OFI Testing Equipment, Inc.
Product Catalog

Testing Equipment for
Drilling Fluids · Cement · Core Analysis · Laboratory Supplies · Reagents
Who we are...
Since 1982, OFI Testing Equipment (OFITE) has manufactured instruments and reagents for testing drilling fluids, completion fluids, oil-well cements, and wastewater.

Our mission...
Our main goal is to provide innovative and dependable instruments using the latest technology, while providing the best customer service available anywhere. We strive to be an indispensable resource to our customers by truly understanding their business, responding quickly to their requests, and by becoming the recognized leader in instrument technology and service.

We're experienced...
We've been in business over 25 years. Many of OFITE's engineers and technicians have been employed by other operators or service companies and have considerable experience in the field and laboratory environments.

Quality-Certified...
All OFITE equipment is built to API specifications, where applicable. OFITE's quality system is certified to ISO 9001:2015 standards.

Full line of products...
OFITE offers a complete line of testing equipment and replacement parts for the oilfield service and related industries. Our products are engineered to provide reliability, ease of operation, and user-friendly maintenance to keep downtime to a minimum.

Worldwide service and support...
As an independent manufacturer and supplier, OFITE has one priority - our customers. We prove this by offering quick response times for new orders, extensive repair services, and custom-designed equipment. With the help of our extensive worldwide distributor network, we’re available to render assistance 24 hours a day 7 days a week.

Poised to Compete...
We have the resources, the knowledge, and the experience to compete with the market players in this industry and we have satisfied customers to prove it. We are serious about our quality and competitive on our prices. Insist on genuine OFI Testing Equipment - Dependable Products from People You Trust®.
**Table of Contents**

Drilling Fluids ......................................................... 38
  Viscosity ......................................................... 38
    Pressurized Viscometers ........................................ 38
    Atmospheric Viscometers ...................................... 39
    Shearometers .................................................. 42
    Thermocups .................................................... 43
    Sag Shoe Assembly ............................................. 45
    Bath / Circulator .............................................. 45
    Temperature Control Unit ................................... 46
  Density ............................................................ 47
    Atmospheric Mud Balance, Metal ............................. 47
    Pressurized Mud Balance .................................... 47
    Atmospheric Mud Balance, Atmospheric .................. 48
    Hydrometer Set ............................................... 48
Cement .................................................................. 5
  Compressive Strength .......................................... 5
    Model 4020-GS Automated UCA/SGSM .................. 5
    Ultrasonic Cement Analyzer, 20 KSI ................... 6
    Static Gel Strength Measurement Device, 20 KSI .... 8
    Ultrasonic Cement Analyzer, 5 KSI ..................... 10
    Static Gel Strength Measurement Device, 5 KSI .... 12
  Thickening Time .................................................. 18
    HTHP Consistometers ......................................... 18
    Benchtop Consistometer ...................................... 22
  Conditioning ....................................................... 24
    Atmospheric Consistometers ................................ 24
  Gas Migration ...................................................... 28
    Gas Migration Tester ......................................... 28
  Fluid Loss .......................................................... 30
    Stirred Fluid Loss Tester ..................................... 30
    HTHP Filter Presses, 500 mL ................................ 32
    HTHP Filter Presses, 175 mL ............................... 33
  Expansion ............................................................ 34
    Volumetric Cement Expansion Device .................. 34
    Circular Cement Expansion Mold Kit .................... 34
  Density ............................................................... 35
    Pressurized Fluid Density Scale ......................... 35
  Slurry Prep .......................................................... 36
    Constant Speed Blenders .................................... 36
  Permeability ........................................................ 37
    Cement Permeameter ......................................... 37
High Pressure Filtration ............................................ 62
  HTHP Filter Press, 175 mL ................................... 62
  HTHP Filter Press, 500 mL ................................... 68
  Four Unit HTHP Filter Presses .............................. 72
  Two Unit HTHP Filter Presses ............................... 76
  Single Unit HTHP Filter Press ............................... 76
  Dynamic HTHP Filter Press ................................... 77
  HTHP Filter Press, Model MB ............................... 78
  Permeability Plugging Tester ............................... 82
  Pressuring Assemblies .......................................... 86
  Regulators ........................................................ 92
  Test Cells ........................................................ 94
  Tools and Accessories ......................................... 98
  Filter Disks ....................................................... 100
  Retorts .............................................................. 102
    50 mL ............................................................. 102
    20 mL ............................................................ 103
    10 mL ............................................................ 104
  Aging ................................................................. 106
    Roller Ovens .................................................... 106
    Gravity Convection Oven ................................... 109
    Parts and Accessories ....................................... 109
    Aging Cells ..................................................... 110
    Shearometer Tube ............................................. 114
  Corrosion Testing ............................................... 115
    Corrosion Rings and Coupons .............................. 115
    Corrosion Test Cell .......................................... 115
    Teflon® Liner for Aging Cells ............................. 116
    HTHP Corrosion Tester ...................................... 116
  Mud Testing Kits ............................................... 117
    International Kit .............................................. 117
    METEOR Kit ..................................................... 118
    Oil Mud Laboratory ........................................... 119
    Airplane Test Kit ............................................. 120
    Offshore Test Kit ............................................. 121
    Frontier Kit ..................................................... 122
    Drilling Fluids Test Kit (MES) ............................ 123
    Pilot Test Kit .................................................... 124
    Basic Water Well Test Kit ................................ 124
    Rig Laboratory .................................................. 125
Table of Contents

Horizontal Direction Drilling (HDD) Mud Test Kit ........................................ 125
Basic Test Kit ........................................................................................................ 126
Directional Drilling Test Kit .................................................................................. 126
Sand Content Kit .................................................................................................. 127
Oil Thief .................................................................................................................. 127
Underbalance Drilling Test Kit (UBD) ................................................................. 128

Filtrate Analysis Kits .............................................................................................. 129
Filtrate Analysis Test / Clay Analysis Test Kit .................................................... 129
Filtrate Analysis Kit .............................................................................................. 130
Methylene Blue Kit ............................................................................................... 130
Chloride, Alkalinity, and Water Hardness ......................................................... 131
Chloride and Alkalinity Kit ................................................................................... 131
Chloride and Water Hardness Kit ....................................................................... 132
Chloride Content Kit ............................................................................................ 132
Calcium and Magnesium Kit .............................................................................. 133
Total Hardness Titration Kit ................................................................................ 133
Calcimeter ............................................................................................................. 134
Garrett Gas Train ................................................................................................... 135
Sulfide Ion Test Kit ............................................................................................... 136
Hydrogen Sulfide Detection Kit .......................................................................... 136
Sulfate Ion Test Kit ............................................................................................... 137
Sulfite Test Kit ....................................................................................................... 137
Sodium Chromate Test Kit .................................................................................. 137
Iron Count Test Kit ............................................................................................... 138
Parafomaldehyde Test Kit .................................................................................... 138

Bacteria Test Kits .................................................................................................. 139
Aerobic and Anaerobic Bacteria Test Kit ........................................................... 139
Rapid Check II-SRB Detection System ............................................................... 139
Sani Check AB Kit #110, Aerobic Bacteria ......................................................... 139

Oilfield Polymers .................................................................................................. 140
Polymer Test Kit - Clapper ................................................................................... 140
PHPA Polymer Concentration Kit .................................................................... 140

Specialty Kits ........................................................................................................ 141
Aniline Point Determination Kit ......................................................................... 141
Nitrate Ion Test Kit ............................................................................................... 141
Thiocyanate Ion Test Kit ..................................................................................... 142
Zinc Carbonate Test Kit ...................................................................................... 142
Zinc in Brines Determination Kit ........................................................................ 143
Potassium and Potassium Chloride Kit .............................................................. 143
Potassium Ion Determination Kit ........................................................................ 144
Reverse Phase Extraction Kit ............................................................................. 144
Water Analysis Kit ............................................................................................... 145
Brine Test Kit ........................................................................................................ 145
Static Sheen Test Kit ............................................................................................ 146

Swelling .................................................................................................................... 147
Dynamic Linear Swell Meter ............................................................................... 147

Lubricity .................................................................................................................. 148
EP / Lubricity Tester ............................................................................................ 148
Lubricity Evaluation Monitor (LEM) ................................................................. 148
Emulsion Stability Tester .................................................................................... 149

Resistivity Meters ................................................................................................ 150
Bulk Hardness Tester ............................................................................................ 151
Particle Size Analysis ............................................................................................ 152

Core Analysis ........................................................................................................ 154
Preparation ............................................................................................................. 154
Core Plug Drill ...................................................................................................... 154
Core Saturator ...................................................................................................... 154
Core Saws .............................................................................................................. 155
Routine Analysis ................................................................................................... 156
Manual Permeameter ......................................................................................... 156
Gas Permeameters ............................................................................................... 157
Automated Gas Permeameter ............................................................................ 158
Gas Porosimeters ................................................................................................. 159
Advanced Analysis .............................................................................................. 160
Rock-Fluid Centrifuge ......................................................................................... 160
Spectral Gamma Ray Core Logger ....................................................................... 161

Frac / Stimulation ................................................................................................. 162
Preparation ............................................................................................................. 162
Constant Speed Blender ....................................................................................... 162
Rheology ............................................................................................................... 163
Viscometers .......................................................................................................... 163
Compressive Strength ......................................................................................... 164
Compressive Load Frame ..................................................................................... 164
Proppant Test Cells .............................................................................................. 164

Completions ........................................................................................................... 165
Wastewater ............................................................................................................ 168
Laboratory ............................................................................................................. 170
Balances ................................................................................................................ 170
Mixers and Blenders ............................................................................................ 173
Hot Plates and Stirrers ......................................................................................... 177
Centrifuges ............................................................................................................ 180
pH Analysis .......................................................................................................... 182
Thermometers ...................................................................................................... 186
Supplies ................................................................................................................ 187
Sieves ..................................................................................................................... 192

Reagents ............................................................................................................... 194
Terms and Conditions of Sales .......................................................................... 202
Forms ..................................................................................................................... 204
Customer Order Form ......................................................................................... 204
Application for Credit ........................................................................................... 205
Re...
Cement - Compressive Strength

MODEL 4020-GS AUTOMATED UCA/SGSM
#120-59

Size: 29" × 20" × 14" (74 × 51 × 36 cm)
Weight: 85 lb (39 kg)

By measuring the change in velocity of an acoustic signal, the Ultrasonic Cement Analyzer provides a continuous, non-destructive method of determining compressive strength of a well cement as a function of time while at temperature and pressure.

The Static Gel Strength Measurement (SGSM) device uses a vaned bob to condition a cement slurry inside a pressurized test cell and intermittently measure static gel strength at down-hole conditions. By directly measuring the forces required to initiate movement in the sample, the SGSM provides an accurate way of determining the static gel strength.

Features
• Data acquisition system with automatic temperature and pressure control included
• UCA and SGSM combined in a single unit

UCA
• Cement samples are not destroyed at time intervals
• Unique technology results in a cleaner signal, so transit times and data are more accurate

SGSM
• Automatically conditions the slurry in-place (1 - 150 RPM)
• Provides a direct, mechanical measurement of static gel strength
• Intermittent or continuous measurement under high-temperature, high-pressure conditions
• Simple calibration and system check
• Quick clean up and turn around

Specification
• Maximum Temperature: 400°F (204.4°C)
• Maximum Pressure: 20,000 PSI (137.9 MPa)

Requirements
• Air Supply: 100 PSI (690 kPa) Recommended, 150 PSI (1,035 kPa) Maximum, ¼” NPT Connector
• Water Supply: 40 - 100 PSI, 40° - 100°F, ¼” NPT Connector
• Coolant Supply: ¼” NPT Connector
• Power Supply: 230 - 240 Volt, 50 - 60 Hz, 10 Amps

Patent Pending
Cement - Compressive Strength

ULTRASONIC CEMENT ANALYZER, 20000 PSI
#120-50 SINGLE CELL
#120-52 DUAL CELL

Size:
Single: 15” × 24” × 18” (38 × 61 × 46 cm)
Dual: 15” × 40” × 18” (38 × 102 × 46 cm)

Weight:
Single: 85 lb (38.6 kg)
Dual: 170 lb (77.1 kg)

Shipping Size:
Single: 42” × 30” × 49” (107 × 76 × 125 cm)
Dual: 45” × 29” × 47” (114 × 74 × 119 cm)

Shipping Weight:
Single: 290 lb (131.5 kg)
Dual: 420 lb (190.5 kg)

By measuring the change in velocity of an acoustic signal, the Ultrasonic Cement Analyzer provides a continuous non-destructive method of determining compressive strength as a function of time while at temperature and pressure.

Features
• Non-destructive method of determining the compressive strength of well cement
• Automatic temperature control
• Computerized data acquisition and control included

Specifications
• Maximum Temperature: 400°F (204.4°C)
• Maximum Pressure: 20,000 PSI (137.9 MPa)

Requirements
• Air: 100 - 150 PSI
• Water: 50 PSI
• Water Drain
• Power: 230 Volt, 50 / 60 Hz
  - Single: 6.5 Amp
  - Dual: 11 Amp

Components
#120-209 Thermocouple Assembly
#120-50-008 Hose, 38”, Stainless Steel
#120-50-018 Fill Gauge
#120-50-021 Test Cell
#120-50-026 Retaining Ring
#120-50-027-1 Seal Ring
#120-50-039 Wrench, Box End, ½”
#120-50-040 Wrench, Box End, ¾”
#120-50-041 Wrench, Strap, 18”
#120-50-053 Heater
#120-50-064 Set of Transducer Cables for #120-52
#120-50-077 Set of Transducer Cables for #120-50
#120-50-TR Transducer, Set of 2
#120-51-031 Wrench, Adjustable
#120-59-076 Hose Kit
#120-90-033 Air Filter
#122-053 Rupture Disk, 22500 PSI
#122-073 Fuse, 2 Amp, 5 mm × 20 mm
#122-075-2 Fuse, 6 Amp, 5 mm × 20 mm
#122-077 Fuse, 10 Amp, 5 mm × 20 mm
#123-011 O-ring for Test Cell
#123-024 Acoustic Couplant
#130-75-27 Allen Key, T-handle, ¼”
#130-75-71 Computer Monitor
#130-75-74 Desktop Computer
#130-79-15 Serial Cable

Optional
#120-50-SP Spare Parts Kit
#120-58 Static Gel Strength Measurement Device, High Pressure
Cement - Compressive Strength

#120-50-021 - UCA Cell Assembly, 20,000 PSI

- Spring Holder (#120-50-023)
- Handle (#120-51-4)
- Top Cap (#120-50-021C)
- Seal Ring (#120-50-027-1)
- O-ring (#123-011)
- Retaining Ring (#120-50-026)
- Cell Body (#120-50-021A)
- O-ring (#123-011)
- Seal Ring (#120-50-027-1)
- Base Cap (#120-50-021B)
- #120-50-025 - Water Supply Tube
  - Gland (#122-004-002)
  - Collar (#120-203-002)
  - Gland (#120-51-024)
  - Collar (#120-51-023)
Cement - Compressive Strength

STATIC GEL STRENGTH MEASUREMENT DEVICE, 20000 PSI
#120-58

Size: 20" Tall × 6" Diameter (51 × 15 cm)
Weight: 50.6 lb (23 kg)

The Static Gel Strength Measurement (SGSM) device uses a vaned bob to condition a cement slurry inside a pressurized test cell and intermittently measure static gel strength at down-hole conditions. By directly measuring the forces required to initiate movement in the sample, the SGSM provides an accurate way of determining the static gel strength.

Features
• Mechanical measurement of static gel strength of well cement
• Accessory to the Ultrasonic Cement Analyzer

Requirements
• Single Cell UCA (120-50) or Dual Cell UCA (120-58)
• Power: 100 - 240 Volt, 2 Amp, 50 / 60 Hz

Components
#120-51-020  Thermocouple Assembly
#120-50-21A  Cell Body
#120-50-021B  Cell Cap, Bottom
#120-50-026  Retaining Ring
#120-50-027-1  Seal Ring
#120-53-01  Vane Assembly
#120-53-25  Cable, 25 Pin, Male to Male, 10 Feet
#120-53-31  O-ring for Mounting Adapter, Lower
#120-53-32  O-ring for Mounting Adapter, Upper
#120-53-33  Spring
#120-53-34  Load Cell
#120-53-42  Bushing, Graphite
#120-53-58  Backup Ring, Upper
#120-53-59  Backup Ring, Lower
#120-53-60  Retaining Ring, Internal
#120-53-80  Electronics Box
#120-53-81  Wrench, Combination, ¾"
#120-58-05  Retaining Ring, External
#120-58-23  Diaphragm
#120-58-38  Retaining Ring, Internal
#120-75-10  Weight Set
#122-073  Fuse, 2 Amp, 5 mm × 20 mm
#130-79-15  Serial Cable
#152-37  AC Power Cord, 115 Volt
#220-10A-EURO  Power Cord, 230V/10A European Plug
#220-15A-USA  Power Cord, 230V/15A USA Plug
#220-20A-USA  Power Cord, 230V/20A USA Plug

Patent Pending
#120-58-006 - SGSM Cell Assembly, 20000 PSI

- Gland (#120-51-024)
- Plug (#120-51-024-1)
- Magnet Cover (#120-53-09)
- Shaft Assembly (#120-58-010)
- Base Flange (#120-53-13)
- Retainer Ring (#120-53-82)
- Upper Backup Ring (#120-53-58)
- O-ring (#120-53-31)
- Bushing (#120-53-42)
- Cell Cap (#120-58-03)
- Retaining Ring, Internal (#120-58-38)
- Retaining Ring (#120-58-38)
- O-ring (#123-011)
- Vane Paddle Assembly (#120-53-01)
- O-ring (#123-011)
- Bottom Cell Cap (#120-50-21B)
- Cell Body (#120-50-021A)
- Seal Ring (#120-50-027-1)
- Retaining Ring, External (#120-50-026)
- Diaphragm (#120-58-23)
- Seal Ring (#120-50-027-1)
- Lower Backup Ring (#120-53-59)
- Retaining Ring (#120-58-05)
- Upper Backup Ring (#120-53-58)
- Bushing (#120-53-42)
- O-ring (#120-53-32)
- Mounting Adapter (#120-58-04)
- Retainer Ring (#120-53-82)
Cement - Compressive Strength

ULTRASONIC CEMENT ANALYZER, TWIN CELL, 5000 PSI
#120-51

Size: 24” × 18” × 12” (61 × 46 × 31 cm)
Weight: 70 lb (31.8 kg)

By measuring the change in velocity of an acoustic signal, the Ultrasonic Cement Analyzer provides a continuous non-destructive method of determining compressive strength as a function of time while at temperature and pressure.

Features
- Non-destructive method of determining the compressive strength of well cement
- Automatic temperature control
- Computerized data acquisition and control included

Specifications
- Maximum Temperature: 400°F (204.4°C)
- Maximum Pressure: 5,000 PSI (34.5 MPa)

Requirements
- Air: 100 - 150 PSI
- Water: 50 PSI
- Water Drain
- Power: 230 Volt, 10 Amp, 50 / 60 Hz

Components
#120-50-008 Hose, 38”, Stainless Steel
#120-50-039 Wrench, Box End, ½”
#120-50-040 Wrench, Box End, ¾”
#120-50-041 Wrench, Strap, 18”
#120-50-063 Set of Transducer Cables
#120-50-TR Transducer, Set of 2
#120-51-019 Heater
#120-51-021 Fill Gauge
#120-51-025 Filter, Inline, ¾”, 7 Micron, Stainless Steel
#120-51-031 Wrench, Adjustable
#120-51-1 Cell Body
#120-51-2 Cell Cap, Bottom
#120-51-3 Cell Cap, Top
#120-59-076 Hose Kit
#120-90-033 Air Filter
#122-075-1 Fuse, 8 Amp, 5 mm × 20 mm
#123-011 O-ring for Test Cell
#123-024 Acoustic Couplant
#130-75-71 Computer Monitor
#130-75-74 Desktop Computer
#130-79-15 Serial Cable
#220-10A-EURO Power Cord, 230V/10A European Plug
#220-15A-USA Power Cord, 230V/15A USA Plug
#220-20A-USA Power Cord, 230V/20A USA Plug

Optional
#120-51-SP Spare Parts Kit
#120-53 Static Gel Strength Measurement Device, Low Pressure
#120-51-010 - Twin Cell UCA Cell Assembly, 5000 PSI

- **Top Cap (#120-51-3)**
- **Handle (#120-51-4)**
- **Body (#120-51-1)**
- **Bottom Cap (#120-51-2)**
- **O-ring (#123-011)**

**#120-51-032 - Water Supply Tube**
- **Gland (#122-004-002)**
- **Collar (#120-203-002)**
- **Gland (#120-51-024)**
- **Collar (#120-51-023)**
- **Filter (#120-51-025)**
- **Gland (#122-004-002)**
- **Nut and Ferrule Set (#500-SS-400-NFSE)**
Cement - Compressive Strength

STATIC GEL STRENGTH MEASUREMENT DEVICE,
5000 PSI
#120-53

Size: 18.25" Tall × 5.9" Diameter (46 × 15 cm)
Weight: 47.2 lb (21.4 kg)

The Static Gel Strength Measurement (SGSM) device uses a vaned bob to condition a cement slurry inside a pressurized test cell and intermittently measure static gel strength at down-hole conditions. By directly measuring the forces required to initiate movement in the sample, the SGSM provides an accurate way of determining the static gel strength.

Features
• Mechanical measurement of static gel strength of well cement
• Accessory to the Ultrasonic Cement Analyzer

Requirements
• Twin Cell UCA (120-51)
• Power: 100 - 240 Volt, 2 Amp, 50 / 60 Hz

Components
#120-51-020 Thermocouple Assembly
#120-51-021 Fill Gauge
#120-51-1 Test Cell Body
#120-51-2 Cell Cap, Bottom
#120-53-01 Vane Assembly
#120-53-03 Cell Cap, Top
#120-53-06 Shaft for Mag Drive
#120-53-23 Diaphragm
#120-53-25 Cable, 25 Pin, Male to Male, 10 Feet
#120-53-31 O-ring for Mounting Adapter, Lower
#120-53-32 O-ring for Mounting Adapter, Upper
#120-53-33 Spring
#120-53-34 Load Cell
#120-53-38 Retainer, Snap Ring
#120-53-42 Bushing, Graphite
#120-53-60 Retaining Ring, Internal
#120-53-80 Electronics Box
#120-53-81 Wrench, Combination, ¾”
#120-75-10 Weight Set
#122-073 Fuse, 2 Amp, 5 mm × 20 mm
#123-011 O-ring for Cell
#130-79-15 Serial Cable
#152-37 AC Power Cord, 115 Volt
#220-10A-EURO Power Cord, 230V/10A European Plug
#220-15A-USA Power Cord, 230V/15A USA Plug

Patent Pending
#120-53-006 - SGSM Cell Assembly, 5000 PSI

- Gland (#120-51-024)
- Plug (#120-51-024-1)
- Magnet Cover (#120-53-09)
- Shaft Assembly (#120-53-010)
- Base Flange (#120-53-13)
- Retainer Ring (#120-53-82)
- Upper Backup Ring (#120-53-58)
- O-ring (#120-53-31)
- Bushing (#120-53-42)
- Cell Cap (#120-53-03)
- Retaining Ring, Internal (#120-53-38)
- O-ring (#123-011)
- Vane Paddle Assembly (#120-53-01)
- O-ring (#123-011)
- Bottom Cell Cap (#120-51-2)
- Cell Body (#120-51-1)
- Diaphragm (#120-53-23)
- Retaining Ring, Internal (#120-53-38)
- O-ring (#123-011)
- Handle (#120-51-4)
- Lower Backup Ring (#120-53-59)
- Retaining Ring (#120-58-05)
- Mounting Adapter (#120-58-04)
- O-ring (#120-53-32)
- Bushing (#120-53-42)
Cement - Compressive Strength

**CLF-40 COMPRESSION LOAD FRAME**

- **#120-285** 115 VOLT
- **#120-285-230** 230 VOLT
- **#120-285-DAS** WITH COMPUTER, 115 VOLT
- **#120-285-230-DAS** WITH COMPUTER, 230 VOLT

**Size:** 23” × 23” × 26.5” (59 × 59 × 67 cm)

**Weight:** 225 lb (102 kg)

**Shipping Size:** 29” × 31” × 39” (74 × 78 × 99 cm)

**Shipping Weight:** 340 lb (154.2 kg)

The CLF-40 Automated Compressive Load Frame was designed to determine the compressive strength of a well cement or proppant. The most common means of determining the compressive strength of a cement involves applying a force to the sample at a constant rate until the sample fails. The maximum loading at which the cement fails is defined as the cement's compressive strength.

**Features**

- Tests the compressive strength of well cement
- Clamshell design with safety switches protect people and equipment
- Safety head, rupture disk, and high pressure alarm prevent over pressurization
- Computerized data acquisition and control system provides detailed test information and precise control
- Operates as a standalone unit or with computer control
- Software accepts cylindrical and cube-shaped samples
- Remote access available via RS-232 or Ethernet
- Small footprint saves valuable lab space

**Specifications**

- Maximum load capacity: 40,000 lbf
- Variable loading rates from 250 to 40,000 lbf/min
- Maximum load dwell: 15 minutes

**Requirements**

- Power: 115 Volt at 9 Amp or 230 Volt at 5 Amp, 50 / 60 Hz

**Components**

- **#120-28-061** Brush
- **#120-90-035-1** Filter
- **#122-074** Fuse, 4 Amp, 5 mm × 20 mm

**Optional**

- **#120-285-9** Proppant Adapter
- **#800-00-038** Proppant Test Cell Assembly, 1.0” Diameter
- **#800-00-034** Proppant Test Cell Assembly, 1.5” Diameter
- **#800-00-013** Proppant Test Cell Assembly, 2.0” Diameter
Cement - Compressive Strength

MODEL 200 HTHP CURING CHAMBER
#120-20 SINGLE CELL, SINGLE DEEP
#120-25 SINGLE CELL, DOUBLE DEEP
#120-30 DUAL CELL, SINGLE DEEP

Size: 47” × 37” × 76” (119 × 94 × 193 cm)
Weight: 1100 lb (499 kg)

The Model 200 HTHP Curing Chamber is designed to prepare well cement specimens for compressive strength tests. It is necessary to determine the amount of time required for a cement to develop compressive strength so that drilling/production operations can be resumed as quickly as possible.

Features
- Cures cement specimens under typical downhole conditions
- Digital programmable temperature controller
- Electronic timer measures elapsed time and may be programmed to terminate test
- Coolant system quickly cools the test cell
- Pressure relief valve and safety head protect people and equipment
- Dual compression molds meet ASTM standard C-109

Specifications
- Maximum temperature: 600°F (315.6°C)
- Maximum pressure: 5,000 PSI (34.5 MPa)
- Test cell cures 8 - 16 specimens
- Creates 2” cubes in accordance with API Specification 10

Requirements
- Air: 100 - 150 PSI
- Water: 40 PSI
- Water Drain
- Power: 230 Volt, 20 Amp, 50 / 60 Hz

Components
#120-00-01 Temperature Controller
#122-008 Heater
#122-052 Rupture Disk, 5500 PSI (37.9 MPa)
#122-083 Mold Assembly, 8 Specimen (Single Deep)
#122-085 Mold Assembly, 16 Specimen (Double Deep)

Optional
#120-21 Spare Parts Kit for #120-20
#120-26 Spare Parts Kit for #120-25
#120-31 Spare Parts Kit for #120-30

BENCHTOP HTHP CURING CHAMBER
#120-55

Size: 25” × 16” × 20” (64 × 41 × 51 cm)
Weight: 215 lb (94.6 kg)

Shipping Size: 36” × 25” × 37” (91 × 64 × 94 cm)
Shipping Weight: 400 lb (181.4 kg)

The Benchtop HTHP Curing Chamber is designed to prepare well cement specimens for compressive strength tests. It is necessary to determine the amount of time required for a cement to develop compressive strength so that drilling/production operations can be resumed as quickly as possible.

Features
- Cures cement specimens under typical downhole conditions
- Digital programmable temperature controller
- Electronic timer measures elapsed time and may be programmed to terminate test
- Coolant system quickly cools the test cell
- Pressure relief valve and safety head protect people and equipment
- Dual compression molds meet ASTM standard C-109

Specifications
- Maximum pressure: 5000 PSI (34.5 MPa)
- Maximum temperature: 500°F (260°C)
- Test cell cures 4 specimens
- Creates 2” cubes in accordance with API Specification 10

Requirements
- Air: 100 - 150 PSI
- Water: 40 PSI
- Water Drain
- Power: 230 Volt, 20 Amp, 50 / 60 Hz

Components
#120-00-01 Temperature Controller
#120-55-006 Heater
#122-052 Rupture Disk, 5500 PSI (37.9 MPa)
#122-072 Fuse, 1 Amp, 5 mm × 20 mm
#122-083-1 Mold Assembly, 4 Specimen

Optional
#120-55-SP Spare Parts Kit
Cement - Compressive Strength

CEMENT MOLD, THREE GANG
#120-902
Size: 6" × 4" × 11" (15 × 10 × 28 cm)
Weight: 12 lb (5.4 kg)

Designed and manufactured in strict conformance to ASTM standards, the Three Gang Cement Cube Mold is used to form 2" (5.1 cm) cube samples for compressive strength testing of cement, mortars, lime, gypsum, and capping compounds.

Features
• Creates 2" (5.1 cm) cubes for compressive strength testing
• Designed and manufactured in conformance to ASTM standards

BP SETTLING TUBE
#122-086
Size: 8.5" Tall × 2" Diameter (23 × 5 cm)
Weight: 1.5 lb (.68 kg)

The BP Setting Tube is used to test the settling characteristics of a well cement. The cement slurry is poured into the tube and then cured in a Consistometer or water bath. After the cement has cured, the column is then cut into pieces and the density of each piece is measured using Archimedes Principle.

Features
• Tests the settling characteristics of a well cement
• All brass construction

CEMENT MOLD ASSEMBLY
#122-083 8 SPECIMEN
#122-085 16 SPECIMEN
Size:
8: 12" × 6.5" × 3" (31 × 17 × 84 cm)
16: 22" × 6.5" × 3" (56 × 17 × 84 cm)

Weight:
8: 23 lb (10 kg)
16: 45 lb (20 kg)

The Brass Cement Mold Assemblies are used to form multiple 1" (5.1 cm) cube specimens for compressive strength tests. The 8-specimen assembly is used in the Single Deep Curing Chamber, while the 16-specimen assembly fits the Double Deep Curing Chamber. The 16-specimen assembly can also be used with the Chandler Models 7350 and 7355 Curing Chambers.

Features
• Creates 2" (5.1 cm) cubes for compressive strength testing
• The 8 specimen assembly fits in the Single Deep HTHP Curing Chamber
• The 16 specimen assembly fits in the Double Deep HTHP Curing Chamber
CARVER LABORATORY PRESS, MODEL M
#120-901

Size: 19" × 24" × 42" (48 × 61 × 107 cm)
Weight: 350 lb (158.9 kg)

The Carver (Model M) is a twenty-five ton, manual, two-column hydraulic press. The daylight opening is fully adjustable. It is constructed of rigid cast iron and steel for precision and durability. The easy-to-read gauge is calibrated in pounds and metric tons.

Specifications
• Capacity: 25 ton
• Platen size: 9" × 9" (23 × 23 cm)
• Manual operation
• Adjustable daylight opening
• Rigid cast iron and steel construction
• Easy-to-read gauge is calibrated in pounds and metric tons

CIRCULATOR/BATH
#120-950  115 VOLT
#120-950-1  230 VOLT

Size: 27.8" × 14.8" × 23.2" (71 × 38 × 59 cm)
Weight: 77.2 lb (35 kg)

Features
• Completely Stainless Steel
• Precise Control
• Autotune, High Precision
• Overtemperature Protection
• RS-232 Communication

Specifications
• Bath Capacity: 58 L
• Bath Dimensions: 16.5" × 10.8" × 11.8" (42 × 28 × 30 cm)
• Temperature Range: Ambient to 482°F (250°C)

PRECISION WATER BATH
#152-57  10 LITER
#152-57-1  28 LITER

Size: 10 Liter: 15.5" × 15.1" × 9.2" (39 × 38 × 23 cm)
28 Liter: 15.4" × 21.8" × 11.1" (39 × 55 × 28 cm)

Precision general purpose water baths are rugged, high performance baths that are designed to maintain water temperature from ambient to 100°C. They are ideal for a wide range of lab applications. Over-temperature safety circuitry is designed to prevent thermal runaway, while new auto-on and auto-off timers allow you to optimize operation schedules. Benefit from outstanding chemical and corrosion resistance with epoxy powder-coated exterior, and easily clean the chamber with its seamless stainless-steel interior.

Features
• Smaller footprint, compared to previous models, frees up valuable benchtop space
• Advanced microprocessor controller is designed for extended functionality
• Protect your work with audible alarms
• Conveniently save commonly used settings with four temperature presets
• Baths come with clear polycarbonate gable cover, diffuser tray, drain hose and rubber duck
• UL Listed and CE Marked

Specifications:
- Maximum Temperature: 100°C (212°F)
- Temperature Stability: ± 0.1°C
- Temperature Uniformity: ± 0.2° @ 70°C
- Voltage: 115 / 230 Volt, 50 / 60 Hz
- Heater Output:
  - 10 L: 800 Watt
  - 28 L: 1200 Watt
Cement - Thickening Time

AUTOMATED HTHP CONSISTOMETER
#120-35 MODEL 2025
#120-35-DAS WITH COMPUTER
#120-35-R WITH CHART RECORDER
#120-35-RDAS WITH COMPUTER AND CHART RECORDER
#120-40 MODEL 2040
#120-40-DAS WITH COMPUTER
#120-40-R WITH CHART RECORDER
#120-40-RDAS WITH COMPUTER AND CHART RECORDER

Size: 22.5” × 27.5” × 70” (57 × 70 × 178 cm)
Weight: Approximately 450 lb (204 kg)

Shipping Size: 39” × 32” × 82” (99 × 81 × 208 cm)
Shipping Weight: 940 lb (426.4 kg)

The Automated HTHP Consistometer was specifically engineered to determine the thickening time of well cements under simulated down-hole pressures and temperatures. The HTHP Consistometer offers a computerized Data Acquisition and Control system, automatic temperature and pressure control, and a variable speed motor all standard in one easy-to-use unit.

Features
- Computerized Data Acquisition and Control system included
- Control multiple units from one computer
- Connect via RS-232 and Ethernet
- Automatic temperature and pressure control
- Automatic, programmable variable speed motor (0 - 300 RPM) powered by a magnetic drive
- Visual indicator provides an at-a-glance status update during testing
- Small cell and efficient cooling system provide quick cool-down times
- Small footprint saves valuable lab space
- Temperature, pressure, and consistency alarms
- Optional chart recorder monitors temperature, pressure, and consistency
- Conforms to API Specification 10A and 10B2 guidelines

Specifications
- Maximum Pressure:
  - Model 2025: 25,000 PSI (172.4 MPa)
  - Model 2040: 40,000 PSI (275.8 MPa)
- Maximum Temperature:
  - Model 2025: 400°F (204°C)
  - Model 2040: 600°F (315°C)
- Consistency Range: (0 - 125 Bc)
- Digital Temperature Controller with 0.1° resolution
- Pressure indicator resolution is 1 PSI and includes both high and low pressure alarms
- Slurry cup rotational speed is variable up to 150 RPM

Requirements
- Air: 100 - 120 PSI
- Water: 40 PSI
- Water Drain
- Power: 230 Volt, 25 Amp, 50 / 60 Hz

What’s Included
- Consistometer
- Slurry Cup
- Potentiometer
- Calibration Stand
- Mineral Oil
- Tools
- O-rings and Gaskets
- Hose Kit with Fittings (Air, Water, Drain)
Components
#120-001 Mineral Oil, 1 Gallon
#120-10-1 Tool Kit
#120-102 Rupture Disk, 28000 PSI (Model 2025)
#120-103 Rupture Disk, 45000 PSI (Model 2040)
#120-40-032 Filter, High Pressure
#120-40-033 Filter Element
#120-106-002 O-ring for Filter Element
#120-35-031 O-ring for Cell, Viton®
#120-35-033 Air Filter
#120-35-132 Oil Filter
#120-40-029 O-ring for Cooling Jacket, FFKM
#120-401 O-ring for Cell, Metal
#120-401-V O-ring for Cell, Viton®
#120-50-040 Wrench, Box End, ½"
#120-59-076 Hose Kit
#122-077 Fuse, 10 Amp, 5 mm × 20 mm

Slurry Cup Components
#120-519 Slurry Cup Assembly without Expansion Chamber
#120-521 Slurry Cup Assembly with Expansion Chamber
#120-501 Sleeve
#120-501-T Sleeve, Tapered (Model 2040)
#120-502 Diaphragm, Molded
#120-502-1 Diaphragm, Flat
#120-503 Paddle Pin
#120-504 Pivot Bearing
#120-505 Pivot Bearing Gasket
#120-506 Paddle
#120-507 Paddle Shaft, 7.75" (For Slurry Cup without Expansion Chamber)
#120-508 Diaphragm Retaining Ring
#120-509 Drive Disk
#120-510 Drive Bar
#120-511 Shear Pin
#120-512 Drive Pin
#120-513 Gasket
#120-514 Drive Disk Set Screw
#120-515 Diaphragm Support
#120-516 Slurry Cup Base
#120-517 Slurry Cup Locking Ring
#120-520 Paddle Shaft, 9.125" (For Slurry Cup without Expansion Chamber)
#122-522 Expansion Chamber Lid

Potentiometer Components
#120-628 Potentiometer Assembly
#120-602 Calibration Spring
#120-603 Body
#120-604 Resistor
#120-605 Contact Spring
#120-606 Contact Arm
#120-607 Contact Strip
#120-608 Grounding Cable Retaining Screw
#120-609 Grounding Contact Spring

Calibration Components
#120-35-040 Calibration Stand Assembly
#120-75-9 Weight Hanger
#120-75-10 Weight Set

Optional
#120-35-SP Spare Parts Kit
#120-506M Paddle for Dynamic Settling Test

Dual cell consistometers available. Ask a sales representative for details.
Cement - Thickening Time

#120-519 - Slurry Cup Assembly Without Expansion Chamber

Shear Pin (#120-511)
Drive Disk (#120-509)
Locking Ring (#120-517)
Diaphragm Support (#120-515)
Diaphragm Retaining Ring (#120-508)
Paddle Pin (#120-503)
Sleeve (#120-501)
Base (#120-516)
Drive Pin (#120-512)
Pivot Bearing (#120-504)

Drive Bar (#120-510)
Set Screw (#120-514)
Paddle Shaft (#120-507)
Paddle (#120-506)

Molded Diaphragm
#120-502 - Below 400°F
#120-40-502 - Above 400°F

Gasket (#120-513)
Pivot Bearing Gasket (#120-505)

Pivot Bearing (#120-504)
#120-521 - Slurry Cup Assembly With Expansion Chamber

- Shear Pin (#120-511)
- Drive Disk (#120-509)
- Expansion Chamber Lid (#120-522)
- Drive Bar (#120-510)
- Set Screw (#120-514)
- Paddle Shaft (#120-520)
- Paddle Pin (#120-503)
- Paddle (#120-506)
- Sleeve (#120-501)
- Diaphragm Retaining Ring (#120-508)
- Diaphragm Support (#120-515)
- Gasket (#120-513)
- Base (#120-516)
- Drive Pin (#120-512)
- Pivot Bearing Gasket (#120-505)
- Pivot Bearing (#120-504)

Molded Diaphragm
- #120-502 - Below 400°F
- #120-40-502 - Above 400°F
Cement - Thickening Time

MODEL 130 HTHP BENCHTOP CONSISTOMETER
#120-90  STANDARD
#120-90-DAS  WITH DATA ACQUISITION
SYSTEM

Size: 25” × 16” × 20” (64 × 41 × 51 cm)
Weight: 215 lb (97.6 kg)

Shipping Size: 37” × 25” × 44” (94 × 64 × 112 cm)
Shipping Weight: 435 lb (197.3 kg)

The Model 130 Benchtop Consistometer was specifically engineered to determine the thickening time of well cements under simulated down-hole pressures and temperatures. Its compact, lightweight design makes the unit ideally suited for benchtop use.

Features
• Digital programmable temperature controller
• An electronic chronograph measures elapsed time
• Cooling jacket facilitates cool down
• A safety head with rupture disk is provided
• Compact size and light weight make the unit suitable for field work
• Unit is fully capable of testing well cements in strict accordance with the guidelines as stated within API Specification 10A and 10B2

Specifications
• Maximum operating temperature of 400°F (200°C)
• Maximum operating pressure of 16,000 PSI (110.3 MPa)

Instrument Requirements
• Air: 100 PSI
• Water: 40 PSI
• Water Drain
• Power: 230 Volt, 15 Amp, 50 / 60 Hz

Components
#120-00-028  Consistency Indicator
#120-001  Mineral Oil, 1 gal
#120-104  Rupture Disk, 17,500 PSI (121 MPa)
#120-105  Check Valve, High Pressure
#120-106  Filter, High Pressure
#120-257  O-ring for Drain Plug, Viton®
#120-35-050  Temperature/Pressure Controller
#120-90-033  Air Filter
#120-90-035  Filter
#120-90-035  Filter
#120-90-5  Chart Recorder
#122-073  Fuse, 2 Amp, 5 mm × 20 mm
#503-152V90  O-ring for Cell, Viton®

Slurry Cup Components
#120-519  Slurry Cup Assembly without Expansion Chamber
#120-501  Sleeve
#120-502  Diaphragm, Molded
#120-502-1  Flat Diaphragm, Buna-N
#120-503  Paddle Pin
#120-504  Pivot Bearing
#120-505  Pivot Bearing Gasket
#120-506  Paddle
#120-508  Diaphragm Retaining Ring
#120-509  Drive Disk
#120-510  Drive Bar
#120-511  Sheet Pin
#120-512  Drive Pin
#120-513  Gasket
#120-628 - Potentiometer Assembly

- Nut, 4-40, 3/16" W x 1/16" H
- Bushing (#120-626)
- Screw, Phillips, Pan Head, 2-56 × .125" L (#120-619)
- Set Screw, Hex Socket, Cup Point, 6-32 × .1875" L (#120-616)
- Calibration Spring (#120-602)
- Insulation Plate (#120-612)
- Support (#120-623)
- Retainer Ring, Internal (#120-629)
- Contact Arm (#120-606)
- Spring Retainer (#120-618)
- Pivot Arm (#120-615)
- Spring Adjuster Stand Assembly (#120-617)
- Spring Adjuster Assembly (#120-613)
- Mechanical Stop (#120-627)
- Contact Spring (#120-601)
- Contact Spring, Ground (#120-609)
- Screw, Hex Socket, Cap, 10-32 × .5" L (#120-608)
- Ground Cable (#120-611)
- Bearing (#120-620)
- Stop Arm Assembly (#120-621)
- Set Screw, Hex Socket, 8-32 × .25" L (#120-622)
- Resistor (#120-604)
- Contact Spring (#120-605)
- Screw, Phillips, Pan Head, 4-40 × .375" L (#120-610)
- Contact Strip (#120-607)
- Body (#120-603)
- Screw, Pan Head, 4-40 × 1.75" L
- Screw Phillips, Countersink, 6-32 × .75" L (#120-614)
Cement - Conditioning

MODEL 80 RECORDING ATMOSPHERIC CONSISTOMETER

#120-80 115 VOLT
#120-80-1 230 VOLT

Size: 30” × 16” × 18” (76 × 41 × 46 cm)
Weight: 105 lb (47.7 kg)

Shipping Size: 33” × 21” × 45” (84 × 53 × 114 cm)
Shipping Weight: 240 lb (108.9 kg)

The Model 80 Recording Atmospheric Consistometer is designed to pre-condition cement slurries in accordance with API Specification 10. Determination of rheological properties, examination of free water content, and evaluation of the API fluid loss test all require that the cement slurry be conditioned by an atmospheric consistometer. This model includes a chart recorder to monitor temperature and consistency over time.

Features
• Multi-channel paperless graphic recorder measures temperature and consistency of each container
• Unit operates at atmospheric pressure
• Microprocessor temperature controller
• Digitally displays process temperature
• Heat transfer fluid is circulated
• Dual sample container design
• Two alarms indicate termination of the test
• Cooling coils
• Stainless steel temperature bath
• Deadweight calibration unit

Specifications
• Maximum Temperature: 200°F (93.3°C)
• Heater: 1,500 Watt
• Speed: 150 RPM

Instrument Requirements
• Water supply for cooling
• Water drain
• 115 Volt at 20 Amp or 230 Volt at 10 Amp, 50 / 60 Hz

Components
#120-001 Mineral Oil, 1 Gallon
#120-75-9 Weight Hanger
#120-75-10 Weight Set, Slotted
#120-75-19 Paddle Assembly
#120-80-4 Temperature Controller
#120-80-5 Chart Recorder
#120-80-6 Motor
#121-001 O-ring for Container
#121-002 Retaining Ring
#121-003 Paddle Assembly
#121-007 Rotator Thrust Bearing
#121-008 Thermocouple
#121-009 Timing Belt
#121-010 Heater (115 Volt)
#121-010-1 Heater (230 Volt)
#152-37 AC Power Cord (115 Volt)
#152-38 AC Power Cord (230 Volt)

For 115 Volt (120-80):
#122-073 Fuse for 15 VDC, 2 Amp, 5 mm × 20 mm
#122-074 Fuse for Motor and Cooling, 4 Amp, 5 mm × 20 mm
#122-077 Fuse for Heater, 10 Amp, 5 mm × 20 mm
#122-078 Fuse for Main Power, 15 Amp, 5 mm × 20 mm

For 230 Volt (120-80-1):
#121-016 Fuse for Heater, 7 Amp, ¾” × 1 ¾”
#122-073 Fuse for Motor, 15 VDC, and Cooling, 2 Amp, 5 mm × 20 mm
#122-077 Fuse for Main Power, 10 Amp, 5 mm × 20 mm

Optional
#120-82 Spare Parts Kit for #120-80
#120-83 Spare Parts Kit for #120-80-1

#120-80 - Model 80 Recording Atmospheric Consistometer
MODEL 60 ATMOSPHERIC CONSISTOMETER

#120-75 115 VOLT
#120-75-1 230 VOLT

Size: 24” × 16” × 18” (61 × 41 × 46 cm)
Weight: 95 lb (43.1 kg)

Shipping Size: 32” × 21” × 32” (81 × 53 × 81 cm)
Shipping Weight: 200 lb (90.7 kg)

The Model 60 Atmospheric Consistometer is used for conditioning cement slurries as specified within API Specification 10. Determination of rheological properties, examination of free water content, and evaluation of the API fluid loss test all require that the cement slurry be pre-conditioned by an Atmospheric Consistometer.

Features
- Unit is operated at atmospheric pressure
- Temperature is maintained via a PID controller
- Process temperature is displayed digitally
- Heat transfer fluid is continuously circulated
- Dual container design
- Cooling system included
- Stainless steel temperature bath
- Deadweight calibration unit

Specifications
- Maximum temperature: 200°F (93.3°C)
- Heater: 1,500 Watt
- Speed: 150 RPM

Instrument Requirements
- Water supply for cooling
- Water drain
- 115 Volt at 19 Amp or 230 Volt at 9.5 Amp, 50 / 60 Hz

Components
- #120-001 Mineral Oil, 1 Gallon
- #120-511 Slurry Cup Shear Pin
- #120-75-9 Weight Hanger
- #120-75-10 Weight Set, Slotted
- #120-75-16 Calibration Stand
- #120-75-17 Drive Assembly
- #120-75-18 Potentiometer Assembly
- #120-75-19 Paddle Assembly
- #120-75-20 Slurry Cup Assembly
- #120-80-4 Temperature Controller
- #120-80-6 Motor
- #121-001 O-ring, Container
- #121-002 Retaining Ring
- #121-007 Rotator Thrust Bearing
- #121-008 Thermocouple
- #121-009 Timing Belt
- #121-010 Heater (115 Volt)
- #121-010-1 Heater (230 Volt)
- #121-013 Slurry Container
- #121-014 Bottom for Slurry Container

For 115 Volt (120-75):
- #120-76-002 Fuse for Heat, 15 Amp, ¼” × 1 ¼”
- #120-76-003 Fuse for Main Power, 20 Amp, ¼” × 1 ¼”
- #152-37 AC Power Cord
- #165-14-10 Fuse for Cooling, ½ Amp, ¼” × 1 ¼”
- #172-07 Fuse for Motor, 5 Amp, ¼” × 1 ¼”

For 230 Volt (120-75-1):
- #120-76-001 Fuse for Motor, 3 Amp, ¼” × 1 ¼”
- #121-016 Fuse for Heat, 7 Amp, ¼” × 1 ¼”
- #172-01 Fuse for Cool, ½ Amp, ¼” × 1 ¼”
- #172-09 Fuse for Main, 10 Amp, ¼” × 1 ¼”
- #220-10A-EURO AC Power Cord
#120-75-18 - Potentiometer Assembly for Atmospheric Consistometer

- Nut (#120-75-18A)
- Indicator Needle (#120-75-18B)
- Stop Pin (#120-75-18H)
- Set Screw (#130-75-18P)
- Pin, 3/16” x 1 1/4” (#120-75-18O)
- Bearing Nut (#120-75-18C)
- Dial (#120-75-18D)
- Bearing (#120-75-18J)
- Retaining Ring (#120-75-18L)
- Spring (#121-004)
- Hub (#120-75-18E)
- retaining Ring (#120-75-18L)
- Bearing (#120-75-18J)
- Pin, 3/4” x ¾” (#120-75-18M)
- Base (#120-75-18F)
- Shaft (#120-75-18K)
- Pin, 3/8” x 1 1/4” (#120-75-18N)
- O-ring (#130-75-14)
#120-75-20 - Slurry Cup Assembly for Atmospheric Consistometer

- Slurry Cup (#121-013)
- O-ring (#121-001)
- Bottom Cap (#121-014)
- Retaining Ring (#121-001)
Cement - Gas Migration

GAS MIGRATION TESTER
#120-57  115 VOLT
#120-57-1  230 VOLT

Shipping Size:  37” × 41” × 50” (94 × 104 × 127 cm)
Shipping Weight:  450 lb (204.1 kg)

The Gas Migration Tester helps predict and overcome the potential for gas migration after cementing. This unit evaluates both the potential and severity of gas migration at downhole conditions with the recommended slurry. This allows for the design of the most economical and reliable cement slurry for a particular well.

Features
• Helps predict and overcome the potential for gas migration after cementing
• Evaluates both the potential and severity of gas migration at downhole conditions
• Allows for the design of the most economical and reliable cement slurry for a particular well

Specifications
• Monitors and records both liquid and gas flows
• Multichannel DAQ and computer control
• DAQ registers all parameters in real time
• Test can be performed on real core samples or standard fluid loss screens
• Optional chiller enables sub-ambient testing
• Maximum pressure: 2,000 PSI (13,790 kPa)
• Maximum Temperature: 400°F (204.4°C)

Requirements
• Nitrogen: 1,000 - 2,000 PSI (6.9 - 13.8 MPa)
• Power: 115 Volt at 8 Amp or 230 Volt at 4 Amp, 50 / 60 Hz

Components
#120-57-01  Screen, 325 Mesh, Detachable
#120-57-02  Screen, 60 Mesh
#120-57-03  Piston Seal
#120-57-04  O-ring for Screen
#120-57-05  Rod Seal
#120-57-06  Packing Grease
#120-57-07  Pressure Sensor, 0 - 2,500 PSI
#120-57-08  Load Cell
#120-57-10  Cell Body
#120-57-11  Inlet Cap
#120-57-12  Inlet Cap Screw
#120-57-13  Piston
#120-57-14  Piston Seal Screw Ring
#120-57-15  Piston Rod
#120-57-16  Seal Plug
#120-57-17  Piston Retaining Ring
#120-57-18  Inlet Cap Wrench
#120-57-19  Stand
#120-70-1-052  Hose, 20"
#120-70-1-064  Outlet Cap
#120-75-10  Weight Set
#120-910-011  Stopper, Solid, #11
#120-910-012  Stopper, Solid, #10
#120-910-016  Plate for Load Cell
#120-910-034  Backup Ring, Viton®
#120-910-052  Erlenmeyer Flask, 500 mL
#120-910-053  Erlenmeyer Flask, 1000 mL
#120-910-054  Erlenmeyer Flask, 2000 mL
#120-910-074  Sample Cylinder, 500 cm
#130-75-71  Computer Monitor
#130-75-74  Desktop Computer
#152-37  AC Power Cord (115 Volt)
#153-67  Syringe, Disposable, 60 cc
#154-63  Spatula, Micro Spoon, Flat, 9"
#170-11  Heating Element
#170-13-3  O-ring for Cell
#170-17  O-ring for Valve Stem
#170-18  Cement Screen, Detachable
#170-35  Wrench, Adjustable, 6"
#170-72  Spacer, ¼"
#170-77  O-ring for Spacer

For 115 Volt (120-57):
#122-073  Fuse for Electronics, 2 Amp, 5 mm × 20 mm
#122-077  Fuse for Heater, 10 Amp, 5 mm × 20 mm
#152-37  AC Power Cord

For 230 Volt (120-57-1):
#122-073  Fuse for Electronics, 2 Amp, 5 mm × 20 mm
#122-074-1  Fuse for Heater, 5 Amp, 5 mm × 20 mm
#220-10A-EURO  AC Power Cord, 230 Volt, European
#220-15A-USA  AC Power Cord, 230 Volt, USA

Optional
#120-57-SP  Spare Parts Kit

For 115 Volt (120-57):
#122-073  Fuse for Electronics, 2 Amp, 5 mm × 20 mm
#122-077  Fuse for Heater, 10 Amp, 5 mm × 20 mm
#152-37  AC Power Cord

For 230 Volt (120-57-1):
#122-073  Fuse for Electronics, 2 Amp, 5 mm × 20 mm
#122-074-1  Fuse for Heater, 5 Amp, 5 mm × 20 mm
#220-10A-EURO  AC Power Cord, 230 Volt, European
#220-15A-USA  AC Power Cord, 230 Volt, USA

Optional
#120-57-SP  Spare Parts Kit

For 115 Volt (120-57):
#122-073  Fuse for Electronics, 2 Amp, 5 mm × 20 mm
#122-077  Fuse for Heater, 10 Amp, 5 mm × 20 mm
#152-37  AC Power Cord

For 230 Volt (120-57-1):
#122-073  Fuse for Electronics, 2 Amp, 5 mm × 20 mm
#122-074-1  Fuse for Heater, 5 Amp, 5 mm × 20 mm
#220-10A-EURO  AC Power Cord, 230 Volt, European
#220-15A-USA  AC Power Cord, 230 Volt, USA

Optional
#120-57-SP  Spare Parts Kit

For 115 Volt (120-57):
#122-073  Fuse for Electronics, 2 Amp, 5 mm × 20 mm
#122-077  Fuse for Heater, 10 Amp, 5 mm × 20 mm
#152-37  AC Power Cord

For 230 Volt (120-57-1):
#122-073  Fuse for Electronics, 2 Amp, 5 mm × 20 mm
#122-074-1  Fuse for Heater, 5 Amp, 5 mm × 20 mm
#220-10A-EURO  AC Power Cord, 230 Volt, European
#220-15A-USA  AC Power Cord, 230 Volt, USA

Optional
#120-57-SP  Spare Parts Kit
#120-57-09 - Cell Assembly Gas Migration Tester

- Piston Rod (#120-57-15)
- Screw for Inlet Cap (#120-57-12)
- O-ring (#170-13-3)
- Seal Plug (#120-57-16)
- Spacer (#170-72)
- Seal Ring (#120-57-03)
- Piston (#120-57-13)
- Screen, 60 Mesh (#120-57-02)
- Retaining Ring for Piston (#120-57-17)
- Cell Body (#120-57-10)
- Screen, Detachable (#170-18)
- Cell Cap, Outlet (#120-70-1-064)

- O-ring (#170-13-3)
- O-ring (#170-13-3)
- O-ring (#120-57-04)
- Screen, 325 Mesh (#120-57-01)
- O-ring (#170-77-1)
- O-ring (#170-910-034)
- O-ring (#120-57-05)
- O-ring (#170-13-3)

- Cell Cap, Inlet (#120-57-11)
- Backup Ring (#120-910-034)
- Piston Seal Screw Ring (#120-57-14)
The Stirred Fluid Loss Tester provides a reliable means of determining the fluid loss characteristics of well cements. The ergonomic and easy-to-use design can condition and test cement slurries under HTHP conditions in accordance with API Specification 10 guidelines. An innovative sealing system eases cleanup and extends the usable life of consumable parts.

Features
- Provides a reliable means of determining the fluid loss characteristics of a well cement
- Temperature is maintained by PID temperature controller
- Filtration portion of cell is dimensionally equivalent to an API approved HTHP test cell
- Optional chiller enables sub-ambient testing

Specifications
- Maximum Pressure: 2,000 PSI (13.8 MPa)
- Maximum Temperature: 400°F (204.4°C)
- Paddle Speed: 5 - 200 RPM

Instrument Requirements
- $N_2$: 2,000 - 2,500 PSI
- Water: 40 PSI
- Water Drain
- 115 Volt at 8 Amp or 230 Volt at 4 Amp, 50 / 60 Hz

Components
- #120-257 O-ring for Drain Plug
- #120-503 Paddle Pin
- #120-70-001 Digital Speed Indicator
- #120-70-1-020 Back Pressure Receiver
- #120-70-1-026 Paddle Assembly
- #120-70-1-043 Drive Belt
- #120-70-1-046 Bearing
- #120-70-1-049 Spanner Wrench
- #120-70-1-052 Hose, 20"
- #120-70-1-053 Hose, 24"
- #120-70-1-062 Test Cell
- #120-70-1-064 Cell Cap, Filter Side
- #120-70-1-066 Heater Assembly
- #120-70-1-067 Plunger
- #120-70-1-068 Cell Cap with Drive Assembly
- #120-80-4 Temperature Controller
- #120-80-6 Motor
- #153-14 Graduated Cylinder, 50 mL x 1 mL, Glass
- #153-16 Graduated Cylinder, 25 mL x ½ mL, Glass
- #165-44-2 Anti Seize Compound, Silver, 7g Pouch
- #170-13-3 O-ring for Cell, Viton®
- #170-16 Valve Stem
- #170-17 O-ring for Valve Stem
- #170-18 Cement Screen, Detachable
- #170-20 Manifold Block
- #170-35 Wrench, Adjustable, 6"
- #171-11 O-ring for Back Pressure Receiver, Nitrile
- #171-23-1 Safety Pin with Lanyard

For 115 Volt (120-70):
- #122-074 Fuse for Motor, 4 Amp, 5 mm × 20 mm
- #122-075-1 Fuse for Heater, 8 Amp, 5 mm × 20 mm
- #122-077 Fuse for Main Power, 10 Amp, 5 mm × 20 mm
- #152-37 AC Power Cord

For 230 Volt (120-70-1):
- #122-073 Fuse for Motor, 2 Amp, 5 mm × 20 mm
- #122-074 Fuse for Heater, 4 Amp, 5 mm × 20 mm
- #122-075-1 Fuse for Main Power, 8 Amp, 5 mm × 20 mm
- #220-10A-EURO AC Power Cord

Optional
- #120-71 Spare Parts Kit
#120-70-1-068 - Drive End Cap Assembly Stirred Fluid Loss Tester

- Pin (#120-70-1-068B)
- Collar (#120-70-1-068A)
- Paddle Pin (#120-70-1-068M)
- Spring (#120-70-1-068J)
- Bearing (#120-70-033)
- O-ring (#170-17)
- Valve Stem (#170-16)
- Seal Retainer Nut (#120-70-1-068G)
- O-ring (#170-17)
- Seal (#120-70-1-068E)
- Drive End Cap (#120-70-1-063)
- O-ring (#171-11)
- Retainer (#120-70-1-068H)
- O-ring (#120-257)
- O-ring (#170-17)
- Body (#120-70-1-068F)
- One Way Valve (#120-70-1-068D)
- Paddle Assembly (#120-70-1-026)
- Washer, Rulon® J (#120-70-034)
- Washer, Rulon® J (#120-70-034)
Cement - Fluid Loss

HTHP FILTER PRESS, 500 ML, DOUBLE CAPPED CELL, THREADED, FOR CEMENT, N₂ PRESSURE
#171-192  115 VOLT
#171-192-1  230 VOLT

Size: 10" × 18" × 42" (25 × 46 × 107 cm)
Weight: 53 lb (24.1 kg)

The all new threaded cap cell design not only allows for testing to be done at higher temperatures and pressures but ensures safety for the operator. In addition, our modular inner cap system allows multiple filter media to be used with one cell. All cells are provided with pressure certification, unique serialization, and material certification which provides true traceability.

Features
- Threaded cell caps are safer than traditional designs
- Interchangeable caps enable testing with filter paper, ceramic disks, or cement screens with the same cell body

Specifications
- Maximum Pressure: 5,000 PSI (34.5 MPa)
- Maximum Temperature: 500°F (260°C)

Requirements
- Power: 115 Volt at 6.75 Amp or 230 Volt at 3.75 Amp, 50 / 60 Hz
- N₂: Up to 1500 PSI

Components
#153-12  Graduated Cylinder, 100 mL × 1 mL, Glass
#154-20  Thermometer with Metal Dial, 8" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#171-00  Heating Jacket, 115 Volt
#171-01  Heating Jacket, 230 Volt
#170-10  Pilot Light
#170-11  Heating Element, 200 Watt
#171-32  Knob
#171-44  Rubber Foot
#171-71  Thermostat
#171-87  Location Pin
#171-94  Cell Rest Plunger Assembly
#170-13-3  O-ring for Cell, Viton®
#170-17  O-ring for Valve Stem, Viton®
#170-35  Wrench, Adjustable, 6"
#171-10  Back Pressure Receiver, 100 mL
#171-192-S  HTHP Filter Press Cell with Threaded Cap, 500 mL, for Cement
#171-24  Dual Nitrogen Manifold

Optional
#143-07  Regulator Repair Kit
#170-37  Nitrogen Cylinder
#170-40  Cell Carrying Tool
#170-91  Pressure Relief Tool
#171-190-028  Cell Stand
#171-192-SP  Spare Parts Kit
## HTHP FILTER PRESS, 175 ML, DOUBLE CAPPED CELL, THREADED, FOR CEMENT, N₂ PRESSURE

**#170-182**  
115 VOLT

**#170-182-1**  
230 VOLT

<table>
<thead>
<tr>
<th>Size:</th>
<th>7.5&quot; × 11&quot; × 23.5&quot; (19 × 28 × 60 cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>27 lb (12.3 kg)</td>
</tr>
</tbody>
</table>

The all new threaded cap cell design not only allows for testing to be done at higher temperatures and pressures but ensures safety for the operator. In addition, our modular inner cap system allows multiple filter media to be used with one cell. All cells are provided with pressure certification, unique serialization, and material certification which provides true traceability.

### Features
- Threaded cell caps are safer than traditional designs
- Interchangeable caps enable testing with filter paper, ceramic disks, or cement screens with the same cell body
- Includes cell caps for testing with cement screens

### Specifications
- **Maximum Pressure:** 5,000 PSI (34.5 MPa)
- **Maximum Temperature:** 500°F (260°C)

### Requirements
- 115 Volt at 4 Amp or 230 Volt at 2 Amp, 50 / 60 Hz

### Components
- **#153-14** Graduated Cylinder, 50 mL × 1 mL, Glass
- **#154-10** Thermometer with Metal Dial, 5" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
- **#170-00-1** Heating Jacket, 115 Volt
- **#170-01-1** Heating Jacket, 230 Volt
- **#170-05** Thermostat
- **#170-09** Insulation Board
- **#170-10** Pilot Light
- **#170-11** Heating Element, 200 Watt
- **#170-30** Thermostat Cover
- **#170-30-001** Fish Paper
- **#170-44** Rubber Foot
- **#171-32** Knob
- **#170-06-1** Back Pressure Receiver for N₂ Pressure, 15 mL
- **#170-19** Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
- **#170-35** Adjustable Wrench, 6"
- **#170-45** Test Cell with Cement Screens, Double Cap
- **#171-24** Dual Nitrogen Manifold, 1350 and 750 PSI
- **#143-07** Regulator Repair Kit
- **#170-00-2-SP** Spare Parts Kit
- **#170-37** Nitrogen Cylinder
- **#170-40** Cell Carrying Tool
- **#170-91** Pressure Relief Tool
- **#171-190-028** Cell Stand

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## HTHP FILTER PRESS, 175 ML, DOUBLE CAPPED CELL, LOCKING SCREWS, FOR CEMENT, N₂ PRESSURE

**#170-00-2**  
115 VOLT

**#170-01-2**  
230 VOLT

<table>
<thead>
<tr>
<th>Size:</th>
<th>7.5&quot; × 11&quot; × 23.5&quot; (19 × 28 × 60 cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>38 lb (17.2 kg)</td>
</tr>
</tbody>
</table>

### Specifications
- **Maximum Pressure:** 2,000 PSI (13.8 MPa)
- **Maximum Temperature:** 400°F (204.4°C)

### Requirements
- 115 Volt at 4 Amp or 230 Volt at 2 Amp, 50 / 60 Hz

### Components
- **#153-14** Graduated Cylinder, 50 mL × 1 mL, Glass
- **#154-10** Thermometer with Metal Dial, 5" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
- **#170-00-1** Heating Jacket, 115 Volt
- **#170-01-1** Heating Jacket, 230 Volt
- **#170-05** Thermostat
- **#170-09** Insulation Board
- **#170-10** Pilot Light
- **#170-11** Heating Element, 200 Watt
- **#170-30** Thermostat Cover
- **#170-30-001** Fish Paper
- **#170-44** Rubber Foot
- **#171-32** Knob
- **#170-06-1** Back Pressure Receiver for N₂ Pressure, 15 mL
- **#170-19** Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
- **#170-35** Adjustable Wrench, 6"
- **#170-45** Test Cell with Cement Screens, Double Cap
- **#171-24** Dual Nitrogen Manifold, 1350 and 750 PSI
- **#143-07** Regulator Repair Kit
- **#170-00-2-SP** Spare Parts Kit
- **#170-37** Nitrogen Cylinder
- **#170-40** Cell Carrying Tool
- **#170-91** Pressure Relief Tool
- **#171-190-028** Cell Stand

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* For tests up to 400°F (204.4°C)
** For tests above 400°F (204.4°C)
Cement - Expansion

VOLUMETRIC CEMENT EXPANSION DEVICE
#120-54

Size: 30" × 18" × 43" (76 × 46 × 109 cm)
Weight: 95 lb (43 kg)
Shipping Size: 37" × 35" × 53" (94 × 89 × 135 cm)
Shipping Weight: 330 lb (149.7 kg)

The Volumetric Cement Expansion Device (VCED) is an accessory component to the Ultrasonic Cement Analyzer (UCA). It can be purchased with a new UCA or as an add-on component for existing units. This system continuously measures the expansion or contraction of a cement sample while simultaneously running a standard UCA test to measure compressive strength.

Features
- Continuously measures the expansion or contraction of a cement sample
- Accessory component to the Ultrasonic Cement Analyzer

Specifications
- Continuous measurement under high temperature, high pressure conditions:
  - Maximum pressure: 15,000 PSI (103.4 MPa)
  - Maximum temperature: 400°F (204.4°C)
- Maximum measurement: ±15%
- Measurement range: ±30 mL
- Sample volume: 190 mL
- Programmable temperature control
- Pressure control: ±25 PSI

Requirements
- Air: 100 - 150 PSI
- Water: 40 PSI
- Water Drain
- Power: 230 Volt, 1 Amp, 50 / 60 Hz

Components
#130-77-030 Valve
#120-106-001 Filter Element, High Pressure
#120-90-035-1 Filter Element, Low Pressure

Optional
#120-54-001-SP Spare Parts Kit for Pump

CIRCULAR CEMENT EXPANSION MOLD KIT
#122-90

Size: 13.5" × 11" × 5.5" (34 × 28 × 14 cm)
Weight: 7.125 lb (3.2 kg)

The Circular Cement Expansion Mold is designed to measure the expansion or shrinkage characteristics of well cement slurries. In a typical well cementing operation, a cement slurry is pumped into the annulus between the well casing and the bore hole. As the cement slurry hydrates, it undergoes a volume change which translates into bulk expansion or shrinkage. Knowing the amount of expansion or shrinkage allows users to design cement systems which can achieve optimal bonding with the borehole and well casing without sacrificing the integrity of the cement matrix.

Features
- Measures expansion/shrinkage or well cement
- Conforms to API Recommended Practice 10B-5

Included Items
#122-90-010 Circular Cement Expansion Mold
#122-90-020 Micrometer Stand
#122-90-030 Micrometer
#122-90-040 Carrying Case with Custom Foam Insert
Cement - Density

PRESSURIZED FLUID DENSITY SCALE
#100-70

Size: 21.5" × 5.5" × 4" (55 × 14 × 10 cm)
Weight: 6.8 lb (3 kg)

Drilling fluids and cement slurries often have a considerable amount of entrained or trapped air that may give erroneous results when determining fluid density. This air volume may be reduced or eliminated by pressurizing the sample cup, which will then give more accurate density readings of the fluid itself.

The Pressurized Fluid Density Scale consists of a sample cup of known volume balanced by a fixed counterweight at the opposite end of a balance beam. A plunger adds pressure to the sample cup through a check valve. A sliding weight moves along a graduated scale and a level bubble on the beam indicates when the system is in balance. The position of the rider on the scale indicates the density of the sample.

Features
• Stronger, more rugged design
• Reduce need for re-calibration
• Machined with Computer Numerically Controlled (CNC) process
• Corrosion resistant
• Easy to clean

Density Measurement Ranges
• 52 - 164 lb / ft³
• 6.9 - 21.9 ppg
• .83 - 2.63 specific gravity
• 360 - 1130 PSI / 1000 ft

What's Included
• Pressurized Mud Balance
• Plunger
• Carrying Case

Components
#100-29 Level Bubble Vial
#100-56 Steel Shot for Calibrating
#100-60-09 Check Valve
#100-60-24 Retaining Ring for Check Valve
#100-70-02 Lid
#100-70-03 Cap
#100-70-04 Rider
#100-70-05 Shotwell
#100-70-06 O-ring for Lid
#100-70-07 Plunger Assembly
  #100-60-13 Packing Cup
  #100-60-14 Backup Washer
  #100-60-18 Screw, Shoulder
  #100-70-010 Knob
  #100-70-11 Piston Rod
  #100-70-13 Compression Cylinder
  #100-70-14 Lower Cap
  #100-70-15 Upper Cap
  #170-07 O-ring
#100-70-08 Carrying Case
#100-70-24 Base
#115-00-002 Set Screw for Knife Edge
#115-32 Knife Edge
#142-54 O-ring for Check Valve Nozzle
#142-56 O-ring for Check Valve
## Cement - Slurry Prep

### MODEL 20 CONSTANT SPEED BLENDER, 1 LITER

<table>
<thead>
<tr>
<th>Part Code</th>
<th>Vol</th>
<th>Shipping Size</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>#120-60</td>
<td>115</td>
<td>22” x 17” x 39” (56 x 43 x 99 cm)</td>
<td>105 lb (47.6 kg)</td>
</tr>
<tr>
<td>#120-60-1</td>
<td>230</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Features
- Facilitates the preparation of oil well cement for testing according to API guidelines
- Hardened stainless steel mixing blades
- Stainless steel mixing container
- Two preset mixing speeds and variable speed
- Rotational speed is maintained with microprocessor
- Timing relays automatically control mixing times
- Digital instrumentation provides excellent readability
- Optional torque measuring module tests crosslinking time for fracturing fluids

### Requirements
- Power: 115 Volt at 7 Amp or 230 Volt at 3.5 Amp, 50 / 60 Hz

### Components
- #122-073-1 Fuse, 3 Amp, 5 mm x 20 mm (230 Volt)
- #122-074-1 Fuse, 5 Amp, 5 mm x 20 mm (230 Volt)
- #122-075 Fuse, 7 Amp, 5 mm x 20 mm (115 Volt)
- #122-077 Fuse, 10 Amp, 5 mm x 20 mm (115 Volt)
- #122-200 Blending Assembly and Square Drive
- #122-202 Container, 1 Liter, Stainless Steel
- #122-203 Lid for 1 Liter Container
- #122-204 Gasket
- #122-207 Blade
- #122-208-1 Exciter Gear, Ten Tooth
- #122-209 Blending Assembly with Exciter Gear, Pickup Cable, and Stainless Steel Container, 230 Volt
- #122-210 Blending Assembly with Exciter Gear, Pickup Cable, and Stainless Steel Container, 115 Volt
- #122-209-2 Magnetic Pick Up
- #122-211 Square Drive Stud
- #122-212 Coupling
- #122-213 Slinger
- #122-215 Shaft
- #122-216 Washer, Stainless Steel

### Optional
- #120-61 Spare Parts Kit, 115 Volt
- #120-61-1 Spare Parts Kit, 230 Volt
- #122-202-1 Container, Glass, 1 Liter

### MODEL 20 CONSTANT SPEED BLENDER, 4 LITER

<table>
<thead>
<tr>
<th>Part Code</th>
<th>Vol</th>
<th>Shipping Size</th>
<th>Shipping Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>#120-65</td>
<td>115</td>
<td>34” x 21” x 40” (86 x 53 x 102 cm)</td>
<td>200 lb (90.7 kg)</td>
</tr>
<tr>
<td>#120-65-1</td>
<td>230</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Requirements
- Power: 115 Volt at 15 Amp or 230 Volt at 7.5 Amp, 50 / 60 Hz

### Components
- #122-201 Blending Assembly and Square Drive
- #122-205 Lid for 4 Liter Container
- #122-206 Container, 4 Liter, Stainless Steel
- #122-208-2 Exciter Gear, Ten Tooth
- #120-65-018 Blender, 4 Liter (115 Volt)
- #120-65-1-018 Blender, 4 Liter (230 Volt)

### Optional
- #120-66 Spare Parts Kit

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### FOAMED CEMENT BLENDING CONTAINER

<table>
<thead>
<tr>
<th>Part Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#120-61</td>
<td>Spare Parts Kit, 115 Volt</td>
</tr>
<tr>
<td>#120-61-1</td>
<td>Spare Parts Kit, 230 Volt</td>
</tr>
<tr>
<td>#122-202-1</td>
<td>Container, Glass, 1 Liter</td>
</tr>
</tbody>
</table>

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#120-60 - Constant Speed Blender, 1 Liter

#124-00 - Foamed Cement Blending Container
CEMENT PERMEAMETER
#120-87 STANDARD
#120-87-DAS WITH DATA ACQUISITION SYSTEM

Size: 22” × 18” × 24” (56 × 46 × 61 cm)
Weight: 80 lb (36.3 kg)

Shipping Size: 24” × 24” × 35” (56 × 61 × 89 cm)
Shipping Weight: 175 lb (79.4 kg)

The Cement Permeameter is designed to measure the permeability of cement core specimens one inch in diameter and one inch in length. A core specimen is placed into a core sleeve, which is then inserted into a modified Hassler-style test cell. Nitrogen at a constant flow rate is forced through the core and the differential pressure across the core is measured. The flowrate is measured with calibrated flowmeters. Viscosity is easily determined by the use of nitrogen property tables. These variables are incorporated into Darcy’s law to calculate sample permeability.

Features
• Measures the permeability of a cement specimen
• Modified Hassler cell accepts specimens 1” in diameter and 1” in length
• Instrumentation gauge displays driving pressure
• All Hassler components made from 316 stainless steel
• Nitrogen used as test fluid
• Conforms to API specification 10 guidelines

Requirements
• Standard:
  - Nitrogen: up to 500 PSI (3,447 kPa)
• With Data Acquisition System
  - Compressed Air: 100 PSI (689.5 kPa)
  - Gas Pressure: Standard Air, Carbon Dioxide, Nitrogen or Oxygen: up to 500 PSI (3,447 kPa)
  - Electrical: 115 / 230 Volt, 50 / 60 Hz, 3 Amp

Components
#120-85-003 Cement Mold, 4 Gang, Brass
#120-85-010 Caliper, Digital, 0 - 6”, 0.001”, Stainless Steel
#122-221 O-ring
#122-222 Flowmeter, Low Range
#122-223 Flowmeter, High Range
#122-224 Valve

The Cement Permeameter with Data Acquisition System

#120-87 - Cement Permeameter

#120-87-DAS - Cement Permeameter with Data Acquisition System
Drilling Fluids - Viscosity

MODEL 3040 HTHP VISCOMETER

The Model 3040 is a fully-automated, high temperature, high pressure viscometer. It accurately determines the rheological properties of completion fluids and drilling fluids in terms of shear stress, shear rate, time, and temperature at pressures up to 40,000 PSI and temperatures up to 600°F. An optional Chiller is available for those situations in which the fluid sample needs to be cooled, rather than heated, further increasing the flexibility of the system.

Like OFITE’s other computer-controlled viscometers, this model features our easy-to-use ORCADA® software. Using this exclusive software, a computer novice can operate the viscometer, and yet the system is versatile enough for advanced research and demanding test parameters.

Features
- Fully-automated control (temperature, pressure, RPM)
- Includes easy-to-use ORCADA® software
- Optional chiller available

Specifications
- Maximum Pressure: 40,000 PSI (275.8 MPa)
- Maximum Temperature: 600°F (315.6°C)

Requirements
- 115 / 230 Volt, 50 / 60 Hz
- Air: 150 - 200 PSI
- Water: 40 PSI

What’s Included
- Model 3040 Viscometer
- Mineral Oil
- Tools
- Desktop PC with Monitor and ORCADA® Software
- Calibration Fluid, 100 cP

MODEL 3025 PRESSURIZED VISCOMETER

The Model 3025 is a fully-automated, pressurized viscometer. It accurately determines the fluid characteristics of stimulation fluids, completion fluids, drilling fluids, and cement in terms of shear stress, shear rate, time, and temperature at pressure elevated temperature and pressure.

Using the exclusive ORCADA® software, a computer novice can operate the viscometer, and yet the system is versatile enough for advanced research and demanding test parameters. It is suitable for both field and laboratory use. A waterproof, compartmentalized case with wheels makes the unit completely portable.

Features
- Automated control (temperature and RPM)
- Includes easy-to-use ORCADA® software and laptop
- Hastelloy®-wetted parts

Specifications
- Maximum Pressure: 2,500 PSI (17.2 MPa)
- Maximum Temperature: 500°F (260°C)

Requirements
- 115 / 230 Volt, 50 / 60 Hz
- N2: 3,000 PSI
- Water: 15 - 30 PSI

What’s Included
- Model 3025 Viscometer
- Laptop PC with ORCADA® Software
- Waterproof, padded carrying case
MODEL 900 VISCOMETER

#130-76-C 115 VOLT
#130-76-1-C 230 VOLT

Size: 17.3" × 15" × 11" (44 × 38 × 28 cm)
Weight: 19 lb (8.6 kg)

The Model 900 Viscometer is a true Couette coaxial cylinder rotational viscometer, which employs a transducer to measure the induced angle of rotation of the bob by a fluid sample. For a fully automated Control/Data Acquisition System suitable for field or research applications, the Model 900 Viscometer may be connected to a computer via a serial (RS-232 or USB with converter) port using OFITE’s exclusive and field-proven Windows™-based ORCADA® software. Multiple Viscometers can be run with a single computer.

U.S. Patent Number 6,766,028.

Features
- Variable-speed motor
- Push-button keypad
- Suitable for field and laboratory use

Specifications
- Maximum Temperature: 200°F (93.3°C)
- Motor Speed (RPM): 12 fixed speeds (600, 300, 200, 100, 60, 30, 20, 10, 6, 3, 2, 1), Variable Speed: .01 - 1000
- Power: 115 Volt at 2 Amp or 230 Volt at 1 Amp, 50 / 60 Hz

What's Included
- Model 900 Viscometer
- Universal Heat Cup
- ORCADA® Software
- Carrying Case
- Serial Cable
- Calibration Fluid, 100 cP
- AC Power Cord

Components

#130-76-03 Thermocouple
#130-76-04 Main Bearing
#130-76-08 Wrench for Bob Shaft
#130-76-10 Universal Heat Cup, 115 Volt
#130-76-10-1 Universal Heat Cup, 230 Volt
#130-76-24 Bob Shaft Assembly
#130-79-19 Serial (RS-232) to USB Converter
#132-56 Rotor Sleeve, R1
#132-57 Bearing Shield
#132-58 Bob, B1
#132-80 Calibration Fluid, 100 cP, 16 oz
#134-05-2 Bob Shaft Bearing, Shielded
#134-10 Torsion Spring Assembly, F1.0
#135-02 Retainer Ring, External

Optional

#130-76-C-SP Spare Parts Kit
#130-76-LSK Low Shear Conversion Kit
#132-56-S Rotor Sleeve, R1, Slotted, 316 Stainless Steel
#132-58-5 Bob, B1, Slotted, 303 Stainless Steel
#134-10-2 Torsion Spring Assembly, F0.2
#147-14 pH Meter
#132-81 Calibration Fluid, 50 cP, 16 oz
#132-56-C Rotor Sleeve, R1, Closed Cup, 316 Stainless Steel
Drilling Fluids - Viscosity

MODEL 800 8-SPEED VISCOMETER
#130-10-C  WITH CARRYING CASE
#130-10-L  WITH RETRACTABLE LEGS
FOR KITS

Size: 22" × 10" × 15" (56 × 25 × 38 cm)
Weight: 28 lb (12.6 kg)

The Model 800 Viscometer determines the rheological characteristics of drilling fluids and cement at atmospheric pressure. It features a simple speed control knob and a lighted dial for easy reading. It operates on universal voltage, making it ideal for both field and lab use.

Features
- Operates anywhere in the world without flipping switches or re-wiring.
- Lighted dial makes reading easier and more accurate.
- Conventional oilfield rotor, bob, and torsion springs maintains rheology history and reproducibility between instruments and laboratories
- Threaded rotor and bob - mechanically attach to the unit the same way every time
- Carrying case included

Specifications
- Motor Speeds (RPM): (600, 300, 200, 100, 60, 30, 6, 3)
- Power Requirement: 97 - 250 Volt, 50 / 60 Hz (12 Volt operation requires a special cable)

What’s Included
- Model 800 Viscometer
- Power Supply with AC Power Cord
- Carrying Case

Components
#130-10-18  Lens for Cover
#130-10-20  Bob Shaft
#130-10-503  Fuse, 4 Amp, 1 ½" × ¼”
#130-10-61  Light Assembly
#130-21  Cup, Stainless Steel
#130-76-08  Wrench for Bob Shaft
#132-56  Rotor Sleeve, R1
#132-57  Bearing Shield
#132-58  Bob, B1
#132-71  Bearing for Main Shaft
#134-10  Torsion Spring Assembly, F1.0
#134-05-2  Bob Shaft Bearing, Shielded
#135-02  Retainer Ring, External
#152-37  Power Cord, 115 Volt

Optional
#130-10-33  Power Cord for 12 Volt Cigarette Lighter Adapter
#130-10-SP  Spare Parts Kit
#130-45-1  Calibrating Instrument
#132-49  Calibration Check Kit
#132-56-C  Rotor Sleeve, R1, Closed Cup, 316 Stainless Steel
#132-80  Calibration Fluid, 100 cP, 16 oz
#132-81  Calibration Fluid, 50 cP, 16 oz
#152-38  Power Cord, 230 Volt
**HAND CRANK RHEOMETER**

#132-00

Size: 9” x 4” x 6.5” (23 x 10 x 17 cm)

Weight: 8 lb (3.6 kg)

The Hand Crank Rheometer (#132-00) is a direct-indicating, manually operated, rotational viscometer. The instrument is powered by a hand crank, which drives the spindle through a precision gear train. The shift cam selects between fixed speeds of 300 and 600 RPM. A knob on the hub of the shift cam determines gel strength.

**Components**

- #130-21 Cup, Stainless Steel
- #132-56 Rotor Sleeve, R1
- #132-57 Bearing Shield
- #132-58 Bob, B1
- #132-59 Bearing Retainer
- #132-67 Torsion Spring Assembly
- #132-68 Bearing, Shielded
- #132-69 Bearing for Governor
- #132-70 Bearing for Drive Shaft
- #132-71 Bearing for Main Shaft
- #132-75 Locking Ring, Internal
- #132-76 Locking Ring, External
- #135-02 Locking Ring for Bob Shaft, External

**Optional**

- #132-00-SP Spare Parts Kit
- #132-06 Case with Foam Insert
- #132-80 Calibration Fluid, 100 cP, 16 oz
- #132-81 Calibration Fluid, 50 cP, 16 oz

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**MARSH FUNNEL VISCOMETER**

#110-10

Size: 6.5” x 6.25” x 14.5” (17 x 16 x 37 cm)

Weight: 12 oz (340.2 g)

Viscosity and gel strength are measurements that relate to the flow properties of fluids. The Marsh Funnel Viscometer has been used for many years to obtain an indication of the relative viscosity of drilling fluids. It is calibrated to outflow one quart (946 mL) of fresh water at a temperature of 70 ± 5°F (21 ± 3°C) in 26 ± 0.5 seconds. The Marsh Funnel is molded from a tough, durable plastic that resists breaking or cracking. A brass orifice assures consistency in all readings.

**Features**

- Used to measure the relative viscosity of drilling fluids
- Calibrated to outflow one quart of water in 26 ± .5 seconds
- Molded from tough, durable plastics

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**MEASURING CUP, 1000 ML**

#110-20

Size: 5.75” x 5.5” x 7.25” (15 x 14 x 18 cm)

Weight: 8 oz (227 g)

The Measuring Cup is graduated in fluid ounces (2 - 32 oz) and cubic centimeters (100 - 1,000 cc) and is designed to be used with the Marsh Funnel Viscometer. The heavy duty plastic measuring cup features a double spout and has the two scales molded into the inside of the cup for convenience.

**Features**

- Measures Fluid Ounces (2 - 32 oz) and cubic centimeters (100 - 1,000 cc)
- Double spout
- Made from heavy duty plastic

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**DIGITAL STOPWATCH**

#155-25

Size: 2.4” x 2” x 0.6” (6 x 5 x 2 cm)

Weight: 1.5 oz (42.5 grams)

For use with the Marsh Funnel Viscometer.
Drilling Fluids - Viscosity

SHEAROMETER KIT
#166-08

Size: 4” x 4” x 8.5” (10 x 10 x 22 cm)
Weight: 11 oz (0.3 kg)

Features
• Alternative for measuring gel strength
• Tubes: 5 g, 3.5” x 1.4”
• Scale measures gel strength in lb / 100 ft²

What's Included
• Two Shear Tubes
• Shearometer Cup with Post
• Sample Bottle

SHEAROMETER TUBE WITH WEIGHT SUPPORT
#166-10

Features
• 20 gram shearometer tube with weight support
• Used for testing aged muds
• Tests high-gel strength drilling fluids
• Shear strength in lb/100 ft²

Optional Components
#166-02 Weight Set with Box, 50 g - 10 mg
Thermocups and cup heaters are designed for controlling the temperature of a mud sample while taking readings with a rheometer or viscometer. The holes in the stage of the OFITE Viscometers have been positioned to hold the heated cups at a 45° angle to the line of the instrument for better accommodation of thermometers and power cables.

**THERMOCUP WITH THERMOMETER**

- **#130-38-30** WITH REMOVABLE STAINLESS STEEL CUP, 115 VOLT
- **#130-38-35** WITH REMOVABLE STAINLESS STEEL CUP, 230 VOLT
- **#130-38-20** WITHOUT CUP, 115 VOLT
- **#130-38-25** WITHOUT CUP, 230 VOLT

**Size:** 3” × 4” × 4.5” (8 × 10 × 11 cm)

**Weight:** 2.6 lb (1.2 kg)

**Features**
- Anodized finish provides better heat transfer
- Strain relief protects power cable
- Power Requirements 115 Volt at 1.25 Amp or 230 Volt at .75 Amp, 50 / 60 Hz

**What’s Included**
- Thermocup
- Removable Stainless Steel Cup, 230 mL Capacity
- Thermometer with Metal Dial, 5" Stem, 0° - 220°F

**Components**
- **#130-26** Heating Element, 150 Watt, 115 Volt
- **#130-26-1** Heating Element, 150 Watt, 230 Volt
- **#130-31** Thermostat
- **#130-38-014** Resistor
- **#130-38-2** Lens for Lamp, Red
- **#130-38-3** Lamp
- **#130-38-7** Cup, Stainless Steel
- **#154-00** Thermometer
- **#171-32-1** Knob

**CUP HEATER WITH REMOVABLE STAINLESS STEEL CUP**

- **#130-20** 115 VOLT
- **#130-30** 230 VOLT

**Size:** 4.5” × 4.75” × 5.5” (11 × 12 × 14 cm)

**Weight:** 4 lb 8 oz (2 kg)

**What’s Included**
- Cup Heater
- Removable Stainless Steel Cup

**Power Requirements**
- 115 Volt at 2.5 Amp or 230 Volt at 1.5 Amp, 50 / 60 Hz

**Components**
- **#130-21** Cup, Stainless Steel
- **#130-25** Heating Element
- **#130-31** Thermostat
- **#170-10** Pilot Light for Thermostat
- **#171-32** Knob
Drilling Fluids - Viscosity

UNIVERSAL HEAT CUP FOR MODEL 900 VISCOMETER

#130-76-10  115 VOLT
#130-76-10-1  230 VOLT

Size: 4.5” × 4.5” × 4” (11 × 11 × 10 cm)
Weight: 3 lb (1.36 kg)

The Universal Heat Cup is designed to control the temperature of a fluid sample while taking viscosity readings. When used with a Model 900 Viscometer, it can be plugged directly into the back, allowing the viscometer to control the temperature of the fluid.

Features
- Plugs into the Model 900 Viscometer
- Includes removable stainless steel cup
- Insulation keeps outer surfaces cool
- Power Requirements 115 Volt at 1.25 Amp or 230 Volt at .75 Amp, 50 / 60 Hz

What's Included
- Heat Cup
- Removable Stainless Steel Cup, 230 mL Capacity

Components
#130-31  Thermostat
#130-38-014  Resistor
#130-35-2  Lens for Lamp, Red
#130-35-3  Lamp
#130-38-7  Cup, Stainless Steel

Optional
#152-37  AC Power Cord, 115 Volt
#152-38  AC Power Cord, 230 Volt

DOUBLE WALLED CIRCULATING CUP

#130-15

Size: 4.5” × 4” × 6” (11 × 10 × 15 cm)
Weight: 2 lb 3 oz (1 kg)

The Double Walled Circulating Cup is designed to cool a fluid sample below ambient temperature while taking viscosity readings.

Features
- Designed for testing below ambient temperature
- Compatible with Refrigerated and Heated Bath/Circulator (#152-55 / #152-55-1)
- Includes removable stainless steel cup

Components
#130-38-7  Removable Cup, Stainless Steel

#130-76-10 - Universal Heat Cup

#130-15 - Double Walled Circulating Cup
Drilling Fluids - Viscosity

SAG SHOE ASSEMBLY
#130-22

The Viscometer Sag Shoe Test (VSST) is a well site and laboratory test that measures the weight material sag tendency of field and lab drilling fluids under dynamic conditions. The VSST provides an intrinsic fluid property without regard to the conditions under which the fluid has been or will be used. As such, results must be combined with operational factors to correlate results with sag experienced in the field.

The VSST designation is derived from the rotational viscometer used as a mixer and the thermoplastic insert (Sag Shoe) designed to concentrate sagged weight material in the bottom of a viscometer thermocup. Sag tendency is determined by the density increase of samples extracted from the collection well over a 30 minute period at a standard temperature and under a consistent rate of shear.

Weight material bed pickup can be run as an optional measurement to characterize bed removal by higher shear levels. Results can be used to suggest opportunities for bed removal in the field prior to tripping out of the hole.

REFRIGERATED AND HEATED BATH/CIRCULATOR
#152-55 115 VOLT, 60 HZ
#152-55-1 230 VOLT, 50 HZ

Size: 13.5” x 13.5” x 14” (34 x 34 x 36 cm)
Weight: 49 lb (22.2 kg)
Shipping Size: 23” x 24” x 26” (58 x 61 x 66 cm)
Shipping Weight: 110 lb (49.9 kg)

Features
• Temp Range: -15° - 90°C (-5° - 194°F)
• Capacity: 5.3 Liters / 1.4 Gallons
• Pump Rate: 6 Liters / Minute

What’s Included
• Bath

Optional Equipment
#152-55-2 Hoses and Fittings Set
#152-55-3 Carrying Case
#152-55-4 Ethylene Glycol, 1 Liter (For tests below 10°C)

#130-22 - Sag Shoe Assembly

#152-55 - CARON Model 2050W Bath/Circulator
Drilling Fluids - Viscosity

TEMPERATURE CONTROL UNIT, SINGLE UNIT, DUAL INLETS
#171-49 115 VOLT
#171-49-1 230 VOLT

Size:  5" × 6.5" × 7" (13 × 17 × 18 cm)
Weight:  4 lb 5.7 oz (2 kg)

TEMPERATURE CONTROL UNIT, FOUR UNIT, DUAL INLETS
#171-49-4 115 VOLT
#171-49-4-1 230 VOLT

Size:  12.25" × 8.5" × 6.5" (31 × 22 × 17 cm)
Weight:  12 lb 4.8 oz (5.6 kg)

The Temperature Control Unit is a convenient tool for precisely controlling the temperature of an electrical heating device. Simply plug the heating device into the Temperature Control Unit and the built-in Eurotherm 2123 controller will regulate the power output to the heater. The controller can be set with either a simple temperature setpoint or an advanced timer.

Features
• Adds electronic temperature control to almost any device
• Type J thermocouple and Eurotherm 2123 controller provide efficient temperature control
• Ideal for thermocups, hot plates, retorts, and heating jackets for filter presses
• Electrical and thermocouple ports on front and back for convenience
• Power Requirements: 115 Volt at 10 Amp or 230 Volt at 6 Amp, 50 / 60 Hz

Components
#122-075 Fuse, 7 Amp, 5 mm × 20 mm (4 Unit, 230 Volt Only)
#122-077 Fuse, 10 Amp, 5 mm × 20 mm (4 Unit, 115 Volt Only)
#130-76-03 Thermocouple
#152-37 Power Cord (115 Volt Only)
#152-38 Power Cord (230 Volt Only)
#172-09 Fuse, 10 Amp (1 Unit Only)
#174-03 Temperature Controller
One of the most important properties monitored throughout the drilling operation is mud density. The Mud Balance is engineered so that the mud cup at one end of the beam is balanced by a fixed counterweight at the other end, with a sliding-weight rider that moves along a graduated scale. A level bubble is mounted on the beam to ensure accurate balancing.

Features
- Stronger, more rugged design
- Reduce need for re-calibration
- Machined with Computer Numerically Controlled (CNC) process
- Corrosion resistant
- Easy to clean

Density Measurement Ranges
- 6.5 - 23.0 lb/gal
- 0.79 - 2.72 specific gravity
- 49 - 172 lb/ft³
- 340 - 1,190 PSI/1,000 ft

Components
- #100-25-2 Rider
- #100-29 Level Bubble Vial
- #100-40 Carrying Case
- #100-56 Steel Shot for Calibrating
- #115-06 Lid
- #115-22 Base
- #115-32 Knife Edge
- #115-34 Shotwell

Optional
- #115-01 Metal Mud Balance Without Case

#115-00 - Metal Mud Balance

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Drilling Fluids - Density

4-SCALE METAL MUD BALANCE
#115-00

Size: 21.5" × 4.5" × 4" (55 × 11 × 10 cm)
Weight: 4 lb 3 oz (1.9 kg)

PRESSURIZED FLUID DENSITY SCALE
#100-70

Size: 21.5" × 5.5" × 4" (55 × 14 × 10 cm)
Weight: 6.8 lb (3 kg)

Features
- Stronger, more rugged design
- Reduce need for re-calibration
- Machined with Computer Numerically Controlled (CNC) process
- Corrosion resistant
- Easy to clean

Density Measurement Ranges
- 52 - 164 lb / ft³
- 6.9 - 21.9 ppg
- .83 - 2.63 specific gravity
- 360 - 1130 PSI / 1000 ft

Components
- #100-29 Level Bubble Vial
- #100-56 Steel Shot for Calibrating
- #100-60-09 Check Valve
- #100-60-24 Retaining Ring for Check Valve
- #100-70-02 Lid
- #100-70-03 Cap
- #100-70-04 Rider
- #100-70-05 Shotwell
- #100-70-06 O-ring for Lid
- #100-70-07 Plunger Assembly
  - #100-60-13 Packing Cup
  - #100-60-14 Backup Washer
  - #100-60-18 Screw, Shoulder
  - #100-70-010 Knob
  - #100-70-11 Piston Rod
  - #100-70-13 Compression Cylinder
  - #100-70-14 Lower Cap
  - #100-70-15 Upper Cap
  - #170-07 O-ring
- #100-70-08 Carrying Case
- #100-70-24 Base
- #115-00-002 Set Screw for Knife Edge
- #115-32 Knife Edge
- #142-54 O-ring for Check Valve Nozzle
- #142-56 O-ring for Check Valve

#100-70 - Pressurized Fluid Density Scale
Drilling Fluids - Density

4-SCALE PLASTIC MUD BALANCE
#100-00
Size: 21.5” x 5” x 4.5” (55 x 13 x 11 cm)
Weight: 3 lb (1.4 kg)

One of the most important properties monitored throughout the drilling operation is mud density. The Mud Balance is engineered so that the mud cup at one end of the beam is balanced by a fixed counterweight at the other end, with a sliding-weight rider that moves along a graduated scale. A level bubble is mounted on the beam to ensure accurate balancing.

Features
• Corrosion resistant
• Range of measurement:
  - 8 - 25 lb/gal
  - 960 - 3,000 kg/m³
  - 60 - 189 lb/ft³
  - 420 - 1,300 PSI/1,000 ft.

What’s Included
• Mud Balance
• Carrying Case

Components
#100-02 Arm Assembly
#100-04 Leg
#100-05 Screw Plug
#100-10 Base
#100-20 Lid
#100-25 Rider
#100-30 Level Bubble
#100-40 Carrying Case
#100-56 Steel Shot for Calibrating

Optional
#100-01 4-Scale Plastic Mud Balance Without Case

HYDROMETER SET WITH CARRYING CASE
#153-52
Size: 13.5” x 10” x 2.5” (34 x 25 x 6 cm)
Weight: 2 lb 10 oz (1.2 kg)

Features
• Measures the true specific gravity of liquids
• Range: 0.700 to 2.000 specific gravity
• Consists of eight glass hydrometers and a thermometer packed in a protective, foam-lined carrying case
• Hydrometer scale standardized at 60°F

What’s Included
#153-52-03 Hydrometer, 0.700 to 0.810 Specific Gravity
#153-52-04 Hydrometer, 0.800 to 0.910 Specific Gravity
#153-52-05 Hydrometer, 0.900 to 1.010 Specific Gravity
#153-52-06 Hydrometer, 1.000 to 1.220 Specific Gravity
#153-52-07 Hydrometer, 1.200 to 1.420 Specific Gravity
#153-52-08 Hydrometer, 1.400 to 1.620 Specific Gravity
#153-52-09 Hydrometer, 1.600 to 1.820 Specific Gravity
#153-52-10 Hydrometer, 1.800 to 2.000 Specific Gravity
#153-52-13 Case
#153-52-14 Thermometer, -30 - 120°F, 1° Divisions

Optional
#153-52-01 Hydrometer Cylinder, 250 mL, Glass, 13.5” x 1.5”
#153-52-02 Hydrometer Cylinder, 500 mL, Plastic, 14.25” x 2”
#153-52-11 Hydrometer, 2.000 to 2.200 Specific Gravity
#153-52-12 Hydrometer, 2.200 to 2.400 Specific Gravity
#153-52-15 Hydrometer, Soil Test, ASTM 151H, .995 to 1.038°
MUD DEAERATOR WITH VACUUM PUMP
#110-00

Size: 16" × 13" × 11" (41 × 33 × 28 cm)
Weight: 7 lb (3.2 kg)

A hand-operated vacuum pump removes gas or air from fluids to provide a more accurate density measurement. Density readings are then provided using the conventional mud balance. This product comes complete with mud chamber, paddle assembly, and pump.

Features
- Hand operated
- Removes gas or air from fluids for testing in a mud balance.

Components
#141-05 Gasket, Neoprene
#142-54 O-ring
#153-55 Stopcock Grease, Silicone

ACCESSORIES FOR TRU-WATE PRESSURIZED FLUID DENSITY SCALE

Arm Components
#100-60-11 Bubble Level Assembly (459.04716)
#100-29 Vial for Level Bubble
#100-60-28 Screw (70.44363)
#100-60-25 Roll Pin for Rider Stop, ¾" × ¾", Stainless Steel
#100-60-31 Pipe Plug, ¾" Allen Socket Head, 304 Stainless Steel (458.84913)

Case Components
#100-60-02 Carrying Case (459.04723)
#100-60-19 Stand (459.04721)
#100-60-23 Knife Edge (459.04722)
#100-60-27 Screw for Knife Edge (70.44364)
#100-60-20 Screw for Stand (70.44703)
#100-60-21 Wing Nut for Stand (70.33154)
#100-60-22 Flat Washer for Stand (70.58791)

Sample Cup Components
#100-60-01 O-ring for Lid (70.33394)
#100-60-07 Cap for Lid Cup, Brass (459.04709)
#100-60-08 Lid Cup (459.04712)
#100-60-09 Check Valve for Sample Cup (459.04714)
#100-60-24 Retaining Ring for Valve (70.42295)
#142-54 O-ring for T-Fitting (30129)
#142-56 O-ring for Coupling (30127) (70.33386)

Plunger Assembly Components
#100-60-13 Packing Cup, Plastic (459.04707)
#100-60-14 Washer-Backup-Plunger, Brass (459.04706)
#100-60-17 Rod-Piston-Plunger (459.04702)
#100-60-18 Screw Shoulder for Packing Cup (459.04708)
#170-07 O-ring (70.33817)
Drilling Fluids - Filtration

Measurement of the filtration, water loss, and wall cake building characteristics are basic to drilling fluid control and treatment. The filtrate collected is a measure of the relative amount of fluid in the drilling mud lost to permeable formations. Chemical studies of the filtrate are necessary in any successful mud control program. Analysis of the filter cake deposited in terms of thickness, composition, and consistency are also important considerations. These characteristics are controlled by the type and quantities of solids in the fluid and their physical and chemical interactions.

The API Filter Press design features a cell body to hold the mud sample, a pressure inlet, and a base cap with screen and filter paper. Suitable for field and laboratory use, these units have become the industry standard for low pressure / low temperature filtration testing.

API FILTER PRESS, BENCH MOUNT, BASIC
#140-20

Size: 8" × 5.5" × 19" (20 × 14 × 48 cm)
Weight: 9 lb 4 oz (4.2 kg)

What's Included
- Filter Press (frame, cell, gaskets, screen)

Components
#141-00-C Test Cell
#141-00 Cell Body
#141-01 Base Cap
#141-02 Top Cap
#141-04 Screen
#141-05 Gasket, Neoprene
#141-08 Frame
#141-09 Threaded Insert with Set Screw
#141-10 T-Screw
#141-11 Support for Graduated Cylinder
#141-12 Support Rod
#141-18 Thumb Screw
#141-19 Air Hose Adapter
#141-22 Felt Filter

Optional
#140-55 Filter Paper, Whatman #50, 3.5" (9 cm), Box of 100
#140-20-SP Spare Parts Kit
#141-00-1 Cell Body, Acrylic
#153-16 Graduated Cylinder, 25 mL × .2 mL
#155-10 Interval Timer, 30 Minutes
Drilling Fluids - Filtration

API FILTER PRESS, BENCH MOUNT, WITH CO₂ PRESSURE ASSEMBLY
#140-30
Size: 9” x 8” x 19” (23 x 20 x 48 cm)
Weight: 12 lb 7 oz (5.6 kg)
What's Included
- Filter Press (frame, cell, gaskets, screen)
- CO₂ Pressure assembly
- Filter paper
- Graduated cylinder

Components
#140-55 Filter Paper, Whatman #50, 3.5” (9 cm), Box of 100
#141-00-C Test Cell
#141-00 Cell Body
#141-01 Base Cap
#141-02 Top Cap
#141-04 Screen
#141-05 Gasket, Neoprene
#141-08 Frame
#141-09 Threaded Insert with Set Screw
#141-10 T-Screw
#141-11 Support for Graduated Cylinder
#141-12 Support Rod
#141-18 Thumb Screw
#141-22 Felt Filter
#142-10 CO₂ Pressuring Assembly
#143-00 Regulator
#143-01 Gauge
#143-02-10 CO₂ Puncture Head Assembly
#143-03 Barrel for CO₂ Bulb
#143-06 Safety Bleeder Valve
#153-16 Graduated Cylinder

Optional
#140-22 Padded Carrying Case
#140-30-SP Spare Parts Kit
#141-00-1 Cell Body, Acrylic
#143-05 CO₂ Bulbs, Box of 10, UN2037
#155-10 Interval Timer, 30 Minutes

Note: CO₂ bulbs must be ordered separately.

* May require special handling for shipping.

API FILTER PRESS, BENCH MOUNT, WITH REGULATOR AND HOSE
#140-31
Size: 19” x 11” x 8” (48 x 28 x 20 cm)
Weight: 11 lb 7 oz (5.2 kg)
What's Included
- Filter Press (frame, cell, gaskets, screen)
- Regulator with Air Hose
- Filter Paper
- Graduated Cylinder

Components
#140-55 Filter Paper, Whatman #50, 3.5” (9 cm), Box of 100
#141-00-C Test Cell
#141-00 Cell Body
#141-01 Base Cap
#141-02 Top Cap
#141-04 Screen
#141-05 Gasket, Neoprene
#141-08 Frame
#141-09 Threaded Insert with Set Screw
#141-10 T-Screw
#141-11 Support for Graduated Cylinder
#141-12 Support Rod
#141-14 Air Hose, 3 Feet
#141-18 Thumb Screw
#141-19 Air Hose Adapter
#141-22 Felt Filter
#143-00 Regulator
#143-01 Gauge
#143-06 Safety Bleeder Valve
#153-16 Graduated Cylinder

Optional
#140-31-SP Spare Parts Kit
#141-00-1 Cell Body, Acrylic
#155-10 Interval Timer, 30 Minutes

#140-30 - Bench Mount Filter Press with CO₂ Assembly
#140-31 - Bench Mount Filter Press with Regulator and Air Hose
API FILTER PRESS, BENCH MOUNT, WITH NITROGEN REGULATOR AND CYLINDER
#140-35

Size: 20" × 13" × 13" (51 × 33 × 33 cm)
Weight: 34 lb 3 oz (15.5 kg)

What’s Included
- Filter Press (frame, cell, gaskets, screen)
- Nitrogen Regulator with Air Hose
- Nitrogen Cylinder
- Filter Paper
- Graduated Cylinder

Components
#140-55 Filter Paper, Whatman #50, 3.5" (9 cm), Box of 100
#141-00-C Test Cell
  #141-00 Cell Body
  #141-01 Base Cap
  #141-02 Top Cap
#141-04 Screen
#141-05 Gasket, Neoprene
#141-08 Frame
#141-09 Threaded Insert with Set Screw
#141-10 T-Screw
#141-11 Support for Graduated Cylinder
#141-12 Support Rod
#141-14 Air Hose, 3 Feet
#141-18 Thumb Screw
#141-19 Air Hose Adapter
#141-22 Felt Filter
#143-06 Safety Bleeder Valve
#153-16 Graduated Cylinder
#170-36 Regulator
#170-37 Nitrogen Cylinder

Optional
#140-75-SP Spare Parts Kit
#141-00-1 Cell Body, Acrylic
#155-10 Interval Timer, 30 Minutes

MODEL MB FILTER PRESS WITH CO₂ PRESSURE ASSEMBLY
#142-53

Size: 7" × 7.5" × 6.5" (18 × 19 × 17 cm)
Weight: 5 lb 6 oz (2.4 kg)

What’s Included
- Filter Press
- CO₂ Pressure Assembly
- Holder for Graduated Cylinder
- Support Bracket for Wall Mounting

Components
#142-37 Regulator
#142-53-1 Cell Assembly
  #142-53-1-1 Body
  #142-53-2 Lid
  #142-60 O-ring for Cell
#142-53-10 Holder for Graduated Cylinder
#142-53-3 Barrel for CO₂ Bulb Holder Assembly
#142-53-4 CO₂ Bulb Holder Assembly
#142-53-5 Female Coupling Assembly
#142-53-6 Valve Stem
#142-53-9 Support Bracket
#142-54 O-ring for Bleed Off Screw
#142-58 O-ring for Female Coupling
#142-60 O-ring for Cell
#143-01 Gauge
#144-15 Bushing

Optional
#143-05 *CO₂ Bulbs, Box of 10, UN2037

Note: CO₂ bulbs must be ordered separately.

* May require special handling for shipping.

#140-35 - Filter Press with Nitrogen Pressurization

#142-53 - Model MB Filter Press with Bracket
Drilling Fluids - Filtration

API FILTER PRESS, BENCH MOUNT, WITH DEAD-WEIGHT HYDRAULIC ASSEMBLY
#140-75

Size: 9” × 10” × 19” (23 × 25 × 48 cm)
Weight: 37 lb (16.8 kg)

The Dead Weight Hydraulic Assembly provides the operator of a standard API Filter Press with a convenient source of hydraulic pressure. This alleviates the need for a regulator, separate pressure source, or outside connections. The assembly is composed of a water reservoir that requires a pint of fresh water for each test, a piston and cylinder, a dead weight gauge, two check valves, and a bleed-off valve. When the system is closed, the dead weight causes the piston to exert a continuous pressure of 100 PSI against the fluid inside the filter press cell. Pressure on the cell is released promptly at the completion of the test with a bleed-off valve. The hydraulic system has sufficient volume to run the complete 30-minute filtration test without further attention from the operator, and the assembly requires a minimum amount of maintenance.

Features
• Provides a convenient source of hydraulic pressure
• Alleviates the need for a regulator, separate pressure source, or outside connections
• Requires only 475 mL of fresh water for each test
• Exerts a continuous pressure of 100 PSI against test cell

What’s Included
• Filter Press (frame, cell, gaskets, screen)
• Dead-Weight Hydraulic Pressure Assembly
• Filter Paper
• Graduated Cylinder

Components
#140-20 Bench Mount Filter Press - Basic
#140-55 Filter Paper, Whatman #50, 3.5” (9 cm), Box of 100
#140-70 Dead-Weight Hydraulic Pressure Assembly
  #120-57-013 Tee, ¼” NPT
  #140-70-001 Weight
  #140-70-002 Lid for Reservoir
  #140-70-003 Shaft
  #140-70-008 Adapter, ¼” × ½”
  #140-70-01 Nut
  #140-70-010 Check Valve
  #140-70-011 Base and Tube
  #140-71 O-ring
  #141-13 Air Hose
  #143-01 Gauge
  #144-14 Hex Nipple, ¼” × ½”
  #170-32 Needle Valve, Male
#153-16 Graduated Cylinder

Optional
#140-75-SP Spare Parts Kit
#141-00-1 Cell Body, Acrylic
#155-10 Interval Timer, 30 Minutes
### API FILTER PRESS, WALL MOUNT, BASIC
#### #140-00

<table>
<thead>
<tr>
<th>Size:</th>
<th>11&quot; × 7&quot; × 4&quot; (28 × 18 × 10 cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>5 lb 8 oz (2.5 kg)</td>
</tr>
</tbody>
</table>

**What's Included**
- Filter Press (frame, cell, gaskets, screen)

**Components**
- #141-00-C Test Cell
- #141-00 Cell Body
- #141-01 Base Cap
- #141-02 Top Cap
- #141-04 Screen
- #141-05 Gasket, Neoprene
- #141-07 Frame
- #141-09 Threaded Insert with Set Screw
- #141-10 T-Screw
- #141-16 Support for Graduated Cylinder
- #141-19 Air Hose Adapter
- #141-20 Frog Bracket
- #141-22 Felt Filter

### API FILTER PRESS, WALL MOUNT, WITH CARRYING CASE
#### #144-10

<table>
<thead>
<tr>
<th>Size:</th>
<th>8.75&quot; × 15.5&quot; × 16.25&quot; (22 × 39 × 41 cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>32 lb (14.5 kg)</td>
</tr>
</tbody>
</table>

**What's Included**
- Filter Press (frame, cell, gaskets, screen)
- CO₂ Pressuring Assembly
- Carrying Case, Stainless Steel
- Filter Paper
- Graduated Cylinder
- Interval Timer, 30 Minutes

**Components**
- #140-10 Wall Mount Filter Press with CO₂ Pressure Assembly
- #144-09 Case
- #153-16 Graduated Cylinder
- #155-10 Interval Timer, 30 Minutes

**Optional**
- #141-00-1 Cell Body, Acrylic
- #143-05 CO₂ Bulbs, Box of 10, UN2037

Note: CO₂ bulbs must be ordered separately.

### API FILTER PRESS, WALL MOUNT, WITH CO₂ PRESSURE ASSEMBLY
#### #140-10

<table>
<thead>
<tr>
<th>Size:</th>
<th>10&quot; × 8.5&quot; × 9&quot; (25 × 22 × 23 cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>8 lb 6 oz (3.8 kg)</td>
</tr>
</tbody>
</table>

**What's Included**
- Filter Press (frame, cell, gaskets, screen)
- CO₂ Pressuring Assembly
- Filter Paper
- Graduated Cylinder

**Components**
- #140-55 Filter Paper, Whatman #50, 3.5" (9 cm), Box of 100
- #141-00-C Test Cell
- #141-00 Cell Body
- #141-01 Base Cap
- #141-02 Top Cap
- #141-04 Screen
- #141-05 Gasket, Neoprene
- #141-07 Frame
- #141-09 Threaded Insert with Set Screw
- #141-10 T-Screw
- #141-16 Support for Graduated Cylinder
- #141-20 Frog Bracket
- #141-22 Felt Filter
- #142-10 CO₂ Pressuring Assembly
- #153-16 Graduated Cylinder
- #170-44 Rubber Foot

Note: CO₂ bulbs must be ordered separately.

*May require special handling for shipping.*

#144-10 - Filter Press with CO₂ Assembly and Case

#140-10 - Wall Mount Filter Press with CO₂ Assembly
Drilling Fluids - Filtration

API FILTER PRESS, MULTI UNIT

#140-50 6 UNIT

Size: 37.5" x 13" x 24.5" (95 x 33 x 62 cm)
Weight: 52 lb 10 oz (23.9 kg)
Shipping Size: 43" x 17" x 34" (109 x 43 x 86 cm)
Shipping Weight: 140 lb (63.5 kg)

#140-40 4 UNIT

Size: 27.5" x 10" x 24.5" (70 x 25 x 62 cm)
Weight: 36 lb 10 oz (16.6 kg)
Shipping Size: 33" x 17" x 34" (84 x 43 x 86 cm)
Shipping Weight: 110 lb (49.9 kg)

What's Included
• Frame
• Pressure Manifold
• Test Cells

Components
#140-55 Filter Paper, Whatman #50, 3.5" (9 cm), Box of 100
#141-00-C Test Cell
#141-00 Cell Body
#141-01 Base Cap
#141-02 Top Cap
#141-04 Screen
#141-05 Gasket, Neoprene
#141-09 Threaded Insert with Set Screw
#141-10 T-Screw
#141-13 Air Hose, Low Pressure, 15"
#141-19 Air Hose Adapter
#141-22 Felt Filter
#143-06 Safety Bleeder Valve
#153-16 Graduated Cylinder
#170-34 Needle Valve

Optional
#141-15 Air Hose, Low Pressure, 6'
#140-40-SP Spare Parts Kit for #140-40
#140-50-SP Spare Parts Kit for #140-50
#153-16 Graduated Cylinder, 25 mL x .2 mL
#171-24-1 Nut for Pressure Fitting, Right-Hand Thread
#171-24-2 Nipple for Pressure Fitting
#170-36 Nitrogen Regulator with Gauges

FILTER PRESS, HALF AREA, WITH CO₂ PRESSURING ASSEMBLY

#140-60

Size: 7.5" x 6" x 6" (19 x 15 x 15 cm)
Weight: 4 lb 3 oz (1.9 kg)

What's Included
• Filter Press
• Graduated Cylinder
• Filter Paper

Components
#140-60-01 O-ring for Bleeder Valve
#140-60-03 C-ring for Bleeder Valve
#140-60-04 E-ring for Base Cap
#140-60-05 Sample Boot
#140-60-09 Gasket for Seat Assembly
#140-60-10 Friction Washer
#143-02-10 CO₂ Puncture Head Assembly
#143-03 Barrel for CO₂ Bulb
#153-18 Graduated Cylinder, 10 mL x .1 mL
#170-19 Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100

Optional
#140-60-SP Spare Parts Kit
#140-84 Stand
#143-05 'CO₂ Bulbs, Box of 10, UN2037
#143-19 Repair Kit for Regulator
#155-10 Interval Timer, 30 Minutes

Note: CO₂ bulbs must be ordered separately.

* May require special handling for shipping.
Drilling Fluids - Filtration

#140-60 - Half Area Filter Press

- T-Screw (#140-60-15)
- Spring Housing (#140-60-06)
- Spring Button (#140-60-13)
- Adjusting Spring (#140-60-14)
- Diaphragm Assembly (#142-48)
- Slip Ring (#142-49)
- Nozzle (#142-38)
- Seat Assembly (#142-47)
- Valve Spring (#142-46)
- Gland (#142-41)
- Friction Washer (#140-60-10)
- Gasket for Seat Assembly (#140-60-09)
- Valve Seat (#140-60-17)
- Stainless Steel Ball (#143-00-6)
- C-Ring (#140-60-03)
- Spring for Pop Valve (#140-60-16)
- Frog Bracket (#141-20)
- Piston Valve (#140-60-02)
- O-ring for Bleeder Valve (#140-60-01)
- Filter Paper (#170-19)
- Screen for Retainer (#140-60-12)
- Cell Cap (#140-60-11)
- E-Ring (#140-60-04)
- Sample Boot (#140-60-05)
- Body (#140-60-07)
- CO₂ Puncture Head Assembly (#143-02-10)
- Barrel for CO₂ Bulb (#143-03)
**DIFFERENTIAL STICKING TESTER**

**#150-50**

**Size:** 6” × 6” × 18” (15 × 15 × 46 cm)

**Weight:** 26 lb (11.8 kg)

The Differential Sticking Tester measures the stuck-pipe tendency of drilling fluids and determines how effective lubricants might be in any given fluid. By measuring the area of cake building during a test, the Bulk Sticking Coefficient is obtained and read directly at the conclusion of the test. This coefficient takes into account both the friction, or stickiness, of the filter cake, as well as the amount of cake building that would occur to stick the pipe in the hole. How likely a given fluid is to produce a stuck-pipe situation and how effective a given treatment may be can be immediately determined on site.

The unit is normally pressurized by a CO₂ assembly, but a nitrogen source will work. The standard test uses 477.5 PSI (3,291 kPa) applied to a stainless steel vessel of approximately 200 mL. Both a flat-faced plate and a plate of 12 ½” spherical radius that simulates the pipe inside casing or collars in the borehole are provided.

**What's Included**

- Test Cell
- Torque Wrench
- Spanner Wrench
- Torque Plates (Flat and Curved)
- Graduated Cylinder
- CO₂ Pressuring Assembly
- Filter Paper
- Adjustable Wrench, 6 Inch
- Hex Wrench, ¼ Inch

**Components**

- #142-56 O-ring for Torque Plate
- #150-50-002 Retaining Ring
- #150-50-003 Test Cell
- #150-50-006 Cell Lid
- #150-50-009 Inner Cap
- #150-51 Locking Mesh Disk, 60 Mesh
- #150-52 Gasket, Neoprene
- #150-53 Gasket, Plastic
- #150-54 Torque Wrench
- #150-55 Spanner Wrench
- #150-56 O-ring for Test Cell
- #150-58 Torque Plate, Flat Bottom
- #150-59 Torque Plate, Spherical Bottom
- #153-16 Graduated Cylinder, 25 mL × .2 mL
- #170-04 CO₂ Pressuring Assembly
- #170-13-3 O-ring for Inner Cap
- #170-16 Valve Stem
- #170-17 O-ring for Valve Stem
- #170-19 Filter Paper, Whatman #50, 2.5” (6.4 cm), Box of 100
- #170-35 Adjustable Wrench, 6 Inch
- #171-79 Hex Wrench, ¼ Inch

**Optional**

- #143-05 CO₂ Bulbs, Box of 10, UN2037
- #150-50-SP Spare Parts Kit
- #170-03 Carrying Case

Note: CO₂ bulbs must be ordered separately.

* May require special handling for shipping.
The Production Screen Tester is designed to test flow-back of completion fluids on the rig site. It is no longer necessary to ship fluid samples back to the lab and delay the completion operation for days or weeks. Field fluids can be tested in real time with samples of the actual production screen being used down hole. The PST now makes it possible to determine if the fluid remaining in the annulus will flow back through the production screen.

**Features**
- Tests the flow-back of completion fluids through a production screen
- Designed similar to API filter press
- Tests a sample of the actual production screen in use
- Accepts any type of production screen
- Can test both invert-emulsion and water-based reservoir drilling fluids
- Portable to well site
- Optional Advanced Screen Holder accepts screens of varying thickness

**Components**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#141-05</td>
<td>Gasket, Neoprene</td>
</tr>
<tr>
<td>#141-09</td>
<td>Threaded Insert W/ Set Screw</td>
</tr>
<tr>
<td>#141-10</td>
<td>T-screw</td>
</tr>
<tr>
<td>#141-22</td>
<td>Filter, Felt</td>
</tr>
<tr>
<td>#142-00</td>
<td>CO₂ Pressuring Assembly With Top Cap</td>
</tr>
<tr>
<td>#170-13</td>
<td>O-ring, Nitrile</td>
</tr>
<tr>
<td>#810-00-002</td>
<td>Bottom Cap Assembly</td>
</tr>
<tr>
<td>#810-00-005</td>
<td>O-ring, Nitrile</td>
</tr>
<tr>
<td>#810-00-006</td>
<td>Cap Screen</td>
</tr>
<tr>
<td>#810-00-007</td>
<td>Bottom Cup Insert</td>
</tr>
<tr>
<td>#810-00-020</td>
<td>Main Insert, Plastic</td>
</tr>
<tr>
<td>#810-00-021</td>
<td>Spacer Ring, Thick</td>
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<tr>
<td>#810-00-022</td>
<td>Spacer Ring, Thin</td>
</tr>
<tr>
<td>#810-00-1-10</td>
<td>Cell Body Assembly, Stainless Steel</td>
</tr>
<tr>
<td>#810-00-1-10-1</td>
<td>Cell Body Assembly, Acrylic</td>
</tr>
</tbody>
</table>

**Optional**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#120-50-076</td>
<td>Combination Wrench, 9/16&quot;</td>
</tr>
<tr>
<td>#120-58-07</td>
<td>Allen Wrench for Threaded Insert, 9/16&quot;</td>
</tr>
<tr>
<td>#170-27</td>
<td>Allen Wrench for Base Cap Set Screws, 9/16&quot;</td>
</tr>
<tr>
<td>#810-00-010</td>
<td>Advanced Screen Holder Assembly</td>
</tr>
</tbody>
</table>

Note: CO₂ bulbs must be ordered separately.
Drilling Fluids - Filtration

**CO₂ PRESSURE ASSEMBLY**

#142-00 WITH TOP CAP  
#142-10 WITHOUT TOP CAP

Size: 9.5” × 2.5” × 5” (24 × 6 × 13 cm)  
Weight: 2 lb 9 oz (1.2 kg)

Components  
#141-02 Top Cap  
#141-05 Gasket, Neoprene  
#141-22 Felt Filter  
#143-00 Regulator, Low Pressure  
#143-01 Gauge, 1.5”, 0 - 200 PSI  
#143-02-10 CO₂ Puncture Head Assembly  
#143-03 Barrel for CO₂ Cartridge  
#143-06 Safety Bleeder Valve

Optional  
#143-07 Regulator Repair Kit  
#143-00-1 Diaphragm for Regulator

Note: CO₂ bulbs must be ordered separately.

**CO₂ PUNCTURE HEAD ASSEMBLY**

#143-02-10

Components  
#143-02-13 O-ring for CO₂ Bulb  
#143-02-14 O-ring for Puncture Pin Holder

Note: Must use #143-03 barrel with this puncture assembly.

**NITROGEN PRESSURING ASSEMBLY WITH TOP CAP, LOW PRESSURE**

#171-31-1 WITH TANK  
#171-31-3 WITHOUT TANK

Components  
#141-02 Top Cap  
#141-05 Gasket, Neoprene  
#141-14 Air Hose, Low Pressure, 3 Feet  
#141-19 Air Hose Adapter  
#141-22 Felt Filter  
#143-06 Safety Bleeder Valve  
#170-36 Regulator Assembly for Nitrogen Pressure, 200 and 3000 PSI Gauges  
#170-37 Nitrogen Cylinder, Right-Hand Thread

---

#142-00 - CO₂ Pressure Assembly with Top Cap  
#142-10 - CO₂ Pressure Assembly  
#171-31-1 - Low-Pressuring Nitrogen Assembly
#142-10 - CO$_2$ Pressuring Assembly

- Gauge, 200 PSI (#143-01)
- CO$_2$ Puncture Head Assembly (#143-02-10)
- CO$_2$ Cartridge (#143-05)
- O-ring (#143-02-13)
- Barrel for CO$_2$ Cartridge (#143-03)
- Complete CO$_2$ Puncture Head Assembly (#143-02-10)
- Regulator (#143-00)
- Safety Bleeder Valve (#143-06)
- CO$_2$ Puncture Head Assembly (#143-02-10)
- Puncture Pin Holder Assembly (#143-02-11)
- Barrel for CO$_2$ Cartridge (#143-03)
- O-ring (#143-02-14)
- O-ring (#143-02-13)
- Complete CO$_2$ Puncture Head Assembly (#143-02-10)
Drilling Fluids - Filtration

HTHP FILTER PRESS, 175 ML, DOUBLE CAPPED CELL, THREADED, FOR DRILLING FLUIDS, CO₂ PRESSURE

#170-181 115 VOLT
#170-181-1 230 VOLT

Size:  7.5" x 11" x 23.5" (19 x 28 x 60 cm)
Weight: 27 lb (12.3 kg)

This new cell was designed with safety in mind. This modular design is much safer and more convenient. The two-piece cap is threaded, and cannot be opened while the cell is pressurized. And interchangeable caps make it easy to reconfigure the cell for testing with different filter media (filter paper, ceramic disks, or cement screens) with a single cell body. All cells are provided with pressure certification, unique serialization, and material certification which provides true traceability.

Features
- Threaded cell caps are safer than traditional designs
- Interchangeable caps enable testing with filter paper, ceramic disks, or cement screens with the same cell body
- Includes cell caps for testing with filter paper and ceramic disks

Specifications
- Maximum Pressure: 5,000 PSI (34.5 MPa)
- Maximum Temperature: 500°F (260°C)

Requirements
- 115 Volt at 4 Amp or 230 Volt at 2 Amp, 50 / 60 Hz

Components
#153-14 Graduated Cylinder, 50 mL x 1 mL, Glass
#154-10 Thermometer with Metal Dial, 5" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-00-1 Heating Jacket, 115 Volt
#170-01-1 Heating Jacket, 230 Volt
#170-05 Thermostat
#170-09 Insulation Board
#170-10 Pilot Light
#170-11 Heating Element, 200 Watt
#170-30 Thermostat Cover
#170-30-001 Fish Paper
#170-44 Rubber Foot
#171-32 Knob
#170-04 CO₂ Pressurization Unit
#170-06 Back Pressure Receiver, 15 mL
#170-13-3 O-ring for Test Cell, Viton® 75D, Qty: 16
#170-17 O-ring for Valve Stem, Viton® 75D, Qty: 16
#170-19 Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-35 Adjustable Wrench, 6"
#170-181-S Test Cell for Drilling Fluids
#171-190-057 O-ring for Valve Stem, Viton® 90D, Qty: 24
#171-190-060 O-ring for Test Cell, Viton® 90D, Qty: 24

Optional
#143-05 CO₂ Bulbs, Box of 10, UN2037
#143-07 Regulator Repair Kit
#170-03 Carrying Case, Stainless Steel
#170-40 Cell Carrying Tool
#170-91 Pressure Relief Tool
#170-181-SP Spare Parts Kit
#171-190-028 Cell Stand

* For tests up to 400°F (204.4°C)
** For tests above 400°F (204.4°C)
*** May require special handling for shipping.
HTHP Filter Press with Threaded Cell, 175 mL, CO₂ Pressure

- High Pressure Regulator (#170-08)
- Needle Valve (#170-32)
- Valve Stem (#170-16)
- Retaining Ring (#130-81-040) (Not Shown)
- Inlet Cap for Mud (#171-190-031-S)
- Heating Jacket (#170-00-1 / #170-01-1)
- Outlet Cap for Filter Paper (#171-190-030-S)
- Retaining Ring (#130-81-040) (Not Shown)
- Regulator (#143-00)
- Gauge, 200 PSI (#143-01)
- CO₂ Puncture Head Assembly (#143-02-10)
- Barrel for CO₂ Bulb (#143-03)
- Safety Bleeder Valve (#143-06)
- Needle Valve (#170-32)
- Gauge, 1500 PSI (#171-34)
- Barrel for CO₂ Bulb (#143-03)
- Manifold Block (#170-20)
- Safety Pin with Lanyard (#171-23-1)
- Locking Ring (#171-190-023)
- Valve Stem O-ring #170-17: Viton® 75D #171-190-060: Viton® 90D
- Cell O-ring #170-13-3: Viton® 75D #171-190-060: Viton® 90D
- Locking Ring (#171-190-023)
- Valve Stem (#170-16)
- Safety Pin with Lanyard (#171-23-1)
- Receiver Body (#170-28)
- Receiver O-ring (#170-07) (Not Shown)
Drilling Fluids - Filtration

HTHP FILTER PRESS, 175 ML, SINGLE CAPPED CELL FOR FILTER PAPER, CO2 PRESSURE

#170-00  115 VOLT
#170-01  230 VOLT

Size:  7.5" x 11" x 23.5" (19 x 28 x 60 cm)
Weight:  27 lb (12.3 kg)

The High Temperature High Pressure (HTHP) Filter Press is designed to evaluate the filtration characteristics of drilling fluids, cement slurries, fracturing fluids, and completion fluids under elevated temperatures and pressures.

Specifications
• Maximum Pressure: 1,500 PSI (10.3 MPa)
• Maximum Temperature: 400°F (204.4°C)

Requirements
• 115 Volt at 4 Amp or 230 Volt at 2 Amp, 50 / 60 Hz

Components
#153-14  Graduated Cylinder, 50 mL x 1 mL, Glass
#154-10  Thermometer with Metal Dial, 5" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-00-1 Heating Jacket, 115 Volt
#170-01-1 Heating Jacket, 230 Volt
#170-05  Thermostat
#170-09  Insulation Board
#170-10  Pilot Light
#170-11  Heating Element, 200 Watt
#170-30  Thermostat Cover
#170-30-001 Fish Paper
#170-44  Rubber Foot
#171-32  Knob
#170-04  CO2 Pressurization Unit
#170-06  Back Pressure Receiver, 15 mL
#170-12-1 Test Cell for Filter Paper, 175 mL, Locking Screws, Single Cap
#170-19  Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-35  Adjustable Wrench, 6" 

Optional
#143-05  ‘CO2 Bulbs, Box of 10, UN2037
#143-07  Regulator Repair Kit
#170-00-SP  Spare Parts Kit
#170-03  Carrying Case, Stainless Steel

HTHP FILTER PRESS, 175 ML, DOUBLE CAPPED CELL FOR CERAMIC DISKS, CO2 PRESSURE

#170-00-7  115 VOLT
#170-01-6  230 VOLT

Size:  7.5" x 11" x 23.5" (19 x 28 x 60 cm)
Weight:  27 lb (12.3 kg)

The High Temperature High Pressure (HTHP) Filter Press is designed to evaluate the filtration characteristics of drilling fluids, cement slurries, fracturing fluids, and completion fluids under elevated temperatures and pressures.

Specifications
• Maximum Pressure: 2,000 PSI (13.8 MPa)
• Maximum Temperature: 400°F (204.4°C)

Requirements
• 115 Volt at 4 Amp or 230 Volt at 2 Amp, 50 / 60 Hz

Components
#153-14  Graduated Cylinder, 50 mL x 1 mL, Glass
#154-10  Thermometer with Metal Dial, 5" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-00-1 Heating Jacket, 115 Volt
#170-01-1 Heating Jacket, 230 Volt
#170-04  CO2 Pressurization Unit
#170-06  Back Pressure Receiver, 15 mL
#170-19  Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-35  Adjustable Wrench, 6"
#170-46  Test Cell for Ceramic Disks, 175 mL, Locking Screws, Double Cap

Optional
#143-05  ‘CO2 Bulbs, Box of 10, UN2037
#143-07  Regulator Repair Kit
#170-03  Carrying Case, Stainless Steel
HTHP Filter Press, 175 mL, CO₂ Pressure

- Gauge, 1500 PSI (#171-34)
- Barrel for CO₂ Bulb (#143-03)
- Manifold Block (#170-20)
- Safety Pin with Lanyard (#171-23-1)
- Valve Stem O-ring (#170-17)
- Cell Body (#170-12)
- Cell O-ring (#170-13-3)
- Locking Screw (#170-26-1)
- Valve Stem (#170-16)
- Receiver Body (#170-28)
- Receiver O-ring (#170-07) (Not Shown)

- High Pressure Regulator (#170-08)
- Needle Valve (#170-32)
- Valve Stem (#170-16)
- Heating Jacket (#170-00-1 / #170-01-1)
- Outlet Cap for Filter Paper (#170-14)
- Regulator (#143-00)
- CO₂ Puncture Head Assembly (#143-02-10)
- Barrel for CO₂ Bulb (#143-03)
- Safety Bleeder Valve (#143-06)
- Needle Valve (#170-32)
Drilling Fluids - Filtration

HTHP FILTER PRESS, 175 ML, SINGLE CAPPED
CELL FOR FILTER PAPER, N₂ PRESSURE

#170-00-3     115 VOLT
#170-01-3     230 VOLT

Size:       7.5" × 11" × 23.5" (19 × 28 × 60 cm)
Weight:     38 lb (17.2 kg)

The High Temperature High Pressure (HTHP) Filter Press is designed to evaluate the filtration characteristics of drilling fluids, cement slurries, fracturing fluids, and completion fluids under elevated temperatures and pressures.

Specifications
• Maximum Pressure: 1,500 PSI (10.3 MPa)
• Maximum Temperature: 400°F (204.4°C)

Requirements
• 115 Volt at 4 Amp or 230 Volt at 2 Amp, 50 / 60 Hz

Components
#153-14       Graduated Cylinder, 50 mL × 1 mL, Glass
#154-10       Thermometer with Metal Dial, 5" Stem, Dual
                Scale: 50° - 500°F / 0° - 250°C
#170-00-1     Heating Jacket, 115 Volt
#170-01-1     Heating Jacket, 230 Volt
#170-05       Thermostat
#170-09       Insulation Board
#170-10       Pilot Light
#170-11       Heating Element, 200 Watt
#170-30       Thermostat Cover
#170-30-001   Fish Paper
#170-44       Rubber Foot
#171-32       Knob
#170-06-1     Back Pressure Receiver, 15 mL
#170-12-1     Test Cell for Filter Paper, 175 mL, Single Cap
#170-19       Filter Paper, Whatman #50, 2.5" (6.4 cm), Box
                of 100
#170-35       Adjustable Wrench, 6"
#171-24       Dual Nitrogen Manifold, 1350 and 750 PSI

Optional
#143-07       Regulator Repair Kit
#170-00-3-SP  Spare Parts Kit
#170-03       Carrying Case, Stainless Steel
#170-40       Cell Carrying Tool
#170-91       HTHP Pressure Relief Tool
#170-92       Safety Clamp for HTHP Fluid Loss Cells
#171-190-028  Cell Stand
HTHP Filter Press, 175 mL, N₂ Pressure

- Manifold Block (#170-20)
- Safety Pin with Lanyard (#171-23-1)
- Valve Stem O-ring (#170-17)
- Cell Body, 175 mL (#170-12)
- Cell O-ring (#170-13-3)
- Locking Screw (#170-26-1)
- Safety Pin with Lanyard (#171-23-1)
- Receiver Body (#170-28)
- Receiver O-ring (#170-07)
  (Not Shown)
Drilling Fluids - Filtration

HTHP FILTER PRESS, 500 ML, DOUBLE CAPPED, THREADED, FOR DRILLING FLUIDS

#171-191 115 VOLT
#171-191-1 230 VOLT

Size: 10” × 18” × 42” (25 × 46 × 107 cm)
Weight: 53 lb (24.1 kg)

The HTHP (High Temperature, High Pressure) Filter Press is designed for testing drilling fluids and cement under elevated temperatures and pressures. This simulates various down-hole conditions and provides a reliable method for determining the effectiveness of the material being tested.

Features
- Threaded cell caps are safer than traditional designs
- Interchangeable caps enable testing with filter paper, ceramic disks, or cement screens with the same cell body

Specifications
- Maximum Pressure: 5,000 PSI (34.5 MPa)
- Maximum Temperature: 500°F (260°C)

Requirements
- Power: 115 Volt at 6.75 Amp or 230 Volt at 3.75 Amp, 50 / 60 Hz
- N₂: Up to 1500 PSI

Components
- #153-12 Graduated Cylinder, 100 mL × 1 mL, Glass
- #154-20 Thermometer with Metal Dial, 8” Stem, Dual Scale: 50° - 500°F / 0° - 250°C
- #170-13-3 O-ring for Test Cell, Viton® 75D*, Qty: 16
- #170-17 O-ring for Valve Stem, Viton® 75D, Qty: 16
- #170-19 Filter Paper, Whatman #50, 2.5” (6.4 cm), Box of 100
- #170-35 Wrench, Adjustable, 6”
- #171-00 Heating Jacket, 115 Volt
- #171-01 Heating Jacket, 230 Volt
- #170-10 Pilot Light
- #170-11 Heating Element, 200 Watt
- #171-32 Knob
- #171-44 Rubber Foot
- #171-71 Thermostat
- #171-87 Location Pin
- #171-94 Cell Rest Plunger Assembly
- #171-10 Back Pressure Receiver, 100 mL
- #171-24 Dual Nitrogen Manifold
- #171-190-057 O-ring for Valve Stem, Viton® 90D**, Qty: 24
- #171-190-060 O-ring for Test Cell, Viton® 90D, Qty: 24
- #171-191-S Test Cell for Drilling Fluids

Optional
- #143-07 Regulator Repair Kit
- #170-37 Nitrogen Cylinder
- #170-40 Cell Carrying Tool
- #170-91 HTHP Pressure Relief Tool
- #171-190-028 Cell Stand
- #171-191-SP Spare Parts Kit

* For tests up to 400°F (204.4°C)
** For tests above 400°F (204.4°C)
HTHP Filter Press with Threaded Cell, 500 mL, N₂ Pressure

Manifold Block (#170-20)
Safety Pin with Lanyard (#171-23-1)

Locking Ring (#171-190-023)

Valve Stem O-ring
#170-17: Viton® 75D
#171-190-060: Viton® 90D

Cell Body, 175 mL (#171-190-020-S)
Pilot Light (#170-10)

Cell O-ring
#170-13-3: Viton® 75D
#171-190-060: Viton® 90D

Cell Rest Plunger (#171-94)

Locking Ring (#171-190-023)

Back Pressure Receiver (#171-10)

O-ring (#171-11)
(Not Shown)
Drilling Fluids - Filtration

HTHP FILTER PRESS, 500 ML, SINGLE CAPPED CELL FOR FILTER PAPER, N₂ PRESSURE

#171-00-C  115 VOLT
#171-01-C  230 VOLT

Size:  10" × 18" × 42" (25 × 46 × 107 cm)
Weight:  53 lb (24.1 kg)

The HTHP (High Temperature, High Pressure) Filter Press is designed for testing drilling fluids and cement under elevated temperatures and pressures. This simulates various down-hole conditions and provides a reliable method for determining the effectiveness of the material being tested. The larger test cell (500 mL) makes it possible to test at higher temperatures and pressures than the smaller cell (175 mL).

Specifications
• Maximum Pressure: 2,000 PSI (13.8 MPa)
• Maximum Temperature: 400°F (204.4°C)

Requirements
• Power: 115 Volt at 6.75 Amp or 230 Volt at 3.75 Amp, 50 / 60 Hz
• N₂: Up to 1500 PSI

Components
#153-12  Graduated Cylinder
#154-20  Thermometer with Metal Dial, 8" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-13-3  O-ring for Test Cell
#170-17  O-ring for Valve Stem
#170-19  Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-35  Adjustable Wrench, 6"
#171-00  Heating Jacket, 115 Volt
#171-01  Heating Jacket, 230 Volt
#171-10  Pilot Light
#171-11  Heating Element, 200 Watt
#171-32  Knob
#171-44  Rubber Foot
#171-71  Thermostat
#171-87  Location Pin
#171-94  Cell Rest Plunger Assembly
#171-10  Back Pressure Receiver
#171-20  Test Cell for Filter Paper, Single Cap
#171-24  Dual Nitrogen Manifold, 1350 and 750 PSI

Optional
#143-07  Regulator Repair Kit
#170-37  Nitrogen Cylinder
#171-03-SP  Spare Parts Kit

HTHP FILTER PRESS, 500 ML, DOUBLE CAPPED CELL WITH CEMENT SCREENS, N₂ PRESSURE

#171-03  115 VOLT
#171-04  230 VOLT

Size:  10" × 18" × 42" (25 × 46 × 107 cm)
Weight:  53 lb (24.1 kg)

The HTHP (High Temperature, High Pressure) Filter Press is designed for testing drilling fluids and cement under elevated temperatures and pressures. This simulates various down-hole conditions and provides a reliable method for determining the effectiveness of the material being tested. The larger test cell (500 mL) makes it possible to test at higher temperatures and pressures than the smaller cell (175 mL).

Specifications
• Maximum Pressure: 2,000 PSI (13.8 MPa)
• Maximum Temperature: 400°F (204.4°C)

Requirements
• Power: 115 Volt at 6.75 Amp or 230 Volt at 3.75 Amp, 50 / 60 Hz
• N₂: Up to 1500 PSI

Components
#153-12  Graduated Cylinder
#154-20  Thermometer with Metal Dial, 8" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-13-3  O-ring for Test Cell
#170-17  O-ring for Valve Stem
#170-19  Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-35  Adjustable Wrench, 6"
#171-00  Heating Jacket, 115 Volt
#171-01  Heating Jacket, 230 Volt
#171-10  Back Pressure Receiver
#171-19  Test Cell with Cement Screens, Locking Screws, Double Cap
#171-24  Dual Nitrogen Manifold, 1350 and 750 PSI

Optional
#143-07  Regulator Repair Kit
#170-37  Nitrogen Cylinder
#171-03-SP  Spare Parts Kit
HTHP Filter Press, 500 mL, N₂ Pressure

- Needle Valve (#170-32)
- Valve Stem (#170-16)
- Inlet Cap for Mud (#171-190-031-S)
- Heating Jacket (#171-00 / #171-01)
- Knob (#171-32)
- Cell O-ring (#170-13-3)
- Outlet Cap for Filter Paper (#171-21)
- Valve Stem (#170-16)
- Receiver Body (#171-12)
- Needle Valve (#170-32)
- Manifold Block (#170-20)
- Safety Pin with Lanyard (#171-23-1)
- Valve Stem O-ring (#170-17)
- Cell Body, 175 mL (#171-17)
- Pilot Light (#170-10)
- Cell Rest Plunger (#171-94)
- Locking Screw (#170-26-1)
- Back Pressure Receiver (#171-10)
- O-ring (#171-11)
  (Not Shown)
Drilling Fluids - Filtration

HTHP FILTER PRESS, 4 UNIT, ELECTRONIC TEMPERATURE CONTROL AND INDEPENDENT PRESSURE, 175 ML

#170-00-4S 115 VOLT
#170-00-4S-230 230 VOLT

Size: 42.5” x 27” x 19” (108 x 69 x 48 cm)
Weight: 172 lb (78 kg)
Shipping Size: 48” x 27” x 38” (122 x 69 x 97 cm)
Shipping Weight: 350 lb (158.8 kg)

The 4 Unit HTHP Filter Press is ideal for high-volume laboratory testing. It accommodates four 175 mL HTHP filter press cells (sold separately). Each cell has a separate electronic temperature controller and two separate pressure regulators (drive pressure and back pressure). This allows each cell to be heated and pressurized independently, while still sharing a single pressure source.

An optional load cell upgrade includes a load cell for each cell with software for recording and graphing filtrate volume over time.

What's Included
- Back Pressure Receivers
- Temperature Controllers (4)
- Regulators (8)
- Safety Pin with Lanyard (8)
- Thermocouple (4)
- Graduated Cylinders (4)
- Filter Paper

Note: Test cells sold separately.

Requirements
- Power: 115 Volt at 16 amp or 230 Volt at 8 Amp, 50 / 60 Hz
- N₂: Up to 1500 PSI

Components
#120-70-1-021  Gauge for Back Pressure, 1000 PSI
#120-70-1-022-1  Gauge for Top Pressure, 1500 PSI
#120-70-1-052  Hose, Stainless Steel
#153-14  Graduated Cylinder
#170-06-1  Back Pressure Receiver
#170-19  Filter Paper, Whatman #50, 2.5” (6.4 cm), Box of 100
#170-20  Manifold Block
#170-93  Wrench for Valve Stem
#171-23-1  Safety Pin with Lanyard
#171-45-7  Thermocouple
#174-03  Temperature Controller

Optional
#170-12-1  Test Cell for Filter Paper, 175 mL, Single Cap
#170-40  Cell Carrying Tool
#170-45  Test Cell with Cement Screens, 175 mL, Locking Screws, Double Cap
#170-46  Test Cell for Ceramic Disks, 175 mL, Locking Screws, Double Cap
#170-181-S  Test Cell for Drilling Fluids, 175 mL, Threaded
#170-182-S  Test Cell for Cement, 175 mL, Threaded
#171-190-028  Cell Stand
#170-91  HTHP Pressure Relief Tool
#170-00-4S-SP  Spare Parts Kit
#170-00-4S-LC  Load Cell Option
#170-00-4S - 4-Unit HTHP Filter Press
with Electronic Temperature Control and Independent Pressure

- Needle Valve (#170-32)
- Hose (#120-70-1-052)
- Valve Stem (#170-16)
- O-ring (#170-17)

- Manifold Block (#170-20)
- Thermocouple (#171-45-7)
- O-ring (#170-17)

- Safety Pin with Lanyard (#171-23-1)
- Gauge (#120-70-1-022-1)

- Hose (#120-70-1-052)
- Valve Stem (#170-16)

- Needle Valve (#170-32)
- Hose (#120-70-1-052)
- Valve Stem (#170-16)

- Thermocouple (#171-45-7)
- O-ring (#170-17)

- Safety Pin with Lanyard (#171-23-1)
- Hose (#120-70-1-052)

- Gauge (#120-70-1-022-1)

- Temperature Controller (#174-03)
- Back Pressure Gauge (#120-70-1-021)
- Back Pressure Regulator (#130-81-028)

- Safety Pin with Lanyard (#171-23-1)
- Back Pressure Receiver (#170-06-1)
Drilling Fluids - Filtration

HTHP FILTER PRESS, 4 UNIT, 175 ML, SINGLE CAPPED CELLS FOR FILTER PAPER

#170-00-4  115 VOLT
#170-00-4-230  230 VOLT

Size:  39.25" × 25.75" × 37.5" (100 × 65 × 95 cm)
Weight:  175 lb (79.4 kg)

Shipping Size:  48" × 33" × 41" (122 × 84 × 104 cm)
Shipping Weight:  320 lb (145.1 kg)

The 4 Unit HTHP Filter Press is designed for high-volume laboratory testing. It accommodates four 175 mL HTHP filter press cells. Each cell has a separate thermostat for independent temperature control. All four cell share a single Nitrogen pressure source (sold separately).

What's Included
• Frame
• Heating Jackets (4)
• Test Cells (4)
• Back Pressure Receivers (4)
• Safety Pin with Lanyard (8)
• Graduated Cylinders (4)
• Thermometers (4)
• Filter Paper
• Pressure Manifold and Fittings

Requirements
• Power: 115 Volt at 16 Amp or 230 Volt at 8 Amp, 50 / 60 Hz
• \( \text{N}_2 \): Up to 1500 PSI

Components
#153-14  Graduated Cylinder
#154-10  Thermometer with Metal Dial, 5" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-05  Thermostat
#170-06-1  Back Pressure Receiver
#170-12-1  Test Cell for Filter Paper, Single Cap
#170-19  Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-20  Manifold Block
#170-35  Adjustable Wrench
#171-25-1  Relief Valve, 750 PSI
#171-25-2  Relief Valve, 1350 PSI
#171-38  Gauge for Back Pressure, 1000 PSI
#171-42  Gauge for Nitrogen Supply, 3000 PSI
#171-40  Gauge for Top Pressure, 1500 PSI

Optional
#143-00-1  Diaphragm for Regulator
#143-07  Regulator Repair Kit
#170-00-4-SP  Spare Parts Kit
#170-40  Cell Carrying Tool
#170-91  HTHP Pressure Relief Tool
#171-190-028  Cell Stand
#171-24  Dual Nitrogen Manifold
#170-00-4 - 4-Unit HTHP Filter Press

- Needle Valve (#170-32)
- Manifold Block (#170-20)
- Heating Jacket (#170-25)
- 5000# Hose (#171-26-1)
- Test Cell (#170-12-1)
- Safety Pin with Lanyard (#171-23-1)
- Valve Stem (#170-16)
- Receiver Body (#170-28)
- Safety Pin with Lanyard (#171-23-1)
- Gauge, 1000 PSI (#171-73-1)
Drilling Fluids - Filtration

HTHP FILTER PRESS, 2 UNIT, ELECTRONIC TEMPERATURE CONTROL AND INDEPENDENT PRESSURE, 500 ML
#171-00-2S 115 VOLT
#171-00-2S-230 230 VOLT

The 2 Unit HTHP Filter Press is ideal for high-volume laboratory testing. It accommodates two 500 mL HTHP filter press cells (sold separately). Each cell has a separate electronic temperature controller and two separate pressure regulators (drive pressure and back pressure). This allows each cell to be heated and pressurized independently, while still sharing a single pressure source.

What's Included
• Back Pressure Receivers (2)
• Temperature Controllers (2)
• Regulators (4)
• Safety Pin with Lanyard (4)
• Thermocouple (2)
• Graduated Cylinders (2)
• Filter Paper

Note: Test cells sold separately.

Requirements
• Power: 115 Volt or 230 Volt, 50 / 60 Hz
• N₂: Up to 1500 PSI

Components
#153-12 Graduated Cylinder, 100 mL x 1 mL
#171-10 Back Pressure Receiver
#170-19 Filter Paper, Whatman #50, 2.5” (6.4 cm), Box of 100
#170-20 Manifold Block
#170-93 Wrench for Valve Stem
#171-23-1 Safety Pin with Lanyard
#130-76-03 Thermocouple

Optional
#170-40 Cell Carrying Tool
#170-91 HTHP Pressure Relief Tool
#171-190-028 Cell Stand
#171-191-S Test Cell for Drilling Fluids, 500 mL, Threaded
#171-192-S Test Cell for Cement, 500 mL, Threaded

HTHP FILTER PRESS, SINGLE UNIT, ELECTRONIC TEMPERATURE CONTROL, 175 ML
#170-00-1S 115 VOLT
#170-00-1S-230 230 VOLT

This HTHP Filter Press is ideal for high-volume laboratory testing. It accommodates a 175 mL HTHP filter press cell (sold separately). Temperature and filtrate collection are controlled automatically by the software. And filtrate volume is recorded over time.

What's Included
• Back Pressure Receiver
• Temperature Controller
• Regulators (2)
• Safety Pin with Lanyard (2)
• Thermocouple
• Graduated Cylinders
• Filter Paper

Note: Test cells sold separately.

Requirements
• Power: 115 Volt at 16 amp or 230 Volt at 8 Amp, 50 / 60 Hz
• N₂: Up to 1500 PSI

Components
#130-76-03 Thermocouple
#153-14 Graduated Cylinder
#170-06-1 Back Pressure Receiver
#170-19 Filter Paper, Whatman #50, 2.5” (6.4 cm), Box of 100
#170-20 Manifold Block
#170-93 Wrench for Valve Stem
#171-23-1 Safety Pin with Lanyard

Optional
#170-181-S Test Cell, Threaded, for Drilling Fluids, 175 mL
#170-182-S Test Cell, Threaded, for Cement, 175 mL
The Dynamic High Temperature High Pressure (HTHP) Filter Press measures filtration volume and cake building properties under varying downhole conditions. A motor driven shaft fitted with propellers turns at varying speeds inside a standard 500 mL HTHP cell. RPM settings from 1 to 3600 RPM impart laminar flow to the fluid inside the cell. By varying the shaft length, the shear stress may be increased or decreased.

During most of the operation, the drilling fluid is circulating inside the hole. With the Dynamic HTHP Filter Press, you can collect filtrate under similar circulating conditions to get a more realistic picture of the conditions inside the well.

Features
- Propeller inside the cell agitates the fluid during the test
- Variable speed motor imparts either laminar flow
- Adjustable shaft length
- Variable speed motor
- Auxiliary pipe connection for the cell top cap. Plug may be removed to add additional fluid additives.
- Rupture disk prevents over pressurization

Specifications
- Maximum Working Pressure: 5,000 PSI (34.5 MPa)
- Maximum Temperature: 500°F (260°C)

Components
#120-70-1-021 Gauge, 1000 PSI
#120-70-1-053 Hose, Stainless Steel, 24"
#120-910-022 Gauge, 3000 PSI
#122-077 Fuse, 10 Amp
#141-28 Hose Kit, Air/Water/Drain
#153-12 Graduated Cylinder, 100 mL × 1 mL
#154-20 Thermometer with Metal Dial, 8" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#165-14-8 Thermocouple
#170-16 Valve Stem
#170-19 Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-20 Manifold Block
#170-32 Needle Valve, Male
#170-35 Adjustable Wrench
#170-53 Ceramic Filter Disk, 50 Micron
#170-67 Propeller, 1.5" (3.81 cm), Stainless Steel
#170-68 Propeller, 2" (5 cm), Stainless Steel
#170-93 Wrench for Valve Stem
#170-95-313 Wrench for Cell Cap, Spanner
#171-10 Back Pressure Receiver, 100 mL
#171-190-028 Stand for Cell
#171-190-057 O-ring for Valve Stem, Viton 90D
#171-190-058 O-ring for Rupture Disk, Viton 90D
#171-190-060 O-ring for Cell, Viton 90D
#171-196-S Test Cell Assembly
#171-23-1 Safety Pin with Lanyard
#171-25-1 Relief Valve, 750 PSI
#171-25-4 Relief Valve, 2600 PSI
#171-48-2 Thermocouple
Drilling Fluids - Filtration

HTHP FILTER PRESS, MODEL MB

171-50  115 VOLT
171-51  230 VOLT

Size:  19" × 21" × 28" (48 × 53 × 71 cm)
Weight:  35 lb (15.9 kg)

Requirements
• 115 Volt at 7 Amp or 230 Volt at 3.75 Amp, 50 / 60 Hz

Components
#153-16  Graduated Cylinder, 25 mL × ½ mL, Glass
#153-55  Grease, High Vacuum, 150 Gram Tube
#154-10  Thermometer with Metal Dial, 5" Stem, Dual
  Scale: 50° - 500°F / 0° - 250°C
#170-19  Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#171-55  Heating Jacket, 115 Volt
#171-55-1 Heating Jacket, 230 Volt
  #170-11  Heating Element, 200 Watt
  #171-54  Fuse
  #171-67  Knob
  #171-68  Pilot Light, Red
  #171-69  Pilot Light, White
  #171-71  Thermostat
#171-56  Test Cell, Model MB
#171-57  High Pressure Regulator Assembly
#171-58  Back Pressure Receiver
#171-79  Hex Wrench, ¼"

Optional
#143-05  CO₂ Bulbs, Box of 10, UN2037
#143-19  Repair Kit for Low Pressure Regulator, for 171-58
#143-20  Repair Kit for High Pressure Regulator, for 171-57
#171-81  Carrying Case, Stainless Steel
#171-50-SP  Spare Parts Kit

* May require special handling for shipping.

#171-50 Series, Model MB HTHP Filter Press
#171-50 - Model MB HTHP Filter Press

- Gauge, 1000 PSI (#171-73-1)
- Gauge, 2000 PSI (#171-74-1)
- Barrel for CO₂ Bulb (#143-03)
- CO₂ Puncture Head Assembly (#143-02-10)
- Female Coupling (#171-76)
- Coupling Ring (#171-77)
- T-handle (#171-72)
- Cell Body (#171-60)
- Heating Jacket and Stand (#171-55)
- O-ring for Cell Lid (#171-52)
- Lid with Screen (#171-62)
- T-handle (#171-72)
- Safety Bleeder Valve (#143-06)
- Relief Valve, 200 PSI (#143-09)
- Receiver Body (#171-75)
- O-ring (#170-70)
- Receiver Tube, Stainless Steel (#171-66)
- Needle Valve (#170-32)
- Stand (#171-59)

- Victor Regulator (#171-15-3)
- Male Coupling (#171-64)
- O-ring (#142-58) (Not Shown)
- Male Coupling (#171-64)
- Needle Valve (#170-34)
- Screw (#171-78)
- Needle Valve (#170-34)
- Gauge, 200 PSI (#142-61)
- Victor Regulator (#142-37)
- CO₂ Puncture Head Assembly (#143-02-10)

- Bushing, ¾” NPT to ¼” NPT (#144-15)

- Needle Valve (#170-34)
- O-ring (#142-58) (Not Shown)
- Male Coupling (#171-64)
- Needle Valve (#170-34)
- Gauge, 200 PSI (#142-61)
- Victor Regulator (#142-37)
- CO₂ Puncture Head Assembly (#143-02-10)

- Barrel for CO₂ Cartridge (#143-03)
Drilling Fluids - Filtration

HTHP FILTER PRESS, MODEL MB, 4 UNIT
#171-50-4

Size: 39.25" × 25.75" × 37.5" (100 × 65 × 95 cm)
Weight: 175 lb (79.4 kg)

Shipping Size: 48" × 33" × 41" (122 × 84 × 104 cm)
Shipping Weight: 350 lb (158.8 kg)

What's Included
• Frame
• Heating Jackets (4)
• Model MB Test Cells (4)
• Back Pressure Receivers (4)
• Pressure Manifold
• Graduated Cylinders (4)
• Thermometers (4)
• Filter Paper
• O-rings

Requirements
• 230 Volt at 15 Amp, 50 / 60 Hz

Components
#142-58 O-ring for Coupling
#152-38 AC Power Cord
#153-16 Graduated Cylinder, 25 mL × ½ mL, Glass
#154-10 Thermometer with Metal Dial, 5" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-07 O-ring for Back Pressure Receiver
#170-11 Heating Element, 200 Watt
#170-19 Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-32 Needle Valve, ¼" × ¼" NPT
#170-34 Needle Valve, ½" × ½" NPT
#170-25-1 Relief Valve, 750 PSI
#170-25-2 Relief Valve, 1350 PSI
#171-38 Gauge, 1000 PSI
#171-40 Gauge, 1500 PSI
#171-42 Gauge, 3000 PSI
#171-52 O-ring for Cell
#171-54 Fuse
#171-56 Test Cell, Model MB
#171-58 Back Pressure Receiver
#171-79 Hex Wrench

Optional
#171-50-4-SP Spare Parts Kit
#143-19 Repair Kit for Low Pressure Regulator, for 171-58
Drilling Fluids - Filtration

#171-50-4 - HTHP Filter Press, Model MB, 4 Unit

- Needle Valve (#170-32)
- Heating Jacket (#171-61)
- Test Cell (#171-56)
- Needle Valve (#170-34)
- Male Coupling (#171-64)
- Hose (#171-26-1)
- Needle Valve (#170-34)
- Receiver Body (#171-75)
- Gauge, 1000 PSI (#171-38)
- T-handle for Needle Valve (#171-72)
Drilling Fluids - Filtration

PERMEABILITY PLUGGING TESTER, 5000 PSI
#171-193 115 VOLT
#171-193-1 230 VOLT

Size:  15" × 25" × 42" (38 × 64 × 107 cm)
Weight:  61 lb (27.7 kg)
Shipping Size:  34" × 24" × 23" (86 × 61 × 58 cm)
Shipping Weight:  150 lb (68 kg)

The Permeability Plugging Tester (PPT) is designed to run filtration tests on plugging materials without the interference of particles settling on the filter medium. The PPT uses the same test cell as the standard HTHP Filter Press. However, in the PPT, the cell is inverted with the filter and receiver on top. Several filter media are available, such as ceramic disks, conventional filter paper, and slotted stainless steel disks. The cell is pressurized with hydraulic oil. A floating piston separates the oil from the test fluid to prevent contamination.

The new cell is designed with safety in mind. This modular design is safe and convenient. The two-piece cap is threaded, and cannot be opened while the cell is pressurized. And interchangeable caps make it easy to reconfigure the cell for testing with different filter media (filter paper, ceramic disks, or cement screens) with a single cell body. All cells are provided with pressure certification, unique serialization, and material certification which provides true traceability.

Requirements
• 115 Volt at 6.75 Amp or 230 Volt at 3.75 Amp, 50 / 60 Hz

What's Included
• Test Cell with Threaded Caps and Floating Piston
• Heating Jacket
• Back Pressure Receiver with Fittings
• Hand Pump with Hydraulic Oil and Fittings
• Graduated Cylinder
• Thermometer
• Filter Paper
• Ceramic Filter Disk

Components
#153-14  Graduated Cylinder, 50 mL × 1 mL, Glass
#154-20  Thermometer with Metal Dial, 8" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-04  CO2 Pressuring Assembly
#170-13-3 O-ring for Test Cell, Viton® 75D, Qty: 16
#170-17  O-ring for Valve Stem, Viton® 75D, Qty: 18
#170-19  Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-53  Ceramic Filter Disk, 50 Micron
#171-00  Heating Jacket, 800 Watt, 115 Volt
#171-01  Heating Jacket, 800 Watt, 230 Volt
#170-10  Pilot Light
#170-11  Heating Element, 200 Watt
#171-32  Knob
#171-44  Rubber Foot
#171-71  Thermostat
#171-87  Location Pin
#171-94  Cell Rest Plunger Assembly
#171-10  Back Pressure Receiver, 100 mL
#171-23-1 Safety Pin with Lanyard
#171-25-3 Relief Valve, 5500 PSI
#171-27  Hose, 5000#, ¾" × 6'
#171-84-02 Reducing Bushing, ¾" MNPT × ¼" FNPT
#171-90-02 Quick Connect Coupler, Female

Optional
#143-05  CO2 Bulbs, Box of 10, UN2037
#171-190-028  Cell Stand
#171-193-SP  Spare Parts Kit
#171-10  Back Pressure Receiver, 100 mL (For Conventional Filtration)

* May require special handling for shipping.
Drilling Fluids - Filtration

PERMEABILITY PLUGGING TESTER, 2000 PSI

#171-90 115 VOLT
#171-90-01 230 VOLT

Size: 15" × 25" × 42" (38 × 64 × 107 cm)
Weight: 61 lb (27.7 kg)

Shipping Size: 34" × 24" × 23" (86 × 61 × 58 cm)
Shipping Weight: 150 lb (68 kg)

The Permeability Plugging Tester (PPT) is designed to run filtration tests on plugging materials without the interference of particles settling on the filter medium. The PPT uses the same test cell as the standard HTHP Filter Press. However, in the PPT, the cell is inverted with the filter and receiver on top. Several filter media are available, such as ceramic disks, conventional filter paper, and slotted stainless steel disks. The cell is pressurized with hydraulic oil. A floating piston separates the oil from the test fluid to prevent contamination.

Requirements
• 115 Volt at 6.75 Amp or 230 Volt at 3.75 Amp, 50 / 60 Hz

What’s Included
• Test Cell with Floating Piston, 2000 PSI
• Heating Jacket
• Back Pressure Receiver with Fittings
• Hand Pump with Hydraulic Oil and Fittings
• Graduated Cylinder
• Thermometer
• Filter Paper
• Ceramic Filter Disk

Components
#153-14 Graduated Cylinder, 50 mL × 1 mL, Glass
#154-20 Thermometer with Metal Dial, 8" Stem, Dual Scale: 50° - 500°F / 0° - 250°C
#170-04 CO₂ Pressuring Assembly
#170-17 O-ring for Valve Stem, Viton®
#170-19 Filter Paper, Whatman #50, 2.5" (6.4 cm), Box of 100
#170-53 Ceramic Filter Disk, 50 Micron
#170-73 Cell Cap for Ceramic Disks, Scribed, Extra Long
#171-00 Heating Jacket, 800 Watt, 115 Volt
#171-01 Heating Jacket, 800 Watt, 230 Volt
#170-10 Pilot Light
#170-11 Heating Element, 200 Watt
#171-32 Knob
#171-44 Rubber Foot
#171-71 Thermostat
#171-87 Location Pin
#171-94 Cell Rest Plunger Assembly
#171-10 Back Pressure Receiver, 100 mL
#171-23-1 Safety Pin with Lanyard
#171-27 Hose, 5000#, ¼" × 6'
#171-90-18 Cell Assembly with Floating Piston, 2000 PSI
#170-13-3 O-ring for Cell, Viton®
#170-16 Valve Stem
#170-17 O-ring for Valve Stem, Viton®
#170-26-1 Locking Screw
#170-27 Allen Wrench, ⅛"
#170-69 Cell Cap, For Ceramic Disks, Scribed, Outlet
#170-72 Spacer, Stainless Steel
#170-77-1 O-ring for Spacer
#171-02 Cell Body
#171-21 Cell Cap with Screen, Inlet

Optional
#143-05 *CO₂ Bulbs, Box of 10, UN2037
#171-10 Back Pressure Receiver, 100 mL (For Conventional Filtration)
#171-90-SP Spare Parts Kit

* May require special handling for shipping.

#171-93 Piston
#171-95 T-handle for Piston
#171-99 O-ring for Piston
#171-42 Gauge, 3000 PSI
#171-83 Valve Stem Assembly, Hydraulic Entry
#171-83-1 Valve Stem Assembly, Outlet
#171-84-02 Reducing Bushing, ¼" MNPT × ¾" FNPT
#171-90-02 Quick Connect Coupler, Female
#171-90-04 Cross, ⅛" NPT
#171-90-07 Hex Nipple, ⅛" NPT
#171-90-11 Elbow for Back Pressure Receiver
#171-90-12 Elbow for Hydraulic Pressure Assembly
#171-90-13 Adapter, ¼" Flare × ¾" MNPT
#171-90-14 Hose Barb
#171-90-15 Crescent Wrench, Adjustable, 6"
#171-92 Relief Valve, 2200 PSI
#171-96 Handpump
#171-96-1 Hydraulic Oil, 32 Oz
#171-98 Ball Valve for Hydraulic Pressure Assembly
#171-99 O-ring for Piston, Viton®
#171-90 - Permeability Plugging Tester, 2000 PSI

- Barrel (#143-03)
- Safety Pin with Lanyard (#171-23-1)
- Valves (#171-90-10)
- Back Pressure Receiver Body (#171-10)
- Elbow (#171-90-11)
- Hose Barb (#171-90-14)
- Valve (#171-97)
- Valve Stem (#171-90-09)
- Ceramic Disk (#170-53)
- Piston O-ring, Viton® (#171-99)
- Valve Stem Assembly, Inlet (#171-83)
- Valve Stem Assembly, Outlet (#171-83-1)
- Needle Valve (#170-32)
- Needle Valve (#170-32)
- Needle Valve (#170-32)
- Needle Valve (#170-32)
- Quick Connect Coupler, Female (#171-90-02)
- Quick Connect Coupler, Male (#171-90-03)
- Cross (#171-90-04)
- Gauge, 3000 PSI (#171-42)
- Elbow (#171-90-12)
- Gauge, 1500 PSI (#171-34)
- Regulator (#170-08)
- Manifold Block (#170-20)
- Needle Valve (#170-32)
- Valve Stem (#171-90-10)
- Valve Stem Assembly, Outlet (#171-83-1)
- Test Cell (#171-29)
- Test Fluid
- Piston (#171-190-024-S)
- Hydraulic Oil (#171-96-1)
- Valve Stem (#171-90-08)
- Quick Connect Coupler, Male (#171-90-03)
- Cross (#171-90-04)
- Gauge, 3000 PSI (#171-42)
- Elbow (#171-90-12)
- Needle Valve (#170-32)
- Needle Valve (#170-32)
- Needle Valve (#170-32)
- Needle Valve (#170-32)
AUTOMATIC PRESSURE CONTROL SYSTEM FOR PERMEABILITY PLUGGING TESTER, 4 UNIT
#171-89

Shipping Size: 27” × 26” × 35” (69 × 66 × 89 cm)
Shipping Weight: 200 lb (90.7 kg)

The Automatic Pressure Control System can provide and maintain a constant pressure on up to four Permeability Plugging Testers. It consists of two air-driven pumps and four hydraulic, self-venting regulators. Replacing the manual hand pump, the air-driven pump automatically engages when you start the test and maintains a constant pressure for the duration.

Features
- Maintains constant pressure for up to four Permeability Plugging Testers
- Includes two air-driven pumps and four hydraulic, self-venting regulators
- Replaces the manual handpump

CO2 PRESSURE ASSEMBLY
#170-04

Components
#143-02-10 CO2 Puncture Head Assembly
#143-03 Barrel for CO2 Bulb
#170-08 Regulator, High Pressure
#170-20 Manifold Block
#170-32 Needle Valve, Male
#171-23-1 Safety Pin with Lanyard
#171-34 Gauge, 1500 PSI

HIGH PRESSURE REGULATOR ASSEMBLY FOR MODEL MB FILTER PRESS
#171-57

Components
#143-00 Regulator, CONCO/AIRCO
#143-01 Gauge, 200 PSI, ¼” Bottom Connection
#143-02-10 CO2 Puncture Head Assembly
#143-03 Barrel for CO2 Bulb
#143-06 Safety Bleeder Valve, ¼” NPT
#144-11 Street Ell, ¼”
#170-07 O-ring for Receiver
#170-28 Receiver Body, 15 mL, Stainless Steel
#170-32 Needle Valve, Male, ½” × ¾” NPT
#171-23-1 Safety Pin with Lanyard

BACK PRESSURE RECEIVER FOR CO2, 15 ML
#170-06

Components
#143-00 Regulator, CONCO/AIRCO
#143-01 Gauge, 200 PSI, ¼” Bottom Connection
#143-02-10 CO2 Puncture Head Assembly
#143-03 Barrel for CO2 Bulb
#143-06 Safety Bleeder Valve, ¼” NPT
#144-11 Street Ell, ¼”
#170-07 O-ring for Receiver
#170-28 Receiver Body, 15 mL, Stainless Steel
#170-32 Needle Valve, Male, ½” × ¾” NPT
#171-23-1 Safety Pin with Lanyard
BACK PRESSURE RECEIVER FOR N₂, 15 ML
#170-06-1

Components
#144-11  Street Ell, ¼"
#144-15  Bushing, ¼" NPT Male to ¼" NPT Female
#170-07  O-ring
#170-28  Receiver Body
#170-32  Needle Valve, Male, ¼" x ¼" NPT
#171-23-1  Safety Pin with Lanyard

BACK PRESSURE RECEIVER FOR N₂, 100 ML
#171-10

Components
#170-32  Needle Valve, Male, ¼" x ¼" NPT
#171-11  O-ring for Receiver Body
#171-12  Receiver Body
#171-23-1  Safety Pin with Lanyard

BACK PRESSURE RECEIVER FOR MODEL MB FILTER PRESS
#171-58

Components
#142-37  Regulator, Victor
#142-58  O-ring for Cell Coupling
#142-61  Gauge, 200 PSI, ¼" Bottom, 2" Face
#143-02-10  CO₂ Puncture Head Assembly
#143-03  Barrel for CO₂ Cartridge
#143-06  Safety Bleeder Valve, ¼" NPT
#170-07  O-ring for Receiver
#170-32  Needle Valve, Male, Outlet, ¼" x ¼" NPT
#171-66  Receiver Tube, Stainless Steel
#171-75  Receiver Body

#170-06-1 - Back Pressure Receiver for N₂

#171-10 - Back Pressure Receiver, 100 mL

#171-58 - Back Pressure Receiver for Model MB Filter Press
Drilling Fluids - Filtration

THERMOCOUPLE ASSEMBLY
#171-45-1 For 175 mL HTHP Filter Press
#171-45-2 For Model MB HTHP Press
#171-45 For 500 mL HTHP Filter Press

In the past, temperature measurements for HTHP filtration testing have been monitored with a metal dial stem thermometer placed in the cell wall or the heating jacket. Therefore, the temperature of the metal was measured and not the temperature of the fluid inside the cell, which was rarely, if ever, at the proper test temperature. Due to the degradation of many fluid additives at certain temperatures, costly discrepancies frequently occurred between the laboratory results and actual downhole drilling conditions.

One independent study indicated that variances in fluid temperature resulted in differences of filtrate volume by as much as 30%. More accurate and repeatable results may be obtained if the fluid temperature is monitored inside the cell rather than measuring the temperature of the insulating cell wall only.

The Thermocouple Assembly represents a significant improvement in high-temperature filtration testing. With an accuracy of 2 degrees variance, the operator no longer has to guess at what the fluid temperature is inside the cell or how long to heat the cell before initiating the test. The LED is easily read and the assembly quickly retrofits to all existing models of HTHP cells and requires no modifications to existing equipment. It operates on 115 / 230 Volts, 50 / 60 Hz.
#171-45-1 - Thermocouple Assembly

- CO₂ Pressure Assembly (#170-04)
- Valve Stem (#170-16)
- Gauge (#171-74-1)
- Adapter Body (#171-45-003)
- Thermocouple (#171-45-4)
- Thermocouple Cable
- Valve (#171-14-001)
- Temperature Controller (#174-03)
Drilling Fluids - Filtration

HIGH PRESSURE NITROGEN PRESSURING ASSEMBLY

#171-31 WITH TANK
#171-31-2 WITHOUT TANK

Components
#142-39 Pipe Plug, ¼"
#170-20 Manifold Block
#170-32 Needle Valve, Male, ⅛" × ⅛" NPT
#170-37 Nitrogen Cylinder, Right-Hand Thread, 21" × 7"
#171-23-1 Safety Pin with Lanyard
#171-24-1 Nut for Inlet, Right-Hand Thread, CGA-580, Right-Handed Thread
#171-32 Needle Valve, Male, ⅛" × ⅛" NPT
#171-37 Nitrogen Cylinder, Right-Hand Thread, 21" × 7"
#171-23-1 Safety Pin with Lanyard
#171-24-1 Nut for Inlet, Right-Hand Thread, CGA-580, Right-Handed Thread
#171-24-2 Nipple with Filter for Regulator Inlet
#171-24-3 Union Elbow, Female, ⅛" Flare × ⅛" FNPT, Chrome Plated
#171-24-5 Street Tee, ⅛" NPT, 316 Stainless Steel
#171-25-1 Relief Valve, 750 PSI
#171-26-1 Hose, 5000#, ⅛" × 2'
#171-38 Gauge, 1000 PSI, 2 ½", ⅛" NPT Bottom
#171-42 Gauge, 3000 PSI, 2 ½", ⅛" NPT Bottom
#171-53 Regulator, High Pressure, Victor,
#171-90-06 Reducing Bushing, ⅛" MNPT × ¼" FNPT, 316 Stainless Steel

DUAL NITROGEN MANIFOLD, 1350 AND 750 PSI

#171-24

Components
#170-20 Manifold Block
#170-32 Needle Valve, Male, ¼" × ¼" NPT
#171-23-1 Safety Pin with Lanyard
#171-24-002 Modified Regulator
#171-24-1 Nut for Regulator Inlet CGA-580, Right-Handed Thread
#171-24-2 Nipple with Filter for Regulator Inlet 15-3SF
#171-24-3 Union Elbow, Female, ⅛" Flare × ⅛" FNPT
#171-24-4 Pipe Plug, ⅛" NPT, 316 Stainless Steel
#171-24-5 Street Tee, ⅛" NPT, 316 Stainless Steel
#171-25-1 Relief Valve, 750 PSI (5,171 kPa)
#171-25-2 Relief Valve, 1350 PSI (9,308 kPa)
#171-26 Hose, 3,000 PSI, ⅛" × 3'
#171-28 Dual Manifold Body
#171-38 Gauge, 1000 PSI, 2.5" Face, ⅛" Bottom Connection
#171-40 Gauge, 1500 PSI, 2.5" Face, ⅛" Bottom Connection
#171-42 Gauge, 3000 PSI, 2.5" Face, ⅛" Bottom Connection
#171-90-06 Reducing Bushing, 316 Stainless Steel
#171-90-07 Hex Nipple, ⅛" NPT, 316 Stainless Steel
#171-90-13 Adapter, ⅛" Flare × ⅛" Male NPT

#171-31 - High Pressure Nitrogen Assembly

#171-24 - Dual Nitrogen Manifold
#171-24 - Dual Nitrogen Manifold, 1,350 and 750 PSI

Gauge, 1500 PSI (#171-40)  
Modified Regulator (#171-24-002)  
Female Union Elbow (#171-24-3)  
High Pressure Hose, 5000 PSI (#171-26)  
Male Needle Valve (#170-32)  
Manifold Block (#170-20)  
Relief Valve Set at 1350 PSI (#171-25-2)

Gauge, 3000 PSI (#171-42)  
Dual Manifold Body (#171-28)  
Hex Nipple (#171-90-07)  
Street Tee (#171-24-5)

Gauge, 1000 PSI (#171-38)  
Modified Regulator (#171-24-002)  
Pipe Plug (#171-24-4)  
Adapter, Male (#171-90-13)  
Reducing Bushing (#171-90-06)  
Relief Valve Set at 750 PSI (#171-25-1)
Drilling Fluids - Filtration

REGULATOR, LOW PRESSURE, CONCOA/AIRCO, ¼" NPT, ¼" GAUGE
#143-00

![Low Pressure CONCOA Regulator](image1)

REGULATOR, HIGH PRESSURE, CONCOA/AIRCO, ¼" NPT, ¼" GAUGE
#170-08

Components (both low and high pressure regulators)
#143-00-1  Diaphragm (830-0342)
#143-00-2  Adjusting Screw for 143-00 Regulator (830-1197)
#143-00-3  Spring Button
#143-00-4  Diaphragm Plate (830-0340)
#143-00-5  Slip Ring (830-0341)
#143-00-6  Ball, ¼”, Stainless Steel
#143-00-7  Thrust Plate (830-0344)
#143-00-8  Teflon® Seat (830-3904)
#143-00-9  O-ring for Seat Assembly (830-2627)
#143-00-10 Screen (830-4052)
#143-00-11 Glasswool Filter (830-4060)
#143-00-12 Spring
#170-08-1  Adjusting Screw for 170-08 Regulator

REGULATOR REPAIR KIT, CONCOA/AIRCO
#143-07

For #143-00 and 170-08 regulators.

![CONCOA Repair Kit](image2)

REGULATOR, LOW PRESSURE, VICTOR, 3000 PSI, ¼" NPT FITTINGS
#142-37

![Victor Regulator](image3)

REGULATOR, VICTOR, 200 AND 3000 PSI GAUGES, N₂ FITTING, ¼" NPT FITTINGS
#170-36

![Nitrogen Regulator](image4)

#143-07 - CONCOA Repair Kit

#142-37 - Victor Regulator

#170-36 - Nitrogen Regulator

#143-00 - Low Pressure CONCOA Regulator

#170-08 - High Pressure CONCOA Regulator
Drilling Fluids - Filtration

REGULATOR, HIGH PRESSURE, VICTOR, 6000 PSI, ¼" NPT FITTINGS
#171-53

Components (both low and high pressure regulators)
#142-38  Nozzle (0702-0005)
#142-39  Pipe Plug (0704-0009)
#142-40  Spring Button (0706-0015)
#142-41  Gland (0708-0003)
#142-42  Diaphragm (0731-0015)
#142-44  T-Screw (0750-0016)
#142-45  Adjusting Spring (0761-0025)
#142-46  Valve Spring (0762-0003)
#142-47  Seat Assembly (0740-0010)
#142-48  Diaphragm Assembly (0730-0024)
#142-49  Slip Ring (0705-0004)

REGULATOR REPAIR KIT, VICTOR
#143-19

For low pressure regulators and Half-Area Filter Press.

Components
#140-60-09  Gasket (1408-0086)
#140-60-10  Friction Washer (1408-0033)
#142-38  Nozzle (0702-0005)
#142-41  Gland (0708-0003)
#142-47  Seat Assembly (0740-0010)
#142-48  Diaphragm Assembly (0730-0024)
#142-49  Slip Ring (0705-0004)

REGULATOR REPAIR KIT, VICTOR
#143-20

For High Pressure Regulator, #171-53.

Components
#143-20-1  Cartridge Assembly
#143-20-2  O-ring (Large)
#140-71  O-ring (Small)
Drilling Fluids - Filtration

**HTHP FILTER PRESS CELL ASSEMBLY WITH THREADED CAPS**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>#171-191-S</td>
<td>500 ML, FOR DRILLING FLUIDS</td>
<td></td>
</tr>
<tr>
<td>#171-192-S</td>
<td>500 ML, FOR CEMENT TESTING</td>
<td></td>
</tr>
<tr>
<td>#171-193-S</td>
<td>500 ML, FOR PPT</td>
<td></td>
</tr>
<tr>
<td>#170-181-S</td>
<td>175 ML, FOR DRILLING FLUIDS</td>
<td></td>
</tr>
<tr>
<td>#170-182-S</td>
<td>175 ML, FOR CEMENT</td>
<td></td>
</tr>
</tbody>
</table>

This new cell has been designed with safety in mind. This modular design is safe and convenient. The two-piece cap is threaded, and cannot be opened while the cell is pressurized. And interchangeable caps make it easy to reconfigure the cell for testing with different filter media (filter paper, ceramic disks, or cement screens) with a single cell body. All cells are provided with pressure certification, unique serialization, and material certification which provides true traceability.

**Features**
- Double capped cell
- Two-piece cap with threaded locking ring
- Rupture disks in inlet caps and piston

**Specifications**
- Maximum Temperature: 500°F (260°C)
- Maximum Pressure: 5,000 PSI (34.5 MPa)

**Components**

*All cells include the following:*

- #120-910-028 O-ring for Rupture Disk
- #130-81-040 Retaining Ring for Cell Cap Assembly
- #170-13-3 O-ring for Test Cell, Viton® 75D
- #170-17 O-ring for Valve Stem, Viton® 75D
- #171-190-020-S Cell Body (500 mL)
- #170-180-020-S Cell Body (175 mL)
- #171-190-023 Locking Ring
- #171-190-027 Rupture Disk
- #171-190-029 Wrench for Cell Cap
- #171-190-057 O-ring for Valve Stem, Viton® 90D
- #171-190-060 O-ring for Test Cell, Viton® 90D

**Drilling Fluids Testing (#171-191-S, #170-181)**

- #171-190-030-S Cell Cap, Outlet, Filter Paper
- #171-190-031-S Cell Cap, Inlet, Mud
- #171-190-034-S Cell Cap, Outlet, Ceramic Disk

**Cement Testing (#171-192-S, #170-182)**

- #170-18 Cement Screen, Detachable
- #171-190-032-S Cell Cap, Outlet, Cement
- #171-190-033-S Cell Cap, Inlet, Cement

**Permeability Plugging Tester (#171-193-S)**

- #171-190-P Piston Kit
- #171-190-030-S Cell Cap, Outlet, Filter Paper
- #171-190-031-S Cell Cap, Inlet, Mud
- #171-190-034-S Cell Cap, Outlet, Ceramic Disk
- #171-83 Valve Stem Assembly for PPT, Hydraulic Entry
- #171-83-1 Valve Stem Assembly for PPT, Outlet

**Optional**

- #171-190-P Piston Kit
- #120-910-028 O-ring for Rupture Disk, Viton® 75D
- #171-190-024-S Piston
- #171-190-027 Rupture Disk
- #171-190-039 Set Screw for Piston
- #171-190-055 Allen Wrench

* For tests up to 400°F (204.4°C)
** For tests above 400°F (204.4°C)
HTHP Filter Press Cell Assembly, Threaded Caps

- Locking Ring (#171-190-023)
- Retaining Ring (#130-81-040)
- Rupture Disk (#171-190-027)
- O-ring (#171-190-058)
- Inlet Cap for Mud (#171-190-031-S)
- Cell Body, 500 mL (#171-190-020-S)
- Cell Body, 175 mL (#170-180-020-S)
- Rupture Disk (#171-190-027)
- O-ring (#171-190-058)
- Piston (#171-190-024-S)
- O-ring (#171-190-061)
- Outlet Cap for Filter Paper (#171-190-030-S)
- Outlet Cap for Ceramic Disks (#171-190-034-S)
- Outlet Cap for Ceramic Disks (#171-190-034-S)
- Outlet Cap for Ceramic Disks (#171-190-034-S)
- Retaining Ring (#130-81-040)
- Locking Ring (#171-190-023)

- Cement Screen (#170-18)
- Inlet Cap for Cement (#171-190-033-S)
- O-ring (#171-190-060)
- Outlet Cap for Cement (#171-190-032-S)
Drilling Fluids - Filtration

HTHP CELL FOR FILTER PAPER, LOCKING SCREWS, 500 ML, SINGLE CAP, 2000 PSI
#171-20

Size: 12" × 10" × 5" (31 × 25 × 13 cm)
Weight: 16 lb 8 oz (7.5 kg)

Components
#170-13-3 O-ring for Test Cell, Viton®
#170-16 Valve Stem
#170-17 O-ring for Valve Stem, Viton®
#170-26-1 Locking Screw
#170-27 Allen Wrench, ½"
#171-17 Cell Body
#171-21 Cell Cap with 60 Mesh Screen

#171-20 - Cell Assembly, Single Cap, Filter Paper, 500 mL

HTHP CELL FOR CERAMIC DISKS, LOCKING SCREWS, 500 ML, DOUBLE CAP, 2000 PSI
#171-29

Size: 12" × 10" × 5" (31 × 25 × 13 cm)
Weight: 16 lb 8 oz (7.5 kg)

Components
#170-13-3 O-ring for Test Cell, Viton®
#170-16 Valve Stem
#170-17 O-ring for Valve Stem, Viton®
#170-18 Detachable Screen, 325 Mesh with 60 Mesh Backup
#170-24 Cell Cap for Removable Cement Screens
#170-26-1 Locking Screw
#170-27 Allen Wrench, ½"
#170-69 Cell Cap for Ceramic Disk, Scribed
#170-72 Spacer, ¼"
#170-77 O-ring for Spacer
#171-19-001 Cell Body

#171-29 - Cell Assembly, Double Cap, Ceramic Disks, 500 mL

HTHP CELL WITH CEMENT SCREENS, LOCKING SCREWS, 500 ML, DOUBLE CAP, 2000 PSI
#171-19

Size: 12" × 10" × 5" (31 × 25 × 13 cm)
Weight: 16 lb 8 oz (7.5 kg)

Components
#170-13-3 O-ring for Test Cell, Viton®
#170-16 Valve Stem
#170-17 O-ring for Valve Stem, Viton®
#170-24-1 Detachable Screen, 325 Mesh with 60 Mesh Backup
#170-26-1 Locking Screw
#170-27 Allen Wrench, ½"
#170-69 Cell Cap for Ceramic Disk, Scribed
#170-72 Spacer, ¼"
#170-77 O-ring for Spacer
#171-19-001 Cell Body

#171-19 - Cell Assembly, Double Cap, Cement, 500 mL

HTHP CELL ASSEMBLY, MODEL MB
#171-56

Size: 4" × 4" × 11" (10 × 10 × 28 cm)
Weight: 11 lb 3 oz (5.1 kg)

Components
#170-34 Needle Valve, Male, ¼" NPT × ¼" NPT
#171-52 O-ring for Test Cell, Nitrile
#171-60 Cell Body
#171-62 Lid
#171-64 Coupling, Male
#171-72 T-handle for Needle Valve
#171-78 Screw

#171-56 - Cell Assembly, Model MB
HTHP CELL FOR FILTER PAPER, LOCKING SCREWS, 175 ML, SINGLE CAP, 1500 PSI
#170-12-1

Size: 4.5" × 4" × 3.25" (11 × 10 × 8 cm)
Weight: 7 lb 11 oz (3.5 kg)

Components
#170-12  Cell Body
#170-13-3  O-ring for Test Cell, Viton®
#170-14  Cell Cap with 60 Mesh Screen
#170-16  Valve Stem
#170-17  O-ring for Valve Stem
#170-26-1  Locking Screw
#170-27  Allen Wrench, ¼”

HTHP CELL FOR CERAMIC DISKS, LOCKING SCREWS, 175 ML, DOUBLE CAP, 2000 PSI
#170-46

Size: 3.25" × 3.25" × 4.5" (8 × 8 × 11 cm)
Weight: 7 lb 14 oz (3.6 kg)

Components
#170-13-3  O-ring for Test Cell, Viton®
#170-16  Valve Stem
#170-17  O-ring for Valve Stem
#170-26-1  Locking Screw
#170-27  Allen Wrench, ¼”
#170-47  Cell Body
#170-69  Cell Cap for Ceramic Disks, Scribed
#170-72  Spacer, ¼”
#170-77  O-ring for Spacer
#170-20-1 - Cell Assembly, Single Cap, Filter Paper, 175 mL
#170-46 - Cell Assembly, Double Cap, Ceramic Disks, 175 mL

HTHP CELL WITH CEMENT SCREENS, LOCKING SCREWS, 175 ML, DOUBLE CAP, 2000 PSI
#170-45

Size: 8" × 5" × 4" (20 × 13 × 10 cm)
Weight: 8 lb (3.6 kg)

Components
#170-13-3  O-ring for Test Cell, Viton®
#170-16  Valve Stem
#170-17  O-ring for Valve Stem
#170-26-1  Locking Screws
#170-27  Allen Wrench, ¼”
#170-47  Cell Body
#170-69  Cell Cap for Ceramic Disks, Scribed
#170-72  Spacer, ¼”
#170-77  O-ring for Spacer
#170-46-3 - Cell Assembly, Double Cap, Cement, 175 mL
Drilling Fluids - Filtration

CELL CAP REMOVAL TOOL
#170-33

The Cell Cap Removal Tool provides a convenient method for removing a cell cap from a HTHP filter press cell. After high temperature testing, cell caps are often difficult to remove due to expansion and o-ring friction. This tool screws into the valve stem port and pivots against the side wall of the cell. Simply pushing down on the lever pulls the cap directly up and out of the cell body.

Carrying Tool for HTHP Cell
#170-40

The Carrying Tool provides a safe, easy method of removing a hot filter press cell from the heating jacket after a high temperature test. This simple device attaches to the valve stem with a standard retaining pin. The T-handle provides a convenient handhold for lifting the cell out of the heating jacket. The cell can then be carried to a safe location for cooling.

SAFETY CLAMP FOR HTHP FLUID LOSS CELLS
#170-92

Size: 20.5" × 8" × 7" (52 × 20 × 18 cm)
Weight: 22 lb (10 kg)

The Test Cell Safety Clamp is designed to hold an HTHP test cell securely in place and prevent an uncontrolled pressure release. The two plates clamp the cell in place while the locking screws are removed. Pressure can then be released gradually and safely.

Features
- Secures an HTHP fluid loss cell to prevent an uncontrolled pressure release
- Robust design durable enough to contain a fully-pressurized HTHP cell
- Accommodates both 175 mL and 500 mL cells
- Scribed ring in the bottom plate centers the test cell in the device

Carrying Tool for HTHP Cell
#170-40 - Carrying Tool for HTHP Cell

Test Cell Safety Clamp
#170-92 - Safety Clamp (Cell not included)
HTHP PRESSURE RELIEF TOOL
#170-91
Size: 8.5” × 5.5” × 1” (22 × 14 × 3 cm)
Weight: 1 lb (454 g)

The HTHP Pressure Relief Tool provides a safe way to release the pressure in a clogged cell. It screws onto the cell cap using the existing valve stem port. Then, using a T-handle, the operator can drive a pin into the cell to puncture through any obstruction. The pressure will then vent safely through the vent pipe, away from people and equipment.

Features
- Safely clear obstructions in HTHP filtration cells
- Directs released pressure away from people and equipment

US Patent Number 9,375,715

#170-91 - HTHP Pressure Relief Tool

STAND FOR HTHP FILTER PRESS CELLS
#171-190-028
Size: 6” × 4” × 8” (15 × 10 × 20 cm)
Weight: 6 lb 6.3 oz (2.9 kg)

This device is designed to hold an HTHP filter press cell upright for assembly, disassembly, or cooling. The cup at the top prevents the cell from tipping, and the open space below provides plenty of room for a valve stem or other pressure fitting. A location pin inside the cup holds the cell body in place to prevent it from turning while tightening threaded cell caps.

#171-190-028 - Stand for HTHP Filter Press Cells
Drilling Fluids - Filtration

Complete Assemblies

<table>
<thead>
<tr>
<th>Part #</th>
<th>Size</th>
<th>Fluid</th>
<th>Pressure</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>171-191</td>
<td>500</td>
<td>Mud</td>
<td>N₂, 5000 PSI</td>
<td>115</td>
</tr>
<tr>
<td>171-191-1</td>
<td>500</td>
<td>Mud</td>
<td>N₂, 5000 PSI</td>
<td>230</td>
</tr>
<tr>
<td>171-192</td>
<td>500</td>
<td>Cement</td>
<td>N₃, 5000 PSI</td>
<td>115</td>
</tr>
<tr>
<td>171-192-1</td>
<td>500</td>
<td>Cement</td>
<td>N₃, 5000 PSI</td>
<td>230</td>
</tr>
<tr>
<td>171-193</td>
<td>500</td>
<td>PPT</td>
<td>Hydraulic, 5000 PSI</td>
<td>115</td>
</tr>
<tr>
<td>171-193-1</td>
<td>500</td>
<td>PPT</td>
<td>Hydraulic, 5000 PSI</td>
<td>230</td>
</tr>
<tr>
<td>170-181</td>
<td>175</td>
<td>Mud</td>
<td>CO₂, 5000 PSI</td>
<td>115</td>
</tr>
<tr>
<td>170-181-1</td>
<td>175</td>
<td>Mud</td>
<td>CO₂, 5000 PSI</td>
<td>230</td>
</tr>
<tr>
<td>170-182</td>
<td>175</td>
<td>Cement</td>
<td>N₂, 5000 PSI</td>
<td>115</td>
</tr>
<tr>
<td>170-182-1</td>
<td>175</td>
<td>Cement</td>
<td>N₂, 5000 PSI</td>
<td>230</td>
</tr>
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Cell Assemblies

<table>
<thead>
<tr>
<th>Part #</th>
<th>Capacity</th>
<th>Filter Media</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>171-191-S</td>
<td>500 mL</td>
<td>Paper/Disk</td>
<td>5000 PSI</td>
</tr>
<tr>
<td>171-192-S</td>
<td>500 mL</td>
<td>Cement Screens</td>
<td>5000 PSI</td>
</tr>
<tr>
<td>171-193-S</td>
<td>500 mL</td>
<td>PPT</td>
<td>5000 PSI</td>
</tr>
<tr>
<td>170-181-S</td>
<td>175 mL</td>
<td>Paper/Disk</td>
<td>5000 PSI</td>
</tr>
<tr>
<td>170-182-S</td>
<td>175 mL</td>
<td>Cement</td>
<td>5000 PSI</td>
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</table>

Cell Caps

<table>
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<tr>
<th>Part #</th>
<th>End</th>
<th>Type</th>
</tr>
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<tbody>
<tr>
<td>170-190-030-S</td>
<td>Outlet</td>
<td>60 Mesh Screen for Filter Paper</td>
</tr>
<tr>
<td>170-190-031-S</td>
<td>Inlet</td>
<td>60 Mesh Screen for Mud</td>
</tr>
<tr>
<td>170-190-032-S</td>
<td>Outlet</td>
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<td>Cement Screen</td>
</tr>
<tr>
<td>170-190-034-S</td>
<td>Outlet</td>
<td>Scribed for Ceramic Disks</td>
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</table>

Cell Bodies

<table>
<thead>
<tr>
<th>Part #</th>
<th>Capacity</th>
</tr>
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<tbody>
<tr>
<td>171-190-020-S</td>
<td>500 mL</td>
</tr>
<tr>
<td>170-180-020-S</td>
<td>175 mL</td>
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Heating Jackets and Stands

<table>
<thead>
<tr>
<th>Part #</th>
<th>Capacity</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>170-00-1</td>
<td>175 mL</td>
<td>115</td>
</tr>
<tr>
<td>170-01-1</td>
<td>175 mL</td>
<td>230</td>
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<tr>
<td>171-00</td>
<td>500 mL</td>
<td>115</td>
</tr>
<tr>
<td>171-01</td>
<td>500 mL</td>
<td>230</td>
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</table>

Back Pressure Receivers

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<thead>
<tr>
<th>Part #</th>
<th>Description</th>
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<tbody>
<tr>
<td>#170-06</td>
<td>15 mL, With CO₂ Pressure Assembly</td>
</tr>
<tr>
<td>#170-06-1</td>
<td>15 mL, For N₂ Pressure</td>
</tr>
<tr>
<td>#171-10</td>
<td>100 mL, For N₂ Pressure</td>
</tr>
<tr>
<td>#171-58</td>
<td>MB Style</td>
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</table>

Cases

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#170-03</td>
<td>HTHP Filter Press, 175 mL</td>
</tr>
<tr>
<td>#171-81</td>
<td>Model MB HTHP Filter Press</td>
</tr>
</tbody>
</table>

Pressure Assemblies

#170-04 CO₂ Pressure Assembly
#171-24 Dual Nitrogen Manifold
#171-57 CO₂ Pressure Assembly, Model MB Style

Tools

#170-93 Wrench for Valve Stem
#170-27 Allen Wrench, ¼”, for Cell Locking Screws
#171-190-029 Wrench for Threaded Cells

Ceramic Filter Disks

Porous ceramic filters are commonly used for everything from sewage treatment to medical equipment monitoring. In the oilfield, ceramic filters are used as a replacement for filter paper in the HTHP filtration test. Available in a wide range of pore throat sizes, ceramic filters enable the operator to perform filtration tests at similar porosities to that of the formations being drilled, a big advantage over filter paper. Also, ceramic filters, unlike paper, have depth (usually ¼”), so invasion and return permeability studies may be performed and bridging characteristics of drilling and drill-in fluids may be analyzed.

Porosities consist of closely-sized particles bonded together, resulting in a uniform, permeable material that forms a tortuous path for fluid flow. The most common materials used are alumina and silica, but there is an almost unlimited variety of material characteristics, shapes, and sizes available.

Ceramic filters are normally classified by mean pore throat size and/or units of permeability. Mean pore throat size is the average minimum pore diameter measured in microns, or a thousandth of a millimeter. Permeability is a measure of the volume flow of fluids through a porous media when subjected to a differential pressure and is mathematically equated by Darcy’s Law.

Previously, mean pore throat size and permeability were roughly determined using air standards. Recent research funded by the American Petroleum Institute (API) used the latest mercury injection capillary pressure technology to determine these characteristics. This new testing procedure identified that the ceramic disk manufacturing process does not allow for absolute consistency between ceramic disk batches. Therefore, it was determined that the true mean pore throat size and permeability should result as a mean of the statistical data. Even though the ceramic filters are the same filters that have been provided for years, new API methods for determining mean pore throat size and permeability have resulted in new specifications as outlined in the chart below:

<table>
<thead>
<tr>
<th>Part #</th>
<th>Mean Pore Throat (µm)</th>
<th>Permeability (Darcy)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New (Mercury)</td>
<td>Old (Air)</td>
</tr>
<tr>
<td>170-55</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>170-53-2</td>
<td>12</td>
<td>5</td>
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<td>170-53-3</td>
<td>20</td>
<td>10</td>
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<td>170-51</td>
<td>40</td>
<td>20</td>
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<td>170-53</td>
<td>50</td>
<td>35</td>
</tr>
<tr>
<td>170-53-1</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>170-53-4</td>
<td>120</td>
<td>90</td>
</tr>
<tr>
<td>170-53-5</td>
<td>160</td>
<td>150</td>
</tr>
<tr>
<td>170-53-6</td>
<td>250</td>
<td>190</td>
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</table>

*1 Micron (µm) = 1 / 25,400” or 1 / 1,000 mm
## SLOTTED FILTER DISKS, 316 STAINLESS STEEL

Slotted filter disks are often used for testing loss circulation material in HTHP filter press cells. These disks are available with one or three slots. Slots can be either straight or tapered. Disks with a thickness of $\frac{1}{4}''$ fit inside the cell where a ceramic disk would go. Thicker disks fit inside the narrower portion of the cell body where the test fluid goes.

Custom sizes and slot configurations are available.

### 3 SLOTS, $\frac{1}{4}''$ THICK, 2.5'' DIAMETER

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>#170-53-46</td>
<td>5000</td>
</tr>
<tr>
<td>#170-53-43</td>
<td>4000</td>
</tr>
<tr>
<td>#170-53-42</td>
<td>3000</td>
</tr>
<tr>
<td>#170-53-47</td>
<td>2000</td>
</tr>
<tr>
<td>#170-53-48</td>
<td>1500</td>
</tr>
<tr>
<td>#170-53-49</td>
<td>1250</td>
</tr>
<tr>
<td>#170-53-50</td>
<td>1000</td>
</tr>
<tr>
<td>#170-53-57</td>
<td>800</td>
</tr>
<tr>
<td>#170-53-51</td>
<td>600</td>
</tr>
<tr>
<td>#170-53-52</td>
<td>500</td>
</tr>
<tr>
<td>#170-53-56</td>
<td>400</td>
</tr>
<tr>
<td>#170-53-53</td>
<td>300</td>
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<tr>
<td>#170-53-54</td>
<td>200</td>
</tr>
<tr>
<td>#170-53-55</td>
<td>100</td>
</tr>
</tbody>
</table>

### SINGLE SLOT, $\frac{1}{4}''$ THICK, 2.5'' DIAMETER

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Micron</th>
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</thead>
<tbody>
<tr>
<td>#170-53-60-200</td>
<td>200</td>
</tr>
<tr>
<td>#170-53-60-300</td>
<td>300</td>
</tr>
<tr>
<td>#170-53-60-400</td>
<td>400</td>
</tr>
<tr>
<td>#170-53-60-500</td>
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<tr>
<td>#170-53-60-600</td>
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<tr>
<td>#170-53-60-750</td>
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<td>#170-53-60-800</td>
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<td>#170-53-60-1000</td>
<td>1000</td>
</tr>
<tr>
<td>#170-53-60-1250</td>
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<tr>
<td>#170-53-60-2000</td>
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<tr>
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<tr>
<td>#170-53-60-4000</td>
<td>4000</td>
</tr>
<tr>
<td>#170-53-60-5000</td>
<td>5000</td>
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### SINGLE SLOT, 1'' THICK, 2.12'' DIAMETER

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>#171-200-01</td>
<td>1000</td>
</tr>
<tr>
<td>#171-200-02</td>
<td>2000</td>
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<tr>
<td>#171-200-03</td>
<td>3000</td>
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<tr>
<td>#171-200-04</td>
<td>4000</td>
</tr>
<tr>
<td>#171-200-05</td>
<td>5000</td>
</tr>
</tbody>
</table>

### SINGLE SLOT, TAPERED, 1'' THICK, 2.12'' DIAMETER

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Diameter</th>
</tr>
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<tbody>
<tr>
<td>#171-200-06</td>
<td>2 mm to 1 mm</td>
</tr>
<tr>
<td>#171-200-07</td>
<td>3 mm to 2 mm</td>
</tr>
<tr>
<td>#171-200-08</td>
<td>4 mm to 3 mm</td>
</tr>
<tr>
<td>#171-200-09</td>
<td>5 mm to 4 mm</td>
</tr>
<tr>
<td>#171-200-10</td>
<td>6 mm to 5 mm</td>
</tr>
</tbody>
</table>

**Optional**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>#171-99</td>
<td>O-ring for 1'' Thick Filter Disks</td>
</tr>
</tbody>
</table>
Drilling Fluids - Retorts

The Retort provides a method for measuring the percentage (%) of oil and water, and for estimating both suspended and dissolved solids contained in a sample of water-based or oil-based muds and cuttings. Knowledge of oil, water, and solid content is fundamental to proper control of mud properties when considering oil/water ratios, rheology, density, filtration, and salinity. Knowledge of solids in drilling fluids is essential to evaluation of viscosity control and solids control equipment.

Electronic temperature control (available on 50 mL and 20 mL sizes) provides more accurate, reliable, and reproducible testing. The digital display shows the current working temperature, so you always know your test conditions.

RETORT KIT WITH STAINLESS STEEL CASE, 50 ML

#165-14 115 VOLT
#165-14-1 230 VOLT
#165-14-2 WITH ELECTRONIC TEMPERATURE CONTROLLER, 115 VOLT
#165-14-3 WITH ELECTRONIC TEMPERATURE CONTROLLER, 230 VOLT

Size: 9.5" × 8.75" × 17" (24 × 22 × 43 cm)
Weight: 26 lb (11.8 kg)

What's Included
- Retort, 50 mL
- Stainless Steel Case
- Graduated Cylinder
- Receiver Tube
- Brush for Graduated Cylinder
- T-handle Drill
- Corkscrew
- Steel Wool
- Pipe Cleaner
- High Temperature Thread Lubricant
- Spatula
- Wetting Agent

Requirements
- 115 Volt at 4.2 Amp or 230 Volt at 2.5 Amp, 50 / 60 Hz

Components
#130-79-53-0990 Thermostat (#165-14 Only)
#130-79-54-0990 Thermostat (#165-14-1 Only)
#153-02 Brush, Graduate, 1 ⅜” × 10 ¾”
#153-14 Graduated Cylinder, 50 mL × 1 mL
#165-07 Receiver Tube, 50 mL
#165-14-13 T-handle Drill
#165-15-1 Condenser with Ultra-Torr Fitting, 50 mL
#165-15-4 O-ring for Ultra-Torr Fitting
#165-16 Retort Chamber with Lid
#165-16-1 Lid for Mud Sample Cup
#165-16-2 Mud Sample Cup
#165-16-3 Expansion Chamber with Non-Threaded Tube
#165-41 Corkscrew
#165-42 Steel Wool, Grade 00 Fine, Package of 4 Pads
#165-43 Pipe Cleaner
#165-44-2 Anti Seize Compound, Silver, 7g Pouch
#165-88 Spatula
#280-00 Wetting Agent, 1 oz

For 115 Volt Only (#165-14 and 165-14-2)

#122-074-1 Fuse, 5 Amp, 5 mm × 20 mm
#165-36-1 Heating Element, 500 Watt
#152-38 Power Cord

For 230 Volt Only (#165-14-1 and #165-14-3)

#122-073-1 Fuse, 3 Amp, 5 mm × 20 mm
#165-36-1 Heating Element, 500 Watt
#152-38 Power Cord

Optional
#153-08 Brush for 50 mL Receiver (JP) Tube
#165-14-SP Spare Parts Kit, 115 Volt
#165-14-1-SP Spare Parts Kit, 230 Volt
#165-14-7 Special Legs for Use with JP Tubes
#165-16-4 Retort Chamber with Threaded Tube and Lid
#165-40 Power Cable, 115 Volt (For older model retorts)
#165-40-1 Power Cable, 230 Volt (For older model retorts)
**Drilling Fluids - Retorts**

**RETORT KIT WITH STAINLESS STEEL CASE, 20 ML**  
#165-80 115 VOLT  
#165-80-1 230 VOLT  
#165-80-2 WITH ELECTRONIC TEMPERATURE CONTROL, 115 VOLT  
#165-80-3 WITH ELECTRONIC TEMPERATURE CONTROL, 230 VOLT

**What's Included**  
- Retort, 20 mL  
- Stainless Steel Case  
- Graduated Cylinder  
- Brush for Graduated Cylinder  
- T-handle Drill  
- Corkscrew  
- Steel Wool  
- Pipe Cleaner  
- High Temperature Thread Lubricant  
- Spatula  
- Wetting Agent

**Requirements**  
- 115 Volt at 4.2 Amp or 230 Volt at 2.5 Amp, 50 / 60 Hz

**Components**  
#131-15 Graduated Cylinder, 20 mL, 100%  
#153-03 Brush, Graduate, ⅛” × 8”  
#165-06 Receiver Tube, 20 mL, with Certificate  
#165-14-13 T-handle Drill  
#165-15-4 O-ring for Ultra-Torr Fitting  
#165-41 Corkscrew  
#165-42 Steel Wool, Grade 00 Fine, Package of 4 Pads  
#165-43 Pipe Cleaner  
#165-44-2 Anti Seize Compound, Silver, 7g Pouch  
#165-82-1 Condenser with Ultra-Torr Fitting, 20 mL  
#165-83 Chamber with Lid for 20 mL Retort Kit  
- Lid for Mud Sample Cup  
- Mud Sample Cup  
- Expansion Chamber  
#165-88 Spatula  
#280-00 Wetting Agent, 1 oz

**For Non-Electronic Only (#165-80 and #165-80-1)**  
#130-79-53-0990 Thermostat

**For 115 Volt Only (#165-80 and 165-80-2)**  
#122-074-1 Fuse, 5 Amp, 5 mm × 20 mm  
#165-35-1 Heating Element, 500 Watt  
#152-37 Power Cord

**For 230 Volt Only (#165-80-1 and #165-80-3)**  
#122-073-1 Fuse, 3 Amp, 5 mm × 20 mm  
#165-36-1 Heating Element, 500 Watt  
#152-38 Power Cord

**For Electronic Only (#165-80-2 and #165-80-3)**  
#165-80-4 Electronic Temperature Controller

**Optional**  
#153-07 Brush for 20 mL Receiver (JP) Tube  
#165-80-SP Spare Parts Kit, 115 Volt  
#165-80-1-SP Spare Parts Kit, 230 Volt  
#165-40 Power Cable, 115 Volt (For older model retorts)  
#165-40-1 Power Cable, 230 Volt (For older model retorts)
Drilling Fluids - Retorts

**RETORT KIT WITH STAINLESS STEEL CASE, 10 ML**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage/Amperage</th>
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<tbody>
<tr>
<td>#165-00-1</td>
<td>115 Volt</td>
</tr>
<tr>
<td>#165-10-1</td>
<td>230 Volt</td>
</tr>
</tbody>
</table>

- **Size:** 7.5" × 6.5" × 11.5" (19 × 17 × 29 cm)
- **Weight:** 12 lb 5 oz (5.6 kg)

**What's Included**
- Retort Chamber and Cup, 10 mL
- Condenser
- Stainless Steel Case
- Graduated Cylinder
- Brush for Graduated Cylinder
- T-handle Drill
- Corkscrew
- Steel Wool
- Pipe Cleaner
- High Temperature Thread Lubricant
- Spatula
- Wetting Agent

**Requirements**
- 115 Volt at 3 Amp or 230 Volt at 1.5 Amp, 50 / 60 Hz

**Components**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#153-03</td>
<td>Brush, Graduate, ½” × 8”</td>
</tr>
<tr>
<td>#153-18</td>
<td>Graduated Cylinder, 10 mL × 1 mL</td>
</tr>
<tr>
<td>#165-31</td>
<td>Chamber with Lid</td>
</tr>
<tr>
<td>#165-31-001</td>
<td>Expansion Chamber</td>
</tr>
<tr>
<td>#165-31-1</td>
<td>Mud Sample Cup</td>
</tr>
<tr>
<td>#165-33</td>
<td>Lid for Mud Sample Cup</td>
</tr>
<tr>
<td>#165-32</td>
<td>Condenser</td>
</tr>
<tr>
<td>#165-34</td>
<td>Spatula</td>
</tr>
<tr>
<td>#165-41</td>
<td>Corkscrew</td>
</tr>
<tr>
<td>#165-42</td>
<td>Steel Wool, Grade 00 Fine, Package of 4 Pads</td>
</tr>
<tr>
<td>#165-43</td>
<td>Pipe Cleaner</td>
</tr>
<tr>
<td>#165-44-2</td>
<td>Anti Seize Compound, Silver, 7g Pouch</td>
</tr>
<tr>
<td>#280-00</td>
<td>Wetting Agent, 1 oz</td>
</tr>
</tbody>
</table>

**For 115 Volt Only (#165-00-1)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>#122-074-1</td>
<td>Fuse, 5 Amp, 5 mm × 20 mm</td>
</tr>
<tr>
<td>#130-79-53-0990</td>
<td>Thermostat</td>
</tr>
<tr>
<td>#152-37</td>
<td>Power Cord</td>
</tr>
<tr>
<td>#165-35</td>
<td>Heating Element</td>
</tr>
</tbody>
</table>

**For 230 Volt Only (#165-10-1)**

<table>
<thead>
<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>#122-073-1</td>
<td>Fuse, 3 Amp, 5 mm × 20 mm</td>
</tr>
<tr>
<td>#130-79-54-0990</td>
<td>Thermostat</td>
</tr>
<tr>
<td>#152-38</td>
<td>Power Cord</td>
</tr>
<tr>
<td>#165-36</td>
<td>Heating Element</td>
</tr>
</tbody>
</table>

**Optional**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#153-06</td>
<td>Brush for 10 mL Receiver (JP) Tube</td>
</tr>
<tr>
<td>#165-05</td>
<td>Receiver Tube with Certificate, 10 mL, Dual</td>
</tr>
<tr>
<td>#165-00-1-SP</td>
<td>Spare Parts Kit, 115 Volt</td>
</tr>
<tr>
<td>#165-10-1-SP</td>
<td>Spare Parts Kit, 230 Volt</td>
</tr>
<tr>
<td>#165-14-7</td>
<td>Special Legs for Use with JP Tubes</td>
</tr>
<tr>
<td>#165-14-13</td>
<td>T-handle Drill</td>
</tr>
<tr>
<td>#165-30</td>
<td>Retort Chamber with Lid, 20 mL</td>
</tr>
<tr>
<td>#165-40</td>
<td>Power Cable, 115 Volt (For older model retorts)</td>
</tr>
<tr>
<td>#165-40-1</td>
<td>Power Cable, 230 Volt (For older model retorts)</td>
</tr>
</tbody>
</table>
RETORT, REMOVABLE
#165-00  10 ML, 115 VOLT
#165-10  10 ML, 230 VOLT
#165-80-00 20 ML, 115 VOLT
#165-80-01 20 ML, 230 VOLT

Size:  3.5" × 4" × 11" (9 × 10 × 28 cm)
Weight: 7 lb 9 oz (3.4 kg)

Features
• Compact size makes it ideal for portable kits
• 10 mL and 20 mL chambers are interchangeable

What’s Included
• Retort Chamber and Cup
• Condenser

Requirements
• 115 Volt at 3 Amp or 230 Volt at 1.5 Amp, 50 / 60 Hz

Components
#165-30  Chamber with Lid for 20 mL Removable Retort
#165-31-002  Expansion Chamber
#165-31-2  Mud Sample Cup
#165-33  Lid for Mud Sample Cup
#165-31  Chamber with Lid, 10 mL
#165-31-001  Expansion Chamber
#165-31-1  Mud Sample Cup
#165-33  Lid for Mud Sample Cup
#165-32  Condenser

For 115 Volt Only (#165-00)
#122-074-1  Fuse, 5 Amp, 5 mm × 20 mm
#130-79-53-0990  Controller, Fixed
#152-37  AC Power Cord
#165-35  Heating Element

For 230 Volt Only (#165-10)
#122-073-1  Fuse, 3 Amp, 5 mm × 20 mm
#130-79-54-0990  Controller, Fixed
#152-38  AC Power Cord
#165-36  Heating Element

Optional
#165-40  Power Cable, 115 Volt (For older model retorts)
#165-40-1  Power Cable, 230 Volt (For older model retorts)

Accessories and Consumable Parts for Retorts
#153-05  Brush with Curved Plastic Handle, Mini, 7 ¼", Stainless Steel
#152-37  Power Cable for Newer Retorts, 115 Volt
#152-38  Power Cable for Newer Retorts, 230 Volt
#165-41  Corkscrew
#165-14-13  Drill for Retort Chamber Tube, T-Handle
#165-43  Pipe Cleaner, 3 mm, 10'
#165-40  Power Cable for Older Retorts, 115 Volt
#165-40-1  Power Cable for Older Retorts, 230 Volt
#171-06  Safety Shield
#165-42  Steel Wool, Grade 000 Extra Fine, 4 Pads
#171-43  Teflon® Tape, ¼"
#165-44-2  Anti Seize Compound, Silver, 7g Pouch
#165-15-2  Ultra-Torr Fitting for 20 and 50 mL Condensers
#165-15-3  Ultra Torr Sleeve, ¼"

For 50 mL Retorts
#131-28  Spatula, 3 ¾"
#153-08  Brush for 50 mL Receiver Tube
#165-07  50 mL Receiver Tube, 2 Scales: 0 - 100% × 0.5%, 0 - 50 mL × 0.25 mL
#165-14-7  Special Legs for Use with JP Tubes, 50 mL
#165-15-1  Condenser with Ultra-Torr Fitting
#165-15-4  O-ring for Ultra-Torr Fitting
#165-16  Retort Chamber with Lid
#165-16-1  Lid for Mud Sample Cup
#165-16-2  Mud Sample Cup
#165-16-3  Expansion Chamber with Non-Threaded Tube

For 20 mL Retorts
#153-07  Brush for 20 mL Receiver Tube
#165-06  20 mL Receiver Tube with Certificate, 2 Scales: 0 - 100% × 0.1%, 0 - 20 mL × 0.1 mL
#165-15-4  O-ring for Ultra-Torr Fitting
#165-30  Chamber with Lid for 20 mL Removable Retort
#165-31-002  Expansion Chamber
#165-31-2  Mud Sample Cup
#165-33  Lid for Mud Sample Cup
#165-31  Retort Chamber with Lid
#165-31-1  Mud Sample Cup
#165-33  Lid for Mud Sample Cup
#165-32  Condenser
#165-34  Spatula

For 10 mL Retorts
#153-06  Brush for 10 mL Receiver Tube
#165-05  10 mL Receiver Tube with Certificate, 2 Scales: 0 - 100% × 0.1%, 0 - 10 mL × 0.1 mL
#165-31  Chamber with Lid
#165-31-001  Expansion Chamber
#165-31-1  Mud Sample Cup
#165-33  Lid for Mud Sample Cup
#165-32  Condenser
#165-34  Spatula

For Removable Retorts
#165-30  Retort Chamber with Lid, 20 mL
#165-31  Retort Chamber with Lid, 10 mL
Drilling Fluids - Aging

ROLLER OVEN, HIGH TEMPERATURE, 5 ROLLER
#176-00-C 230 VOLT

Size: 25.7” x 26” x 33.5” (65 × 66 × 85 cm)
Weight: 133 lb (293 kg)

Crated Size: 33.75” x 26.25” x 26” (86 × 67 × 66 cm)
Crated Weight: 172 lb (78 kg)

Features
- Able to reach higher temperatures than conventional ovens
- Variable-speed controller
- Enclosure is constructed of stainless steel for longer life
- Stainless steel rollers promote a cleaner environment inside the oven
- Sealed back so bearings and chains are not exposed to lab personnel
- Glass-impregnated Teflon® bearings extend the life of the rollers and allow for longer maintenance-free service
- A digital temperature controller maintains a constant temperature throughout the aging process
- A programmable 7-day timer enables unattended operation by automatically starting and stopping the heaters
- The circulating fan ensures more stable, consistent, and reliable heating

Specifications
- Rollers: 5
- Roller Speed: 25 RPM
- Maximum Temperature: 600°F (315.6°C)
- Heaters: 2 × 750 Watts
- Material:
  - Cabinet: 300 Series Stainless Steel
  - Rollers: 304 Stainless Steel
- Capacity (Aging Cells Sold Separately):
  - 260 mL Aging Cells: 12
  - 500 mL Aging Cells: 8
  - 1,000 mL Aging Cells: 4

Requirements
- 230 Volt, 18 Amp, 50 / 60 Hz

Components
#120-50-005 Cooling Fan
#120-76-002 Fuse for Heater, 15 Amp, 1” x 1 ¼”
#130-78-002 Cover for Cooling Fan with Filter
#165-14-8 Type J Thermocouple
#165-14-10 Fuse for Fan, 1 Amp
#172-01 Fuse for Instruments, ½ Amp
#172-02-1 Chain
#172-03-1 Sprocket, Qty: 9
#172-04-1 Connecting Link for Chain, Qty: 4
#172-05 Fuse for Motor, 2 Amp
#172-08-1 Bearing for Rollers, Carbon, Qty: 10
#172-11-1 Temperature Controller
#172-14 On/Off Toggle Switch
#172-15-1 Programmable Timer
#172-24 Solid State Relay, 240V-25A
#172-23-1 Heater, 750 Watt
#172-25-1 Motor for Fan
#174-13 Motor
#174-14 Motor Controller
#176-00-002 Safety Controller
Drilling Fluids - Aging

ROLLER OVEN, 4 ROLLER
#172-00-C  115 VOLT
#172-00-1-C  230 VOLT
#172-00-RC  REDUNDANT HEAT, 115 VOLT
#172-00-1-RC  REDUNDANT HEAT, 230 VOLT

Size:  23” × 26.5” × 26” (58 × 67 × 66 cm)
Weight:  141 lb (64 kg)

Shipping Size:  32” × 29” × 36” (81 × 74 × 91 cm)
Shipping Weight:  240 lb (108.9 kg)

ROLLER OVEN, 5 ROLLER
#173-00-C  115 VOLT
#173-00-1-C  230 VOLT
#173-00-RC  REDUNDANT HEAT, 115 VOLT
#173-00-1-RC  REDUNDANT HEAT, 230 VOLT

Size:  27.5” × 32” × 26” (70 × 81 × 66 cm)
Weight:  172 lb (78 kg)

Shipping Size:  37” × 32” × 36” (94 × 81 × 91 cm)
Shipping Weight:  290 lb (131.5 kg)

The Roller Oven is an effective aid in determining the effects of temperature on drilling fluid as it circulates through the well bore. The Roller Oven is designed to provide heating and rolling functionality simultaneously or independently. It is available with either 4 or 5 rollers and includes a circulation fan for uniform heating.

Features
• Digital temperature controller
• 7 day programmable timer
• Circulation fan
• Optional redundant heat control provides extra safety

Specifications
• Roller Speed: 25 RPM
• Maximum Temperature: 450°F (232.2°C)
• 4 Roller Oven Capacity:
  - 260 mL Aging Cells: 6
  - 500 mL Aging Cells: 3
  - 1,000 mL Aging Cells: 3
• 5 Roller Oven Capacity:
  - 260 mL Aging Cells: 12
  - 500 mL Aging Cells: 8
  - 1,000 mL Aging Cells: 4

Requirements
• 4 Roller: 115 Volt at 6.5 Amp or 230 Volt at 3.5 Amp, 50 / 60 Hz
• 5 Roller: 115 Volt at 9.5 Amp or 230 Volt at 4.5 Amp, 50 / 60 Hz

Components
#165-14-8  Type J Thermocouple
#165-14-10  Fuse for Circulating Fan, 1 Amp
#170-05  Thermostat
#172-01  Fuse for Temperature Controller, ½ Amp
#172-09  Fuse for Heater, 10 Amp
#172-11-1  Temperature Controller
#172-14  On/Off Toggle Switch
#172-15-1  Programmable Timer
#172-24  Solid State Relay, 240V-25A
#172-25  Fan Motor
#174-07-1  Fan Blade, 5"
#174-13  Motor
#174-14  Motor Controller

#173-00-C - 5-Roller Oven

Drilling Fluids - Aging

ROLLER OVEN, PORTABLE, 3 ROLLER

#174-00 115 VOLT  
#174-00-1 230 VOLT

Size: 25” × 12” × 11” (64 × 31 × 28 cm)  
Weight: 53 lb (24.1 kg)

Shipping Size: 31” × 18” × 21 (79 × 46 × 53 cm)  
Shipping Weight: 110 lb (49.9 kg)

Features
- Specifically designed for the field  
- Variable-speed controlled  
- Enclosure is constructed of stainless steel for longer life  
- Stainless steel rollers promote a cleaner environment inside the oven  
- Glass-impregnated Teflon® bearings extend the life of the rollers and allow for longer maintenance free service  
- Digital temperature controller that can be read directly from outside the oven  
- Temperature is controlled by an electronic solid state thermostat and operates between 100°F and 450°F (38° - 232.2°C)

Specifications
- Rollers: 3  
- Roller Speed: 25 RPM  
- Maximum temperature: 450°F (232°C)  
- Heaters: 150 Watt  
- Capacity (Aging Cells Sold Separately):  
  - 260 mL Aging Cells: 2  
  - 500 mL Aging Cells: 2

Requirements
- 115 Volt at 2.5 Amp or 230 Volt at 1.5 Amp, 50 / 60 Hz

Components
#165-14-8  Type J Thermocouple  
#170-05  Thermostat  
#172-02-2  Chain, 12.5”, Qty: 2  
#172-02-3  Chain, 18.5”, Qty: 1  
#172-03  Sprocket, Qty: 6  
#172-04  Connecting Link for Chain, Qty: 5  
#172-08  Bearing, Qty: 6  
#172-14  On/Off Toggle Switch  
#172-20  Heater, 150 Watt  
#172-24  Solid State Relay  
#174-03  Electronic Controller  
#174-13  Motor  
#174-14  Motor Controller

115 Volt
#152-37  Power Cable  
#172-07  Fuse, 5 Amp

230 Volt
#152-38  Power Cable  
#172-05  Fuse, 2 Amp
GRAVITY CONVECTION DRYING OVEN

#174-50  115 VOLT
#174-50-1  230 VOLT

Size:  29” × 34” × 25.2” (74 × 87 × 64 cm)
Weight:  160 lb (72.5 kg)

Shipping Size:  32” × 42” × 32” (83 × 106 × 80 cm)
Shipping Weight:  227 lb (103 kg)

Features
• Natural air circulation
• Digital timer
• Digital display
• Multiple over-temperature protection
• Stainless steel interior and exterior
• Volume: 3.8 ft³ (108 L)
• Maximum Temperature: 300°C (572°F)

#174-50 - Gravity Convection Oven

ACCESSORIES FOR ROLLER OVENS

Electronics
#173-04  Redundant Heat Control for 4 and 5 Roll Ovens
#174-03  Electronic Controller for Portable Oven

Chain Drive
#172-02-1  Chain for High Temperature Roller Oven
#172-02-2  Chain, 12.5” for 4 and 5 Roller and Portable Oven
#172-02-3  Chain, 18.5”, for Portable Oven
#172-02-4  Chain, 40.5”, for 4 and 5 Roller Oven
#172-03  Sprocket for 4 and 5 Roller and Portable Ovens, ½” Bore
#172-03-1  Sprocket for High Temperature Oven, ½” Bore
#172-04  Connecting Link for Chain, for 4 and 5 Roller and Portable Ovens
#172-04-1  Connecting Link for Chain, for High Temperature Roller Oven
#172-06  Half Link for Chain, for 4 and 5 Roller and Portable Ovens
#172-08  Bearing for Rollers, Glass Impregnated Teflon®, for 4 and 5 Roller and Portable Ovens
#172-08-1  Bearing for Rollers, Carbon, for High Temperature Roller Oven

Fan
#172-25  Motor for Circulating Fan, for 4 and 5 Roller and Portable Ovens
#172-25-1  Motor for Circulating Fan, for High Temperature Roller Oven
#172-26  Shaft Extension for Fan Motor, for 4 and 5 Roller and Portable Ovens
#172-26-1  Shaft Extension for Fan Motor, for High Temperature Roller Oven
#172-27  Shroud for Fan Motor, for 4 and 5 Roller and Portable Ovens
#172-27-2  Shroud for Fan Motor, for High Temperature Roller Oven
#172-28  Motor Bracket for Circulating Fan, for 4 and 5 Roller and Portable Ovens
#172-28-1  Motor Bracket for Circulating Fan, for High Temperature Roller Oven
#174-07-1  Fan Blade, 5”, for 4 and 5 Roller and Portable Ovens

Fuses
#172-01  For Instruments, ½ Amp
#172-05  For Motor, 2 Amp, 230 Volt
#172-07  For Motor, 5 Amp, 115 Volt
#172-09  For Heater, 10 Amp, Standard Temperature Ovens
#120-76-002  For Heater, 15 Amp, High Temperature Ovens
#165-14-10  For Circulating Fan, 1 Amp

Lamp
#165-45  Neon, Red
#165-45-1  Neon, Clear

Heater
#172-20  150 Watt, for Portable Oven
#172-22  350 Watt, for 4 Roller Oven
#172-23  500 Watt, for 5 Roller Oven
#172-23-1  750 Watt, for High Temperature Oven

Spare Parts
#172-00-SP  Spare Parts Kit for 4 Roller Oven, 115 Volt
#172-00-1-SP  Spare Parts Kit for 4 Roller Oven, 230 Volt
#173-00-SP  Spare Parts Kit for 5 Roller Oven
#176-00-SP  Spare Parts Kit for High Temperature Oven
Drilling Fluids - Aging

AGING CELL, HIGH TEMPERATURE
#175-80 1,000 ML

Size: 14.5" Tall × 4" Diameter (37 × 10 cm)
Weight: 18.4 lb (8.3 kg)

The High Temperature Aging Cell is a pressure vessel that enables samples to be subjected to temperatures higher than the boiling point of water (up to 600°F / 315.6°C) and still be maintained in a liquid state. The cells may be used for static temperature exposure or in a dynamic mode in a roller oven (sold separately).

Specifications
• Maximum Temperature: 600°F (315°C)
• Maximum Pressure: 2,000 PSI (13.8 MPa)
• Material: 316 Stainless Steel (other materials available)

Components
• #170-17 O-ring for Valve Stem, Viton®
• #175-16 Valve Stem
• #175-46 O-ring for Outside of Cell, Teflon®, Qty: 2
• #175-80-010 Cell Body, 1 Liter
• #175-80-002 Outer Cap
• #175-80-003 Thrust Ring
• #175-80-004 Tension Post
• #175-80-005 Tension Ring
• #175-80-006 Seal Ring
• #175-80-007 Thrust Washer
• #175-80-008 Set Screw
• #175-15 Allen Wrench

Optional
• #175-46 O-ring for Outside of Cell, Teflon® (Above 400°F)
• #175-47 O-ring for Outside of Cell, Viton® (Up to 400°F)
• #175-54 O-ring for Outside of Cell, Buna-N (Below 200°F)
• #175-80-015 Torque Wrench for Set Screw
• #175-80-016 Socket, Hex Bit

Patent Pending
Drilling Fluids - Aging

High Temperature Aging Cell

- Outer Cap (#175-80-002)
- Tension Ring (#175-80-005)
- Thrust Washer (#175-80-007)
- Thrust Ring (#175-80-003)
- Seal Ring (#175-80-006)
- Tension Post (#175-80-004)
- Set Screw (#175-80-008)
- Cell Body (#175-80-010)
## Drilling Fluids - Aging

### AGING CELL, OFITE STYLE, 500 ML

<table>
<thead>
<tr>
<th>Part Code</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>#175-30</td>
<td>303 STAINLESS STEEL</td>
</tr>
<tr>
<td>#175-50</td>
<td>316 STAINLESS STEEL</td>
</tr>
<tr>
<td>#175-30-H</td>
<td>C-276 HASTELLOY®</td>
</tr>
</tbody>
</table>

**Size:** 4” × 4” × 8” (10 × 10 × 20 cm)
**Weight:** 11 lb 3 oz (5.1 kg)

### Components

- #170-17: O-ring for Valve Stem, Viton®
- #175-05: Thrust Washer
- #175-09-1: O-ring for Inside of Cell, Teflon®
- #175-09-2: O-ring for Inside of Cell, Viton®
- #175-14: Set Screw, ⅜”
- #175-15: Wrench for ¾” Set Screw
- #175-16: Valve Stem, 2”
- #175-47: O-ring for Outside of Cell, Viton® 90

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### AGING CELL, OLD STYLE WITH GASKET IN LID, 500 ML

<table>
<thead>
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<th>Part Code</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>#175-70</td>
<td>316 STAINLESS STEEL</td>
</tr>
<tr>
<td>#175-70-H</td>
<td>C-276 HASTELLOY®</td>
</tr>
</tbody>
</table>

**Size:** 4” × 4” × 8” (10 × 10 × 20 cm)
**Weight:** 11 lb 3 oz (5.1 kg)

### Components

- #170-17: O-ring for Valve Stem, Viton®
- #175-04: Gasket for Inner Cap, Teflon®
- #175-05: Thrust Washer
- #175-14: Set Screw, ⅜”
- #175-15: Wrench for ¾” Set Screw
- #175-16: Valve Stem, 2”
- #175-47: O-ring for Outside of Cell, Viton® 90

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### AGING CELL, OFITE STYLE, 260 ML

<table>
<thead>
<tr>
<th>Part Code</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>#175-25</td>
<td>303 STAINLESS STEEL</td>
</tr>
<tr>
<td>#175-25-03</td>
<td>316 STAINLESS STEEL</td>
</tr>
<tr>
<td>#175-25-H</td>
<td>C-276 HASTELLOY®</td>
</tr>
</tbody>
</table>

**Size:** 4” × 4” × 5” (10 × 10 × 13 cm)
**Weight:** 8 lb 2 oz (3.7 kg)

### Components

- #170-17: O-ring for Valve Stem, Viton®
- #175-05: Thrust Washer
- #175-09-1: O-ring for Inside of Aging Cell, Teflon®
- #175-09-2: O-ring for Inside of Aging Cell, Viton®
- #175-14: Set Screw, ⅜”
- #175-15: Wrench for ¾” Set Screw
- #175-16: Valve Stem, 2”
- #175-47: O-ring for Outside of Aging Cell, Viton® 90

### Optional

- #170-04: CO₂ Pressuring Assembly
- #171-24: Dual Nitrogen Manifold
- #175-30-SP: Spare Parts Kit for OFITE Style Aging Cell
- #175-70-SP: Spare Parts Kit for Old Style Aging Cell
Drilling Fluids - Aging

### SHEAROMETER TUBE WITH WEIGHT SUPPORT

**#166-10**

**Size:** 1.5” × 3.5” × 1.5” (4 × 9 × 4 cm)

**Weight:** .7 oz (20 g)

This 20 gram shearometer tube with weight support is used for testing heavier muds and is specifically designed for testing high gel strength drilling fluids. It is common for 10 minute gels to reach 35 lb / 100 ft². Drilling conditions and economics will determine the need to reduce gel strengths.

**Features**
- Designed to test heavier muds and high gel strength drilling fluids
- 20 gram tube with weight support

**Optional**

<table>
<thead>
<tr>
<th>Weight Set, 10 mg - 50 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>#166-02</td>
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</table>

**PARTS AND ACCESSORIES FOR AGING CELLS**

**Liner, Teflon®**

<table>
<thead>
<tr>
<th>#175-60</th>
<th>Teflon® Liner for 500 mL Aging Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>#175-60-6</td>
<td>Teflon® Liner for 260 mL Aging Cell</td>
</tr>
</tbody>
</table>

**O-rings and Gaskets**

<table>
<thead>
<tr>
<th>#175-03</th>
<th>Gasket for Inside of Aging Cell, Peek</th>
</tr>
</thead>
<tbody>
<tr>
<td>#175-04</td>
<td>Gasket for Inner Cap, Teflon® (Old Style)</td>
</tr>
<tr>
<td>#175-09</td>
<td>O-ring for Inside of Cell, Viton® (OFITE Style)</td>
</tr>
<tr>
<td>#175-09-1</td>
<td>O-ring for Inside of Cell, Teflon® (OFITE Style)</td>
</tr>
<tr>
<td>#175-09-2</td>
<td>O-ring for Inside of Cell, Viton® 90D (OFITE Style)</td>
</tr>
<tr>
<td>#175-46</td>
<td>O-ring for Outside of Cell, Teflon®</td>
</tr>
<tr>
<td>#175-47</td>
<td>O-ring for Outside of Cell, Viton®</td>
</tr>
<tr>
<td>#175-54</td>
<td>O-ring for Outside of Cell, Buna-N</td>
</tr>
<tr>
<td>#170-17</td>
<td>O-ring for Valve Stem, Viton®</td>
</tr>
</tbody>
</table>

**Pressuring Assemblies**

<table>
<thead>
<tr>
<th>#171-31</th>
<th>High Pressure Nitrogen Assembly with Tank</th>
</tr>
</thead>
<tbody>
<tr>
<td>#171-31-2</td>
<td>High Pressure Nitrogen Assembly without Tank</td>
</tr>
</tbody>
</table>

**Rupture Disk ¼”**

<table>
<thead>
<tr>
<th>#175-56</th>
<th>2,000 PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>#175-57</td>
<td>1,500 PSI</td>
</tr>
</tbody>
</table>

**Set Screws and Wrenches**

<table>
<thead>
<tr>
<th>#175-14</th>
<th>Set Screw, ¼”</th>
</tr>
</thead>
<tbody>
<tr>
<td>#175-15</td>
<td>Wrench for ¼” Set Screw</td>
</tr>
</tbody>
</table>

**Valve Stem**

<table>
<thead>
<tr>
<th>#175-16</th>
<th>Valve Stem, 2”</th>
</tr>
</thead>
</table>

**Spare Parts Kits**

<table>
<thead>
<tr>
<th>#175-30-SP</th>
<th>Spare Part Kit for OFITE Style Aging Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>#175-70-SP</td>
<td>Spare Part Kit for Old Style Aging Cell</td>
</tr>
</tbody>
</table>

*Image: #166-10 - Shearometer Tube with Weight Support*
Corrosion is the destruction of a metal by a chemical or electrochemical reaction within its environment. It is a costly and severe problem in the drilling industry. Because tubular goods are mostly iron and most drilling fluids are water-based, corrosion is inevitable. To aid in providing corrosion protection, special chemicals may be added to the fluid system.

Pre-weighed corrosion rings are the most effective way of measuring the corrosivity of the drilling fluid and the benefits of any treatment. Corrosion rings, made from grade AISI 4130 cold drawn seamless mechanical tubing similar to drill pipe, are sized to fit into the relief groove in the tool joint box. After exposure in the system, the rings are retrieved, cleaned, and re-weighed. The weight loss is attributed to corrosion and is then calculated. Rings may be returned to OFITE for weighing and analysis.

Corrosion coupons (flat and rod shaped) are mounted on the appropriate coupon holder and usually placed inside an aging cell, but sometimes directly in the flow line at the rig site. Testing is based upon the same principles as the corrosion rings. A simple formula gives a corrosion rate per year. Corrosion coupons are made from cold rolled steel.

**Features**
- Pre-weighed by OFITE
- Rings are made from AISI 4130 cold drawn seamless mechanical tubing similar to drill pipe
- Coupons are made from cold rolled steel
- Rings are sized to fit in the relief groove in the tool joint box
- Coupons (flat and rod shaped) can be mounted inside a Corrosion Test Cell (#175-40)

**Corrosion Rings**

<table>
<thead>
<tr>
<th>Part #</th>
<th>Drill Pipe Size and Type</th>
<th>K-Factor</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>180-14</td>
<td>2 ¾” Internal Flush and 3 ½” Slim Hole</td>
<td>394</td>
<td>2.425” OD 2.125” ID</td>
</tr>
<tr>
<td>180-16</td>
<td>3 ½” X-Hole and 3 ¾” Full Hole</td>
<td>357</td>
<td>2.685” OD 2.405” ID</td>
</tr>
<tr>
<td>180-18</td>
<td>3 ¾” Internal Flush and 3 ¾” Full Hole</td>
<td>337</td>
<td>2.965” OD 2.435” ID</td>
</tr>
<tr>
<td>180-20</td>
<td>4” Full Hole</td>
<td>256</td>
<td>3.156” OD 2.820” ID</td>
</tr>
<tr>
<td>180-22</td>
<td>4” Internal Flush and 4 ½” X-Hole</td>
<td>250</td>
<td>3.703” OD 3.227” ID</td>
</tr>
<tr>
<td>180-24</td>
<td>4 ½” Full Hole and 4 ½” X-Hole and 4” Internal Flush</td>
<td>207</td>
<td>3.500” OD 3.000” ID</td>
</tr>
<tr>
<td>180-26</td>
<td>4 ¾” Internal Flush and 5” X-Hole</td>
<td>253</td>
<td>4.185” OD 3.749” ID</td>
</tr>
<tr>
<td>180-28</td>
<td>5 ⅞”, 5 ⅞” API Regular or Full Hole and 6 ¼” API Regular</td>
<td>134</td>
<td>4.590” OD 4.004” ID</td>
</tr>
<tr>
<td>180-30</td>
<td>4 ⅞” X-Hole</td>
<td>184</td>
<td>3.805” OD 3.399” ID</td>
</tr>
<tr>
<td>180-32</td>
<td>5” X-Hole Tool Joint</td>
<td>179.12</td>
<td>4.185” OD 3.745” ID</td>
</tr>
</tbody>
</table>

**Corrosion Test Cell with Coupon Holder, 500 ML**

| #175-40 | 303 Stainless Steel |
| #175-40-1 | 316 Stainless Steel |
| #175-40-H | C-276 Hastelloy® |

Size: 4” x 4” x 8” (10 x 10 x 20 cm)
Weight: 11 lb 3 oz (5.1 kg)

**Components**
- #180-04 Grommets for Coupon Holder, Teflon®, Pack of 10

**Optional**
- #175-40-SP Spare Parts Kit
Drilling Fluids - Corrosion Testing

TEFLON® LINER FOR AGING CELLS

#175-60 FOR 500 ML AGING CELLS
#175-60-6 FOR 260 ML AGING CELLS

Testing highly corrosive fluids at high temperatures and pressures can cause significant, permanent damage to typical stainless steel aging cells. The Teflon® Liner is designed to prevent corrosive damage while still providing the same results as a standard aging cell.

The Teflon® Liner consists of a chamber for the test fluid and a floating piston that pressurizes the sample fluid when the aging cell is pressurized. Included is a T-screw that attaches to a hole in the piston and facilitates removal. A plug seals the hole in the piston during a test to prevent leakage.

Note: Not for use with the Corrosion Test Cell with Coupon Holder (#175-40).

Components

#175-60-1 Chamber for 500 mL Aging Cells
#175-60-5 Chamber for 260 mL Aging Cells
#175-60-2-1 Piston, Teflon®, Solid
#175-60-3 Plug, Teflon®
#175-60-4 T-Screw
#175-62 O-ring for Plug, Viton®
#175-63 O-ring for Lid (Piston), Viton®

Optional

#175-60-SP Spare Parts Kit

HTHP CORROSION TESTER

#120-700

Size: 25" x 16" x 26" (64 x 41 x 66 cm)
Weight: 215 lb (97.6 kg)

Shipping Size: 42" x 30" x 41" (107 x 76 x 104 cm)
Shipping Weight: 500 lb (226.8 kg)

The HTHP Corrosion Tester is designed to perform corrosion tests under elevated temperature and pressure. The device is capable of heating the sample up to 400°F (204.4°C) and applying up to 5,000 PSI (34.5 MPa). Four samples can be tested simultaneously. All wetted components are made of corrosion-resistant Stainless Steel.

Four corrosion coupons are thoroughly cleaned and weighed before the test begins. The acid solution and corrosion inhibitor are mixed and poured into each of the four sample bottles. A corrosion coupon is added to each sample and all four bottles are placed into the test cell. Pressure and temperature are applied, and the motor agitates the samples throughout the test. After the test, the coupons are cleaned and weighed again. The mass loss during testing is used to calculate the corrosive properties of the acid.

Features

- Perform corrosion tests under elevated temperature and pressure
- Test 4 specimens simultaneously
- Maximum Temperature: 400°F (204.4°C)
- Maximum Pressure, 5,000 PSI (34.5 MPa)
- All wetted components are made of 316 stainless steel
- Power Requirements 230 Volt, 6 Amp, 50 / 60 Hz

Components

#120-001 Mineral Oil, 1 Gallon
#120-90-008 Breaker, 15 Amp, 2 Pole
#120-700-011 Pressure Release Valve
#120-700-012 Air to Cylinder Valve
#120-700-016 Thermocouple Assembly
#120-700-018-1 O-ring, Viton®
#120-700-020 Sample Jar
#120-700-021 Lid for Sample Jar
#120-700-023-1 Heater
#122-052 Rupture Disk, 5500 PSI (37.9 MPa)

Optional

#120-700-1 Spare Parts Kit
Drilling Fluids - Mud Testing Kits

INTERNATIONAL KIT
#162-00 115 VOLT
#162-00-1 230 VOLT

Size: 36.5" × 25" × 25" (93 × 64 × 64 cm)
Weight: 225 lb (102.2 kg)

Designed for long distance shipping, the International Test Kit is enclosed inside a portable case with reinforced handles and latches. It includes all the equipment necessary to test density, viscosity, filtration, oil/water content, pH, and chemical analysis. Glassware, reagents, and common spare parts for all assembled items have also been included.

Density
#115-00 Mud Balance, Metal
#115-06 Lid for Metal Mud Balance, Stainless Steel

Viscosity
#110-10 Marsh Funnel Viscometer, Plastic
#110-20 Measuring Cup, 1,000 mL, Plastic
#130-10 Model 800, 8-Speed Viscometer
#130-20 Cup Heater, (115 Volt Only)
#130-30 Cup Heater, (230 Volt Only)
#130-31 Thermostat for Cup Heaters

Filtration
#140-30 API Filter Press with CO₂ Pressure Assembly
#140-55 Filter Paper, Whatman #50, 3.5" (9.0 cm), Box of 100
#141-04 Screen, 60 Mesh
#143-02-11 Puncture Pin Holder Assembly
#143-02-13 O-ring for Puncture Pin Holder Assembly
#143-05 ‘CO₂ Bulbs, Box of 10, UN2037
#170-00 Filter Press, HTHP, 175 mL, CO₂ (115 Volt)
#170-01 Filter Press, HTHP, 175 mL, CO₂ (230 Volt)
#170-10 Thermostat Pilot Light
#170-13-1 O-ring for Test Cell, Viton®
#170-16 Valve Stem
#170-17 O-ring for Valve Stem

Portable Drilling Fluids Test Kit
#161-00 Offshore Kit with Stainless Steel Case

Retort
#165-00 Retort, 10 mL, Removable, (115 Volt)
#165-10 Retort, 10 mL, Removable, (230 Volt)
#165-34 Spatula
#165-35 Heating Element, 350 W (115 Volt)
#165-36 Heating Element, 350 W (230 Volt)
#165-41 Corkscrew
#165-42 Steel Wool, Grade 000 Extra Fine, Pack of 4 Pads
#165-43 Pipe Cleaner
#165-44-2 Anti Seize Compound, Silver, 7g Pouch

pH Testing
#147-01 pH Meter with Probe and Case, Digital, Portable
#147-20 Buffer Solution, 4 pH, 16 oz
#147-30 Buffer Solution, 7 pH, 16 oz
#147-40 Buffer Solution, 10 pH, 16 oz
#147-44 High pH Indicator Solution, 8 oz

Supplies
#130-74 Transformer, 230 to 115 Volts, 1.10 Amps, 50 / 60 Hz (230 Volt)
#152-38 AC Power Cord, (230 Volt Only)

May require special handling for shipping.

#153-14 Graduated Cylinder, 50 mL × 1 mL, Glass
#153-14-1 Case for 50 mL Graduated Cylinder, Polycarbonate
#153-16 Graduated Cylinder, 25 mL × .2 mL, Glass
#153-16-1 Case for 25 mL Graduated Cylinder, Polycarbonate
#153-20 Graduated Cylinder, 5 mL × .1 mL, Glass
#153-21 Centrifuge Tube, Kolmer®, 10-mL
#153-25-2 Centrifuge for 15 mL Tubes, Hand Crank, 4-Place
#153-29 Syringe, 2 CC, Glass Tip
#153-34 Pipette, 1 mL × .01 mL, Glass
#153-35 Pipette, 5 mL × .1 mL, Glass
#153-39 Case for 10 mL Pipette, Polycarbonate
#153-40 Pipette, 10 mL × .1 mL, Glass
#153-50 Erlenmeyer Flask, 250 mL
#155-10 Timer, 30 Minute Interval
#162-05 Electric Outlet Strip, 6 Outlets
#162-77 Sample Bottle, 4 oz, Polypropylene
#163-20 Mixer for Mud Cup
#166-03 Balance, Hand Held, 0 - 320 g × 0.1 g
#166-01 Hot Plate with Thermostat (115 Volt)
#166-01-1 Hot Plate with Thermostat (230 Volt)
#168-04 Stirring Rod, 6" (15.2 cm), Glass
#200-01 Methylene Blue Solution, 1 mL - 0.01 ME, 8 oz (250 mL)
#200-11 Hydrogen Peroxide, 3%, 8 oz (250 mL)
#206-01 Deionized Water, 8 oz (250 mL)
#230-13 'Sulfuric Acid, 5 N, 8 oz (250 mL) UN2796
#280-00 Wetting Agent, 1 oz (30 mL)
#285-10 'Sodium Perchlorate Solution, 16 oz (500 mL) UN3139
#285-11 Potassium Chloride Solution, 4 oz (120 mL)
#162-01-1 Case, Molded Plastic
#162-03 Padlock

Optional
#162-00-LH International Kit Without HAZMAT Items, 115 Volt
#162-00-1-LH International Kit Without HAZMAT Items, 230 Volt
Drilling Fluids - Mud Testing Kits

METEOR KIT

#162-70  115 VOLT
#162-70-1  230 VOLT

Size:  33.5“ × 21“ × 18“ (85 × 53 × 46 cm)
Weight:  114 lb (51.8 kg)

The Mud Engineer’s Testing Equipment on Rollers (METEOR) Kit contains all the equipment you’ll need to conduct tests on water and oil-based muds (with the optional ES Meter) - all in one waterproof, portable case! In addition to the standard mud balance, marsh funnel, and cup, the METEOR Kit includes an 8-Speed Viscometer, an HTHP Filter Press, a Full Area Filter Press, a pH meter, a retort, and a Methylene Blue Test (MBT) Kit, with ample room for regulators, supplies, and extra chemicals. The rugged, plastic case is built according to military specs, enabling it to withstand the harshest of conditions, while protecting your equipment.

Viscosity

#110-10  Marsh Funnel Viscometer, Plastic
#110-20  Measuring Cup, 1,000 mL, Plastic
#130-10  Model 800, 8-Speed Viscometer
#130-38-30  Thermocup with Removable Cup (115 Volt)
#130-38-35  Thermocup with Removable Cup (230 Volt)

Density

#115-00  Mud Balance with Case, 4-Scale, Machined Arm

Filtration

#142-53  Filter Press, API, Model MB
#170-00  Filter Press, HTHP (115 Volt)
#170-01  Filter Press, HTHP (230 Volt)

Retort

#165-00  Retort, 10 mL, Removable, (115 Volt)
#165-10  Retort, 10 mL, Removable, (230 Volt)
#165-05  Receiver Tube for 10 mL Retort
#165-08  Case for Retort Receiver Tubes, Polycarbonate
#165-14-13  T-handle Drill
#165-34  Spatula
#165-41  Corkscrew

Sand Content

#167-10  Sieve, 200 Mesh
#167-20  Funnel
#167-30  Tube

Filtrate Analysis

#162-74  Filtrate Analysis Kit (115 Volt)
#162-74-2  Filtrate Analysis Kit (230 Volt)
For components, see page 129.

Optional

#131-50  Emulsion Stability (ES) Tester
#153-25-2  Centrifuge for 15 mL Tubes, Hand Crank, 4 Place Head and Shields
#153-51-2  Beaker, 600 mL, Glass
#162-70-LH  METEOR Kit Without HAZMAT Items, 115 Volt
#162-70-1-LH  METEOR Kit Without HAZMAT Items, 230 Volt
#163-20  Mixer for Mud Cup, 115 Volt

Case

#162-72  Case with Rollers and Foam Insert, Waterproof, Plastic
#162-72-4  Velcro Strip

May require special handling for shipping.

**OIL MUD LABORATORY**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#162-60</td>
<td>115 VOLT</td>
<td></td>
</tr>
<tr>
<td>#162-60-1</td>
<td>230 VOLT</td>
<td></td>
</tr>
</tbody>
</table>

**Size:** 26” × 13” × 10” (66 × 33 × 25 cm)  
**Weight:** 68 lb (30.9 kg)

The Oil Mud Laboratory retort analysis is a standard guide for controlling the oil/water ratio, which influences the viscosity and filtration of the oil mud. Labware and reagents are included for deemulsification and for the determination of the aniline point, alkalinity, calcium, and chloride content. Everything is housed in a convenient stainless steel cabinet with lots of storage space and shelving.

**Emulsion Stability**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#131-50</td>
<td>Emulsion Stability (ES) Tester</td>
</tr>
</tbody>
</table>

**Retort**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#165-00</td>
<td>Retort, 10 mL, Removable, (115 Volt)</td>
<td></td>
</tr>
<tr>
<td>#165-10</td>
<td>Retort, 10 mL, Removable, (230 Volt)</td>
<td></td>
</tr>
<tr>
<td>#165-05</td>
<td>Receiver Tube with Certificate, 10 mL, 2 Scales: 0 - 100% x 0.1%, 0 - 10 mL x 0.1 mL</td>
<td></td>
</tr>
<tr>
<td>#165-34</td>
<td>Spatula for 10 mL Retort</td>
<td></td>
</tr>
<tr>
<td>#165-41</td>
<td>Corkscrew</td>
<td></td>
</tr>
<tr>
<td>#165-42</td>
<td>Steel Wool, Grade 000 Extra Fine, Pack of 4 Pads</td>
<td></td>
</tr>
<tr>
<td>#165-43</td>
<td>Pipe Cleaner</td>
<td></td>
</tr>
<tr>
<td>#165-44-2</td>
<td>Anti Seize Compound, Silver, 7g Pouch</td>
<td></td>
</tr>
</tbody>
</table>

**Viscosity**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#130-10</td>
<td>Model 800, 8-Speed Viscometer</td>
<td></td>
</tr>
<tr>
<td>#130-38-30</td>
<td>Thermocup with Removable Cup (115 Volt)</td>
<td></td>
</tr>
<tr>
<td>#130-38-35</td>
<td>Thermocup with Removable Cup (230 Volt)</td>
<td></td>
</tr>
</tbody>
</table>

**Sand Content**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#167-10</td>
<td>Sieve, 200-Mesh</td>
</tr>
<tr>
<td>#167-20</td>
<td>Funnel</td>
</tr>
<tr>
<td>#167-30</td>
<td>Tube</td>
</tr>
</tbody>
</table>

**Supplies**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#110-30</td>
<td>Measuring Cup, 500 mL, Stainless Steel</td>
<td></td>
</tr>
<tr>
<td>#145-83</td>
<td>Utility Clamp</td>
<td></td>
</tr>
<tr>
<td>#152-48</td>
<td>Stirring Hot Plate (115 Volt)</td>
<td></td>
</tr>
<tr>
<td>#152-49</td>
<td>Stirring Hot Plate (230 Volt)</td>
<td></td>
</tr>
<tr>
<td>#152-48-1</td>
<td>Support Rod for Stirrer, ¾” × 12”</td>
<td></td>
</tr>
<tr>
<td>#153-03</td>
<td>Brush for Graduated Cylinder, ¾” × 8”</td>
<td></td>
</tr>
<tr>
<td>#153-06</td>
<td>Brush for 10 mL Receiver Tube</td>
<td></td>
</tr>
<tr>
<td>#153-15-1</td>
<td>Test Tube, 20 × 1.2 × 150 mm, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-15-2</td>
<td>Test Tube, 41 × 2.0 × 150 mm, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-16</td>
<td>Graduated Cylinder, 25 mL × .2 mL, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-18</td>
<td>Graduated Cylinder, 10 mL × .2 mL, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-29</td>
<td>Syringe, 2 mL, Glass-Tip</td>
<td></td>
</tr>
<tr>
<td>#153-29-2</td>
<td>Syringe, 10 mL, Glass-Tip</td>
<td></td>
</tr>
<tr>
<td>#153-31-1</td>
<td>Wash Bottle, 250 mL</td>
<td></td>
</tr>
<tr>
<td>#153-34</td>
<td>Pipette, 1 mL × .01 mL, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-38</td>
<td>Pipette, 5 mL × .1 mL, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-40</td>
<td>Pipette, 10 mL × .1 mL, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-42</td>
<td>Pipette Filler, Rapid Release, 10 mL</td>
<td></td>
</tr>
<tr>
<td>#153-51-2</td>
<td>Beaker, 600 mL, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-51-3</td>
<td>Beaker, 50 mL, Glass</td>
<td></td>
</tr>
<tr>
<td>#153-53-1</td>
<td>Stir Bar, 1” × ¾”</td>
<td></td>
</tr>
<tr>
<td>#153-53-11</td>
<td>Stir Bar, ½” × ¾”</td>
<td></td>
</tr>
<tr>
<td>#153-88</td>
<td>Cork for Thermometer, Size 8</td>
<td></td>
</tr>
<tr>
<td>#153-89</td>
<td>Cork for Test Tubes, Size 20</td>
<td></td>
</tr>
<tr>
<td>#154-26</td>
<td>Thermometer, Aniline Point, 77 - 221°F</td>
<td></td>
</tr>
<tr>
<td>#154-50</td>
<td>Spatula, 4”</td>
<td></td>
</tr>
<tr>
<td>#166-03</td>
<td>Balance, Hand-Held, 0 - 320 g</td>
<td></td>
</tr>
<tr>
<td>#165-62</td>
<td>Filter for Syringe, 25 mm, 0.45 µm, PTFE</td>
<td></td>
</tr>
</tbody>
</table>

**Reagents**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#130-78-25</td>
<td>Heating Bath Oil, 16 oz (500 mL)</td>
<td></td>
</tr>
<tr>
<td>#131-16</td>
<td>Aerosol Solution, ½ oz (15 mL)</td>
<td></td>
</tr>
<tr>
<td>#145-84</td>
<td>’Aniline Solution, 8 oz (250 mL) UN1547</td>
<td></td>
</tr>
<tr>
<td>#205-14-4</td>
<td>’Calcium Buffer Solution, 16 oz (500 mL) UN1824</td>
<td></td>
</tr>
<tr>
<td>#205-17-2</td>
<td>Titration Solution (EDTA), 4.000 mg/L, 8 oz (250 mL)</td>
<td></td>
</tr>
<tr>
<td>#206-01</td>
<td>Deionized Water, 8 oz (250 mL)</td>
<td></td>
</tr>
<tr>
<td>#210-00-1</td>
<td>CalVer® 2 Indicator Powder, 100 gram</td>
<td></td>
</tr>
<tr>
<td>#215-00</td>
<td>Potassium Chromate Solution, 2 oz (60 mL)</td>
<td></td>
</tr>
<tr>
<td>#215-02</td>
<td>Potassium Chromate Solution, 8 oz (250 mL)</td>
<td></td>
</tr>
<tr>
<td>#220-00</td>
<td>Phenolphthalein Indicator Solution, 2 oz (60 mL)</td>
<td></td>
</tr>
<tr>
<td>#220-01</td>
<td>Phenolphthalein Indicator Solution, 8 oz (250 mL)</td>
<td></td>
</tr>
<tr>
<td>#230-10</td>
<td>Sulfuric Acid, 0.1 N, 8 oz (250 mL)</td>
<td></td>
</tr>
<tr>
<td>#265-08</td>
<td>Silver Nitrate Solution, 0.01 g, 16 oz (500 mL)</td>
<td></td>
</tr>
<tr>
<td>#280-30</td>
<td>’Arcosolv® PN, 1 Gal (3.785 L) UN1993</td>
<td></td>
</tr>
<tr>
<td>#285-06</td>
<td>Calcium Sulfate, Anhydrous, 58 g</td>
<td></td>
</tr>
</tbody>
</table>

**Case**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#141-17</td>
<td>Clip for Graduated Cylinder</td>
<td></td>
</tr>
<tr>
<td>#162-61</td>
<td>Case, Stainless Steel</td>
<td></td>
</tr>
<tr>
<td>#163-26</td>
<td>Clip, Small</td>
<td></td>
</tr>
<tr>
<td>#163-27</td>
<td>Clip, Medium</td>
<td></td>
</tr>
<tr>
<td>#163-28</td>
<td>Clip, Large</td>
<td></td>
</tr>
</tbody>
</table>

**Optional**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#152-60</td>
<td>Blender with Glass Container, Waring, 115 Volt</td>
<td></td>
</tr>
<tr>
<td>#153-59-01</td>
<td>Hydrometer, Protimeter Hydromaster 2</td>
<td></td>
</tr>
<tr>
<td>#162-60-LH</td>
<td>Oil Mud Lab Without HAZMAT Items, 115 Volt</td>
<td></td>
</tr>
<tr>
<td>#162-60-1-LH</td>
<td>Oil Mud Lab Without HAZMAT Items, 230 Volt</td>
<td></td>
</tr>
<tr>
<td>#162-60-SP</td>
<td>Spare Parts Kit</td>
<td></td>
</tr>
</tbody>
</table>

* May require special handling for shipping.

---

**#162-60 - Oil Mud Laboratory**

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Drilling Fluids - Mud Testing Kits

AIRPLANE TEST KIT
#160-00
Size: 27” × 7” × 12.25” (69 × 18 × 31 cm)
Weight: 36 lb 4 oz (16.4 kg)

Components
- #147-50 pH Paper, pHydrion® Dispenser, pH 2-10, 1-11
- #147-60 pH Paper, pHydrion® Dispenser, pH 6-8, 8-9.5
- #147-70 pH Paper, pHydrion® Dispenser, pH 10-12, 12.5-14
- #153-03 Brush for Graduated Cylinder, ⅛” × 8”
- #153-04 Brush for Pipette, ⅛” × 3” Bristles, 24” Wire Length
- #153-18 Graduated Cylinder, 10 mL × .2 mL, Glass
- #153-20 Graduated Cylinder, 5 mL × .1 mL, Glass
- #153-26 Titration Dish, Polyethylene
- #153-28 Stirring Rod, Polyethylene
- #153-29 Syringe, 2 mL, Glass-Tip
- #153-30 Pipette, 1 mL × .01 mL, Glass
- #153-32 Pipette, 5 mL × .1 mL, Glass
- #153-40 Pipette, 10 mL × .1 mL, Glass
- #154-10 Thermometer with Metal Dial, 5” Stem, Dual-Scale: 50° - 500°F (0° - 250°C)
- #154-50 Spatula, 4” Blade
- #155-25 Stopwatch, Digital
- #163-20 Mixer for Mud Cup, 115 Volt
- #165-34 Spatula for 10 mL Retort
- #165-41 Corkscrew
- #165-42 Steel Wool, Grade 000 Extra Fine, Package of 4 Pads
- #165-43 Pipe Cleaner
- #165-44-2 Anti Seize Compound, Silver, 7g Pouch

Sand Content Analysis
- #167-10 Sieve, 200-Mesh
- #167-20 Funnel
- #167-30 Tube

Reagents
- #205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)
- #205-04 Versenate® Hardness Buffer Solution, 2 oz (60 mL) UN2672
- #205-08 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 4 oz (120 mL)
- #205-14 Versenate® Calcium Buffer Solution, 2 oz (60 mL) UN1824
- #205-15 Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 4 oz (120 mL)
- #206-00 Deionized Water, 4 oz (120 mL)
- #210-00 CalVer® 2 Indicator Powder, 10 g
- #215-00 Potassium Chromate Indicator Solution, 2 oz (60 mL)
- #220-00 Phenolphthalein Indicator Solution, 2 oz (60 mL)
- #230-16 Sulfuric Acid, 0.1 N, 4 oz (120 mL)
- #230-17 Sulfuric Acid, 0.02 N, 4 oz (120 mL)
- #240-00 Methyl Orange Indicator Solution, 2 oz (60 mL)
- #250-00 Calcium Indicator Solution, 2 oz (60 mL)
- #255-00 Sulfate Indicator Solution, 2 oz (60 mL) UN1789
- #260-00 Sodium Hydroxide, 0.1 N Solution, 2 oz (60 mL)
- #265-12 Silver Nitrate Solution, 0.001 g, .0282 N, 4 oz (120 mL)
- #265-13 Silver Nitrate Solution, 0.01 g, .0282 N, 4 oz (120 mL)
- #280-00 Wetting Agent, 1 oz

Note: CO₂ bulbs must be ordered separately.

#160-00 - Airplane Test Kit, Basic

AIRPLANE TEST KIT WITH RHEOMETER, FILTER PRESS, AND RETORT
#160-00-C 115 VOLT
#160-00-1-C 230 VOLT
Size: 27” × 7” × 12.25” (69 × 18 × 31 cm)
Weight: 56 lb (25.4 kg)

Components
- #130-74 Transformer, 230 to 115 Volts, 1.10 Amps, 50 / 60 Hz (230 Volt)
- #132-00 Rheometer, Hand Crank
- #140-60 Filter Press, Half-Area
- #160-00 Airplane Test Kit
- #165-00 Retort, 10 mL, Removable, (115 Volt)
- #165-10 Retort, 10 mL, Removable, (230 Volt)

Optional
- #143-05 CO₂ Bulbs, Box of 10, UN2037
- #160-00-LH Airplane Test Kit Without HAZMAT Items
- #160-00-SP Spare Parts Kit

#160-00 - Airplane Test Kit, Complete

* May require special handling for shipping.
OFFSHORE TEST KIT

#161-00

Size: 20.5" × 7.5" × 12" (52 × 19 × 31 cm)
Weight: 34 lb 7 oz (15.6 kg)

Components
#147-70 pH Paper, pHydron® Dispenser, pH 10 - 12, 12.5 - 14
#153-03 Brush for Graduated Cylinder, ⅛" × 8"
#153-18 Graduated Cylinder, 10 mL × .2 mL, Glass
#153-20 Graduated Cylinder, 5 mL × .1 mL, Glass
#153-26 Titration Dish, Polyethylene
#153-28 Stirring Rod, Polyethylene
#153-29 Syringe, 2 mL, Glass-Tip
#153-34 Pipette, 1 mL × .01 mL, Glass
#153-36 Pipette, 5 mL × .1 mL, Glass
#153-40 Pipette, 10 mL × .1 mL, Glass
#153-36 Syrup for 10 mL Retort
#153-41 Corkscrew
#153-42 Steel Wool, Grade 000 Extra Fine, Package of 4 Pads
#153-43 Pipe Cleaner
#153-44-2 Anti Seize Compound, Silver, 7g Pouch
#297-08 Bottle with Cap, Boston Round, Natural, 4 oz, Poly

Sand Content Analysis
#167-10 Sieve, 200-Mesh
#167-20 Funnel
#167-30 Tube

Reagents
#205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)
#205-04 Versenate® Hardness Buffer Solution, 2 oz (60 mL) UN2672
#205-08 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 4 oz (120 mL)
#205-15 Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 4 oz (120 mL)
#206-00 Deionized Water, 4 oz (120 mL)
#215-00 Potassium Chromate Indicator Solution, 2 oz (60 mL)
#220-00 Phenolphthalein Indicator Solution, 2 oz (60 mL)
#230-16 Sulfuric Acid, 0.1 N, 4 oz (120 mL)
#230-17 Sulfuric Acid, 0.02 N, 4 oz (120 mL)
#240-00 Methyl Orange Indicator Solution, 2 oz (60 mL)
#265-12 Silver Nitrate Solution, 0.001 g, .0282 N, 4 oz (120 mL)
#265-13 Silver Nitrate Solution, 0.01 g, .0282 N, 4 oz (120 mL)
#280-00 Wetting Agent, 1 oz

Case
#141-17 Clip for Graduated Cylinder
#161-02 Case, Stainless Steel
#163-26 Clip, Small
#163-27 Clip, Medium
#163-28 Clip, Large

Optional
#161-00-LH Offshore Test Kit Without HAZMAT Items
#161-00-SP Spare Parts Kit

* May require special handling for shipping.

OFFSHORE TEST KIT WITH RHEOMETER AND RETORT

#161-00-C 115 VOLT
#161-00-1-C 230 VOLT

Size: 20.5" × 7.5" × 12" (52 × 19 × 31 cm)
Weight: 50 lb (22.7 kg)

Components
#132-00 Rheometer, Hand Crank
#161-00 Offshore Test Kit
#165-00 Retort, 10 mL, Removable, (115 Volt)
#165-10 Retort, 10 mL, Removable, (230 Volt)
# Drilling Fluids - Mud Testing Kits

## FRONTIER KIT

**#161-25**

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>20.25” × 13.5” × 8.5” (51 × 34 × 22 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>48 lb (21.8 kg)</td>
</tr>
</tbody>
</table>

**Filter Press**

- #142-53 Filter Press with CO2 Assembly, Support Bracket, and Graduated Cylinder Holder, Model MB

**Retort**

- #165-34 Spatula, 2”
- #165-41 Corkscrew
- #165-42 Steel Wool, Grade 000 Extra Fine, Package of 4 Pads

**Sand Content Kit**

- #167-10 Sieve, 200-Mesh
- #167-20 Funnel
- #167-30 Tube

**Labware**

- #140-55 Filter Paper, Whatman #50, 3.5” (9 cm), Box of 100
- #147-50 pH Paper, Hydrion Dispenser, pH 2 - 10, 1 - 11
- #153-03 Graduate Brush, ¼” × 8”
- #153-18 Graduated Cylinder, TC, 10 mL × .2 mL, Glass
- #153-18-1 Graduated Cylinder, TD, 10 mL × .2 mL, Glass
- #153-26 Titration Dish, Polyethylene
- #153-28 Stirring Rod, 4”, Polyethylene
- #153-29 Syringe, 2 cc, Glass-Tip
- #153-31-1 Wash Bottle, 250 mL
- #153-34 Pipette, 1 mL × .01 mL, Glass
- #153-38 Pipette, 5 mL × .1 mL, Glass
- #153-40 Pipette, 10 mL × .1 mL, Glass
- #153-42 Pipette Filler, Fast Release, 10 mL
- #153-60 Syringe, Disposable, 3 cc
- #154-01 Thermometer with Metal Dial, 5” Stem, Dual-Scale: 0° - 220°F (-10° - 100°C)
- #162-77 Sample Bottle, 4 oz, Polypropylene
- #165-43 Pipe Cleaner
- #165-44-2 Anti Seize Compound, Silver, 7g Pouch

**Reagents**

- #205-02 Versenate® Hardness Indicator Solution, 2 oz
- #205-04 Versenate® Hardness Buffer Solution, 2 oz, UN2672
- #205-06-M-I Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 8 oz
- #205-10-M-I Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 8 oz
- #220-00 Phenolphthalein Solution, 2 oz
- #230-08-M-I Sulfuric Acid, N/50, 8 oz
- #230-10-M-I Sulfuric Acid, N/10, 8 oz
- #240-05 Bromocresol Green - Methyl Orange Indicator Solution, 2 oz
- #265-00-M-I Silver Nitrate Solution, .001 g, 0.0282 N, 8 oz
- #265-06-M-I Silver Nitrate Solution, .01 g, 0.282 N, 8 oz
- #280-00 Wetting Agent, 1 oz

**Case**

- #141-17 Clip for Graduated Cylinder
- #161-03 Case, Stainless Steel
- #163-26 Clip, Small
- #163-27 Clip, Medium
- #163-28 Clip, Large

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* May require special handling for shipping.

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## FRONTIER KIT WITH VISCOMETER AND RETORT

**#161-25-C 115 VOLT**

**#161-25-1-C 230 VOLT**

**Components**

- #161-25 Frontier Kit
- #130-10-L Model 800, 8-Speed Viscometer with Retractable Legs
- #165-00 Retort with Thermostat, Removable, 10 mL, 350 Watt (115 Volt Only)
- #165-10 Retort with Thermostat, Removable, 10 mL, 350 Watt (230 Volt Only)
- #152-38 AC Power Cord (230 Volt)

**Optional**

- #130-10-33 Cigarette Lighter Adapter Cable for Model 800
- #143-05 CO2 Bulbs, Box of 10, UN2037

Note: CO2 bulbs must be ordered separately.

---

#161-25-C Frontier Kit with Viscometer and Retort
## Drilling Fluids - Mud Testing Kits

### DRILLING FLUIDS TEST KIT (MES) #161-50

**Size:** 20.25” × 12.75” × 10” (51 × 32 × 25 cm)

**Weight:** 45 lb (20.4 kg)

### Components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#115-01</td>
<td>Mud Balance, Metal, 4-Scale</td>
</tr>
<tr>
<td>#165-14-13</td>
<td>T-Handle Drill for Retort Chamber Tube</td>
</tr>
<tr>
<td>#165-34</td>
<td>Spatula for Retort Kit, 2”</td>
</tr>
<tr>
<td>#165-41</td>
<td>Corkscrew</td>
</tr>
<tr>
<td>#165-42</td>
<td>Steel Wool, Grade 000 Extra Fine, Package of 4 Pads</td>
</tr>
<tr>
<td>#165-44-2</td>
<td>Anti Seize Compound, Silver, 7g Pouch</td>
</tr>
</tbody>
</table>

### Wall Mount Filter Press Components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#140-55</td>
<td>Filter Paper, Whatman #50, 3.5” (9 cm), Box of 100</td>
</tr>
<tr>
<td>#141-01</td>
<td>Base Cap for Filter Press</td>
</tr>
<tr>
<td>#141-04</td>
<td>Screen, 60-Mesh</td>
</tr>
<tr>
<td>#141-05</td>
<td>Gasket for Cell, ⅛”, Neoprene</td>
</tr>
<tr>
<td>#141-08-1</td>
<td>Frame, MES Design</td>
</tr>
<tr>
<td>#141-08-2</td>
<td>Mounting Bracket, MES Design</td>
</tr>
<tr>
<td>#141-08-3</td>
<td>Wall Mount Screw, MES Design</td>
</tr>
<tr>
<td>#141-09</td>
<td>Threaded Insert for T-Screw</td>
</tr>
<tr>
<td>#141-10</td>
<td>T-Screw for Filter Press</td>
</tr>
<tr>
<td>#141-16</td>
<td>Support for Graduated Cylinder</td>
</tr>
<tr>
<td>#141-17</td>
<td>Clip for Graduated Cylinder</td>
</tr>
<tr>
<td>#142-00</td>
<td>CO₂ Pressuring Assembly with Top Cap</td>
</tr>
<tr>
<td>#142-70</td>
<td>Cell Body, Half Height, Clear Acrylic</td>
</tr>
</tbody>
</table>

### Sand Content Analysis

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#167-10</td>
<td>Sieve, 200-Mesh</td>
</tr>
<tr>
<td>#167-20</td>
<td>Funnel</td>
</tr>
<tr>
<td>#167-30</td>
<td>Tube</td>
</tr>
</tbody>
</table>

### Labware

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#147-60</td>
<td>pH Paper, phHydron® Dispenser, pH 6-8, 8-9.5</td>
</tr>
<tr>
<td>#147-80</td>
<td>pH Paper, phHydron® Dispenser, pH 8-12</td>
</tr>
<tr>
<td>#153-03</td>
<td>Brush for Graduated Cylinder, ¼” × 8”</td>
</tr>
<tr>
<td>#153-16</td>
<td>Graduated Cylinder, 25 mL × 2 mL, Glass</td>
</tr>
<tr>
<td>#153-18</td>
<td>Graduated Cylinder, 10 mL × 2 mL, Glass</td>
</tr>
<tr>
<td>#153-26-1</td>
<td>Porcelain Casserole with Handle, 140 mL</td>
</tr>
<tr>
<td>#153-31-1</td>
<td>Wash Bottle, 250 mL</td>
</tr>
<tr>
<td>#153-34</td>
<td>Pipette, 1 mL × ¼ mL, Glass</td>
</tr>
<tr>
<td>#153-36</td>
<td>Pipette, 2 mL × ½ mL, Glass</td>
</tr>
<tr>
<td>#153-38</td>
<td>Pipette, 5 mL × ½ mL, Glass</td>
</tr>
<tr>
<td>#153-40</td>
<td>Pipette, 10 mL × ½ mL, Glass</td>
</tr>
<tr>
<td>#153-60</td>
<td>Disposable Syringe, 3 cc</td>
</tr>
</tbody>
</table>

### Reagents

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#205-02</td>
<td>Versenate® Hardness Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#205-04</td>
<td>Versenate® Hardness Buffer Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#215-00</td>
<td>Potassium Chromate Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#220-00</td>
<td>Phenolphthalein Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#230-08</td>
<td>Sulfuric Acid, N/50, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#240-00</td>
<td>Methyl Orange Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#265-00</td>
<td>Silver Nitrate Solution, 0.0282 N, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#265-06</td>
<td>Silver Nitrate Solution, 0.01 g, 0.282 N, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#280-00</td>
<td>Wetting Agent, 1 oz (30 mL)</td>
</tr>
</tbody>
</table>

### Case

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#161-60</td>
<td>Case, Stainless Steel</td>
</tr>
<tr>
<td>#163-26</td>
<td>Clip, Small</td>
</tr>
<tr>
<td>#163-27</td>
<td>Clip, Medium</td>
</tr>
<tr>
<td>#163-28</td>
<td>Clip, Large</td>
</tr>
</tbody>
</table>

**Note:** CO₂ bulbs must be ordered separately.

### DRILLING FLUIDS TEST KIT (MES) WITH RHEOMETER AND RETORT #161-50-C

**Size:** 20.25” × 12.75” × 10” (51 × 32 × 25 cm)

**Weight:** 45 lb (20.4 kg)

### Components

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#161-50</td>
<td>Drilling Fluids Test Kit (MES)</td>
</tr>
<tr>
<td>#132-00</td>
<td>Rheometer, Hand Crank</td>
</tr>
<tr>
<td>#164-33</td>
<td>Plug Adapter (230 Volt)</td>
</tr>
<tr>
<td>#165-00</td>
<td>Retort, 10 mL, Removable, (115 Volt)</td>
</tr>
<tr>
<td>#165-10</td>
<td>Retort, 10 mL, Removable, (230 Volt)</td>
</tr>
</tbody>
</table>

**Optional**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#143-05</td>
<td>CO₂ Bulbs, Box of 10, UN2037</td>
</tr>
<tr>
<td>#161-50-LH</td>
<td>Drilling Fluids Test Kit (MES)Without HAZMAT Items</td>
</tr>
</tbody>
</table>

* MES = Mud Engineering Supply Co.
** May require special handling for shipping.
The Pilot Test Kit is the ideal supplemental kit to either the Offshore or Airplane Kit. An oil field barrel holds 350 pounds of fresh water and a pilot test "barrel equivalent" contains 350 mL of fluid. Adding one gram of material to a barrel equivalent is the same as adding one pound of material to an oil field barrel. The Pilot Test Kit enables the operator to quickly mix and test a wide variety of drilling fluids on site. The test kit includes a wallmount filter press, timer, pocket balance, and two-ounce glass bottles for mud additives. The Pilot Test Kit is conveniently packaged in a stainless steel carrying case.

### Components

| #110-20 | Measuring Cup, 1,000 mL, Plastic |
| #140-60 | Filter Press, Half-Area |
| #153-18 | Graduated Cylinder, 10 mL × .2 mL, Glass |
| #153-20 | Graduated Cylinder, 5 mL × .1 mL, Glass |
| #153-26 | Titration Dish, Polyethylene |
| #153-28 | Stirring Rod, Polyethylene |
| #153-34 | Pipette, 1 mL × .01 mL, Glass |
| #153-38 | Pipette, 5 mL × .1 mL, Glass |
| #153-40 | Pipette, 10 mL × .1 mL, Glass |
| #154-50 | Spatula, 4" Blade |
| #155-10 | Timer, 30-Minute Interval |
| #163-20 | Mixer for Mud Cup, 115 Volt |
| #166-03 | Balance, Hand-Held, 0 - 320 G × 0.1 g |
| #206-00 | Deionized Water, 4 oz (120 mL) |
| #297-01 | Bottle with Cap, French Square, 2 oz, Glass |

### Case

| #141-17 | Clip for Graduated Cylinder |
| #163-02 | Case, Stainless Steel |
| #163-26 | Clip, Small |
| #163-27 | Clip, Medium |

### Optional

| #143-05 | CO₂ Bulbs, Box of 10, UN2037 |
| #163-00-SP | Spare Parts Kit |
| #163-10 | Mixer for Mud Cup, 12 Volt |

### Reagents

| #205-02 | Versenate™ Hardness Indicator Solution, 2 oz (60 mL) |
| #205-04 | Versenate™ Hardness Buffer Solution, 2 oz (60 mL) UN2672 |
| #205-06 | Versenate™ Hardness Titration Solution, 1 mL = 2 EPM, 8 oz (250 mL) |
| #205-10 | Versenate™ Hardness Titration Solution, 1 mL = 20 EPM, 8 oz (250 mL) |
| #206-01 | Deionized Water, 8 oz (250 mL) |
| #210-00 | CalVer® 2 Indicator Powder, 10 g |
| #215-00 | Potassium Chromate Indicator Solution, 2 oz (60 mL) |
| #220-00 | Phenolphthalein Indicator Solution, 2 oz (60 mL) |
| #230-08 | Sulfuric Acid, N/50, 8 oz (250 mL) |
| #240-00 | Methyl Orange Indicator Solution, 2 oz (60 mL) |
| #265-00 | Silver Nitrate Solution, .001 g, 0.0282 N, 8 oz (250 mL) |
| #265-06 | Silver Nitrate Solution, .01 g, 0.282 N, 8 oz (250 mL) |

### Case

| #161-60 | Case, Stainless Steel |
| #163-26 | Clip, Small |
| #163-27 | Clip, Medium |
| #163-28 | Clip, Large |

* May require special handling for shipping.
RIG LABORATORY

#144-20

Size: 26” × 13” × 26.75” (58 × 33 × 68 cm)

Weight: 75 lb (34.1 kg)

Shipping Size: 31” × 18” × 34” (79 × 46 × 86 cm)

Shipping Weight: 140 lb (63.5 kg)

Included in the Rig Laboratory are a mud balance, marsh funnel, measuring cup, filter press, Sand Content Kit, timer, and all the reagents and labware for performing chloride ion analysis. An air hose and connections are included to run the filter press from rig air. A model with a small sink with hook-ups for rig water (#144-30) is also available.

Components

- #110-10 Marsh Funnel Viscometer, Plastic
- #110-20 Measuring Cup, 1,000 mL, Plastic
- #115-01 Mud Balance with Machined Arm, Metal
- #140-10 Wall Mount Filter Press
- #140-55 Filter Paper, Whatman #50, 3.5” (9 cm), Box of 100
- #141-13 Air Hose, Low Pressure, 15”
- #141-19 Air Hose Adapter
- #152-84 Drive Clutch, Rubber

Sand Content Kit

- #167-10 Sieve, 200-Mesh
- #167-20 Funnel
- #167-30 Tube

Labware

- #147-50 pH Paper, Hydron Dispenser, pH 2 - 10, 1 - 11
- #147-70 pH Paper, Hydron Dispenser, pH 10 - 12, 12.5 - 14
- #153-01 Bottle Brush, 3” × 12”
- #153-03 Brush, Graduate, ½” × 8”
- #153-18 Graduated Cylinder, 10 mL × .2 mL, Glass
- #153-26 Titrination Dish, Polyethylene
- #153-28 Stirring Rod, 4”, Polyethylene
- #153-34 Pipette, 1 mL × .01 mL, Glass
- #153-40 Pipette, 10 mL × .1 mL, Glass
- #154-10 Thermometer with Metal Dial, 5” Stem, Dual-Scale: 50° - 500°F (0° - 250°C)
- #155-20 Timer, 60 Minutes Interval
- #155-25 Stopwatch, Digital

Reagents

- #206-01 Deionized Water, 8 oz
- #215-00 Potassium Chromate Solution, 2 oz
- #265-00 Silver Nitrate Solution, .001 g, 0.0282 N, 8 oz
- #265-06 Silver Nitrate Solution, .01 g, 0.282 N, 8 oz

Case

- #144-21 Cabinet, Stainless Steel
- #144-26 Clip, Small
- #144-27 Clip, Medium
- #144-28 Clip, Large
- #144-25 Air Manifold

Optional

- #143-05 CO₂ Bulbs, Box of 10, UN2037
- #144-20-SP Spare Parts Kit
- #144-22 Rig Laboratory with Dead Weight Hydraulic Assembly
- #144-30 Rig Laboratory with Sink

Note: CO₂ bulbs must be ordered separately.

* May require special handling for shipping.

HORIZONTAL DIRECTIONAL DRILLING (HDD) MUD TEST KIT

#161-05

Size: 23” × 18” × 7.25” (58 × 46 × 18 cm)

Weight: 7 lb (3.2 kg)

Components

- #100-01 Mud Balance, Plastic, 4-Scale
- #110-10 Marsh Funnel Viscometer, Plastic
- #110-20 Measuring Cup, 1,000 mL, Plastic
- #147-53 pH Strips (Sticks), pH range 0 - 14, Box of 100
- #147-95 Total Hardness Test Strips, SofChek, Package of 50
- #153-31-1 Wash Bottle, 250 mL
- #155-26 Stopwatch
- #166-08 Shearometer
- #167-00 Sand Content Kit

Case

#161-06 Case, Executive-Style

CO₂ bulbs must be ordered separately.

* May require special handling for shipping.
Drilling Fluids - Mud Testing Kits

BASIC TEST KIT
#161-10
Size: 23” × 10.25” × 11” (58 × 26 × 28 cm)
Weight: 9 lb 3 oz (4.15 kg)

In addition to the standard mud balance, marsh funnel, and cup, the Basic Test Kit provides ample room for equipment and extra chemicals that just don't seem to fit in conventional testing equipment kits. As with all of our equipment, this kit may be custom fitted to meet specific requirements.

Components
#110-10 Marsh Funnel Viscometer, Plastic
#110-20 Measuring Cup, 1,000 mL, Plastic
#115-01 Mud Balance, Metal
#147-53 pH Strips (Sticks), pH range 0 - 14, Box of 100
#155-25 Stopwatch, Digital
#167-00 Sand Content Kit

Case
#161-11 Case, Plastic
#161-12 Foam Insert

Optional
#147-95 Total Hardness Test Strips, 0 - 425 ppm, Package of 50

DIRECTIONAL DRILLING TEST KIT
#161-15
Size: 23” × 10.25” × 11” (58 × 26 × 28 cm)
Weight: 8 lb 3.9 oz (3.7 kg)

Components
#100-01 Mud Balance, 4 Scale, Plastic
#110-10 Marsh Funnel Viscometer, Plastic
#110-20 Measuring Cup, 1,000 mL, Plastic
#147-53 pH Strips (Sticks), pH range 0 - 14, Box of 100
#147-95 Total Hardness Test Strips, 0 - 425 ppm, Package of 50
#155-25 Stopwatch, Digital
#167-00 Sand Content Kit

Case
#161-11 Case, Plastic
#161-12 Foam Insert

#161-10 - Basic Test Kit
#161-15 - Directional Drilling Test Kit
Drilling Fluids - Mud Testing Kits

SAND CONTENT KIT
#167-00-C

Size: 13” × 6” × 6” (33 × 15 × 15 cm)
Weight: 1 lb 8 oz (0.7 kg)

One of the primary functions of a drilling fluid is to carry drilled solids from the well bore. These solids are a contaminant, and if left in the system, can lead to numerous problems. The Sand Content Kit determines the volume percent of sand-sized particles in the drilling fluid. API defines sand-sized particles as any material larger than 74 µm* (200-mesh) in size. The test can be performed on low solids fluids as well as on weighted fluids. The kit consists of a glass tube graduated to read percent (%) by volume, a funnel, and a 200-mesh sieve contained in a cylindrical shaped holder.

Components
#153-31 Wash Bottle, 500 mL
#167-10 Sieve, 200-Mesh (75 µm), 2.5” Diameter
#167-20 Funnel, Plastic
#167-30 Graduated Tube, Glass, 0 - 20%

Case
#167-01 Carrying Case

Optional
#167-00-C-SP Spare Parts Kit

* Micron (µm) = \( \frac{1}{25400} \) or \( \frac{1}{1000} \) mm

OIL THIEF WITH SAMPLE COCK, 16”
#153-25-21 ACRYLIC
#153-25-22 BRASS

Size: 20.5” × 4.5” × 6” (52 × 11 × 15 cm)
Weight: 6 lb 11 oz (3 kg)

This is a simple, one-spring device for taking samples of liquids from any specified depth within a tank. It features a one-line adjustable control, an adjustable hanger, and a replacement valve seat. It is also available in various lengths.

#153-25-21 - Oil Thief with Sample Cock
Drilling Fluids - Mud Testing Kits

UNDERBALANCE DRILLING TEST KIT (UBD)
#144-82

Size: 20.25" × 13.5" × 8.5" (51 × 34 × 22 cm)
Weight: 55 lb (24.9 kg)

Components
#110-10 Marsh Funnel Viscometer, Plastic
#110-20 Measuring Cup, 1,000 mL, Plastic
#152-00 Mixer with Container, Hamilton Beach®, Single Spin- 
dle, 115 Volt
#152-40 Container for Mixers, 30 oz, Stainless Steel
#153-25-2 Centrifuge for 15 mL Tubes, Hand Crank, 4-Place Head and Shields
#153-52 Hydrometer Set in Plastic Carrying Case

Labware
#147-53 pH Strips, 0 - 14, Package of 100
#153-19 Centrifuge Tube, 15 mL, PYREX® 8080
#153-26 Titration Dish, Polyethylene
#153-28 Stirring Rod, 4", Polyethylene
#153-29 Syringe, 2 cc, Glass-Tip
#153-29-1 Syringe, 5 cc, Glass-Tip
#153-29-2 Syringe, 10 cc, Glass-Tip
#153-34 Pipette, 1 mL × .01 mL, Glass
#153-36 Pipette, 2 mL × .1 mL, Glass
#153-38 Pipette, 5 mL × .1 mL, Glass
#153-40 Pipette, 10 mL × .1 mL, Glass
#153-42 Pipette Filler, Fast Release, 10 mL

Reagents
#205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)
#205-04 Versenate® Hardness Buffer Solution, 2 oz (60 mL), UN2672
#205-06 Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 8 oz (250 mL)
#205-08 Versenate® Hardness Titration Solution 1 mL = 20 EPM, 4 oz (120 mL)
#206-02 Deionized Water, 16 oz (500 mL)
#215-00 Potassium Chromate Solution, 2 oz (60 mL)
#220-00 Phenolphthalein Solution, 2 oz (60 mL)
#230-04 Sulfuric Acid, .02 N, 16 oz (500 mL)
#245-00 Bromocresol Green Methyl Red Indicator Solution, 2 oz (60 mL)
#265-00 Silver Nitrate Solution, .001 g, 0.0282 N., 8 oz (250 mL)
#265-13 Silver Nitrate Solution, .01 g, 0.282 N, 4 oz (120 mL)
#285-00 Precipitated Calcium Carbonate Powder, 35 g

Case
#144-82-03 Case with Custom Foam

* May require special handling for shipping.
Drilling Fluids - Filtrate Analysis Kits

FILTRATE ANALYSIS TEST / CLAY ANALYSIS TEST
(FAT-CAT) KIT

<table>
<thead>
<tr>
<th>Kit Number</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#162-74</td>
<td>115 VOLT</td>
</tr>
<tr>
<td>#162-74-2</td>
<td>230 VOLT</td>
</tr>
</tbody>
</table>

Size: 15” x 10” x 10” (38 x 25 x 25 cm)
Weight: 17 lb 11 oz (8 kg)

Components

- #140-55 Filter Paper, Whatman #50, 3.5” (9 cm), Box of 100
- #140-57 Filter Paper 7 cm, Whatman Grade 1, Package of 100
- #142-53 Filter Press with CO2 Assembly, Support Bracket, and Graduated Cylinder Holder, Model MB
- #143-05 CO2 Bulbs, Box of 10, UN2037
- #144-90-05 Dropper Pipette, 2 mL, Poly
- #147-53 pH Sticks, Range 0-14, Package of 100
- #153-05 Brush, Graduate, 1 1/2” x 10 3/4”
- #153-06 Brush for 10 mL Receiver Tube
- #153-18-1 Graduated Cylinder, TD, 10 mL x .2 mL, Glass
- #153-26 Titration Dish, Polyethylene
- #153-31-1 Wash Bottle, 250 mL, Polyethylene
- #153-34 Pipette, 1 mL x .01 mL, Glass
- #153-36 Pipette, 2 mL x .1 mL, Glass
- #153-38 Pipette, 5 mL x .1 mL, Glass
- #153-40 Pipette, 10 mL x .1 mL, Glass
- #153-41 Safety Bulb for Pipette
- #153-50-1 Erlenmeyer Flask, 125 mL, Glass
- #153-60 Syringe, Disposable, 3 cc
- #154-75 Scoop, Brass
- #168-01 Hot Plate (115 Volt)
- #168-01-1 Hot Plate (230 Volt)
- #168-04 Stirring Rod, 6”, Glass

Reagents

- #200-01 Methylene Blue Solution, 1 mL = 0.01 ME, 8 oz (250 mL)
- #200-11 Hydrogen Peroxide, 3% Solution, 8 oz (250 mL)
- #205-02 Versenate® Hardness Indicator Solution (Calmagite), 2 oz (60 mL)
- #205-04-01 *Buffer Solution, Hardness, Versenate®, Ammonium Hydroxide, 1 oz (30 mL) UN2672
- #205-06 Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 8 oz (250 mL)
- #205-10 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 8 oz (250 mL)
- #205-14-01 *Calcium Buffer, 1 oz (30 mL) UN1824
- #210-00-2 CalVer® 2, 20 g
- #215-00 Potassium Chromate Solution, 2 oz (60 mL)
- #220-00 Phenolphthalein Indicator Solution, 2 oz (60 mL)
- #230-00-01 Sulfuric Acid, N/10, 1 oz (30 mL)
- #230-15-01 *Sulfuric Acid, 5 N,1 oz (30 mL) UN2796
- #230-17-01 Sulfuric Acid, N/50, 1 oz (30 mL)
- #240-00 Methyl Orange Indicator Solution, 2 oz (60 mL)
- #261-55-01 Masking Agent, 1 oz (30 mL)
- #265-00 Silver Nitrate Solution, 0.0282 N, 8 oz (250 mL)
- #265-06 Silver Nitrate Solution, .01 g, 0.282 N, 8 oz (250 mL)

Cases

- #153-35 Case for 1, 2, and 5 mL Pipettes, Polycarbonate
- #153-39 Case for 10 mL Pipettes, Polycarbonate
- #162-73 Turtlebox, 6 1/2” x 3 1/4” x 3 3/4”
- #162-74-1 Custom Foam Insert for Reagent Test Kit
- #162-75 Tool Box, Cantilever

** May require special handling for shipping.

TEST STRIPS

- #147-92 QUANTOFIX® Chloride Test Strips, 500 - 3000 mg/L, Box of 100
- #147-93 QUANTOFIX® Nitrate Test Strips, 10 - 500 mg/L NO₃, 10 - 080 mg/L NO₂, Box of 100
- #147-94 QUANTOFIX® Sulfite Test Strips, 10 - 1000 mg/L SO₃, Box of 100
- #147-95 SofChek Total Hardness Test Strips, 0 - 425 ppm, Package of 50
Drilling Fluids - Filtrate Analysis Kits

**Filtrate Analysis Kit**

**#145-00**

- **Size:** 12.25” x 6.25” x 11” (31 x 16 x 28 cm)
- **Weight:** 13 lb 6 oz (6.1 kg)

**Labware**

- #140-55 Filter Paper, Whatman #50, 3.5” (9 cm), Box of 100
- #147-53 pH Strips, 0 - 14, Package of 100
- #153-16 Graduated Cylinder, 25 mL x .2 mL, Glass
- #153-26 Titration Dish, Polyethylene
- #153-28 Stirring Rod, 4”, Polyethylene
- #153-30 Funnel, 3”, Polyethylene
- #153-34 Pipette, 1 mL x .01 mL, Glass
- #153-38 Pipette, 5 mL x .1 mL, Glass
- #153-40 Pipette, 10 mL x .1 mL, Glass
- #153-60 Syringe, Disposable, 3 cc

**Reagents**

- #205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)
- #205-04 Versenate® Hardness Buffer Solution, 2 oz (60 mL), UN2672
- #205-08 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 4 oz (120 mL)
- #205-14 Versenate® Calcium Buffer Solution, 2 oz (60 mL), UN1824
- #205-15 Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 4 oz (120 mL)
- #206-02 Deionized Water, 16 oz (500 mL)
- #210-00 CalVer® 2 Indicator, 10 g
- #215-00 Potassium Chromate Solution, 2 oz (60 mL)
- #220-00 Phenolphthalein Solution, 2 oz (60 mL)
- #230-08 Sulfuric Acid, N/50, 8 oz (250 mL)
- #230-16 Sulfuric Acid, N/10, 4 oz (120 mL)
- #245-00 Bromocresol Green Methyl Red Indicator Solution, 2 oz (60 mL)
- #250-00 Calcium Indicator Solution, 2 oz (60 mL)
- #255-00 Sulfate Indicator Solution, 2 oz (60 mL), UN1789
- #265-12 Silver Nitrate Solution, .001 g, 0.2682 N, 4 oz (120 mL)
- #265-13 Silver Nitrate Solution, .01 g, 0.282 N, 4 oz (120 mL)

**Case**

- #134-36-1 Knob, Red
- #141-17 Clip for Graduated Cylinder
- #144-36 Kit, Multi-Purpose, Diagonal, Large

**Optional**

- #145-00-LH Filtrate Analysis Kit Without HAZMAT Items
- #145-00-SP Spare Parts Kit

*May require special handling for shipping.*

The Methylene Blue Test Kit measures the total exchange capacity of a clay system and determines the reactive solids content of fluids. The test measures the capacity of a clay to absorb cations from solution where exchangeable cations on the clay surfaces are replaced by methylene blue cations. The more ions the clay can exchange for methylene blue cations, the more reactive the clay, and the greater the swelling potential.

The Methylene Blue Test Kit comes complete with all necessary chemicals, glassware, and equipment to perform this important and informative test in the field. All of the equipment is stored in a convenient stainless steel carrying case.
### CHLORIDE, ALKALINITY, AND WATER HARDNESS

#### Kit #144-80

- **Size:** 10” × 11” × 11” (25 × 28 × 28 cm)
- **Weight:** 13 lb 2 oz (6 kg)

#### Components

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#153-26</td>
<td>Titration Dish, Polyethylene</td>
</tr>
<tr>
<td>#153-28</td>
<td>Stirring Rod, Polyethylene</td>
</tr>
<tr>
<td>#153-34</td>
<td>Pipette, 1 mL × .01 mL, Glass</td>
</tr>
<tr>
<td>#153-40</td>
<td>Pipette, 10 mL × .1 mL, Glass</td>
</tr>
</tbody>
</table>

#### Reagents

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#205-02</td>
<td>Versenate® Hardness Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#205-04</td>
<td>Versenate® Hardness Buffer Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#205-06</td>
<td>Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#205-08</td>
<td>Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 4 oz (120 mL)</td>
</tr>
<tr>
<td>#206-02</td>
<td>Deionized Water, 16 oz (500 mL)</td>
</tr>
<tr>
<td>#215-00</td>
<td>Potassium Chromate Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#220-00</td>
<td>Phenolphthalein Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#230-04</td>
<td>Sulfuric Acid, 0.02 N, 16 oz (500 mL)</td>
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<tr>
<td>#245-00</td>
<td>Bromocresol Green-Methyl Red Indicator Solution, 2 oz (60 mL)</td>
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<tr>
<td>#265-00</td>
<td>Silver Nitrate, 0.001 g, 0.0282 N, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#265-06</td>
<td>Silver Nitrate, 0.01 g, 0.282 N, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#285-00</td>
<td>Precipitated Calcium Carbonate Powder, 35 g</td>
</tr>
</tbody>
</table>

#### Case

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#134-36-1</td>
<td>Knob, Red</td>
</tr>
<tr>
<td>#144-36</td>
<td>Kit, Multi-Purpose, Diagonal, Large</td>
</tr>
</tbody>
</table>

#### Optional

- #144-80-LH Chloride, Alkalinity, and Water Hardness Kit Without HAZMAT Items

* May require special handling for shipping.

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### CHLORIDE AND ALKALINITY KIT

#### Kit #144-50

- **Size:** 10” × 11” × 11” (25 × 28 × 28 cm)
- **Weight:** 12 lb 14 oz (5.7 kg)

#### Components

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>#153-26</td>
<td>Titration Dish, Polyethylene</td>
</tr>
<tr>
<td>#153-28</td>
<td>Stirring Rod, Polyethylene</td>
</tr>
<tr>
<td>#153-34</td>
<td>Pipette, 1 mL × .01 mL, Glass</td>
</tr>
<tr>
<td>#153-40</td>
<td>Pipette, 10 mL × .1 mL, Glass</td>
</tr>
</tbody>
</table>

#### Reagents

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#206-02</td>
<td>Deionized Water, 16 oz (500 mL)</td>
</tr>
<tr>
<td>#215-00</td>
<td>Potassium Chromate Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#220-00</td>
<td>Phenolphthalein Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#230-08</td>
<td>Sulfuric Acid, 0.02 N, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#245-00</td>
<td>Bromocresol Green-Methyl Red Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#265-00</td>
<td>Silver Nitrate, 0.001 g, 0.0282 N, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#265-06</td>
<td>Silver Nitrate, 0.01 g, 0.282 N, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#285-00</td>
<td>Precipitated Calcium Carbonate Powder, 35 g</td>
</tr>
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</table>

#### Case

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#134-36-1</td>
<td>Knob, Red</td>
</tr>
<tr>
<td>#144-36</td>
<td>Kit, Multi-Purpose, Diagonal, Large</td>
</tr>
</tbody>
</table>

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#144-80 - Chloride, Alkalinity, and Hardness Kit

#144-50 - Chloride and Alkalinity Test Kit
Drilling Fluids - Filtrate Analysis Kits

CHLORIDE AND WATER HARDNESS KIT
#144-70

Size: 10” × 11” × 11” (25 × 28 × 28 cm)
Weight: 13 lb 2 oz (6 kg)

Components
#153-26 Titration Dish, Polyethylene
#153-28 Stirring Rod, Polyethylene
#153-34 Pipette, 1 mL × .01 mL, Glass
#153-40 Pipette, 10 mL × .1 mL, Glass

Reagents
#205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)
#205-04 Versenate® Hardness Buffer Solution, 2 oz (60 mL)
UN2672
#205-06 Versenate® Hardness Titration Solution, 1 mL = 2
EPM, 8 oz (250 mL)
#205-10 Versenate® Hardness Titration Solution, 1 mL = 20
EPM, 8 oz (250 mL)
#206-01 Deionized Water, 8 oz (250 mL)
#215-00 Potassium Chromate Indicator Solution, 2 oz (60 mL)
#220-00 Phenolphthalein Indicator Solution, 2 oz (60 mL)
#230-08 Sulfuric Acid, 0.02 N, 8 oz (250 mL)
#265-02 Silver Nitrate, 0.001 g, 0.0282 N, 8 oz (250 mL)
#265-06 Silver Nitrate, 0.01 g, 0.282 N, 8 oz (250 mL)
#285-00 Precipitated Calcium Carbonate Powder, 35 g

Case
#134-36-1 Knob, Red
#144-36 Case, Stainless Steel

Optional
#144-70-LH Chloride and Water Hardness Kit Without
HAZMAT Items

CHLORIDE CONTENT KIT
#144-40

Size: 6.25” × 11” × 11” (16 × 28 × 28 cm)
Weight: 10 lb 14 oz (4.9 kg)

Components
#153-26 Titration Dish, Polyethylene
#153-28 Stirring Rod, Polyethylene
#153-34 Pipette, 1 mL × .01 mL, Glass
#153-40 Pipette, 10 mL × .1 mL, Glass

Reagents
#206-01 Deionized Water, 8 oz (250 mL)
#215-00 Potassium Chromate Solution, 2 oz (60 mL)
#220-00 Phenolphthalein Indicator Solution, 2 oz (60 mL)
#230-08 Sulfuric Acid, 0.02 N, 8 oz (250 mL)
#265-02 Silver Nitrate, 0.001 g, 0.0282 N, 16 oz (500 mL)
#265-06 Silver Nitrate, 0.01 g, 0.282 N, 8 oz (250 mL)
#285-00 Calcium Carbonate Powder, Precipitated, 35 g

Case
#134-36-1 Knob, Red
#144-35 Case, Stainless Steel

* May require special handling for shipping.
## Calcium and Magnesium Kit
### #144-85

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>#153-14</td>
<td>Graduated Cylinder, 50 mL × 1 mL, Glass</td>
</tr>
<tr>
<td>#153-18</td>
<td>Graduated Cylinder, 10 mL × .01 mL, Glass</td>
</tr>
<tr>
<td>#153-26</td>
<td>Titration Dish, Polyethylene</td>
</tr>
<tr>
<td>#153-34</td>
<td>Pipette, 1 mL × .01 mL, Glass</td>
</tr>
<tr>
<td>#153-38</td>
<td>Glass Pipette, 5 mL × .1 mL, Glass</td>
</tr>
<tr>
<td>#153-40</td>
<td>Pipette, 10 mL × .1 mL, Glass</td>
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<tr>
<td>#153-42</td>
<td>Pipette Filler, Fast Release, 10 mL</td>
</tr>
<tr>
<td>#153-51-4</td>
<td>Beaker, 100 mL, Glass</td>
</tr>
<tr>
<td>#154-62</td>
<td>Spatula, 123 mm, Porcelain</td>
</tr>
<tr>
<td>#154-63</td>
<td>Spatula with Flat Handle, Micro Spoon, 9&quot;</td>
</tr>
<tr>
<td>#168-04</td>
<td>Stirring Rod, Glass</td>
</tr>
</tbody>
</table>

### Reagents

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>#205-04</td>
<td>*Versenate® Hardness Buffer Solution, 2 oz (60 mL) UN2672</td>
</tr>
<tr>
<td>#205-10</td>
<td>Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#205-14</td>
<td>*Versenate® Calcium Buffer Solution, 2 oz (60 mL) UN1824</td>
</tr>
<tr>
<td>#205-22</td>
<td>Calcium Titration I, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#205-23</td>
<td>*Calcium Titration II, 2 oz (60 mL) UN3287</td>
</tr>
<tr>
<td>#205-26</td>
<td>Calcon Powder, 40 g</td>
</tr>
<tr>
<td>#205-27</td>
<td>Manver Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#206-01</td>
<td>Deionized Water, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#230-25</td>
<td>*Acetic Acid, Glacial, 8 oz (250 mL) UN2789</td>
</tr>
<tr>
<td>#260-07</td>
<td>*Sodium Hydroxide Solution, 8 N, 8 oz (250 mL) UN1824</td>
</tr>
<tr>
<td>#261-00</td>
<td>*Sodium Hypochlorite Solution, 8 oz (250 mL) UN1791</td>
</tr>
</tbody>
</table>

### Optional

- #144-85-LH Calcium and Magnesium Kit Without HAZMAT Items

* May require special handling for shipping.

### Total Hardness Titration Kit
### #145-10

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>#153-26</td>
<td>Titration Dish, Polyethylene</td>
</tr>
<tr>
<td>#153-28</td>
<td>Stirring Rod, Polyethylene</td>
</tr>
<tr>
<td>#153-34</td>
<td>Pipette, 1 mL × .01 mL, Glass</td>
</tr>
<tr>
<td>#153-40</td>
<td>Pipette, 10 mL × .1 mL, Glass</td>
</tr>
</tbody>
</table>

### Reagents

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>#205-02</td>
<td>Versenate® Hardness Indicator Solution, 2 oz (60 mL)</td>
</tr>
<tr>
<td>#205-04</td>
<td>*Versenate® Hardness Buffer Solution, 2 oz (60 mL) UN2672</td>
</tr>
<tr>
<td>#205-06</td>
<td>Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#205-10</td>
<td>Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#206-02</td>
<td>Deionized Water, 16 oz</td>
</tr>
</tbody>
</table>

### Case

- #134-36-1 Red Knob
- #144-35 Case, Stainless Steel

### Optional

- #145-10-LH Total Hardness Titration Kit Without HAZMAT Items

---

*Drilling Fluids - Filtrate Analysis Kits*

#144-85 - Calcium and Magnesium Kit

#145-10 - Total Hardness Titration Kit
Drilling Fluids - Filtrate Analysis Kits

CALCIMETER
#152-95

Size: 13” × 8” × 2.5” (33 × 20 × 6 cm)  
Weight: 2 lb 7 oz (1.1 kg)

The Calcimeter accurately and quickly determines if scale build up is composed of calcium carbonate. The calcite to dolomite content of the unknown sample aids in determining which chemical treating program to implement. The entire test procedure requires 15 to 30 minutes for both calcite and dolomite determination.

Components
#142-54 O-ring for Lid  
#152-95-1 Gauge, 30 PSI, 4” Diameter, ¼” NPT  
#152-95-2 Bleed-Off Screw  
#152-95-3 Cell Cap  
#152-95-4 Reaction Cell  
#152-95-5 O-ring for Cell, 1 ¾” × ¼”  
#152-95-6 Sample Cup

#152-95 - Calcimeter

RECORDING CALCIMETER WITH DAQ
#152-97 STANDARD  
#152-97-C WITH LAPTOP

The Recording Calcimeter replaces the gauge with a pressure transducer and PC software. The software automates the data recording process, saving the operator the time of doing it manually. This kit includes the Calcimeter plus all consumable items required.

Features
- Software records pressure increase and calculates percentage CaCO₃ and Dolomite  
- Rugged carrying case

Components
#142-54 O-ring for Bleed-Off Screw  
#152-95-1 Gauge with Cover, 30 PSI, 4” Diameter  
#152-95-2 Bleed-Off Screw  
#152-95-3 Cell Cap  
#152-95-4 Reaction Cell  
#152-95-5 O-ring for Cap  
#152-95-6 Sample Cup  
#152-96-6 Mortar, 65 mL, Porcelain  
#152-96-7 Pestle, Porcelain  
#153-02 Brush, Graduate, 1.5” × 10.75”  
#153-18 Graduated Cylinder, 10 mL × .2 mL, Glass  
#153-55 Stopcock Grease, Silicone  
#166-03 Hand-held Balance, 0 - 320 g × .1 g  
#275-03 *Hydrochloric Acid, 10%, 8 oz UN1789  
#285-00-1 Calcium Carbonate, 100 g

* May require special handling for shipping.

#152-97 Recording Calcimeter with DAQ
GARRETT GAS TRAIN KIT

#151-00

Size: 18.75" × 14.5" × 8" (48 × 37 × 20 cm)
Weight: 17 lb 5 oz (7.9 kg)

The Garrett Gas Train determines the concentration of soluble sulfides and carbonate in drilling fluid. Mud filtrate is acidified inside the gas train, converting all sulfides to H2S or all carbonates to CO₂, depending upon the test. The gas train separates the gas from the liquid and an inert carrier gas transports the gasses through the separate chambers. At the end of the train, the gas is passed through a Dräger-tube®, which indicates the concentration of H2S or CO₂. The Garrett Gas Train consists of a transparent train, pressure regulator assembly, Dräger-tubes® for H₂S and carbonate detection, and a convenient carrying case.

Components

#142-58 O-ring, Small
#143-00 Regulator, Low Pressure
#143-02-10 CO₂ Puncture Head Assembly
#143-03 Barrel for CO₂ Bulb
#145-601 Hydrogen Sulfide Test Papers, Package of 100
#151-00-001 Gas Train Body, Acrylic
#151-00-003 Binding Head Machine Screw, Nylon
#151-00-005 Washer, #10, Nylon
#151-05 Thumb Screw for Lid
#151-06 Gas Bag, 1 Liter
#151-07 2-Way Bore Stopcock with Teflon® Plug
#151-09 Hand Vacuum Pump, Dräger Model 31
#151-14 Hose, ¼" OD × ¼" ID × ¾" Thick, 1' Length, Rubber
#151-14-1 Tube, 3" Length, Nylon
#151-15 Fitting for Filter Flow Tube, Nylon
#151-16 Septum for Injection, Rubber
#171-90-14 Hose Barb, ½" NPT × ¼"

Dräger-tubes®

#151-02 Dräger-tube®, H2S 100/a, Range 100 - 2,000 ppm, Package of 10
#151-03 Dräger-tube®, H2S 0.2%/a, Range 0.2 - 7 Vol.%, Package of 10
#151-04 Dräger-tube®, CO₂ 100/a, Range 100 - 3,000 ppm, Package of 10

Glassware

#151-01 Dispersion Tube, Glass
#151-08 Flow Meter Tube, API
#153-34 Pipette, 1 mL × .01 mL, Glass
#153-40 Pipette, 10 mL × .1 mL, Glass
#153-63 Syringe with Needle, Disposable, 10 mL

O-rings

#142-58 O-ring for Nylon Fitting
#143-02-13 O-ring for CO₂ Bulb Puncture Pin
#143-02-14 O-ring for Puncture Pin Holder Assembly
#151-10 O-ring for Dräger-tube® Pump
#151-11 O-ring for Flow Meter Tube Floating Ball
#151-12 O-ring for 2nd and 3rd Chamber
#151-13 O-ring for 1st Chamber

Reagents

#151-17 Defoamer, Octanol/Octyl Alcohol, 2 oz (60 mL)
#230-15 'Sulfuric Acid, 5 N, 2 oz (60 mL) UN2796

Case

#151-53 Case with Foam Insert

Note: CO₂ and N₂O bulbs must be ordered separately.

Optional

#143-05 CO₂ Bulbs, Box of 10, UN2037
#143-08 N₂O Bulbs, Box of 10, UN1070
#151-00-LH Garrett Gas Train Kit Without HAZMAT Items
#151-00-SP Spare Parts Kit

GARRETT GAS TRAIN ANALYSIS FOR ACTIVE SULFIDES KIT FOR OIL-BASED DRILLING FLUIDS

#151-20

Size: 6" × 6" × 6" (15 × 15 × 15 cm)
Weight: 2 lb (900 g)

Components

#151-17 Defoamer, Octanol/Octyl Alcohol, 2 oz (60 mL)
#151-20-1 'Citric Acid, 2M, Demulsifier, IPA Solution, 16 oz (500 mL) UN1219
#151-20-2 Tubing, 12", with Female Luer Lock Connection
#153-29 Syringe, 2 mL, Glass-Tip
#153-29-1 Syringe, 5 mL, Glass-Tip
#153-29-2 Syringe, 10 mL, Glass-Tip
#153-66 Syringe, Disposable, 20 mL

Optional

#153-53 Magnetic Stirrer, 115 Volt
#151-20-LH Sulfide Analysis Kit Without HAZMAT Items

#151-20 - Active Sulfides Kit for Garrett Gas Train
Drilling Fluids - Filtrate Analysis Kits

SULFIDE ION (S²⁻) TEST KIT
#145-50

Size: 6” x 6” x 6” (15 x 15 x 15 cm)
Weight: 1 lb (470 g)

Sulfide ions in drilling fluid or water may be determined semi-quantitatively using this method. (1.06 ppm S = ppm H₂S).

Components
#153-15  Test Tube, 125 mm × 15 mm, Glass
#153-43  Transfer Pipette, Disposable, 5 mL, Poly

Reagents
#145-501  Sulfide Ion Solution “A”, 2 oz (60 mL)
#145-502  *Sulfide Ion Solution “B”, 2 oz (60 mL) UN1789
#145-503  Sulfide Ion Solution, “C”, 2 oz (60 mL)
#206-03  Deionized Water, 2 oz (60 mL)

SULFIDE ION (S²⁻) TEST KIT NO. 2
#145-55

Size: 6.5” x 8.5” x 10.5” (17 × 22 × 27 cm)
Weight: 3 lb 2 oz (1.4 kg)

Oilfield Brines, Range: 0.1 - 1,000 ppm

Components
#153-12  Graduated Cylinder, 100 mL × 1 mL, Glass
#153-34  Pipette, 1 mL × .01 mL, Glass
#153-40  Pipette, 10 mL × .1 mL, Glass
#153-82  Stopper, #5, Rubber

Reagents
#145-551  Starch Indicator Solution, 2 oz (60 mL)
#145-552  *Sulfide Buffer Solution, 2 oz (60 mL) UN1789
#145-553  Iodine Titrating Solution, 8 oz (250 mL)
#206-02  Deionized Water, 16 oz (500 mL)

HYDROGEN SULFIDE (H₂S) DETECTION KIT
#145-60

Size: 5” × 6.25” × 3” (13 × 16 × 8 cm)
Weight: 12 oz (0.3 kg)

Soluble sulfides may be determined using mud filtrate. Total sulfides may be determined using whole mud.

Components
#145-601  Hydrogen Sulfide Test Papers, Package of 100
#145-602  Hydrogen Sulfide Test Bottle
#145-603  H₂S Test Color Chart with Instructions
#167-01  Carrying Case

Reagents
#145-604  Alka-Seltzer® Tablets, Packet of 2
#151-17  Defoamer, Octanol/Octyl Alcohol, 2 oz (60 mL)
#230-15  *Sulfuric Acid, 5 N, 2 oz (60 mL) UN2796

Optional
#145-60-LH  Hydrogen Sulfide Detection Kit Without HAZMAT Items

* May require special handling for shipping.
SULFATE (SO₄) ION TEST KIT, 500 - 10,000 PPM
#145-20

Size: 12” × 15” × 10.5” (30 × 38 × 27 cm)
Weight: 6 lb 5 oz (2.9 kg)

Components
#153-26 Titration Dish, Polyethylene
#153-28 Stirring Rod, Polyethylene
#153-34 Pipette, 1 mL × .01 mL, Glass
#153-40 Pipette, 10 mL × .1 mL, Glass

Reagents
#205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)
#205-04 Versenate® Hardness Buffer Solution, 2 oz (60 mL)
UN2672
#205-12 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 16 oz (500 mL)
#275-04 Hydrochloric Acid, 0.02 N, 8 oz (250 mL)
#285-35 Standard Magnesium Chloride Solution, 8 oz (250 mL)
#285-36 Standard Barium Chloride Solution, 16 oz (500 mL)

Optional
#145-20-LH Sulfate Ion Test Kit Without HAZMAT Items
#153-10 Burette with Bottle and Bulb, Automatic, 10 mL
#168-01 Hot Plate, 115 Volt
#168-01-01 Hot Plate, 230 Volt

#145-20 - Sulfate Ion Test Kit

SODIUM CHROMATE TEST KIT
#145-40

Size: 5” × 3” × 6.25” (12 × 8 × 16 cm)
Weight: 1 lb (0.5 kg)

To determine the amount of Sodium Chromate (Na₂CrO₄) in a drilling fluid. Reported in parts per million (PPM).

Components
#153-15 Test Tube, 125 mm × 15 mm, Glass
#153-43 Transfer Pipette, Disposable, 5 mL, Poly

Reagents
#145-401 Sodium Chromate Solution “A”, 2 oz (60 mL)
#145-402 Sodium Chromate Solution “B”, 2 oz (60 mL)
UN1789
#145-403 Sodium Chromate Solution “C”, 2 oz (60 mL)
#206-03 Deionized Water, 2 oz (60 mL)

Optional
#145-40-LH Sodium Chromate Test Kit Without HAZMAT Items

# 145-40 - Sodium Chromate Test Kit

SULFITE (SO₃) TEST KIT
#145-70

Size: 6” × 10” × 5” (15 × 25 × 13 cm)
Weight: 2 lb 1 oz (0.9 kg)

Components
#153-28 Stirring Rod
#153-43 Transfer Pipette, Disposable, 5 mL, Poly
#153-51 Beaker, 250 mL, Glass
#167-01 Carrying Case

Reagents
#145-551 Starch Indicator Solution, 2 oz (60 mL)
#145-554 Potassium Iodide-Iodate Solution, 8 oz (250 mL)
#206-01 Deionized Water, 8 oz (250 mL)
#220-00 Phenolphthalein Indicator Solution, 2 oz (60 mL)
#275-00 Hydrochloric Acid, 37%, Concentrated, 2 oz (60 mL) UN1789

Optional
#145-70-LH Sulfite Test Kit Without HAZMAT Items

#145-70 - Sulfite Test Kit

* May require special handling for shipping.
**IRON (Fe⁺³) COUNT TEST KIT**

#161-70

Ferric iron concentration is determined in this procedure by the oxidation of iron to the ferric state at a pH value of 1 or less. The sample is then titrated with a standard EDTA solution in the presence of a salicylic acid indicator at a pH of approximately 2.4. Hydrogen sulfide interferes with the complexing action of both the EDTA solution and the salicylic acid. The hydrogen sulfide can be removed by boiling the sample with hydrochloric acid at a pH level below 1. Results are reported as ppm Fe⁺³ or as epm Fe⁺³.

**Components**

- #147-50 pH Paper, pHydron® Dispenser, pH 2-10, 1-11
- #153-10 Burette with Bottle and Bulb, Automatic, 10 mL
- #153-12 Graduated Cylinder, 100 mL × 1 mL, Glass
- #153-26 Titration Dish, Polyethylene
- #153-28 Stirring Rod, Polyethylene
- #153-34 Pipette, 1 mL × .01 mL, Glass

**Reagents**

- #200-10-1 Hydrogen Peroxide, 3% Solution, 2 oz (60 mL)
- #205-00 Versenate® Hardness Titration Solution, 1 mL = 2 EPM, 16 oz (500 mL)
- #205-12 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 16 oz (500 mL)
- #270-00 *Nitric Acid, 3 N, 8 oz (250 mL) UN2031
- #275-00 *Hydrochloric Acid, 37%, Concentrated, 2 oz (60 mL) UN1789
- #285-37 *Iron Indicator Solution, 2 oz (60 mL) UN1993
- #285-40 Iron Buffer Solution, 2 oz (60 mL)

**Optional**

- #161-70-LH Iron Count Test Kit Without HAZMAT Items
- #168-01 Hot Plate, 115 Volt
- #168-01-1 Hot Plate, 230 Volt

*May require special handling for shipping.*

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**PARAFORMALDEHYDE TEST KIT**

#145-30 STANDARD

#145-31 WITH ANTIFREEZE

**Size:** 6.25" × 5" × 3" (16 × 13 × 8 cm)

**Weight:** 1 lb (0.5 kg)

Most low pH fresh water and saltwater drilling fluids contain bacteria that attack starch material added to the drilling fluid for filtrate control. Paraformaldehyde is often added to destroy these bacteria, but it must be maintained within certain levels for best results. The Paraformaldehyde Kit contains all the apparatus and reagents required to measure the available preservative in pounds per barrel (lb/bbl).

**Components**

- #153-15 Test Tube, 125 mm × 15 mm, Glass
- #153-43 Transfer Pipette, Disposable, 5 mL, Poly
- #167-01 Carrying Case

**Reagents for #145-30**

- #145-301 Paraformaldehyde Solution “A”, 2 oz (60 mL)
- #145-302 Paraformaldehyde Solution “B”, 2 oz (60 mL)
- #145-303 Paraformaldehyde Solution “C”, 2 oz (60 mL)
- #145-304 Paraformaldehyde Solution “D”, 2 oz (60 mL)

**Reagents for #145-31**

- #145-311 Paraformaldehyde Solution “A” AF, 2 oz (60 mL)
- #145-312 Paraformaldehyde Solution “B” AF, 2 oz (60 mL)
- #145-313 Paraformaldehyde Solution “C” AF, 2 oz (60 mL)
- #145-314 Paraformaldehyde Solution “D” AF, 2 oz (60 mL)

AF = Antifreeze

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#161-70 - Iron Count Test Kit

#145-30 - Paraformaldehyde Test Kit
## Drilling Fluids - Bacteria Test Kits

### AEROBIC AND ANAEROBIC BACTERIA TEST KIT
#### #180-50

**Size:** 6.5" × 6.5" × 6.5" (17 × 17 × 17 cm)  
**Weight:** 13 oz (368 g)

**Features**  
- Extinction dilution procedure identifies and counts the number of organisms present  
- Aerobic tests require 5 days  
- Anaerobic tests require 25 days

**Components**  
- Syringe with Needle, Disposable, 3 cc
- Phenol Red Vials (green), 10 cc, Aerobic Bacteria
- Sulfate Reducer Vials (silver), 10 cc, Anaerobic Bacteria

Note: All bacteria cultures should be kept refrigerated for longer life.

### SANI CHECK AB KIT #110, AEROBIC BACTERIA

#### #180-65

**Size:** 4.5" × 4.25" × 2.7" (11 × 11 × 7 cm)  
**Weight:** 6 oz (170 g)

The Sani Check AB Kit #110 allows you to determine aerobic bacteria in aqueous and non-aqueous liquids. A saturated test paper strip is incubated for a period of 24-72 hours and then compared to a color chart to determine the bacterial count per square inch. Each kit is good for 25 tests.

**Features**  
- Determine aerobic bacteria in liquids  
- 25 tests per kit

### QUICKCHEK SULPHATE REDUCING BACTERIA RC II TEN-PAK
#### #180-60

**Size:** 16" × 11" × 6" (41 × 28 × 15 cm)  
**Weight:** 6 lb (2.7 kg)

**Features**  
- Tests for sulfate reducing bacteria  
- Requires only 1 hour  
- Not affected by chemical or salinity interferences  
- Range: 103 to 106 bacteria per mL  
- If refrigerated and stored properly, shelf life is one year  
- Ten tests per kit

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Drilling Fluids - Oilfield Polymers

POLYMER TEST KIT - CLAPPER

#295-00  115 VOLT
#295-01  230 VOLT

Size:  17.5" x 13" x 10" (45 x 33 x 25 cm)
Weight:  23 lb 10 oz (10.7 kg)

Features
- Determines the polymer concentration in mud filtrates
- Measures of the rate of ammonia generation while the mud filtrate is heated in the presence of sodium hydroxide solution
- Can be used to analyze all filtrates except those containing some types of lignosulfonates and polyacrylate filtration control additives

Components
- Transformer, 230 to 115 Volts, 1.10 Amps, 50 / 60 Hz (230 Volt)
- Knob, Red
- Filter Paper, Whatman #50, 3.5" (9 cm), Box of 100
- ¾" Street Ell
- Dräger-tube®, Ammonia 5/a, Range 5 - 700 ppm
- Graduated Cylinder, 250 mL, Glass
- Syringe, 20 mL, Plastic
- Syringe, 60 mL, Plastic
- Tubing, Glass
- Stopper, No. 8, 2-Hole
- Thermometer with Metal Dial, 8", Dual-Scale: 50° - 500°F (0° - 250°C)
- Stopwatch, Digital
- Clamp, Small
- Clamp, Large
- Power Cable, 115 Volt
- Receptacle, 115 Volt
- Hot Plate with Thermostat, (115 Volt)
- Hot Plate with Thermostat, (230 Volt)
- Needle Valve, Male
- Hose Barb, ¼" NPT x ¼""
- Hose Barb, ¼", Chrome Plated
- Slim Taper File
- Wall Receptacle
- Case, Stainless Steel
- Beaker, 1200 mL, Stainless Steel
- Funnel, Glass, 6" Long Stem
- Pump
- Flowmeter
- Street Tee, ¼", Chromed
- Sodium Hydroxide, 5 N (20%), 8 oz (250 mL) UN1824

Optional
- Hydrometer Cylinder, 500 mL, Plastic
- Polymer Test Kit Without HAZMAT Items, 115 Volt
- Polymer Test Kit Without HAZMAT Items, 230 Volt
- Spare Parts Kit

* May require special handling for shipping.

PHPA POLYMER CONCENTRATION KIT WITH CENTRIFUGE

#290-00

Size:  15" x 12.5" x 10.5" (38 x 32 x 27 cm)
Weight:  4 lb 8 oz (2 kg)

Components
- Graduated Cylinder, 25 mL x .2 mL, Glass
- Centrifuge Tube, 15 mL, PYREX®
- Centrifuge, Portable, 2-Place, 15 mL Shields, Approximately 1,750 RPM, 6 Amp, 115 Volt
- Pipette, 1 mL x .01 mL, Glass
- Pipette, 2 mL x .1 mL, Glass
- Pipette, 5 mL x .1 mL, Glass
- Pipette Safety Bulb
- Beaker, 100 mL, Glass
- Stirring Rod, 6", Glass

Reagents
- Sodium Hydroxide, 0.2 N, 8 oz (250 mL)
- Hydrochloric Acid, 0.2 N, 8 oz (250 mL)
- Cresol Red Indicator Solution, 2 oz (60 mL)
- Stannic Chloride, 10% Solution, 16 oz (500 mL) UN3264

Optional
- Centrifuge for 15 mL Tubes, Hand Crank, 4-Place
- Centrifuge, Portable, 2-Place, 12 Volt, 6 Amp, 2-15 mL Shields, Approximately 2,150 RPM
- Carrying Case with Foam, Handle, and Wheels
- Spare Parts Kit

#290-00 - PHPA Polymer Concentration Kit
**ANILINE POINT DETERMINATION KIT**

#145-80 115 VOLT  
#145-80-1 230 VOLT

Size: 15" x 12" x 10.5" (38 x 30 x 27 cm)  
Weight: 11.75 lb (5.3 kg)

The Aniline Point Determination Kit determines the aniline point of oil used in drilling fluid. The aniline point indicates whether damage may occur to rubber parts of a drilling rig when oil is added to the drilling fluid. In general, oils with a high aromatic content are more detrimental to rubber products than those with a low aromatic content. The relative aromatic content of an oil is indicated by its aniline point. Oils with a high aromatic content have a low aniline point and vice versa. The higher the aniline point of the oil, the more desirable it is for drilling fluid use.

**Components**

#145-83 Utility Clamp  
#152-48 Stirring Hot Plate (115 Volt)  
#152-49 Stirring Hot Plate (230 Volt)  
#152-48-1 Support Rod for Stirrer, ½" x 12"  
#153-15-1 Test Tube, 20 x 1.2 x 150 mm, Glass  
#153-15-2 Test Tube, 41 x 2.0 x 150 mm, Glass  
#153-29-2 Syringe, 10 cc, Glass-Tip  
#153-40 Pipette, 10 mL x .1 mL, Glass  
#153-41 Pipette Aid, Rubber Section Bulb  
#153-51-3 Beaker, 50 mL, Glass  
#153-53-11 Stir Bar, ⅛" x ¼"  
#153-88 Cork for Thermometer, Size 8  
#153-89 Cork for Test Tubes, Size 20  
#154-26 Thermometer, Aniline Point, 77 - 221°F  
#165-62 Filter for Syringe, 25 mm, 0.45 µm, PTFE

**Reagents**

#130-78-25 Heater Bath Oil, 16 oz (500 mL)  
#145-84 Aniline Solution, 8 oz (250 mL) UN1547  
#265-06 Calcium Sulfate, 58 grams

**Optional**

#166-03 Balance, Portable, 0 - 320 x 0.1 gram  
#144-90-07 Carrying Case

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**NITRATE (NO₃⁻) ION TEST KIT WITH CASE**

#144-90

Size: 20" x 9" x 9" (57 x 23 x 23 cm)  
Weight: 6 lb 6 oz (2.9 kg)

**Features**

- Designed for reading the concentration of tracer nitrate ions in drilling fluids by people with extensive experience in oilfield research problems  
- Does not contain liquids  
- Reagent mixtures are in individually sealed plastic ampules to protect them from moisture, air, heat, and cold  
- Results are available in ppm Nitrate  
- Test requires 13 minutes, exclusive of filtering  
- Range for a direct sample is 0 - 10 ppm, and diluting 1 to 5 gives a 50 ppm range with a maximum dilution of 1 to 20 yielding a 0 - 200 ppm range

**Components**

#140-56 Filter Paper, Whatman Grade 1, 12.5 cm, Pack of 100  
#144-90-03 Color Wheel and Comparator Box  
#144-90-04 Test Tube Rack, 8 Tube Capacity  
#144-90-05 Dropper Pipette, 2 mL, Polyethylene  
#144-90-06 Test Tube with Rubber Stopper (150 x 18 mm)  
#153-12 Graduated Cylinder, 100 mL x 1 mL, Glass  
#153-18 Graduated Cylinder, 10 mL x .2 mL, Glass  
#153-30 Funnel, 3", Polyethylene  
#153-34 Pipette, 1 mL x .01 mL, Glass  
#153-51 Beaker, 250 mL, Glass

**Reagents**

#144-90-01 Calcium Hydroxide (Low Nitrate), ½ lb Jar  
#144-91 NO₃⁻¹¹ Nitrate Test Reagent, Package of 100  
#144-92 NO₃⁻¹² Nitrate Test Reagent, Package of 100

**Case**

#144-90-07 Carrying Case

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* WARNING: Aniline is extremely toxic.  
** May require special handling for shipping.

---

#145-80 - Aniline Point Kit with Optional Balance

#144-90 - Nitrate Test Kit
Drilling Fluids - Specialty Kits

**THIOCYANATE ION (SCN-) TEST KIT**

**#144-94**

| Size: 16.25" × 6.5" × 12" (29 × 17 × 31 cm) | Weight: 13 lb (5.9 kg) |

Thiocyanate Ion (SCN-) is used as a tracer in water-based drilling fluids. This test kit provides all of the necessary supplies and reagents to determine thiocyanate ion in a drill stem test fluid or mud filtrate.

**Components**

- #153-14 Graduated Cylinder, 50 mL × 1 mL, Glass
- #153-34 Pipette, 1 mL × .01 mL, Glass
- #153-36 Pipette, 2 mL × .1 mL, Glass
- #153-38 Pipette, 5 mL × .1 mL, Glass
- #153-50-1 Erlenmeyer Flask, 125 mL, Glass
- #153-60 Syringe, Disposable, 3 mL
- #154-75 Scoop, Brass

**Reagents**

- #144-941 `Bromine Water, 16 oz (500 mL) UN1744`
- #144-942 `Orthophosphoric Acid Solution, 8 oz (250 mL) UN1805`
- #144-943 `Phenol Solution, 5%, 8 oz (250 mL) UN2821`
- #144-944 Potassium Iodide Crystals, 50 g
- #145-551 Starch Indicator Solution, 10 oz (30 mL)
- #206-01 Deionized Water, 8 oz (250 mL)
- #262-05 Sodium Thiosulfate Solution, 0.01 N, 8 oz (250 mL)

**Case**

- #134-36-1 Knob, Red
- #144-36 Kit, Multi-Purpose, Diagonal, Large
- #163-28 Clip, Large

**Optional**

- #144-94-LH Thiocyanate Ion Test Kit Without HAZMAT Items
- #147-93 Nitrate Test Strips, 10 - 500 mg/L, Box of 100

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**ZINC CARBONATE (ZnCO₃) TEST KIT**

**#145-65**

| Size: 13" × 13" × 13" (33 × 33 × 33 cm) | Weight: 11 lb 13 oz (5.4 kg) |

This is a field test procedure for determining zinc carbonate in a drilling fluid. Powdered zinc carbonate may be used to scavenge hydrogen sulfide from viscosified water-based drilling fluids. Hence, it may be necessary to monitor the available ZnCO₃ in the mud. The Zinc Carbonate Test Kit contains all of the required labware, supplies, and reagents for the analysis of zinc carbonate in a drilling fluid.

**Components**

- #147-54 pH Strips, Range 7.5 to 14
- #153-12 Graduated Cylinder, 100 mL × 1 mL, Glass
- #153-16 Graduated Cylinder, 25 mL × .2 mL, Glass
- #153-18 Graduated Cylinder, 10 mL × .2 mL, Glass
- #153-29-2 Syringe, 10 mL, Glass-Tip
- #153-30 Funnel, 3", Polyethylene
- #153-40 Pipette, 10 mL × .1 mL, Glass
- #153-51 Beaker, 250 mL, Glass
- #168-04 Stirring Rod, 6", Glass

**Reagents**

- #205-17 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 32 oz (1 L)
- #205-24 Calcium Titration Solution I, 16 oz (500 mL)
- #205-25 Calcium Titration Solution II, 16 oz (500 mL) UN3287
- #205-27 manver Indicator Solution, 2 oz (60 mL)
- #206-02 Deionized Water, 16 oz (500 mL)
- #211-00 'Ammonium Fluoride, 10% Solution, 32 oz (1 L) UN3287
- #212-00 'Ammonium Hydroxide Concentrate, 16 oz (500 mL) UN2672
- #213-00 Formaldehyde, 4% Solution, 32 oz (1 L) UN2209
- #230-25 Acetic Acid, Glacial, 8 oz (250 mL) UN2789

**Optional**

- #145-65-LH Zinc Carbonate Test Kit Without HAZMAT Items

* May require special handling for shipping.
ZINC (Zn) IN BRINES DETERMINATION KIT
#145-66

Size: 12.5" × 15.5" × 10.5" (32 × 39 × 27 cm)
Weight: 5 lb 12 oz (2.6 kg)

Components
#144-90-05 Dropper Pipette, 2 mL, Polyethylene
#153-34 Pipette, 1 mL × .01 mL, Glass
#153-38 Pipette, 5 mL × .1 mL, Glass
#153-40 Pipette, 10 mL × .1 mL, Glass
#153-50-1 Erlenmeyer Flask, 125 mL
#153-51-3 Beaker, 50 mL, Glass

Reagents
#205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)
#205-04 Versenate® Hardness Buffer Solution, 2 oz, (60 mL) UN2672
#205-17-3 Versenate® Hardness Titration Solution (EDTA), 200 EPM, 16 oz (500 mL)
#206-02 Deionized Water, 16 oz (500 mL)
#262-00 Sodium Sulfide, 10% Solution, 8 oz (250 mL)
#270-01 Nitric Acid, 1 N, 8 oz (250 mL) UN2031

Optional
#145-66-LH Zinc in Brines Determination Kit Without HAZMAT Items

POTASSIUM AND POTASSIUM CHLORIDE KIT
(CENTRIFUGE METHOD)
#285-09

Size: 18.75" × 8" × 15" (48 × 20 × 38 cm)
Weight: 15 lb 11 oz (7.1 kg)

Features
- Range: Clear Filtrates - Above 5,000 mg/L or 1% KCl

Components
#153-21 Centrifuge Tube, Kolmer®, 10 mL
#153-25-2-H Centrifuge with 4 Heads and Shields, Hand Crank
#153-38 Pipette, 5 mL × .1 mL, Glass

Reagents
#206-01 Deionized Water, 8 oz (250 mL)
#285-11 Potassium Chloride Standard, 4 oz (120 mL)
#285-13 Sodium Perchlorate, 8 oz (250 mL) UN3139

Case
#130-60-2 Carrying Case

Optional
#285-09-LH Potassium and Potassium Chloride Kit Without HAZMAT Items
#285-09-SP Spare Parts Kit

POTASSIUM ION TEST KIT (TEST STRIP METHOD)
#147-90

Size: 6" × 1.5" × 5" (15 × 4 × 13 cm)
Weight: 7 oz (0.2 kg)

Features
- Suitable as a rapid guiding test for potassium in water, drilling fluids, and extracts from soil samples
- Potassium can be semi-quantitatively determined in the presence of 10 times its amount of sodium
- Color scale:
  - Range: 0 - 300 - 700 - 1,000 - 2,000 mg/L (ppm) K+
- Contains 100 test strips

* May require special handling for shipping.

#145-66 - Zinc in Brines Kit

#285-09 - Potassium Kit with Hand Crank Centrifuge

#147-90 - Potassium Ion Test Kit
Drilling Fluids - Specialty Kits

**POTASSIUM ION DETERMINATION KIT (TITRATION METHOD)**

#285-30

Size:  15.5” × 12.25” × 10.5” (39 × 31 × 27 cm)
Weight:  6 lb 13 oz (3.1 kg)

Features

Range: Clear Filtrates - Below 5,000 mg/L or 1% KCl.

Components

- #140-56 Filter Paper, Whatman Grade, 12.5 cm, Pack of 100
- #153-16 Graduated Cylinder, 25 mL × .2 mL, Glass
- #153-26 Titration Dish, Polyethylene
- #153-28 Stirring Rod, Polyethylene
- #153-30 Funnel, 3”, Polyethylene
- #153-36 Pipette, 2 mL × .1 mL, Glass
- #153-38 Pipette, 5 mL × .1 mL, Glass
- #153-40 Pipette, 10 mL × .1 mL, Glass
- #153-51 Beaker, 250 mL, Glass
- #153-54 Volumetric Flask, 100 mL, Glass

Reagents

- #206-02 Deionized Water, 16 oz (500 mL)
- #285-31 STPB Solution, 16 oz (500 mL)
- #285-32 QAS Solution, 16 oz (500 mL)
- #285-33 *Sodium Hydroxide, 5 N (20%), 8 oz (250 mL) UN1824
- #285-34 Bromophenol Blue Indicator Solution, 2 oz (60 mL)

Optional

- #285-30-LH Potassium Ion Determination Kit Without HAZMAT Items
- #285-30-SP Spare Parts Kit

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**REVERSE PHASE EXTRACTION KIT**

#165-65

Size:  20.75” × 13.5” × 16.75” (53 × 34 × 43 cm)
Weight:  23 lb (10.4 kg)

The Reverse Phase Extraction Test Kit is used for the determination of crude or formation oil, or other petroleum oil contamination, in non-aqueous fluids used in oil and gas exploration. The test method is intended to be used as a positive/negative test to determine the presence of crude oil in NAF prior to discharging drill cuttings from offshore drilling and production platforms.

Components

- #153-29-2 Syringe, 10 mL, Glass-Tip
- #153-51-4 Beaker, 100 mL, Glass
- #153-60-1 Syringe, 1 mL, Disposable
- #153-64 Syringe, 5 mL, Disposable
- #165-60-1 UV Lamp, 4W, 365 NM, 115 Volt
- #165-60-2 UV Viewing Cabinet
- #165-61 Sep-pak Plus C-18 Cartridges, Package of 10
- #165-62 Filter for Syringe, 25 mm, 0.45 µm, PTFE
- #165-63 Carrying Case, Plastic
- #165-66 "Standard" Cartridge, 1% Crude
- #165-67 Vials, 20 mL, Glass
- #165-68 *Isopropyl Alcohol, 32 oz (1 L) UN1219
- #297-14 Boston Round Bottle with Cap, Natural, Poly, 16 oz (500 mL)

Optional

- #130-74 Transformer, 230 to 115 Volts, 1.10 Amps, 50 / 60 Hz

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* May require special handling for shipping.
WATER ANALYSIS KIT  
#144-95

Size: 20" × 10.5" × 9.5" (51 × 27 × 24 cm)  
Weight: 28 lb 4 oz (12.8 kg)

Components
#144-95-001 Burette, Auto Self-Zero  
#145-601 Hydrogen Sulfide Test Papers, Package of 100  
#145-602 Test Bottle, Hydrogen Sulfide  
#145-603 Color Chart, Hydrogen Sulfide  
#145-604 Alka-Seltzer® Tablets  
#147-50 pH Paper, pHydron® Dispenser, pH 2-10, 1-11  
#153-12 Graduated Cylinder, 100 mL × 1 mL, Glass  
#153-15 Test Tube, 15 mm × 125 mm  
#153-26 Titration Dish, Polyethylene  
#153-28 Stirring Rod, Polyethylene  
#153-34 Pipette, 1 mL × .01 mL, Glass  
#153-40 Glass Pipette, 10 mL × .1 mL, Glass  
#153-75 Tubing, %", Tygon®  
#153-76 Tubing, %", Tygon®  
#153-83 Rubber Stopper, No. 3, One-Hole

Reagents
#145-551 Starch Indicator Solution, 2 oz (60 mL)  
#145-552 *Sulfide Buffer Solution, 2 oz (60 mL) UN1789  
#145-553 Iodine Titrating Solution, 8 oz (250 mL)  
#147-30 Buffer Solution, pH 7, 16 oz (500 mL)  
#200-10-1 Hydrogen Peroxide, 3% Solution, 2 oz (60 mL)  
#205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)  
#205-04 Versenate® Hardness Buffer Solution, 2 oz (60 mL) UN2672  
#205-12 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 16 oz (500 mL)  
#205-14 Versenate® Calcium Buffer Solution, 2 oz (60 mL) UN1824  
#206-04 Deionized Water, 32 oz (1 L)  
#210-00 CalVer® 2 Indicator Powder, 10 gram  
#215-00 Potassium Chromate Solution, 2 oz (60 mL)  
#220-00 Phenolphthalein Indicator Solution, 2 oz (60 mL)  
#230-04 Sulfuric Acid, 0.02 N, 16 oz (500 mL)  
#230-15 *Sulfuric Acid, 5 N, 2 oz (60 mL) UN2796  
#240-00 Methyl Orange Indicator Solution, 2 oz (60 mL)  
#250-00 Calcium Indicator Solution, 2 oz (60 mL)  
#255-00 *Sulfate Indicator Solution, 2 oz (60 mL) UN1789  
#265-08 Silver Nitrate, 0.01 g, 0.282 N, 16 oz (500 mL)  
#275-00 *Hydrochloric Acid, 37%, Concentrated, 2 oz (60 mL) UN1789  
#285-37 *Iron Indicator Solution, 2 oz (60 mL) UN1993  
#285-40 Iron Buffer Solution, 2 oz (60 mL)

Case
#141-17 Clip for Graduated Cylinder  
#144-96 Carrying Case, Stainless Steel  
#163-26 Clip, Small  
#163-27 Clip, Medium  
#163-28 Clip, Large

Optional
#144-95-LH Water Analysis Kit Without HAZMAT Items
Drilling Fluids - Specialty Kits

BRINE TEST KIT
#146-10

The Brine Test Kit is an accurate test to determine the weight percentage of calcium, zinc, bromide, and chloride in brine solutions. The test procedures are made with a 1:5 dilution of the original brine sample, and involve two separate procedures, one for calcium and zinc, and another procedure for chloride and bromide. Included is a procedure to check the analytical values obtained from the test procedures by comparing the moles of calcium and zinc verses the moles of bromide and chloride. This procedure verifies the calculations and is also useful to check for contamination by other salts such as sodium or potassium chlorides.

Components
#130-56 Beaker, Tripour, Disposable, 50 mL
#144-95-001 Buret, Auto Self-Zero
#147-53 pH Strips, 0 - 14, Package of 100
#153-30 Funnel, 3", Polyethylene
#153-31 Wash Bottle 500 mL
#153-34 Pipette, 1 mL x .01 mL, Glass
#153-38 Pipette, 5 mL x .1 mL, Glass
#153-44 Pipette with Curved Tip
#153-45 Vial, Boiling Beads, Glass, 5 mm
#153-50-1 Erlenmeyer Flask, 125 mL
#153-54-2 Flask with Cap, Volumetric, 25 mL
#154-75 Scoop, Brass
#168-01 Hot Plate With Thermostat, 115 Volt
#296-06 Vial, 17 mm (1 Dram)
#296-07 Cap, 17 mm

Reagents
#205-02 Versenate® Hardness Indicator Solution, 2 oz (60 mL)
#205-04 Versenate® Hardness Buffer Solution, 2 oz (60 mL) UN2672
#205-12 Versenate® Hardness Titration Solution, 1 mL = 20 EPM, 16 oz (500 mL)
#206-02 Deionized Water, 16 oz (500 mL)
#214-00 Ammonium Persulfate, 100 g UN1444
#215-00 Potassium Chromate Solution, 2 oz (60 mL)
#260-09 Sodium Hydroxide, 15%, 4 oz UN1824
#265-14 Silver Nitrate, 0.141 N, 16 oz (500 mL)
#270-02 Nitric Acid, 1 N, 1 oz (30 mL) UN2031
#270-05 Nitric Acid, .1 N, 8 oz (250 mL)

Case
#130-60-2 Carrying Case with Pluck Foam Insert and Rollers

Optional
#115-00 Mud Balance with Case, 4-Scale
#140-30 Filter Press with CO₂ Assembly, Benchmount
#146-10-LH Brine Test Kit Without HAZMAT Items
#153-52 Hydrometer Set with Case, Range: 0.700 - 2.000 Specific Gravity
#153-52-02 Hydrometer Cylinder, 500 mL, Plastic
#168-01-1 Hot Plate With Thermostat, 230 Volt

STATIC SHEEN TEST KIT
#295-50

Size: 19" × 18.5" × 12.5" (48 × 47 × 32 cm)
Weight: 9 lb 13 oz (4.5 kg)

Features
- Determines whether free oil is present in solutions
- Can easily test drilling and well treating fluids, drill cuttings, and produced sands.

Components
#153-12 Graduated Cylinder, 100 mL x 1 mL, Glass
#153-40-5 Pipette, Disposable, 25 mL
#153-51-5 Beaker, 1,000 mL, Glass
#153-51-6 Beaker, 1,000 mL, Polyethylene
#153-68 Weigh Boat, Disposable, Medium, 78 x 78 mm
#154-50 Spatula, 4"...
#295-50-1 Dishpan, 18 qt
#295-50-2 Trashbag, 30 gal
#297-28 Pail with Lid, 5 Gallon, Plastic

Optional (But Necessary)
#153-53 Magnetic Stirrer with Stirring Bar, 115 Volt
#153-53-7 Magnetic Stirrer with Stirring Bar, 230 Volt
#166-06 Triple Beam Balance, 610 g x 0.1 g

* May require special handling for shipping.
Dynamic Linear Swell Meter with Compactor and Computer

**#150-80** 115 Volt
**#150-80-1** 230 Volt

Size: 20.5” × 14.5” × 25” (52 × 37 × 64 cm)
Weight: 220 lb (100 kg)

Shipping Size: 38” × 34” × 41” (97 × 86 × 104 cm)
Shipping Weight: 460 lb (208.7 kg)

Investigating the swelling characteristics of shale formations is vital in selecting a proper drilling fluid to give maximum inhibition and wellbore stability. While drilling a well, a shale formation will immediately begin to swell if the drilling fluid is not completely compatible with the formation. This swelling can cause many problems, such as bit bailing, pipe drag, hole sloughing, or other “gumbo” related problems. Therefore, selecting the proper drilling fluid prior to, or during the drilling operation, can be very beneficial in achieving a stable wellbore.

The Dynamic Linear Swell Meter is designed to simultaneously test up to four drilling fluids (expandable to eight) on a representative shale sample for extended periods of time at temperatures up to 180°F.

Most swell meters are designed to test shale samples in static fluid. However, fluids circulate as you drill, so testing shale samples in a static environment does not always provide accurate readings.

The Dynamic Linear Swell Meter is the only swell meter on the market capable of dynamically testing your fluids, so you obtain the most accurate data possible.

**Features**
- Investigate the swelling characteristics of shale formations
- Test up to four fluids (expandable to eight) simultaneously
- Fluid is circulated during testing
- Maximum temperature: 180°F (82.2°C)

**Swell Meter Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor</td>
<td>#130-75-71</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>#130-75-74</td>
</tr>
<tr>
<td>Thermocouple</td>
<td>#130-76-03</td>
</tr>
<tr>
<td>DAQ Cable</td>
<td>#130-79-06</td>
</tr>
<tr>
<td>Weight</td>
<td>#150-80-009</td>
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<td>Screen, Flat, 1 ¼” Diameter</td>
<td>#150-80-03</td>
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<td>Washer (Spacer), Teflon®</td>
<td>#150-80-031</td>
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<tr>
<td>Transfer Stand</td>
<td>#150-80-032</td>
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<td>Wafer Tube</td>
<td>#150-80-033</td>
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<td>Cup</td>
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<td>Cap</td>
<td>#150-80-036</td>
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<td>LVDT</td>
<td>#150-80-064</td>
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<tr>
<td>Micrometer</td>
<td>#150-80-067</td>
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<tr>
<td>Calibration Block, Multi Point</td>
<td>#150-80-101</td>
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<tr>
<td>Stirring Hot Plate, 115 Volt</td>
<td>#150-83</td>
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<tr>
<td>Stirring Hot Plate, 230 Volt</td>
<td>#150-84</td>
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<tr>
<td>AC Power Cord, 115 Volt</td>
<td>#152-37</td>
</tr>
<tr>
<td>AC Power Cord, 230 Volt</td>
<td>#152-38</td>
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<tr>
<td>Syringe, Disposable, 60 cc</td>
<td>#153-67</td>
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**Compactor Components**

<table>
<thead>
<tr>
<th>Component</th>
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<tbody>
<tr>
<td>Valve</td>
<td>#122-224</td>
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<tr>
<td>Pump</td>
<td>#150-80-072</td>
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<tr>
<td>Hose</td>
<td>#150-80-075</td>
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<td>Spacer for Wafer Mold, ¼”</td>
<td>#150-80-085</td>
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<tr>
<td>Spacer for Wafer Mold, ¾”</td>
<td>#150-80-086</td>
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<tr>
<td>Body for Wafer Mold</td>
<td>#150-80-087</td>
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<tr>
<td>Plunger for Wafer Mold</td>
<td>#150-80-088</td>
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<tr>
<td>Drop Tube for Wafer Mold</td>
<td>#150-80-089</td>
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<tr>
<td>Relief Valve, 2,900 PSI (20 MPa)</td>
<td>#150-85</td>
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**Optional**

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<tr>
<th>Component</th>
<th>Code</th>
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<tr>
<td>Swell Meter Expansion, Single Unit, 115 Volt Only</td>
<td>#150-81-1</td>
</tr>
<tr>
<td>Swell Meter Expansion, Single Unit, 230 Volt Only</td>
<td>#150-81-2</td>
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</table>

#150-80 - Dynamic Linear Swell Meter with Compactor
Drilling Fluids - Lubricity

EP / LUBRICITY TESTER
#112-00 115 VOLT
#112-00-1 230 VOLT
#112-00-T WITH DATA ACQUISITION, 115 VOLT
#112-00-1-T WITH DATA ACQUISITION, 230 VOLT
#112-00-C WITH HEAT CUP, ULTRASONIC CLEANER, DATA ACQUISITION, AND CASE, 115 VOLT
#112-00-1-C WITH HEAT CUP, ULTRASONIC CLEANER, DATA ACQUISITION, AND CASE, 230 VOLT

Size: 19” × 15” × 14” (48 × 38 × 36 cm)
Weight: 56 lb (25.4 kg)

Features
- Measures the lubricating quality of drilling fluids and additives
- Predict wear rates of mechanical parts in known fluid systems
- Perform both Extreme Pressure (EP) and Lubricity (surface to surface drag) tests
- Digital control board
- User-friendly interface
- Automatic speed control
- Push-button torque zeroing
- Maximum speed: 1,000 RPM
- Maximum torque: 600 inch-pounds

Components
#121-016 Fuse, 7 Amp, ⅛” × 1 ⅛”
#111-02-01 Test Ring for Lubricity Test
#111-04-01 Test Block for EP Test
#111-06-01 Test Ring for EP Test
#111-08-01 Test Block for Lubricity Test
#111-09 Sample Cup
#111-10 Torque Wrench
#111-16 Service Wrench, ¼”
#111-17 Service Wrench, 1 ¼”
#111-18 Combination Wrench, ¾”
#111-19 Grinding Compound, Fine and Coarse, 2 oz each

Optional
#111-00-SP Spare Parts Kit
#111-01 Case, Padded, for Transport
#111-11 Measuring Magnifier with Inch Scale, 7x
#112-50 Heat Cup
#152-59 Ultrasonic Cleaner, 16 oz, 115 Volt

LUBRICITY EVALUATION MONITOR (LEM)
#113-00
Crated Size: 41” × 31” × 42” (104 × 79 × 107 cm)
Crated Weight: 380 lb (172.4 kg)

Features
- Pneumatic ram applies side load pushing the bob against the sample
- Periodic refresh of test fluid by pulling bob away from sample at definable intervals
- Clamp allows samples of casing, formation, sandstone, etc. to be tested in the same fixture
- Computerized data acquisition and control
- Software
  - Graphs rotational speed (RPM), torque (in-lb), side load (lb), and coefficient of friction with respect to time
  - Operator inputs rotational speed, side load, and refresh period
  - Test archive provides access to historical data

Specifications
- Sample cup capacity: 350 mL
- Range of Mud Weights: 0.83 - 18.0 lbs
- Torque Transducer Maximum Range: 100 lbf-in
- Torque Resolution: +/- 0.1% of full scale combined
- Maximum Side Load: 60 lbf
- Maximum Rotational Speed: 200 RPM
- Speed of Circulating Pump: 20 - 500 RPM
- Calibration: Coefficient of Friction of Water = .32 - .36
- Test Cell Material: Acrylic
- Bob Material: 4140 Steel - Rockwell Hardness of 37

Requirements
- Electrical Supply: 220 Volts
- Air Supply: 60 - 100 PSI

#112-00 - EP / Lubricity Tester

#113-00 - Lubricity Evaluation Monitor (LEM)
The Electrical Stability (ES) of an oil-based drilling fluid is a property related to its emulsion stability and oil wetting ability. The Emulsion Stability Tester determines ES by applying a precision voltage-ramped sinusoidal signal across a pair of parallel flat plate electrodes that are immersed in the fluid. The resulting current remains low until a threshold voltage (61 ± 5 µA) is reached. Then the current rises very rapidly. The point at which the fluid becomes conductive is the dielectric breakdown voltage, or the “ES” of the fluid, and is the voltage in peak volts measured when the current reaches the 61 µA point. The API recommended sinewave circuitry results in a more efficient energizing of the fluid and generates considerably lower ES values than the old style “spiky” waveform instruments. The symmetry of the sinusoidal signal inhibits the buildup of solids on the electrode faces and enhances reproducibility.

Features
- Determines the electrical stability of an oil-based drilling fluid
- Applies a precision voltage-ramped sinusoidal signal across a pair of electrodes immersed in the fluid

What’s Included
- Meter
- Probe
- High and low calibration standards
- Batteries (4)
- Case

Components
#131-01 Probe
#131-51 Calibration Standards, High and Low
#147-02 Battery, 9 Volt, Alkaline

Optional
#131-50-SP Spare Parts Kit
Drilling Fluids - Resistivity

RESISTIVITY METER, ANALOG
#130-85
Size: 9.5" × 6.5" × 3.5" (24 × 17 × 9 cm)
Weight: 2 lb 7 oz (1.1 kg)

Features
- Measures resistivity of a small sample of fluid, slurry, or semi-solid
- Range: 0.01 to 10 ohm-meter
- Reading can be converted to PPM NaCl using the supplied Nomograph
- Removable probe with built-in thermometer
- Powered by readily available 9 volt batteries

What's Included
- Meter
- Probe with suction bulb and thermometer
- Calibration Standards
- Batteries (2)
- Pipe cleaner
- Carrying case

Components
#130-85-02 Resistivity Probe
#130-85-04 Suction Bulb for Probe, Rubber (63207)
#130-87-014 Calibration Fluid, 1,413 µmhos, 1 L
#130-87-015 Calibration Fluid, 10,000 µmhos, 1 L
#130-87-016 Calibration Fluid, 50,000 µmhos, 1 L
#147-02 Battery, 9 Volt, Alkaline
#165-43 Pipe Cleaner

RESISTIVITY METER, DIGITAL
#130-87
Size: 8.0" × 5.0" × 3.5" (20 × 13 × 9 cm)
Weight: 2 lb 14 oz (1.3 kg)

Features
- Measures resistivity of a small sample of fluid, slurry, or semi-solid
- Range: 0.01 to 400 ohm-meters
- Digital display
- Removable probe
- Powered by readily available 9 volt batteries
- Resistivity units: ohm-meters
- Concentration of NaCl units: ppm, kppm, and gr/gal
- Temperature units: °C or °F

What's Included
- Meter
- Probe with suction bulb
- Calibration standards
- Batteries (2)
- Pipe cleaner
- Case

Components
#130-76-42 Display
#130-85-04 Rubber Suction Bulb
#130-87-05 Resistivity Probe
#130-87-014 Calibration Fluid, 1,413 µmhos, 1 L
#130-87-016 Calibration Fluid, 50,000 µmhos, 1 L
#147-02 Battery, 9 Volt, Alkaline
#165-43 Pipe Cleaner

Optional
#130-10-30 Power Supply
#152-37 AC Power Cord, 115 Volt
#152-38 AC Power Cord, 230 Volt
The Bulk Hardness Tester (#150-87) is designed to evaluate the hardness of shale after exposure to fluids. The hardness of the shale can be related to the inhibitive properties of the fluid being evaluated. Shale that interacted with the fluids will become softer due to the adsorption of water, swelling, and dispersion of fine particles. This rock-fluid interaction can be linked to wellbore stability problems, including reduction in the compressive strength, spalling, or fracturing. In terms of integrity of drill cuttings, excessive softening and stickiness of the pieces of shale can produce mud rings in the annulus, sticking problems in the drilling assembly, and bit balling, among other problems.

Features
- Evaluates the hardness of shale samples after exposure to fluids
- Stainless steel construction
- Includes threaded piston, torque wrench, and Allen key
Drilling Fluids - Particle Size

SEQOIA LISST-PORTABLE|XR PARTICLE SIZE ANALYZER

#365-10

Size: 7” × 11.5” × 17.5” (18 × 29 × 44 cm)
Weight: 17 lb (7.5 kg)
Crated Size: 31” × 21” × 11” (78 × 53 × 28 cm)
Crated Weight: 49 lb (22 kg)

Features

• Truly portable - completely self-contained with built-in data logger, processor, rechargeable battery, and 7” touch panel color display.
• Touch panel allows for easy SOP programming, sample analysis and display of data without a PC.
• Shock mounted optics block.
• Multiple Mie models as well as Fraunhofer model available for inversion, selectable from the touch panel.
• All data-processing is performed on board and stored in ASCII format. No post-processing necessary.
• Outputs: Total volume concentration, mean size, standard deviation, optical transmission, D5, D10, D16, D25, D50 (median grain size), D60, D75, D84, D90, D95, D60/D10 (Hazen uniformity coefficient), particle surface area, silt fraction, silt volume, size distribution, battery voltage, sample notes.
• Built-in ultrasonic probe for complete particle dispersion.
• Based on the laser diffraction principle. Compliant with ISO-13320-1 standard.

Specifications

• 0.34-500 µm in 44 log-spaced size classes.
• 30-1,900 mg/l range, depending on particle size (see table). Resolution < 1 mg/l. Accuracy ± 20%.
• Data storage: 128 MB flash card, capable of storing at least 40,000 size distributions and associated sample information.
• Rechargeable Lithium-ion battery provides for 6 hours of sample processing.
• 25W, 40kHz ultrasonic probe with controller electronics, managed from the touch panel display.

PARTICLE SIZE BY WET SIEVE ANALYSIS TEST

#169-00

Size: 9” × 6” × 6” (23 × 15 × 15 cm)
Weight: 3 lb 5 oz (1.5 kg)

The major solids component of a drilling fluid is often the weight material Barite. The American Petroleum Institute outlines several test procedures that help assure the quality of this important ingredient. Among these is the wet screen procedure for particle size analysis. The Particle Size Kit contains all of the equipment necessary to perform particle size analysis as specified in API Specification 13A. The kit is furnished complete with U.S. Standard screens of 200 and 325-mesh, screen holder, and spray wash assembly. The spray system includes a pressure monitoring gauge (0 to 30 PSI), one 24” water hose, and an adapter plug for easy connection to a water supply.

Components

#169-01 Spray Cup
#169-02 Screen, 200-Mesh, 75 µm
#169-03 Gauge, 60 PSI, ¼” Bottom Connect, 2” Face
#169-04 Screen, 325-Mesh, 45 µm
#169-05 Hose with Adapter
#169-05-004 Reducing Bushing, ½” × ¼” FNPT
#169-06 Complete Tee Jet
#169-08 Pressure Regulator, Water
#171-90-07 Hex Nipple, ⅛” NPT, 316 Stainless Steel
FLOWCAM® BENCHTOP PARTICLE SIZE ANALYZER
#365-00

Features
• Measures particle size and shape - over 30 morphological measurements on each particle imaged.
• Provides superior image quality and image-based measurements - fast and accurate results you can see, backed by the quantitative data to prove it.
• Gives statistically relevant results quickly - allows you to look at tens of thousands of particles per minute.
• Allows automated, trainable, statistically-based pattern recognition - saves time by isolating different types of particles into categories and sub-populations.
• Delivers accurate results on all particles from 1 μm to 2 mm (count) and 4 μm to 2 mm (shape).
• Flexible and customizable system meets user-specific requirements.
• Four magnifications (2X, 4X, 10X, and 20X) and various flow cell sizes are available to accommodate a broad range of sample particle sizes (1 μm to 2 mm).
• Captures particle images at up to 22 frames per second - provides high sampling efficiency and fast analysis times.

Software Features
• Sort and filter particle data based upon criteria you supply - results display immediately as particle images.
• Find and display all similar-type particles in a heterogeneous sample with sophisticated pattern recognition capabilities.
• Create and save user-defined particle type libraries, for automatic sorting and statistical analysis.
• Instantly calculates summary statistics, including concentration, and creates corresponding graphs you can interact with.

Optional
#365-00-1 Objective Kit, 4X, 10X
#365-00-5 Focus Beads, 10X, 20X
Core - Preparation

**CORE PLUG DRILL**

**#127-40**

- **Size:** 39” x 35” x 75” (99 x 89 x 191 cm)
- **Weight:** 480 lb (217.7 kg)

**Features**
- Floor-mounted design
- Can be used to cut cores 1” in diameter and up to 6” in length (14” available)
- Splash guard for reducing spills
- Rotary union with shut-off valve connects drill bit to drill press and feeds water to the bit surface
- Includes drain pan, 6” jaw vise, and hoses for coolant

**Requirements**
- 230 Volt, 50 / 60 Hz

**Components**
- #127-40-003-1 Diamond-Tipped Core Bit, 1” Diameter x 6” Long
- #127-40-015 Vise, 6” Jaw
- #127-40-006-1 Drain Pan

**Optional**
- #127-40-002-1 Diamond-Tipped Core Bit, .5” Diameter x 6” Long
- #127-40-002-2 Diamond-Tipped Core Bit, .75” x 6” Long
- #127-40-004-1 Diamond-Tipped Core Bit, 1.5” Diameter, 6” Long
- #127-40-005 Reservoir with Submersible Pump, Flexible Hoses, and Fittings, Corrosion Resistant
- #127-40-006 Core Holding Tray, 40”, Stainless Steel, with Two 6 ¼” Clamping Vises
- #127-40-009 Water Swivel Repair Kit
- #127-40-SP Spare Parts Kit

**PCS-340 CORE SATURATOR**

**#127-70 115 VOLT**

- **Size:** 41” x 32” x 47” (104 x 81 x 119 cm)
- **Weight:** 324 lb (147 kg)

**Features**
- Fully saturate a core sample before starting a permeability test
- Includes: test cell, vacuum pump, air-driven pump, and saturation fluid reservoir

**Specifications**
- Maximum Pressure: 2,500 PSI (2.5 MPa)
- Maximum Core Size: 3” Diameter x 24” Long
- Air Requirement: 100 - 120 PSI (689.5 - 827.4 kPa)

**Components**
- #122-073-1 Fuse, 2.5 Amp, 5 mm x 20 mm (230 Volt)
- #122-074-1 Fuse, 5 Amp, 5 mm x 20 mm (115 Volt)
- #127-70-020 Cell Body
- #127-70-021 Cell Plug
- #127-70-022 Lock Ring
- #127-70-023 Bottom Cell Closure
- #127-70-024 Handle
- #127-70-026 Cell O-ring
- #127-70-027 Cell Backup Ring
- #127-70-028 Retaining Ring
- #127-70-030 Vacuum Gauge
- #120-910-022 Pressure Gauge
- #120-00-030 Air Filter

---

#127-40 - Core Plug Drill

#127-70 - PCS 340 Core Saturator
**MK-5000 SERIES CORE SAW**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Phase</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>#127-61</td>
<td>230 VOLT</td>
<td>1</td>
<td>60 Hz</td>
</tr>
<tr>
<td>#127-61-1</td>
<td>208 / 230 V</td>
<td>1</td>
<td>50 Hz</td>
</tr>
<tr>
<td>#127-62</td>
<td>230 VOLT</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>#127-62-1</td>
<td>208 / 230 V</td>
<td>1</td>
<td>50 Hz</td>
</tr>
<tr>
<td>#127-63</td>
<td>460 VOLT</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>#127-63-1</td>
<td>460 VOLT</td>
<td>3</td>
<td>50 Hz</td>
</tr>
</tbody>
</table>

**Features**
- Precision screw feed mechanism allows the cutting head to be easily raised or lowered to the precise cutting depth required.
- Self-leveling blade guard provides optimum blade coverage for operator safety.
- Foot pedal for hands-free cutting.
- Open-back design allows for material up to 20" long to be cut.
- Conveyor cart built from heavy-duty cast aluminum.
- 3 phase saws are equipped with GE NEMA 1 starters in NEMA 12 enclosure.
- Adjustable water supply for maximum blade protection.
- Built-in tie-downs for safer saw transport.
- Ergonomically designed handle for reduced operator fatigue.
- Heavy-duty built-in forklift brackets allow lift to approach from the front or either side of the saw.

**Specifications**
- Motor: Baldor
- Arbor Size: 1" Arbor
- Shaft RPM: 2,700
- Blade RPM: 1,925
- Depth of Cut - 14" Blade: 5"
- Depth of Cut - 20" Blade: 8"
- Depth of Cut - 24" Blade: 10"

**CORE SAW ACCESSORIES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#127-61-2</td>
<td>Blade, Segmented Rim, 14&quot; Diameter x .095&quot; Width, 1&quot; Arbor, 10 mm Segment Height</td>
</tr>
<tr>
<td>#127-61-3</td>
<td>Blade, Segmented Rim, 20&quot; Diameter x .135&quot; Width, 1&quot; Arbor, 10 mm Segment Height</td>
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<tr>
<td>#127-61-4</td>
<td>Blade, Continuous Rim, 10&quot; Diameter x .050&quot; Width, 1/4&quot; Arbor, 5 mm Rim Height</td>
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<tr>
<td>#127-61-5</td>
<td>Blade, Continuous Rim, 14&quot; Diameter x .070&quot; Width, 1&quot; Arbor, 5 mm Rim Height</td>
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<tr>
<td>#127-61-6</td>
<td>Blade, Continuous Rim, 20&quot; Diameter x .100&quot; Width, 1&quot; Arbor, 5 mm Rim Height</td>
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<tr>
<td>#127-61-7</td>
<td>Blade, Segmented Rim, 20&quot; Diameter x .100&quot; Width, 1&quot; Arbor, 5 mm Rim Height</td>
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<tr>
<td>#127-61-8</td>
<td>Blade, Segmented Rim, 24&quot; Diameter x .100&quot; Width, 1&quot; Arbor, 5 mm Rim Height</td>
</tr>
<tr>
<td>#127-61-9</td>
<td>Blade, Segmented Rim, 30&quot; Diameter x .125&quot; Width, 1&quot; Arbor, 5 mm Rim Height</td>
</tr>
</tbody>
</table>

**BD-2000 SERIES CORE SAW**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Phase</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>#127-64</td>
<td>230 VOLT</td>
<td>1</td>
<td>60 Hz</td>
</tr>
<tr>
<td>#127-64-1</td>
<td>208 / 230 V</td>
<td>1</td>
<td>50 Hz</td>
</tr>
</tbody>
</table>

**Features**
- Stay level blade guard gives 180° coverage at all times.
- Blade shaft is built with sealed, permanently lubricated, heavy-duty bearings.
- Cast-aluminum structural components & jig-welded steel frame assembly.
- Convenient ON/OFF switch for operator safety.
- Recoil spring return cutting head.
- Cast aluminum blade guard with stainless steel water tubes that will not bend or rust.
- Adjustable water supply for maximum blade protection.
- Thermally protected 3 hp Baldor motor on electric saw.
- Submersible electric water pump.
- Made in the USA.
- 208-240V/50 Hz motor available on request.
- One-year limited warranty.

**Specifications**
- Motor: Baldor, 3 hp.
- Motor RPM: 3,450.
- Blade RPM: 3,100.
- Blade Capacity: 14" (35 cm).
- Arbor: 1" (2.5 cm).
- Table Travel: 29" (74 cm).
- Max Core Sample Length: 12" (30 cm).
- Max Core Sample Diameter: 5" (13 cm).
- Minimum Core Sample Diameter: 1" (2.5 cm).
The permeability of a petroleum reservoir is one of the most influential parameters in determining the production capabilities of a producing formation. Permeability is a measure of the ability of a fluid to flow through a porous media when subjected to a differential pressure and is mathematically equated by Darcy’s law. The Reservoir Permeability Tester was developed to evaluate how fluids affect the permeability of a core specimen. In addition, the unit may be used to evaluate acidizing techniques and to develop typical Acid Response Curves (ARCs).

Features
- Evaluates how fluids affect the permeability of a core specimen
- Develop Acid Response Curves (ARCs) for different acidizing techniques
- Hassler test cell accepts cores of variable length
- Duplex pump delivers constant drive pressure
- Flow direction of test fluid easily reversed by use of valves
- All wetted components constructed of Hastelloy® or 316 Stainless Steel
- Multiple accumulators with piston
- Cell temperature maintained via internal heaters

Specifications
- Maximum Drive Pressure: 5,000 PSI (34.5 MPa)
- Maximum Confining Pressure: 5,000 PSI (34.5 MPa)
- Maximum Back Pressure: 1,000 PSI (6.9 MPa)

Requirements
- Air: 100 - 120 PSI (689.5 - 827.4 kPa)
- Nitrogen: 1000 - 2000 PSI (6.9 - 13.8 MPa)
- Water: 30 - 40 PSI (206.9 - 275.8 kPa)
- Electrical: 230 Volt

Components
#120-27-019 Band Heater for Hassler Test Cell
#120-70-1-052 Hose, 18”
#120-80-4 Temperature Controller
#122-073-1 Fuse for Main Power, 3 Amp, 5 mm × 20 mm
#122-074 Fuse for Pump, 4 Amp, 5 mm × 20 mm
#122-077 Fuse for Safety Controller, 10 Amp, 5 mm × 20 mm
#127-00-003 Regulator
#127-00-205 O-ring for Accumulator Cap and Piston
#127-00-210 Rod for Hassler Cell Cap
#127-00-212 O-ring for Hassler Cell Cap
#127-00-213 O-ring for Hassler Insert
#127-00-217 Knob for Hassler Cell Cap
#127-00-235 Core Boot for Hassler Cell, 1.5” Diameter × 1.5” ID × 0.125” Wall × 7” Length, Viton®
#127-00-247 Sample Cylinder with ¼” FNPT Ports, 75 mL
#127-00-255 Clamp Rod
#127-00-256 Bearing Plate

Optional
#127-00 - Model 340 Manual Permeameter

Heat Exchanger
Cartridge Heater for Heat Exchanger
Gauge with Back Connection, 5,000 PSI, 4.5”
Gauge with Back Connection, 1,000 PSI, 4.5”
Fill Pump for Accumulator, 230 Volt
Bearing for Hassler Pivot, ¼”
Monitor
Desktop Computer
Thermocouple
Thermocouple Jack
Power Supply
Serial Cable, OB9 M/F
USB Cable
AC Power Cord, 3-Conductor, International (Continental European)
Plug Adapter, European, 230 Volt
Solid State Relay, 25 Amp, 230 Volt
Spare Parts Kit
### RGP-560 Gas Permeameter

**#127-87**

**Size:** 27” × 24” × 32” (69 × 61 × 81 cm)  
**Weight:** 160 lb (72.6 kg)

The RGP-560 Gas Permeameter is designed to measure the permeability of core specimens one inch in diameter and one inch in length. A core specimen is placed into a core sleeve, which is then inserted into a modified Hassler-style test cell. Nitrogen at a constant flow rate is forced through the core and the differential pressure across the core is measured. The flowrate is measured with calibrated flowmeters. Viscosity is easily determined by the use of nitrogen property tables. These variables are incorporated into Darcy’s law to calculate sample permeability.

**Features**
- Data Acquisition and Control system with software included
- Modified Hassler cell accommodates cores of 1” length and 1” diameter
- Instrumentation gauge displays driving pressure
- All Hassler components are fabricated from 316 Stainless Steel
- Nitrogen test fluid

**Requirements**
- Compressed Air: 100 PSI (689.5 kPa)
- Gas Pressure: Standard Air, Carbon Dioxide, Nitrogen, or Oxygen up to 500 PSI (3.5 MPa)
- Power: 115 Volt or 230 Volt, 50 / 60 Hz

**Components**
- #120-85-010 Digital Calipers
- #122-220 Rubber Specimen Holder
- #122-221 O-ring
- #122-225 Stainless Steel Core Sleeve

### GAS PERMEAMETER

**#120-85**

**Size:** 22” × 18” × 24” (56 × 46 × 61 cm)  
**Weight:** 80 lb (36.3 kg)

The Gas Permeameter is designed to measure the permeability of core specimens one inch in diameter and one inch in length. A core specimen is placed into a core sleeve, which is then inserted into a modified Hassler-style test cell. Nitrogen at a constant flow rate is forced through the core and the differential pressure across the core is measured. The flowrate is measured with calibrated flowmeters. Viscosity is easily determined by the use of nitrogen property tables. These variables are incorporated into Darcy’s law to calculate sample permeability.

**Features**
- Modified Hassler cell accommodates cores of 1” length and 1” diameter
- Instrumentation gauge displays driving pressure
- All Hassler components are fabricated from 316 Stainless Steel
- Nitrogen test fluid

**Requirements**
- Compressed Air: 100 PSI (689.5 kPa)
- Gas Pressure: Standard Air, Carbon Dioxide, Nitrogen, or Oxygen up to 500 PSI (3.5 MPa)

**Components**
- #120-85-010 Digital Calipers
- #122-220 Rubber Specimen Holder
- #122-221 O-ring
- #122-225 Stainless Steel Core Sleeve
Core - Routine Analysis

AUTOMATED GAS PERMEAMETER
#127-80

The Automated Gas Permeameter is designed to measure the permeability of core specimens 1” or 1.5” in diameter and 2” to 4” in length. A core specimen is placed into a Phoenix Instruments Hydrostatic Core holder and confining pressure up to 10,000 PSI is applied. Nitrogen is forced through the core and differential pressure across the core is measured. The flowrate is measured with a series of calibrated flowmeters designed to operate within varying ranges. Viscosity is easily determined by the use of nitrogen property tables. These variables are then incorporated into Darcy’s law to calculate permeability.

Features
- Phoenix Instruments hydrostatic core holder with Tri-Lock technology
- Built-in data acquisition and control system with software
- Nitrogen test fluid
- Confining pressure up to 10,000 PSI
- Automated testing
- Multiple flowmeters of varying sensitivity provide a greater range of flowrates
- Accepts core samples 1” or 1.5” diameter and 2” to 4” length
The BLP 530 Gas Porosimeter was designed to rapidly and accurately measure the effective porosity of a core sample. Porosity is defined as the percentage of void space within a solid media. Effective porosity is the percentage of void space within a solid media in which the pore spaces are interconnected. It is imperative to accurately determine the effective porosity of a petroleum reservoir when estimating the total amount of recoverable hydrocarbons within a producing formation. The BLP 530 Gas Porosimeter was designed to precisely measure the effective porosity of a core sample.

Features
- Precision regulator for accurate pressure control
- Digital display of pressure
- Vacuum gauge and connection port for evacuation
- Lock in feature allows for rapid measurements of samples
- Unit is compact and virtually maintenance free
- Calibration sample included with unit
- Air relief valve prevents overpressurization

Specifications
- Can test core samples up to 1.5" in diameter by 2" long (Larger core holders available upon request)

Components
#120-27-004 DP-15 Diaphragm (0 - 200 PSI)
#122-073 Fuse, 2 Amp, 5 mm x 20 mm
#127-00-262 Valve
#127-20-004 O-ring for Test Cell
#127-20-020 Calibration Block

The BLP 630 Automated Gas Porosimeter was designed to rapidly and accurately measure the effective porosity of a core sample. Porosity is defined as the percentage of void space within a solid media. Effective porosity is the percentage of void space within a solid media in which the pore spaces are interconnected. It is imperative to accurately determine the effective porosity of a petroleum reservoir when estimating the total amount of recoverable hydrocarbons within a producing formation. The BLP 630 Automated Gas Porosimeter was designed to precisely measure the effective porosity of a core sample.

Features
- Three separate volumetric gas reservoirs provide 7 possible gas volume combinations to improve effective pore space data for a broad range of core sizes and core porosities.
- Comes with an assortment of volumetric core holder inserts to minimize dead space for greater accuracy
- Core holder secured and released with ¼ turn by hand for quick and easy core loading
- Integrated vacuum pump allows evacuation of pore space and porosimeter gas circuits
- Various gases can be used, including helium, nitrogen and carbon dioxide
- Calibration is performed with the software to ensure accuracy
- Pressure relief valves are incorporated into the gas circuits to ensure safe operation
- Comes with PC and software for automatic or manual control and data acquisition

Specifications
- Core holder can test cores up to 2" diameter and up to 3" long
- Comes with adapter kit for 1", 1 ½" and 30mm diameter cores
- Gas pressure: 200 psi maximum testing pressure

Requirements
- Gas (helium, nitrogen, etc.): 200 PSI
- Power: 115 Volt, 7 Amp or 230 Volt, 3 Amp
A properly-equipped centrifuge has many applications in the study of the rock-fluid properties of hydrocarbon reservoirs. Processing the centrifuge core analysis results provides relative permeability and capillary pressure data applicable to reservoir production performance calculations. Because enormous forces on the pore fluids are easily generated in the centrifuge, it is possible to perform experiments that model gravity drainage production processes. Rates and end points are key concerns that can be derived from the measured centrifuge core analysis data.

Features
- Solid construction with welded frame provides enhanced stability and safety
- Testing chamber is mounted on compressed vibration absorbers for smooth operation
- Top rotor shaft bearing enables stable and safe operation throughout the entire RPM range
- Integrated vacuum pump evacuates testing chamber so that the rotor can maintain high speeds
- Radiant heating system makes it possible to heat the core holders in a vacuum environment
- Integrated chiller for fast cool-down cycle after tests
- Hassler-type core holders apply equivalent confining pressure along the length of the cores
- Core holders are reversible for operating in either imbibition or drainage mode
- Computer with control and data acquisition software is included
- High-resolution camera gives accurate measurements of the fluid interface changes

Specifications
- Rotor speed
  - Maximum: 5,000 RPM
  - Minimum (with data acquisition simultaneously on all 4 core holders): 100 RPM
- Core holders
  - Sample Size: 1.0” and 1.5” diameter × 2.0” maximum length
  - Maximum Confining Pressure: 3,000 PSI
  - Maximum Temperature: 200°F (250°F Optional)
  - Maximum Pore Pressure: 1,000 PSI
  - Maximum Confining Pressure: 3,000 PSI
  - Maximum Capillary Pressure: 300 PSI in drainage mode
- Camera
  - Resolution: 2048 linear pixels
  - Data rate: 1 reading per revolution below 700 RPM, 10 readings per second above 700 RPM

Requirements
- Power: 220 Volt, 50 / 60 Hz, 1 Phase (20 Amp) and 3 Phase (30 Amp)
SGR-740 SPECTRAL GAMMA RAY CORE LOGGER
#700-410

Size: 126” × 38” × 55” (320 × 97 × 140 cm)
Weight: 1550 lb (703.1 kg)

A total gamma-ray well log is a recording of the total natural gamma radiation of the formation around the wellbore. A spectral gamma-ray well log is a recording of the relative amounts of the three main elements that create natural radiation (Potassium, Uranium, and Thorium).

The SGR-740 Gamma Ray Core Logger measures the energy level and quantity of the radiation emitted from a core sample and calculates the quantity of each of the elements. The amounts of each of these elements and the total gamma-ray count are then plotted as a function of depth.

Features
- Dual logging mode - simultaneously plots Spectral and Total logs from cores in one pass
- Constant temperature controller is integrated with scintillation detector - improves repeatability
- Stepper motor drive mechanism for multiple speed settings - optimizes resolution and speed
- Automatic conveyor stop mode - prevents cores from falling off end of conveyor
- Mounted on locking swivel castors - enables quick and easy moving
- V-shaped conveyor track - keeps cores in center of conveyor
- Can log cores up to 7” in diameter
- Calibration standards are included

Specifications
- Belt Size: 6” wide × 9’ long (15 × 274 cm)
- Gamma Ray Detector: NaI Crystal, 3” × 3” (8 × 8 cm)
- Size: 24” × 47” × 118” (60 × 120 × 300 cm)
- Weight: 992 lb (450 kg)

Requirements
- 230 Volt, 2 Amp, 50 / 60 Hz

Components
#122-075-2 Fuse, 6 Amp, 5 mm × 20 mm
#700-400-014 Conveyor Belt
#700-400-017 Distance Sensor
#700-400-021 Motor
#700-410-001 Multi-Channel Analyzer
#700-410-401 Potassium Calibration Standard
#700-410-402 Thorium Calibration Standard
#700-410-403 Uranium Calibration Standard
#700-410-404 Background Calibration Standard
#700-410-405 API 200 Calibration Standard
MODEL 20 CONSTANT SPEED BLENDER FOR FRACTURING FLUID TESTING, 1 LITER

#120-60-F 115 VOLT
#120-60-1-F 230 VOLT

Size: 45" × 32" × 12" (114 × 81 × 31 cm)
Weight: 75 lb (34.1 kg)

Features
- Hardened stainless steel mixing blades
- Glass mixing container
- Two preset mixing speeds (500 and 1,000 RPM) and variable speed
- Rotational speed is maintained with microprocessor
- Timing relays automatically control mixing times at required RPM
- Digital instrumentation provides excellent readability
- Optional torque measuring module tests crosslinking time

Requirements
Power: 115 Volt at 7 Amp or 230 Volt at 3.5 Amp, 50 / 60 Hz

Components
#122-073-1 Fuse, 3 Amp, 5 mm × 20 mm (230 Volt)
#122-074-1 Fuse, 5 Amp, 5 mm × 20 mm (230 Volt)
#122-075 Fuse, 7 Amp, 5 mm × 20 mm (115 Volt)
#122-077 Fuse, 10 Amp, 5 mm × 20 mm (115 Volt)
#122-200 Blending Assembly and Square Drive
#122-203 Lid for 1 Liter Container
#122-204 Gasket
#122-207 Blade
#122-208-1 Exciter Gear, Ten Tooth
#122-209 Blender Assembly with Exciter Gear, Pickup Cable, and Stainless Steel Container, 230 Volt
#122-210 Blender Assembly with Exciter Gear, Pickup Cable, and Stainless Steel Container, 115 Volt
#122-209-2 Magnetic Pick Up
#122-211 Square Drive Stud
#122-212 Coupling
#122-213 Slinger
#122-215 Shaft
#122-216 Washer, Stainless Steel
#152-64 Container, 1 Liter, Glass
**MODEL 900 DIGITAL VISCOMETER**

#130-76-C   115 VOLT
#130-76-1-C   230 VOLT

Size:   17.3" × 15" × 11" (44 × 38 × 28 cm)
Weight:   19 lb (8.6 kg)

The Model 900 Viscometer is a true Couette coaxial cylinder rotational viscometer, which employs a transducer to measure the induced angle of rotation of the bob by a fluid sample. For a fully automated Control/Data Acquisition System suitable for research applications, the Model 900 Viscometer may be connected to a computer via a serial (RS-232 or USB with converter) port using OFITE’s exclusive and field-proven Windows™-based ORCADA® software.

For more information, refer to page 39.

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**MODEL 3025 PRESSURIZED VISCOMETER**

#130-83

The Model 3025 is a fully-automated, pressurized viscometer. It accurately determines the fluid characteristics of stimulation fluids, completion fluids, drilling fluids, and cement in terms of shear stress, shear rate, time, and temperature at elevated temperature and pressure.

Using the exclusive ORCADA® software, a computer novice can operate the viscometer, and yet the system is versatile enough for advanced research and demanding test parameters. It is suitable for both field and laboratory use. A waterproof, compartmentalized case with wheels makes the unit completely portable.

**Features**
- Automated control (temperature and RPM)
- Includes easy-to-use ORCADA® software and laptop
- Hastelloy®-wetted parts

**Specifications**
- Maximum Pressure: 2,500 PSI (17.2 MPa)
- Maximum Temperature: 500°F (260°C)

**Requirements**
- 115 / 230 Volt, 50 / 60 Hz
- N₂: 3,000 PSI
- Water: 15 - 30 PSI

**What’s Included**
- Model 3025 Viscometer
- Laptop PC with ORCADA® Software
- Waterproof, padded carrying case
Frac / Stimulation - Compressive Strength

CLF-40 COMPRESSION LOAD FRAME
#120-285 115 VOLT
#120-285-230 230 VOLT

Size: 23" × 23" × 26.5" (59 × 59 × 67 cm)
Weight: 225 lb (102 kg)

Shipping Size: 29" × 31" × 39" (74 × 78 × 99 cm)
Shipping Weight: 340 lb (154.2 kg)

The CLF-40 Automated Compressive Load Frame was designed to determine the compressive strength of a well cement or proppant.

Features
- Perform crush testing on proppant
- Clamshell design with safety switches protect people and equipment
- Safety head, rupture disk, and high pressure alarm prevent over pressurization
- Computerized data acquisition and control system provides detailed test information and precise control
- Operates as a standalone unit or with computer control
- Software accepts cylindrical and cube-shaped samples
- Remote access available via RS-232 or Ethernet
- Small footprint saves valuable lab space

Specifications
- Maximum load capacity: 40,000 lbf
- Variable loading rates from 250 to 40,000 lbf/min
- Maximum load dwell: 15 minutes

Requirements
- Power: 115 Volt at 9 Amp or 230 Volt at 5 Amp, 50 / 60 Hz

Components
#120-28-061 Brush
#120-90-035-1 Filter
#122-074 Fuse, 4 Amp, 5 mm × 20 mm

Optional
#120-285-9 Proppant Adapter

PROPPANT TEST CELL, 1" DIAMETER
#800-00-038

Size: 3.9" (10 cm)
Weight: 3 lb 2 oz (1.4 kg)

Components:
#800-00-035 Cell Body
#800-00-036 Cell Bottom
#800-00-037 Piston

PROPPANT TEST CELL, 1.5" DIAMETER
#800-00-034

Size: 3.9" (10 cm)
Weight: 4 lb 14 oz (2.2 kg)

Components:
#800-00-031 Cell Body
#800-00-032 Cell Bottom
#800-00-033 Piston

PROPPANT TEST CELL, 2" DIAMETER
#800-00-013

Size: 3.9" (10 cm)
Weight: 7 lb 2 oz (3.2 kg)

Components:
#800-00-010 Cell Body
#800-00-011 Cell Bottom
#800-00-012 Piston

#120-285 - CLF-40 Compressive Load Frame

#800-00-034 - Proppant Test Cell, 1.5"
TURBIDITY METER, PORTABLE
#299-10

Size: 7.5" x 3.5" x 2.5" (19 x 9 x 6 cm)
Weight: 13 oz (368 g)

Features
- Signal Averaging: Disabled, 2, 5, 10
- Power: USB computer cable/wall adapter or Lithium ion rechargeable battery, 3.7V, 2.5" x .75", 1.7 oz
- Data Logging: 500 points
- Auto Shut-Off: Disabled, 5, 10, 30 minutes
- Languages: English, French, Spanish, Japanese, Italian, Portuguese, Chinese
- Waterproof: IP67

Specifications
- Unit of Measure: NTU, AU, ASBC, EBC
- Range: 0-4000 NTU/FNU, 0-10.500 ASBC, 0-150 EBC
- Resolution:
  - 0.01 NTU/FNU 10.00-10.99
  - 0.1 NTU/FNU 11.00-109.9
  - 1 NTU/FNU 110-4000
- Accuracy:
  - From 0-2.5 NTU the accuracy is ±0.05 NTU
  - From 2.5-100 NTU the accuracy is ±2%
  - From 100 NTU the accuracy is ±3%
- Detection Limit: 0.05 NTU/FNU
- Range Selection: Automatic
- Reproducibility: 0.02 NTU/FNU or 1%
- Light Source: Tungsten complies with EPA 180.1 Standard

What's Included
- 9 volt alkaline battery
- AC power adapter
- Four optically selected sample vials with screw caps
- Standardization package (1.0 NTU and 10.0 NTU standards)
- Sturdy carrying case

Components
#299-10-4 Turbidity Tubes, Set of 4
#299-10-5 Turbidity Standard, 1.0 NTU, 60 mL
#299-10-6 Turbidity Standard, 10 NTU, 60 mL
#299-10-7 Turbidity Standard, 100 NTU, 60 mL
CON 450 WATERPROOF CONDUCTIVITY/TDS/SALINITY/TEMPERATURE METER
#130-86

Size: 7.9” × 3.1” × 2.25” (20 × 8 × 6 cm)
Weight: 1.3 lb (.6 kg)

Features
- Intuitive, user-friendly icon selects electrode status displays cell constant
- Grip-Clip holder quickly and easily secures probe to beaker/container
- USB and RS-232 output for up to 500 data sets
- 500 hours battery life or optional universal power adapter
- Built-in stand with Wall Mount option allows for easy benchtop measurement and storage

Specifications
- Conductivity Range: 0.00 to 200 mS
- Conductivity Resolution: 0.01 μS, 0.1 mS
- Conductivity Accuracy: ±1% full scale
- Conductivity Calibration: One point per range
- TDS Range: 0 to 200 ppt
- TDS Resolution: 0.01 ppm to 0.1 ppt
- TDS Accuracy: ±1.0% full range
- TDS Calibration: One point per range
- Temperature Range: -10.0 to 110.0°C
- Temperature Resolution: 0.1°C
- Temperature Accuracy: ±0.5°C
- Temperature Calibration: Offset 0.1°C increments
- ATC: Automatic or manual
- Memory: Up to 500 data sets with temperature and calibration
- Power: 2 AA batteries
- Real Time Clock: Yes
- RS-232: Yes and USB
- Cell constant: Selectable at K = 1.0, 0.1 or 10
- Temperature coefficient: Adjustable 0.00 to 10.00% per °C
- Optional AC Power: Yes
- Built-in Stand: Yes
- Dual Display: Yes
- Waterproof/Dustproof (IP67): Yes

Components
#130-86-02 Calibration Kit Contains Four Each of TDS “Singles” Calibration Pouches 447 μS, 1413 μS, 2764 μS, and 15.0 μS and Four Rinse Water Pouches, All in a Hard Plastic Carrying Case with Room for the CON 450 Meter
MILLIPORE MEMBRANE FILTER TESTER
#145-00-10

The makeup water for a completion fluid can be studied effectively using a membrane filter tester. The apparatus provides information on biological contaminants, chemical composition, and filtration rates of water and other liquids. The main body of this unique filtering device is a 3200 mL, 5.75" by 10.5" transparent cylinder, which has been graduated for instantaneous readings. Pressurization is provided by optional manifold assemblies that attach to the top of the filtering chamber and allow for pressurization with either carbon dioxide or nitrogen.

Features
• Study makeup water for a completion fluid
• Provides information on biological contaminants, chemical composition, and filtration rates of water
• Includes 3,200 mL transparent cylinder with graduations on the side
• Optional pressure manifold for CO₂ or N₂

Components
#142-39 Pipe Plug, ¼" (0704-0009)
#143-01-2 Gauge, 30 PSI, ¼" Bottom Connection
#144-15 Bushing, Plated Brass
#145-00-10-1 Cylinder
#145-00-10-3 Bottom
#145-00-12 Membrane Filters, 0.45 µm, Package of 100 UN3270
#145-00-13 Filter Holder, Swinnex #47
#145-00-14 O-ring for Filter Holder, Silicone
#145-00-15 O-ring for Top and Bottom Lids for Membrane Tank
#145-00-16 Relief Valve, 30 PSI, ¼" MNPT
#145-00-17 Coupler Plug, ¼" MNPT
#145-00-18 Labcock Valve, ¼" MT x T Male Thread x Female Thread, PVC
#145-00-19 Labcock Valve, ¼" MT x H, PVC
#145-00-20 PU Tubing, ¼" ID x ¼" OD
#153-09-2 Graduated Cylinder, 1,000 mL
#155-25 Stopwatch, Digital

Optional
#145-00-21 Carrying Case with Pluck Foam

* May require special handling for shipping.

CO₂ PRESSURE ASSEMBLY FOR #145-00-10
#145-00-11

Components
#143-00 Regulator, CONCOA/AIRCO 805-1179
#143-02-10 CO₂ Puncture Head Assembly
#143-03 Barrel for CO₂ Bulb
#143-05 'CO₂ Bulbs, Box of 10, UN2037
#143-06 Safety Bleeder Valve, ¼" NPT
#144-16 Coupling, Female, ¼", Plated
#145-00-23 Speed Coupler, ¼" FNPT
#170-34 Needle Valve, Male, ¼" x ¼" NPT

N₂ PRESSURE ASSEMBLY FOR #145-00-10
#145-00-22

Components
#141-15 Air Hose, Low Pressure, 6'
#141-19 Air Hose Adapter
#142-39 Pipe Plug, ¼"
#143-06 Safety Bleeder Valve, ¼" NPT
#145-00-23 Speed Coupler, ¼" FNPT
#170-36 Regulator for Nitrogen Pressure
#170-37 Nitrogen Cylinder, 21" x 7", Right-Hand Thread
Wastewater - Wastewater Testing Equipment

CAPILLARY SUCTION TIMER (CST)
#294-50

Size: 10" × 4.75" × 2" (25 × 12 × 5 cm)
Weight: 1 lb 8 oz (.68 kg)

The capillary suction time test was developed to study the filterability of sewage sludge and evaluate the effects of pre-treatment chemicals and process conditions of sewage treatment. It has been widely used to study the colloidal properties of clay suspensions. The petroleum industry uses the Capillary Suction Timer to characterize shales and to optimize the electrolyte concentration in drilling fluids for minimizing its effect on shale formations.

Features
- Measures the time required for filtrate to advance between radially separated electrodes when a fixed area of special filter paper is exposed to a suspension
- Studies the filtration characteristics of aqueous systems and the colloidal properties of clay suspensions
- Low battery indicator
- Used in the wastewater treatment, sewage, and petroleum industries
- Digital display

Components
#147-02 Battery, 9 Volt, Alkaline
#294-01 CST Paper, Standard, Chromatography Grade, Whatman 17, 7 cm × 9 cm, Box of 100
#294-50-004 Spacer, Nylon
#294-50-006 Cable Connector
#294-50-007 Battery Connector
#294-50-011 Lower Block
#294-50-012 Electrode
#294-50-013 Support Rod
#294-50-014 Terminal Cover
#294-50-015 Power Supply
#294-50-017 Plug Adapter for Power Supply
#294-50-021 Upper Block Assembly

Optional
#294-05 CST Paper for very viscous or slow filtering systems, Box of 300

DIFFUSED AIR / DISSOLVED AIR FLOTATION TEST APPARATUS (DADAFTA), 115 VOLT, 60 HZ
#298-00 115 VOLT, 60 Hz
#298-00-1 230 VOLT, 50 Hz

Features
- Simulates a Diffused Air Flotation or Dissolved Air Flotation process on a small scale
- Measure the floatability of a particular sludge to design treatment plants and evaluate chemical flotation aids
- Clear, unibody pressure cell withstands pressures up to 125 PSI
- Oil-less piston air compressor for high efficiency and constant performance
- Permeable ceramic disk used for the diffuser can be removed, cleaned, and reused
- Chemical flotation aid inlet with septum
- Stainless steel paddle for additional mixing capabilities
- Easy-to-read flow meter and pressure gauge
- Quick disconnect fittings

Components
#135-04 Retainer Ring, External
#141-22 Filter, Felt
#143-01-1 Gauge, 200 PSI, ¼" Back Connection
#153-09-2 Graduated Cylinder, Nalgene®, 1,000 mL, PMP
#153-75 Tygon® Tubing, ¼", 3 Feet
#298-04 Flowmeter, 0 - 30 SCFH, 50 mm
#298-13 Poly Pak Seal
#298-20 Stopper, O Size, Rubber
#298-21 Pressure Relief Valve, 100 PSI (689.5 kPa)
#298-22 Pump, 100 PSI, 115 Volt, 60 Hz
#298-22-1 Pump, 100 PSI, 230 Volt, 50 Hz
#298-27 Stopcock Valve, ¼” Male × Female
#298-28 Tubing, ¼” ID × ½” OD, Polyethylene
#298-29 Tubing, Flexible, Polyurethane
#298-32 Gauge, Glycerine Filled, 100 PSI, 2 ½” Face, ¼” Back Connection, Stainless Steel
#298-33 Air Diffuser, 1.5” Long × 0.75” Wide, ⅛” OD Barb, 4 mm, ABS
POLY PREP “N” FLOC TEST KIT
#291-00

Features
• Enables field personnel to properly prepare water soluble flocculants/coagulants and observe their effects on the type of fluid or sludge in use
• Ideal for quickly selecting the proper polymer and dosage for sludge dewatering and water/wastewater treatment

Components
#130-41 Beaker, Nalgene®, 400 mL, Polypropylene
#153-01 Brush, Bottle, 3” × 12”
#153-09 Graduated Cylinder, Nalgene®, 250 mL, PMP
#153-09-2 Graduated Cylinder, Nalgene®, 1,000 mL, PMP
#153-53-8 Stir Bar, Spin Wedge, 1 ¾” × ½”
#153-53 Magnetic Stirrer with Stir Bars, 200 - 2,500 RPM, 6” Diameter, 3” Height, 115 Volt
#153-60 Syringe, Disposable, 3 cc
#153-60-1 Syringe, Disposable, 1 mL
#153-62 Syringe, Disposable, 10 cc
#166-03 Balance, Hand-Held, 0 - 320 g × 0.1 g
#291-01 Rack for 4 Acrylic Cylinders, Stainless Steel
#291-06 Cylinder, 3” OD × 2.75” ID × 11” H, 1 L, Acrylic
#291-07 Stopper, Solid, No. 13 ½, Neoprene
#297-08 Bottle, Boston Round, Natural, 4 fl oz, Poly
#297-10 Bottle with Cap, Boston Round, Natural, 8 fl oz, Poly

CON 410 WATERPROOF CONDUCTIVITY/TDS/TEMP. METER
#130-86

See page 166 for more information.

PORTABLE TURBIDITY METER
#299-10

See page 165 for more information.

HYGROMASTER 2 HYGROMETER WITH SHORT QUICKSTICK SENSOR AND CASE
#153-59-01

Size: 7” × 3.2” × 1.5” (18 × 8 × 4 cm)
Weight: 8 oz (0.2 kg)

Features
• Provides a measurement of relative humidity in a closed space above an emulsified fluid and relates the humidity to the activity of the water
• Infrared non-contact surface temperature
• Psychrometric calculations
• Data logging
• Simple to use interface with color display
• Fast temperature and humidity response
• Replaceable humidity and temperature sensor
• Highly accurate

Specifications
• Relative humidity: 0 - 100 %rh
• Temperature: 32° - 122°F (0 - 50°C)

Optional
#153-59-1 Extension Lead for Hygrostick
#153-59-3 Hygrostick Probe, Tip Only
#153-71 Glass Jar with Grommet
#153-72 Glass Jar without Grommet
#153-59-4 ‘Calcium Chloride, Saturated, 4 oz
#153-59-5 ‘Calcium Nitrate, Saturated, 4 oz, UN3139
#153-59-6 ‘Potassium Nitrate, Saturated, 4 oz, UN3139
#153-59-7 Sodium Chloride, Saturated, 4 oz

WATER ANALYSIS KIT IN STAINLESS STEEL CASE
#144-95

See page 145 for more information.

MILLIPORE MEMBRANE FILTER TESTER
#145-00-10

See page 167 for more information.

* May require special handling for shipping.
Laboratory - Balances

<table>
<thead>
<tr>
<th>Balances</th>
<th>Part #</th>
<th>Type</th>
<th>Capacity</th>
<th>Readability</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>166-17</td>
<td>Analytical</td>
<td>220 g</td>
<td>.0001 g</td>
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<tr>
<td></td>
<td>166-30</td>
<td>Moisture Analyzer</td>
<td>50 g</td>
<td>.001 g / .01%</td>
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<tr>
<td></td>
<td>166-15</td>
<td>Precision</td>
<td>2500 g</td>
<td>.01 g</td>
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<tr>
<td></td>
<td>166-18</td>
<td>Precision</td>
<td>450 g</td>
<td>.001 g</td>
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<tr>
<td></td>
<td>166-31</td>
<td>Electronic</td>
<td>620 g</td>
<td>.1 g</td>
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<tr>
<td></td>
<td>166-20-2</td>
<td>Precision, Portable</td>
<td>3000 g</td>
<td>.1 g</td>
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<td>166-03</td>
<td>Handheld</td>
<td>320 g</td>
<td>.1 g</td>
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<tr>
<td></td>
<td>166-06</td>
<td>Triple Beam</td>
<td>610 g</td>
<td>.1 g</td>
</tr>
</tbody>
</table>

OHAUS ADVENTURER® ANALYTICAL BALANCE, 220 GRAM CAPACITY, 0.0001 GRAM READABILITY

#166-17
Size: 13.9” x 13.4” x 9.1” (35 x 34 x 23 cm)
Weight: 11.3 lb (5.1 kg)

Standard Features
- Color Touchscreen
- Two USB Ports
- Draftshield
- External and Internal Calibration
- Stability Indicator
- Software Over/Under Load Protection
- AC Adapter
- Auto Tare

PMB MOISTURE ANALYZER, 50 GRAM CAPACITY, 0.001 GRAM / 0.01% READABILITY

#166-30 115 VOLT
#166-30-1 230 VOLT
Size: 14” x 9.8” x 7.3” (36 x 24 x 19 cm)
Weight: 13 lb (5.9 kg)

Features
- Built-in memories for storing products and settings
- Date and time
- Full range tare
- Zero Tracking
- Multilingual display
- Large backlit display with dual text prompts
- Overload protection
- RS-232 and USB interface
- Calibration facilities for temperature and weight

#166-30 - PMB Moisture Balance

NBL PRECISION BALANCE

#166-15 2500 GRAM x 0.01 GRAM, 115 VOLT
#166-15-1 2500 GRAM x 0.01 GRAM, 230 VOLT
#166-18 450 GRAM x 0.001 GRAM, 115 VOLT
#166-18-1 450 GRAM x 0.001 GRAM, 230 VOLT
Size: 9.9” x 14.1” x 4.1” (33 x 28 x 53 cm)
Weight: 11 lb (4.9 kg)

Features
- Backlit LCD with dual display
- Security locking station
- GLP printouts

Note: NIST traceable calibration weights also available to meet quality assurance requirements.
Laboratory - Balances

OHAUS SCOUT® MODEL SPX621 ELECTRONIC BALANCE, 620 GRAM CAPACITY, 0.1 GRAM READABILITY

#166-31 115 VOLT
#166-31-1 230 VOLT

Size: 8" × 8.8" × 2.1" (20 × 22 × 54 cm)
Weight: 2.2 (1 kg)

Features
- Finger touch operation
- Large LCD screen
- USB or RS232 connectivity
- Multiple weighing units
- Integral weigh-below hook
- Battery (not included) or AC power

HANDHELD SCALE, 320 GRAM CAPACITY, 0.1 GRAM READABILITY, AAA BATTERIES

#166-03

Size: 5.35" × 3.25" × 0.8" (13.6 × 8.3 × 2.0 cm)
Weight: 6 oz (0.16 kg)

Features
- Four-button keypad
- Luminescent backlight
- Units: grams (g), ounces (oz), pennyweight (dwt), or troy ounces (ozt).
- Includes automatic shut off to extend battery life

HIGHLAND PORTABLE PRECISION BALANCE

#166-20 3000 GRAM × 0.1 GRAM, 115 VOLT
#166-20-1 3000 GRAM × 0.1 GRAM, 230 VOLT
#166-20-2 600 GRAM × 0.01 GRAM, 115 VOLT
#166-20-3 600 GRAM × 0.01 GRAM, 230 VOLT

Size: 6.7" × 9.6" × 3.1" (17 × 25 × 8 cm)
Weight: 4 lb 6 oz (2 kg)

Features
- LCD display
- Multiple weighing units and modes
- RS-232 and USB interface
- Internal rechargeable battery pack / AC operation
- Capacity tracker
- Internal manual calibration

OHAUS VALOR™ 1000 COMPACT ECONOMICAL SCALE, 15000 GRAM CAPACITY, 2 GRAM READABILITY

#166-16 115 VOLT
#166-16-1 230 VOLT

Size: 12.8" × 6.25" × 11.9" (34 × 16 × 30 cm)
Weight: 8.8 lb (4.0 kg)

Features
- Removable stainless steel weighing platform and a mid-profile ABS plastic housing with leveling adjustment
- Internal rechargeable battery and AC power adapter included
Laboratory - Balances

TRIPLE BEAM BALANCE, 610 GRAM CAPACITY, 0.1 GRAM READABILITY
#166-06
Size: 19.9" × 4.3" × 6.3" (51 × 11 × 16 cm)
Weight: 7 lb (3.2 kg)
Features
• Tiered, notched beams
• Below balance weighing
• Integral security bracket
• Mass holder

Optional
#166-07 Attachment Weight Set, 2000 g (×2), 500 g (×1)

ACCESSORIES FOR BALANCES
#153-26 Titration Dish, Polyethylene
#153-28 Stirring Rod, 4", Polyethylene
#153-68 Weigh Boat, Disposable, Medium, 78 × 78 mm
#153-69 Weigh Boat, Disposable, Large, 124 × 124 mm
#166-02 Weight Set with Hinged Covered Weight Box, Precision, 10 mg to 50 g
#166-07 Weight Set Attachment for Triple Beam Balance to Expand Capacity to 2610 g
#166-27 Anti-Vibration Table
#166-29 Disposable Aluminum Sample Pans, Package of 250

#166-06 - Triple Beam Balance

#166-07 - Attachment Weight Set for Triple Beam Balance (Optional)
SILVERSON® L5M-A LAB MIXER

#152-16 115 VOLT
#152-16-1 230 VOLT

Size:  37” × 12” × 20” (94 × 31 × 51 cm)
Weight: 55 lb (25 kg)

Shipping Size: 46” × 30” × 25” (117 × 76 × 64 cm)
Shipping Weight: 172 lb (78 kg)

Features
• Powerful 1 hp motor
• Digital tachometer, timer, and amperage display
• Touch screen control for cleaner and more reliable operation
• Capacity from 1 mL up to 12 L
• Nominal maximum speed: 10,000 RPM
• Infinitely variable speed control with integral on/off switch

Optional
#152-15-2 Bushing, PTFE
#152-15-3 Bushing, Bronze Alloy
#152-15-4 Coupling Pin
#152-15-6 Drive Shaft and Rotor
#152-16-2 Motor Brushes

MINIMASTER LABORATORY DISPERSER

#152-76 230 VOLT

Features
• Robust machine stand comprised of portable stainless steel support columns with cast steel base
• Drive power of 0.6 kW
• Direct power transmission from the motor to the mixer spindle
• Infinitely variable speed control up to a maximum of 12,000 min⁻¹ via frequency inverter with push buttons and digital display on the control panel
• Height of the drive motor with agitator shaft easily adjustable on the support columns
• Restraint straps to secure mixing vessels with volumes from 0.2 L to 2 L
• The mixer spindle can accommodate different types of mixing tools
• Wetted parts made of Cr-Ni-steel
• For your safety - stationary shaft protector of PVC

Mixing Heads

#152-70-1 Duplex Head
A precision slotted cylindrical head with internal baffles that perform like a submerged centrifugal pump. Double shearing results in faster, more thorough mixing because it disperses materials that float and sink. Excellent for mixing low viscosity materials with solids that tend to settle.

#152-70-2 Simplex Head
Similar to the duplex head, the simplex head is more useful for dispersing materials heavier than the suspending liquid and is excellent for emulsifying and liquefying.

#152-70-3 Hi-Vis Head
A flat rotating disk with angled teeth along the periphery is useful for very high shearing action on shear thinning viscous liquids and pastes from 10,000 to 30,000 centipoise.
Laboratory - Mixers and Blenders

**MULTIMIXER, FIVE SPINDLE, SINGLE SPEED, NO LOAD SPEED 11,500 RPM**

<table>
<thead>
<tr>
<th>#</th>
<th>Voltage</th>
<th>HZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>#152-50</td>
<td>115 VOLT</td>
<td>60 HZ</td>
</tr>
<tr>
<td>#152-52-1</td>
<td>230 VOLT</td>
<td>50 HZ</td>
</tr>
</tbody>
</table>

Size: 22” x 18” x 14” (56 x 46 x 36 cm)

Weight: 71 lb (32.2 kg)

Note: Male connector for 230 Volt power cable sold separately.

**Optional**

- #152-40 Container, 30 oz, Stainless Steel
- #152-41 Agitator Button
- #152-41-1 Screw for Bottom Agitator
- #152-43 Impeller Blade
- #152-50-SP Spare Parts Kit
- #152-51 Case for Multi-Mixer, Soundproof, Stainless Steel
- #152-52-2 Spare Part for Multi-Mixer
- #164-32 Male Connector for 230 Volt Power Cable (US)
- #164-34 Male Connector for 230 Volt Power Cable (European)

**LABORATORY MIXER WITH STAND, 2 SPEED**

<table>
<thead>
<tr>
<th>#</th>
<th>Voltage</th>
<th>HZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>#152-18</td>
<td>115 VOLT</td>
<td>60 HZ</td>
</tr>
<tr>
<td>#152-18-1</td>
<td>230 VOLT</td>
<td>60 HZ</td>
</tr>
</tbody>
</table>

Size: 8” x 12” x 25” (20 x 31 x 64 cm)

Weight: 18 lb 7 oz (8.4 kg)

Two Speed Switch and Motor - No load - 6,000 and 12,000 RPM

**Component**

- #152-18-100 Laboratory Mixer, 2-Speed (115 Volt Only)
- #152-18-101 Laboratory Mixer, 2-Speed (230 Volt Only)
- #152-18-2 Adjustable Stand
- #152-18-5 Shaft Extension, 4"
- #163-09 Impeller

**POWERSTAT®**

<table>
<thead>
<tr>
<th>#</th>
<th>Voltage</th>
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</thead>
<tbody>
<tr>
<td>#152-35</td>
<td>115 VOLT</td>
</tr>
<tr>
<td>#152-36</td>
<td>230 VOLT</td>
</tr>
</tbody>
</table>

#152-18 - 2-Speed Laboratory Mixer with Stand

#152-35 - POWERSTAT® for 2-Speed Laboratory Mixer
THREE SPINDLE HAMILTON BEACH® MIXER WITH CONTAINERS, THREE SPEED

#152-20  115 VOLT, 60 HZ
#152-30  230 VOLT, 50 HZ

| Size: 15” x 15” x 24” (38 x 38 x 61 cm) |
| Weight: 39 lb (17.7 kg) |

Components
#152-40  Container, Stainless Steel

SINGLE SPINDLE HAMILTON BEACH® MIXER WITH CONTAINER, THREE SPEED

#152-00  115 VOLT, 60 HZ
#152-10  230 VOLT, 50 HZ

| Size: 7.25” x 8.5” x 21.25” (18 x 22 x 54 cm) |
| Weight: 13 lb (5.9 kg) |

Components
#152-40  Container, Stainless Steel

Optional
#152-00-SP  Spare Parts Kit
#152-41  Agitator Button, Upper
#152-42  Agitator Button, Lower

CUP MIXER

#163-10  12 VOLT
#163-20  115 VOLT

| Size: 9” x 5” x 5” (23 x 12 x 12 cm) |
| Weight: 2 lb 14 oz (1.3 kg) |

Components
#130-46  Male Plug Connector (12 Volt Only)
#152-42  Agitator Button, Lower
#152-87  Motor, ¾ HP (115 Volt Only)
#163-10-001  Motor, ¾ HP (12 Volt Only)
#163-10-1  Power Cord, 18-2 (12 Volt Only)
#163-20-1  Splash Guard
#163-20-2  Shaft, Stainless Steel
#163-20-3  Power Cord with In-line, Single-Speed Switch, 18-3 SJT, 8’ (115 Volt Only)
#163-20-4  All Thread, 8-32 x 4 ½”

Optional
#130-74  Transformer, 230 to 115 Volts, 1.10 Amps, 50 / 60 Hz
# Laboratory - Mixers and Blenders

## WARING BLENDER WITH GLASS CONTAINER

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Size</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>#152-60</td>
<td>115 VOLT</td>
<td>8” × 9” × 15.5” (20 × 23 × 39 cm)</td>
<td>10 lb 12 oz (4.9 kg)</td>
</tr>
<tr>
<td>#152-60-1</td>
<td>230 VOLT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Features**
- Heat-resistant glass container (1 Liter)
- No load speed: 22,000 RPM

**Components**
- #152-64 Container, 1 L, Glass
- #122-207 Blade

## WARING BLENDER WITH STAINLESS STEEL CONTAINER

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Size</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>#122-210-1</td>
<td>115 VOLT</td>
<td>13.5” × 9.5” × 8.25” (34 × 24 × 21 cm)</td>
<td>12 lb 13 oz (5.8 kg)</td>
</tr>
<tr>
<td>#122-209-1</td>
<td>230 VOLT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Components**
- #122-207 Blade

## BLENDRER WITH ½ GALLON (1.9 L) STAINLESS STEEL CONTAINER, HAMILTON BEACH®

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Size</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>#152-13</td>
<td>115 VOLT</td>
<td>7” × 8” × 20.5” (18 × 20 × 52 cm)</td>
<td>12.5 lb (5.7 kg)</td>
</tr>
<tr>
<td>#152-13-1</td>
<td>230 VOLT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Components**
- #152-64 Container Assembly with Lid for Model 700, 1 L, Glass
- #152-40 Container for Mixers, 30 oz, Stainless Steel
- #152-39 Container with Handle for Mixers, 30 oz, Stainless Steel
- #152-44 Screw for Lower Impeller for Hamilton Beach® Mixer
- #152-41-1 Screw for Bottom Agitator for Multi-Mixer
- #130-74 Transformer, 230 to 115 Volts, 1.10 Amps, 50 / 60 Hz

## ACCESSORIES FOR MIXERS AND BLENDERS

- #152-37 AC Power Cord, 115 Volt
- #152-38 AC Power Cord, 230 Volt
- #152-47 Agitator for Hamilton Beach® Mixers, Butterfly
- #152-41 Agitator Button for Hamilton Beach® Mixers, Upper
- #152-42 Agitator Button for Hamilton Beach® Mixers, Lower
- #122-207 Blade for Blender, 1 qt
- #152-03 Brush and Spring Set for Hamilton Beach® Mixer, 115 Volt
- #152-03-1 Brush and Spring Set for Hamilton Beach® Mixers, 230 Volt
- #152-51 Case for Multi Mixer®, Sound Proof, Stainless Steel
- #152-40 Container for Mixers, 30 oz, Stainless Steel
- #152-39 Container with Handle for Mixers, 30 oz, Stainless Steel
- #152-64 Container Assembly with Lid for Model 700, 1 L, Glass
- #163-09 Impeller for 2-Speed Laboratory Mixer
- #152-43 Impeller Blade for Multi-Mixer
- #152-35 Powerstat®, 115 Volt
- #152-36 Powerstat®, 230 Volt
- #152-44 Screw for Lower Impeller for Hamilton Beach® Mixer
- #152-41-1 Screw for Bottom Agitator for Multi-Mixer
- #130-74 Transformer, 230 to 115 Volts, 1.10 Amps, 50 / 60 Hz
Laboratory - Hot Plates and Stirrers

STIR LIGHT MAGNETIC STIRRER WITH LIGHT
#153-53-2  115 VOLT, 60 HZ
Size: 8.75" × 12.5" × 11.5" (22 × 32 × 29 cm)
Weight: 6 lb (2.7 kg)
Features
• Speed: Variable 250 - 2,500 RPM
• Surface Size: 7" × 7" (18 × 18 cm)

Component
#153-53-2-001  Cover, Plastic

HEATED MAGNETIC STIRRER WITH STIR BAR
#152-45  115 VOLT, 60 HZ
#152-46  230 VOLT, 50 HZ
Size: 4.25" × 7.75" × 11" (11 × 20 × 28 cm)
Weight: 7 lb 1 oz (3.2 kg)
Features
• Speed: 60 - 1,150 RPM
• Temperature: 41° - 1,022°F (5° - 550°C)
• Surface Size: 5" × 7" (13 × 18 cm)

STIRRING HOT PLATE
#150-83  115 VOLT
#150-84  230 VOLT
Size: 12" × 10" × 7.5" (31 × 25 × 19 cm)
Weight: 5 lb 1 oz (2.8) kg
Features
• Speed: 60 - 1,100 RPM
• Temperature: 77 - 1022°F (25° - 550°C)
• Surface Size: 4" × 5" (10 × 13 cm)

STIRRING HOT PLATE
#152-48  115 VOLT
#152-49  230 VOLT
Size: 10" × 5" × 25.5" (25 × 13 × 10cm)
Weight: 7 lb (3.2 kg)
Features
• Speed: 60 - 1,200 RPM
• Temperature: 41° to 1004°F (5° to 540°C)
• Surface Size: 4.25" × 4.25" (11 × 11 cm)
Laboratory - Hot Plates and Stirrers

MAGNETIC STIRRER WITH TFE-COATED STIR BAR, 60 - 1200 RPM, 230 VOLT
#153-53-7
Size: 10" × 5" × 3.5" (26 × 13 × 9 cm)
Weight: 6 lb 3 oz (2.8 kg)
Features
• Speed: 60 - 1,200 RPM
• Surface Size: 4" × 4" (10 × 10 cm)

MAGNETIC STIRRER WITH TFE-COATED STIR BAR, 200 - 2500 RPM, 115 VOLT
#153-53
Size: 6" Diameter × 3" Height (15 × 8 cm)
Weight: 2 lb 6 oz (1.1 kg)
Features
• Speed: 200 - 2,500 RPM
• Surface Size: 6" Diameter

MAGNETIC STIRRER WITH DIGITAL READOUT
#153-53-12 115 VOLT
#153-53-13 230 VOLT
Size: 7.75" × 10" × 4.5" (20 × 25 × 11 cm)
Weight: 6.5 lb (3 kg)
Features
• Speed: 60 - 1,100 RPM
• Surface Size: 5" × 7" (13 × 18 cm)

BATTERY-POWERED MAGNETIC STIRRER
#153-53-10
Size: 9.25" × 5" × 3.5" (24 × 13 × 9 cm)
Weight: 6.4 lb (2.9 kg)
Features
• Speed: up to 900 RPM
• Surface Size: 4" × 5" (10 × 13 cm)
HOT PLATE WITH THERMOSTAT

#168-01  115 VOLT
#168-01-1  230 VOLT

Size: 3.75" Tall × 3.25" Diameter (9.5 × 8 cm)
Weight: 1.5 lb (680 g)

Features
- Maximum Temperature: 700°F (371°C)
- Surface Size: 3.25" Diameter

HOT PLATE

#168-03  115 VOLT
#168-03-1  230 VOLT

Size: 8" × 7.5" × 6" (20 × 19 × 15 cm)
Weight: 3 lb (1.4 kg)

Features
- Temperature: 77° - 672°F (25° - 360°C)
- Surface Size: 5" × 5" (13 × 13 cm)

ACCESSORIES FOR STIRRERS

#153-53-11  Stirring Bar, Magnetic, ⅛" × ⅛"
#153-53-6  Stirring Bar, Magnetic, ⅛" × ¼"
#153-53-1  Stirring Bar, Magnetic, ⅛" × ⅛"
#153-53-4  Stirring Bar, Magnetic, 1 ¼" × ¼"
#153-53-5  Stirring Bar, Magnetic, 2" × ¼"
#153-53-8  Stirring Bar, Spin Wedge, 1 ¾" × ⅛"
Laboratory - Centrifuges

PORTABLE CENTRIFUGE, 2-PLACE
HEAD AND SHIELDS FOR 12.5 ML TUBES

#153-25-15  115 VOLT
#153-25-12  12 VOLT

Size:      13.75” x 8” x 6.5” (34.9 x 20.3 x 16.5 cm)
Weight:    7 lb 4 oz (3.3 kg)

Features
Speed: 1,750 RPM

Optional
#130-74  Transformer, 230 to 115 Volts, 1.10 Amps, 50 / 60-Hz

#153-220 - #153-331 Robinson Centrifuge

CENTRIFUGE FOR 2.5 ML TUBES, 4 PLACE
HEAD, HEATED

#153-220   115 VOLT
#153-222   230 VOLT

Size:      18” x 14” x 9” (46 x 36 x 23 cm)
Weight:    32 lb (14.5 kg)

CENTRIFUGE FOR 12.5 ML TUBES, 4 PLACE
HEAD, NON-HEATED

#153-221   115 VOLT
#153-223   230 VOLT

Size:       14” x 14” x 9” (36 x 36 x 23 cm)
Weight:     24 lb (10.9 kg)

CENTRIFUGE FOR 100 ML SHORT CONE TUBES, 4 PLACE

#153-224   NON-HEATED, 115 VOLT
#153-225   NON-HEATED, 230 VOLT
#153-226   HEATED, 115 VOLT
#153-227   HEATED, 230 VOLT

Size:       21.5” x 20” x 11.5” (55 x 51 x 29 cm)
Weight:     40 lb (18.1 kg)

CENTRIFUGE FOR 100 ML PEAR SHAPED CONE TUBES, 4 PLACE

#153-228   NON-HEATED, 115 VOLT
#153-229   NON-HEATED, 230 VOLT
#153-230   HEATED, 115 VOLT
#153-331   HEATED, 230 VOLT

Size:       21.5” x 20” x 11.5” (55 x 51 x 29 cm)
Weight:     40 lb (18.1 kg)
CENTRIFUGE, HAND CRANK, 4 PLACE HEAD AND SHIELDS FOR 15 ML TUBES

#153-25-2

Size: 11.5” × 6” × 4.5” (29 × 15 × 11 cm)
Weight: 2 lb (900 g)

HAND CRANK CENTRIFUGE WITH 2-PLACE HEAD AND SHIELDS

#153-25-1 FOR 100 ML PEAR SHAPED TUBES
#153-25-1-1 FOR 12.5 ML FINGER TUBES
#153-25-1-2 FOR 100 ML SHORT CONE TUBES

Size: 9.5” × 4” × 3.5” (24 × 10 × 8.9 cm)
Weight: 1 lb 8 oz (680 g)

TUBES AND PARTS FOR CENTRIFUGE

#153-00 Bottle Brush for Centrifuge Tubes
#153-19 Tube, 15 mL × 0.1 mL, Glass, 12 cm
#153-21 Tube, Kolmer®, 10 mL, Glass, 12.5 cm
0 - 2 mL × 0.1 mL
2 - 10 mL × 0.2 mL
#153-22 Tube, API, 12.5 mL, 100%, Glass, 12 cm
0 - 3% × 0.2%
3 - 10% × 0.5%
10 - 50% × 1%
#153-23 Tube, ASTM, Pear Shaped, 100 mL
0 - 2 mL × 0.2 mL
2 - 10 mL × 1.0 mL
10 - 25 mL × 5.0 mL
25 - 100 mL × 25.0 mL
#153-24 Tube, Pear Shaped, 100 mL, Glass Stoppered
0 - 0.2 mL × 0.01 mL
Body at 25, 50, and 100 mL
#153-25-20 Centrifuge Tube, 100 mL, Short Cone
0.0 - 0.5 mL × 0.05 mL
0.5 - 2.0 mL × 0.1 mL
2.0 - 3.0 mL × 0.2 mL
3.0 - 5.0 mL × 0.5 mL
5.0 - 10.0 mL × 1.0 mL
10.0 - 25.0 mL × 5.0 mL
25.0 - 100.0 mL × 25.0 mL
#153-25-3 Shield for 10 - 15 mL Tubes, Aluminum
#153-25-4 Head Assembly for two 15 mL Tubes for #153-25
#153-25-4-1 Head Assembly for two 100 mL Pear Tubes for #153-25-1
#153-25-4-2 Shield for 100 mL Pear Tubes, Aluminum
#153-25-7 Handle for #153-25-2 Centrifuge
#153-25-13 Shield for 12.5 mL Tube with Cushion for #153-25-12 and #153-25-15
Laboratory - pH Analysis

ION 700 METER, PH/MV/ION/TEMP
#147-04

Size: 6.125” × 6.875” × 2.75” (16 × 18 × 7 cm)
Weight: 1 lb 6 oz (.6 kg)

Features
- Small footprint saves bench space
- Direct readout of ion concentration in ppm
- Oversized dual display for easier viewing
- Features 0.1 mV resolution for ORP measurements
- Simultaneous display of ppm and mV electrode output in the ion mode
- Selectable buffer sets and five-point pH calibration with auto buffer recognition
- Works with many ion-selective electrodes
- Built-in electrode stand
- Selectable manual or automatic temperature compensation
- Built-in memory function
- Hold function, “Ready” indicator, diagnostic messages
- Slide-out instruction card for quick reference

Specifications
- Measuring Parameters: ph, mV, Ion concentration, Temperature
- pH:
  - Range: -2.00 to 16
  - Resolution: 0.01
  - Accuracy: ±0.01
  - Calibration: Up to 5 points
- Millivolt:
  - Range: ±2000 mV
  - Resolution: 0.1 mV from ±199.9 mV
  - Accuracy: 1 mV beyond ±199.9 mV
  - Calibration: Offset up to ±150 mV
- Ion:
  - Range: 0.01 - 2000 ppm
  - Resolution: 0.01 ppm / 0.1 ppm / 1 ppm
  - Accuracy: ±0.5% of reading (monovalent)
    ±1.0% of reading (divalent)
  - Calibration: From 2 to 5 points
- Temperature:
  - Range: 0.0° - 100.0°C (32° - 212°F)
  - Resolution: 0.1°C (0.1°F)
  - Accuracy: ±0.3°C (±0.5°F)
  - Calibration: Offset 0.1°C Increments
  - Temperature Compensation Automatic or Manual, 0 - 100°C

Ion Selective Electrodes (ISE) and Solution Kits
(For #147-04 and 147-06 Meters)

Features
- Eliminate time consuming steps such as filtration, weighing, distillation, and titration
- Easily analyze dark or colored liquids
- Produces fewer mistakes
- Can be run on samples as small as 5 mL
- Compatible with Ion 6+ (#147-06) and Ion 700 (#147-04) meters

Electrode Specifications
- Glass body
- Double junction
- Refillable
- BNC connector

What’s Included
- Electrode
  - Electrolyte, 15 mL
  - Filling pipette
  - Instructions
- Solution kit
  - Replacement reference electrolyte
  - Ionic strength adjustor
  - Calibration standards (1,000 ppm)
  - Filling pipette

<table>
<thead>
<tr>
<th>Part #</th>
<th>ISE Type</th>
<th>Measuring Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>#147-10-2</td>
<td>Potassium, K+</td>
<td>Polymer Membrane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.04 - 39,000 ppm</td>
</tr>
<tr>
<td>#147-10-3</td>
<td>Hardness, Ca2+Mg2+</td>
<td>Polymer Membrane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.4 - 40,000 ppm</td>
</tr>
<tr>
<td>#147-10-4</td>
<td>Calcium, Ca2+</td>
<td>Polymer Membrane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.2 - 40,000 ppm</td>
</tr>
<tr>
<td>#147-10-5</td>
<td>Sodium, Na+</td>
<td>Glass Bulb Electrode</td>
</tr>
<tr>
<td></td>
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<td>0.2 - 23,000 ppm</td>
</tr>
<tr>
<td>#147-10-6</td>
<td>Chloride, Cl</td>
<td>Solid State Electrode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.8 - 35,500 ppm</td>
</tr>
<tr>
<td>#147-10-7</td>
<td>Iodide, I</td>
<td>Solid State Electrode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.006 - 127,000 ppm</td>
</tr>
<tr>
<td>#147-10-8</td>
<td>Fluoride, F</td>
<td>Solid State Electrode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.02 ppm to saturated</td>
</tr>
</tbody>
</table>
PORTABLE METER KIT
#147-01  OAKTON PH 5+, PH / TEMP METER
#147-06  OAKTON ION 6+, PH / MV / ION / TEMP METER

Size:  14” × 10.5” × 3” (36 × 27 × 8 cm)
Weight:  3 lb 12 oz (1.7 kg)

What’s Included
• Meter
• Electrode
• pH buffer solution
• Sample bottles
• Rubber boot
• Batteries (4)
• Carrying case

Specifications
pH Range:  0.00 to 14.00
Resolution:  0.01 pH
Accuracy:  ±0.01 pH
Calibration Points:  3 points (pH 4.01, 7.00, 10.00)
Temp Range:  0.0 - 100.0°C
Temp Resolution:  0.1°C
Temp Accuracy:  ±0.5°C
Temp Calibration:  Offset 0.1° increments
Temp Compensation:  Automatic / Manual (0 to 100°C)
Power:  4 × AA Batteries
Battery Life:  200 hours

Ion 6+ Meter #147-06
Ion Range:  0.01 - 1999 ppm
Ion Resolution:  0.01 ppm up to 0.99 ppm
1 ppm up to 199.9
1 ppm up to 1999 ppm
Ion Accuracy:  ±1.0% of Reading
Ion Calibration:  2 or 3 points (0.1, 1, 10, 1000 ppm)
Millivolt:  Accepts Ion Selective Electrodes (ISE)
Millivolt Range:  -1999 to +1999 mV
mV Resolution:  1 mV
mV Accuracy:  ±0.01 pH
mV Calibration:  ±50 mV

Optional
#147-10-1  pH Electrode, Refillable, Double Junction, Glass Body
#147-02-2  Battery, AA
#147-06-3  pH Electrode Saver Bottle
#147-06-4  pH Calibration Pouch, pH 4.01
#147-06-5  pH Calibration Pouch, pH 7.00
#147-06-6  pH Calibration Pouch, pH 10.0
#147-06-7  Deionized Rinse Water Pouch
#147-10-9  Temperature Probe for #147-01 and #147-06

HACH MODEL H135 PROFESSIONAL MINILAB PH METER WITH CALIBRATION BUFFER SET
#147-11

Size:  5.5” × 1” × 0.6” (14 × 3 × 2 cm)
Weight:  1.0 lb (0.45 kg)

Features
• Silicon chip non-glass pH sensor
• Stores dry with minimal maintenance
• 1, 2, or 3 point calibration
• Automatic temperature compensation

What’s Included
• Meter
• Buffer solutions (4, 7, and 10 pH)
• Case

Optional
#147-11-1  Replacement Reference Electrode

HACH MODEL H260 PH METER WITH PROBE
#147-14

Features
• pH Range:  -2 to +19
• Resolution:  0.1 or 0.01 pH
• Calibration:  Up to five points
• Temp Compensation:  Automatic or Manual

Components
#147-14-1  Hach Model H260 pH Meter
#147-15  pH Probe, ISFET, Stainless Steel

#147-11 - H135 Professional Minilab pH Meter
#147-14 - Hach Model H260 pH Meter
## Laboratory - pH Analysis

### POCKET PH METER

| #147-16-1 | ECOTESTR PH 2, SINGLE JUNCTION |
| #147-16-3 | pHTESTr® 10, DOUBLE JUNCTION |

<table>
<thead>
<tr>
<th></th>
<th>EcoTestr pH 2 #147-16-1</th>
<th>pHTestr® 10 #147-16-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>-1.0 - 15.0</td>
<td>-1.0 - 15.0</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Accuracy</td>
<td>± 0.1</td>
<td>± 0.1</td>
</tr>
<tr>
<td>Electrode Design</td>
<td>Single Junction Non-Replaceable</td>
<td>Double Junction Replaceable</td>
</tr>
<tr>
<td>Housing</td>
<td>Water Dust / Proof</td>
<td>Water / Dust Proof</td>
</tr>
<tr>
<td>Calibration</td>
<td>Up to 3 Points</td>
<td>Up to 3 Points</td>
</tr>
<tr>
<td>Operating Temp</td>
<td>0° - 50°C 32° - 122°F With ATC</td>
<td>0° - 50°C 32° - 122°F With ATC</td>
</tr>
<tr>
<td>Battery</td>
<td>1.5 Volt Batteries (4) 250 Hours</td>
<td>1.5 Volt Batteries (4) 500 Hours</td>
</tr>
<tr>
<td>Dimensions</td>
<td>1.5” × 6.5”</td>
<td>1.5” × 6.5”</td>
</tr>
<tr>
<td>Boxed Weight</td>
<td>5.6 oz (159 g)</td>
<td>4.5 oz (125 g)</td>
</tr>
</tbody>
</table>

### pH Indicator Strips

<table>
<thead>
<tr>
<th>Part #</th>
<th>Package</th>
<th>Range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>#147-53</td>
<td>Box of 100</td>
<td>0.0 - 14</td>
<td>1.0</td>
</tr>
<tr>
<td>#147-54</td>
<td>Box of 100</td>
<td>7.5 - 14</td>
<td>0.5</td>
</tr>
</tbody>
</table>

### pHydron® Papers

<table>
<thead>
<tr>
<th>Part #</th>
<th>Package</th>
<th>Range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>#147-50</td>
<td>Dispenser 1 Roll</td>
<td>1 - 11</td>
<td>2.0</td>
</tr>
<tr>
<td>#147-60</td>
<td>Dispenser 1 Roll</td>
<td>6 - 8</td>
<td>0.2</td>
</tr>
<tr>
<td>#147-51</td>
<td>Refill 5 Rolls</td>
<td>2 - 10</td>
<td>1.0</td>
</tr>
<tr>
<td>#147-61</td>
<td>Refill 5 Rolls</td>
<td>6 - 8</td>
<td>0.2</td>
</tr>
<tr>
<td>#147-63</td>
<td>Refill 5 Rolls</td>
<td>6 - 11</td>
<td>1.0</td>
</tr>
<tr>
<td>#147-52</td>
<td>Dispenser 1 Roll</td>
<td>2 - 10</td>
<td>0.5</td>
</tr>
<tr>
<td>#147-70</td>
<td>Dispenser 1 Roll</td>
<td>10 - 12</td>
<td>0.5</td>
</tr>
<tr>
<td>#147-80</td>
<td>Dispenser 1 Roll</td>
<td>8 - 12</td>
<td>0.5</td>
</tr>
</tbody>
</table>

### Optional

- #147-16-5 Replacement Sensor for 147-16-3
- #147-17 Battery, 1.5 Volt

---

#147-16-1 - Single Junction EcoTestr pH 2 (Left)
#147-16-3 - Double Junction pHTestr® 10 (Right)
PH ELECTRODE

#147-08  DOUBLE JUNCTION, GLASS BODY, REFILLABLE, AMBER GLASS

#147-10  SINGLE JUNCTION, EPOXY BODY, SEALED, ECONOMICAL

#147-10-1 DOUBLE JUNCTION, GLASS BODY, REFILLABLE, FLUSHABLE PTFE JUNCTION

Features
• For use with any meter with a BNC connector
• Includes electrode saver bottle to extend electrode life
• Single junction: for field, clean water, and general purpose applications
• Double junction: for dirty water, heavy metals and organics applications
• 12 mm with 3’ cable

PH ANALYSIS ACCESSORIES

#147-20  Buffer Solution, pH 4, 16 oz
#147-20-1 Buffer Solution, pH 4, 1 gal
#147-06-4 Buffer Solution, pH 4, Single Pouch
#147-30  Buffer Solution, pH 7, 16 oz
#147-30-1 Buffer Solution, pH 7, 1 gal
#147-06-5 Buffer Solution, pH 7, Single Pouch
#147-40  Buffer Solution, pH 10, 16 oz
#147-40-1 Buffer Solution, pH 10, 1 gal
#147-06-6 Buffer Solution, pH 10, Single Pouch
#145-95-001 Capsule Set, pH 4, 7, and 10, 1 Vial of 10 Capsules Each
#147-42  High pH Indicator Solution, 2 oz
#147-44  High pH Indicator Solution, 8 oz
#147-09  Reference Fill Solution for Double Junction Electrodes, KCl, 4M, 125 mL

HANDHELD REFRACTOMETER, (GLYCOL AND BATTERY TESTER WITH VIEWPOINT)

#153-57

Size: 10” × 2.25” × 2.25” (25 × 6 × 6 cm)
Weight: 8 oz (227 g)

Features
• Fast and easy method for testing the freeze point of glycol-based solutions and battery charge conditions
• Automatic temperature compensation

HANDHELD REFRACTOMETER, (GLYCOL AND BATTERY TESTER WITH VIEWPOINT)

PH Electrode
## Laboratory - Thermometers

### THERMOMETER, TYPE K, DIGITAL

**#154-25** STANDARD  
**#154-25-5** WITH NIST CERTIFICATION

**Size:**  2.75” × 6” × 1.5” (7 × 15 × 4 cm)  
**Weight:** 2 lb (0.9 kg)

**Features**
- Temperature range of -58° - 1,999°F (-50 - 1,093°C)
- Resolution: .1° below 200°, 1° above 200°
- Accuracy: ±0.3% of reading +2°F(+1°C)
- Low battery indicator
- LCD display
- 6 AAA batteries provide 500 hours of life
- NIST certification available upon request

**What’s Included**
- Thermometer
- Batteries (6)

**Optional**
- #147-02-1 Battery, AAA, Alkaline
- #154-25-1 Type K Probe, 4”, -418° - 1,500°F (-250° - 816°C) with 5’ Coiled Cable
- #154-25-2 Type K Flexible Probe, 12”, -418° - 1290°F (-250° - 700°C)

*Not recommended for aqueous solutions*

### TRACEABLE FULL SCALE THERMOMETER

**#154-06**

**Features**
- Readings updated every second
- 1 cm LCD display
- Magnetic back allows for placement on metal surfaces
- Stainless steel probe with 10’ (304.8 cm) long cable and piercing tip
- 1.5 volt silver oxide battery provides 1.5 years continuous use
- Range: -58° - 500°F (-50° - 250°C)
- Resolution: 0.1° from –20° to 200, and 1° elsewhere

**What’s Included**
- Thermometer
- Probe
- Traceable certificate
- Battery (1)

### OTHER THERMOMETERS

- #154-24 ASTM 90C, Glass, 0° - 30°C × 0.1°C
- #154-26 ASTM 34F, Glass, 77° - 221°F × 0.5°F
- #154-04 Digital Long Stem, NIST Traceable, 8” Stem, -58° - 302°F (-50° - 150°C)
- #154-05 Digital, 4” Probe, 14° - 392°F (-10 - 200°C)
- #154-01 Dual-Scale, 5” Stem, Metal Dial, 0° - 220°F (-10° - 100°C)
- #154-10 Dual-Scale, 5” Stem, Metal Dial, 50° - 500°F (0° - 250°C)
- #154-15 Dual-Scale with Metal Dial, 4” Stem, 50° - 500°F (0° - 250°C)
- #154-20 Dual-Scale with Metal Dial, 8” Stem, 50° - 500°F (0° - 250°C)
- #154-23 General Purpose, Total Immersion, Mercury-Filled, Glass, 0° - 230°F
- #154-22 Pocket, 5” Stem, 1” Dial, 0° - 220°F
- #154-00 Metal Dial, 5” Stem, 0° - 220°F
- #147-03 Spirit-Filled (Non-Mercury), -20° - 155°C
### Balance Accessories

| #153-68  | Weigh Boat, Disposable, Medium, 78 x 78 mm |
| #153-69  | Weigh Boat, Disposable, Large, 124 x 124 mm |
| #166-02  | Weight Set, 10 mg - 50 g |
| #166-07  | Attachment Weight Set for Triple Beam Balance |

### Batteries

| #147-02  | 9 Volt, Alkaline |
| #147-02-1 | AAA, Alkaline |
| #147-02-2 | AA, Alkaline |
| #147-17  | 1.5 Volt, A76 |

### Beakers

| #153-51-3 | 50 mL, Glass |
| #153-51-4 | 100 mL, Glass |
| #153-51-8 | 150 mL, Glass |
| #153-51   | 250 mL, Glass |
| #153-51-1 | 400 mL, Glass |
| #130-41   | 400 mL, Nalgene®, Polypropylene |
| #153-51-2 | 600 mL, Glass |
| #153-55   | 600 mL, Nalgene®, Polypropylene |
| #166-08-1 | 600 mL, Stainless Steel |
| #153-51-5 | 1,000 mL, Glass |
| #153-51-6 | 1,000 mL, Polypropylene |
| #153-51-7 | 2,000 mL, Glass |
| #120-910-054 | 2,000 mL, Plastic |

### Bottles, Poly

| #297-06  | 1.25 oz (35 mL), White Oval Dropper with Insert |
| #296-49  | 1 oz (30 mL), Natural Boston Round Dropper with White Cap and Natural Tip |
| #297-07  | 2 oz (60 mL), Natural Oval Dropper with Insert |
| #297-09  | 4 oz (125 mL), Amber Boston Round with Cap |
| #297-08  | 4 oz (125 mL), Natural Boston Round with Cap |
| #297-04-1 | 4 oz (125 mL), Natural Wide Mouth with Cap |
| #162-77  | 4 oz (125 mL), Sample Bottle, Polypropylene |
| #297-12  | 8 oz (250 mL), Amber Boston Round with Cap |
| #297-10  | 8 oz (250 mL), Natural Boston Round with Cap |
| #297-13  | 8 oz (250 mL), Natural Wide Mouth with Cap |
| #297-11  | 8 oz (250 mL), White Modified Bottle with Cap |
| #297-15  | 16 oz (500 mL), Amber Boston Round with Cap |
| #297-14  | 16 oz (500 mL), Natural Boston Round with Cap |
| #297-16  | 16 oz (500 mL), Natural Wide Mouth with Cap |
| #297-18  | 32 oz (1 L), Amber Boston Round with Cap |
| #297-17  | 32 oz (1 L), Natural Boston Round with Cap |
| #297-19  | 32 oz (1 L), Natural Wide Mouth with Cap |
| #297-21  | 1 gal (4 L), Amber Jug with Cap |
| #297-20  | 1 gal (4 L), Natural Jug with Cap |

### Bottles, Wash, Polyethylene

| #153-31-1 | 8 oz (250 mL) |
| #153-31  | 16 oz (500 mL) |

### Brushes

| #153-01  | Brush, Bottle, Wood Handle, 3” x 12” |
| #153-05  | Brush, Mini, 7 ½” x 3” Curved, Stainless Steel |
| #153-00  | Brush for Centrifuge and Sand Content Tubes |
| #153-02  | Brush for Graduated Cylinder, 1 ½” x 10 ¾” |
| #153-03  | Brush for Graduated Cylinder or Pipette, ½” x 8” |
| #153-04  | Brush for Pipette, 10 mL, ¾” x 3” Bristles, 24”, Wire |
| #153-06  | Brush for Receiver Tube, 10 mL |
| #153-07  | Brush for Receiver Tube, 20 mL |
| #153-08  | Brush for Receiver Tube, 50 mL |
| #153-05-1 | Brush for Retort Chamber, 1” Diameter, Stainless Steel |

### Books and Literature

| #190-20  | “Drilling Fluids Technology Manual” by Mudtech |
| #190-90  | OFI Testing Equipment, Inc. Product Catalog |

### Bottles, Glass

| #297-00  | 1 oz (30 mL), French Square with Cap |
| #297-01  | 2 oz (60 mL), French Square with Cap |
| #297-03  | 8 oz (250 mL), Amber Round with Cap |
| #297-04  | 8 oz (250 mL), Clear Paragon with Cap |
| #297-05  | 16 oz (500 mL), Mason Jar with Cap |
## Laboratory - Supplies

### CABLES
- **#130-38-5**: Power Cord for Thermocup
- **#130-42**: Cable for 2-Speed Viscometer, 12 Volt
- **#135-33**: Cable for 6-Speed Viscometers, 6'
- **#152-37**: Power Cord, 3 Conductor, 5-15P, C13
- **#152-38**: Power Cord, 3 Conductor, CEE 7/VII, C13
- **#165-40**: Cable for 115 Volt Retort
- **#165-40-1**: Cable for 230 Volt Retort and Portable Oven
- **#171-82**: Round Power Cord with Male Plug Only, 8'

### CASES (ALPHABETICAL ORDER)
- **#160-02**: Airplane Kit, Stainless Steel
- **#111-01**: EP-Lubricity Tester
- **#170-03**: Filter Press, HTHP, 175 mL, Stainless Steel
- **#171-81**: Filter Press, HTHP, Model MB, Stainless Steel
- **#142-53-8**: Filter Press, MB, with CO₂ Assembly
- **#151-53**: Garrett Gas Train
- **#153-16-1**: Graduate Cylinder Case, 25 mL, Polycarbonate
- **#132-06**: Hand Crank Rheometer
- **#161-06**: HDD Case, Executive-Style
- **#153-52-13**: Hydrometer Set
- **#162-01-1**: International Kit, Molded Plastic
- **#162-72**: METEOR Kit
- **#100-40**: Mud Balance
- **#161-60**: Mud Laboratory, MES Design, Stainless Steel
- **#144-35**: Multi-Kit, Diagonal Design, Stainless Steel
- **#144-90-07**: Nitrate Test Kit, Plastic
- **#161-02**: Offshore Kit, Stainless Steel
- **#162-61**: Oil Mud Laboratory
- **#163-02**: Pilot Test Kit, Stainless Steel
- **#153-35**: Pipette Case (1, 2 and 5 mL), Polycarbonate
- **#153-39**: Pipette Case (10 mL), Polycarbonate
- **#165-63**: Reverse Phase Extraction Kit
- **#144-21**: Rig Laboratory Cabinet without Sink
- **#162-76**: Tackle Box, Plastic, Plano 3780
- **#163-21**: Tool Box, Plastic, 13" × 6 ½" × 5 ½"
- **#163-22**: Tool Box, Plastic, 19 ¼" × 8 ¾" × 8 ¼"
- **#163-23**: Tool Box, Plastic, 16 ½" × 9" × 12 ½"
- **#130-10-13-5**: Viscometer, Model 800 8-Speed
- **#144-96**: Water Analysis Kit, Stainless Steel

### CENTRIFUGE TUBES

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
<th>Volume</th>
<th>Glass Type</th>
<th>0 - 15 mL</th>
<th>0.1 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>#153-19</td>
<td>12 cm, Glass</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#153-21</td>
<td>Tube, Kolmer®, 10 mL, Glass, 12.5 cm</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>#153-22</td>
<td>12.5 mL, API, 100%, Glass, 12 cm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#153-23</td>
<td>100 mL, ASTM, Pear Shaped</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#153-25-20</td>
<td>100 mL, Short Cone, for Oil</td>
<td></td>
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</tr>
</tbody>
</table>

### CERAMIC FILTER DISKS, 2 ½" × ¾"

<table>
<thead>
<tr>
<th>Part #</th>
<th>Mean Port Throat (µm)</th>
<th>Permeability (Darcy)</th>
<th>New (Mercury)</th>
<th>Old (Air)</th>
<th>New (Mercury)</th>
<th>Old (Air)</th>
</tr>
</thead>
<tbody>
<tr>
<td>170-55</td>
<td>10</td>
<td></td>
<td>3</td>
<td>755 mD</td>
<td>400 mD</td>
<td></td>
</tr>
<tr>
<td>170-53-2</td>
<td>12</td>
<td></td>
<td>5</td>
<td>850 mD</td>
<td>750 mD</td>
<td></td>
</tr>
<tr>
<td>170-53-3</td>
<td>20</td>
<td></td>
<td>10</td>
<td>3 D</td>
<td>2 D</td>
<td></td>
</tr>
<tr>
<td>170-51</td>
<td>40</td>
<td></td>
<td>20</td>
<td>8 D</td>
<td>5 D</td>
<td></td>
</tr>
<tr>
<td>170-53</td>
<td>50</td>
<td></td>
<td>35</td>
<td>15 D</td>
<td>10 D</td>
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</tr>
<tr>
<td>170-53-1</td>
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<td>60</td>
<td>20 D</td>
<td>20 D</td>
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<td>170-53-4</td>
<td>120</td>
<td></td>
<td>90</td>
<td>40 D</td>
<td>100 D</td>
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</tr>
<tr>
<td>170-53-5</td>
<td>160</td>
<td></td>
<td>150</td>
<td>-</td>
<td>180 D</td>
<td></td>
</tr>
<tr>
<td>170-53-6</td>
<td>250</td>
<td></td>
<td>190</td>
<td>-</td>
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</tr>
</tbody>
</table>
Nitrous oxide cartridges should never be placed on airplanes without proper packaging, due to the possibility of cabin de-pressurization, which may result in an explosion.

Carbon dioxide and nitrous oxide cartridges are pressurized to approximately 900 PSI at 1 atmosphere (sea level). Therefore, they should never be placed on airplanes without proper packaging, due to the possibility of cabin de-pressurization, which may result in an explosion.

CONTAINERS

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#297-24</td>
<td>Cubitainer with Carton and Valve, 5 gal (20 L)</td>
</tr>
<tr>
<td>#297-25</td>
<td>Pail with Lid, 1 gal (4 L)</td>
</tr>
<tr>
<td>#297-26</td>
<td>Pail with Lid, 2 gal (8 L)</td>
</tr>
<tr>
<td>#297-27</td>
<td>Pail with Lid, 3.5 gal (10.9 L)</td>
</tr>
<tr>
<td>#297-28</td>
<td>Pail with Lid, 5 gal (30 L)</td>
</tr>
<tr>
<td>#297-22</td>
<td>Solvent Can with Cap, 16 oz (500 mL), Metal</td>
</tr>
<tr>
<td>#297-23</td>
<td>Solvent Can with Cap, 1 gal (4 L), Metal</td>
</tr>
</tbody>
</table>

CUPS

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#110-20</td>
<td>Measuring Cup, Beige, 1,000 mL, Plastic</td>
</tr>
<tr>
<td>#110-30</td>
<td>Measuring Cup, 500 mL, Stainless Steel</td>
</tr>
<tr>
<td>#110-40</td>
<td>Measuring Cup, 1,000 mL, Stainless Steel</td>
</tr>
<tr>
<td>#110-50</td>
<td>Measuring Cup, 2,000 mL, Stainless Steel</td>
</tr>
<tr>
<td>#130-21</td>
<td>Sample Cup for 8-Speed Viscometer, Stainless Steel</td>
</tr>
<tr>
<td>#130-41</td>
<td>Beaker for Hand Crank Rheometer, 400 mL, Polypropylene</td>
</tr>
<tr>
<td>#130-34</td>
<td>Sample Cup for 6-Speed Viscometers, 350 mL, Stainless Steel Scribed</td>
</tr>
<tr>
<td>#130-55</td>
<td>Sample Cup for 6-Speed Viscometers, 600 mL, Poly</td>
</tr>
<tr>
<td>#131-12</td>
<td>Sample Cup for Ministill</td>
</tr>
<tr>
<td>#165-16-2</td>
<td>Mud Sample Chamber for 50 mL Retort</td>
</tr>
<tr>
<td>#165-31-1</td>
<td>Mud Sample Cup for 10 mL Retort</td>
</tr>
<tr>
<td>#165-83-2</td>
<td>Mud Sample Cup for 20 mL Retort</td>
</tr>
<tr>
<td>#169-01</td>
<td>Spray Cup for #169-00 Particle Size Analyzer</td>
</tr>
</tbody>
</table>

DRÄGER-TUBES

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#151-18</td>
<td>Ammonia 5/a, Range 5 - 700 ppm</td>
</tr>
<tr>
<td>#151-04</td>
<td>CO, 100/a, Range 100 - 3,000 ppm</td>
</tr>
<tr>
<td>#151-03</td>
<td>H2S 0.2%/A, Range 0.2 - 7 Vol.%</td>
</tr>
<tr>
<td>#151-02</td>
<td>H2S 100/a, Range 100 - 2,000 ppm</td>
</tr>
<tr>
<td>#151-09</td>
<td>Dräger Hand Pump</td>
</tr>
<tr>
<td>#151-09-1</td>
<td>Dräger Tube Opener</td>
</tr>
</tbody>
</table>

FILTERS

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#170-19</td>
<td>Filter Paper, Whatman #50, 2.5” (6.4 cm), 2.7 µm, Box of 100</td>
</tr>
<tr>
<td>#140-55</td>
<td>Filter Paper, Whatman #50, 3.5” (9 cm), 2.7 µm, Box of 100</td>
</tr>
<tr>
<td>#140-56</td>
<td>Filter Paper, Whatman #1, 4.9” (12.5 cm), 11 µm, Box of 100</td>
</tr>
<tr>
<td>#140-56-1</td>
<td>Filter Paper, Whatman #40, 3.5” (9 cm), 8 µm, Box of 100</td>
</tr>
<tr>
<td>#140-56-2</td>
<td>Filter Paper, Whatman #42, 3.5” (9 cm), 2.5 µm, Box of 100</td>
</tr>
<tr>
<td>#141-22</td>
<td>Filter for Regulators, Felt</td>
</tr>
<tr>
<td>#165-62</td>
<td>Filter for Syringe, 25 mm, 0.45 µm, PTFE</td>
</tr>
<tr>
<td>#170-19-1</td>
<td>Filter, Dynalloy®, 2 ¼”, Stainless Steel</td>
</tr>
<tr>
<td>#145-00-12</td>
<td>Filter, Millipore, 47 mm, 0.45 µm, Package of 100 UN3270</td>
</tr>
<tr>
<td>#170-18</td>
<td>Screen, 325 Mesh with 60 Mesh Backup, Detachable</td>
</tr>
<tr>
<td>#170-19-2</td>
<td>Glass Fiber Paper for Filter Paper Backup, 2 ½” (6.3 cm), Box of 50</td>
</tr>
</tbody>
</table>

FLASKS, ERLENMEYER

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#153-50-4</td>
<td>25</td>
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<tr>
<td>#153-50-3</td>
<td>50</td>
</tr>
<tr>
<td>#153-50-1</td>
<td>125</td>
</tr>
<tr>
<td>#153-50</td>
<td>250</td>
</tr>
<tr>
<td>#153-50-2</td>
<td>500</td>
</tr>
</tbody>
</table>

FLASKS, OTHER

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#153-49</td>
<td>Le Chatelier with Glass Stopper for Specific Gravity, 250 mL Body, Neck Graduated 18 - 24 x 0.1 mL, Lid 2” OD x 3.5” OD Base</td>
</tr>
<tr>
<td>#153-54</td>
<td>Volumetric, 100 mL, Glass</td>
</tr>
<tr>
<td>#153-54-1</td>
<td>Volumetric, 250 mL, Glass</td>
</tr>
</tbody>
</table>

FUNNELS

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#110-10</td>
<td>Marsh Funnel Viscometer, Plastic</td>
</tr>
<tr>
<td>#153-30</td>
<td>Funnel, 3” Diameter, Polyethylene</td>
</tr>
<tr>
<td>#295-00-007</td>
<td>Funnel, 6” Stem, Glass</td>
</tr>
<tr>
<td>#167-20</td>
<td>Funnel for Sand Content Kit</td>
</tr>
</tbody>
</table>

GAUGES

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#152-95-1</td>
<td>30 PSI, ¾” Bottom Connection, 4” Face</td>
</tr>
<tr>
<td>#143-01-2</td>
<td>30 PSI, ¾” Bottom Connection, 1 ½” Face</td>
</tr>
<tr>
<td>#169-03</td>
<td>60 PSI, ¾” Bottom Connection, 2” Face</td>
</tr>
<tr>
<td>#143-01-1</td>
<td>200 PSI, ½” Back Connection, 1 ½” Face</td>
</tr>
<tr>
<td>#143-01</td>
<td>200 PSI, ½” Bottom Connection, 1 ¼” Face</td>
</tr>
<tr>
<td>#142-61</td>
<td>1,000 PSI, ½” Bottom Connection, 1 ¼” Face</td>
</tr>
<tr>
<td>#171-73-1</td>
<td>1,000 PSI, ½” Bottom Connection, 2 ½” Face</td>
</tr>
<tr>
<td>#171-38</td>
<td>1,500 PSI, ½” Bottom Connection, 2” Face</td>
</tr>
<tr>
<td>#171-40</td>
<td>1,500 PSI, ½” Bottom Connection, 2 ½” Face</td>
</tr>
<tr>
<td>#171-74-1</td>
<td>2,000 PSI, ½” Bottom Connection, 1 ¾” Face</td>
</tr>
<tr>
<td>#171-42</td>
<td>3,000 PSI, ½” Bottom Connection, 2 ½” Face</td>
</tr>
<tr>
<td>#171-41</td>
<td>5,000 PSI, ½” Bottom Connection, 2 ½” Face</td>
</tr>
</tbody>
</table>

May require special handling for shipping.
## Laboratory - Supplies

### GRADUATED CYLINDERS

| #131-15 | 20 mL, 100% |
| #153-20 | 5 mL × 0.1 mL, TD, Glass |
| #153-18 | 10 mL × 0.1 mL, TC, Glass |
| #153-18-1 | 10 mL × 0.2 mL, TD, Glass |
| #153-09-3 | 10 mL × 0.2 mL, PMP, Nalgene® |
| #153-16 | 25 mL × 0.2 mL, TC, Glass |
| #153-09-4 | 25 mL × 0.5 mL, PMP, Nalgene® |
| #153-14 | 50 mL × 1 mL, TC, Glass |
| #153-09-5 | 50 mL × 1 mL, PMP, Nalgene® |
| #153-12 | 100 mL × 1 mL, TC, Glass |
| #153-09 | 250 mL × 2 mL, PMP, Nalgene® |
| #153-09-1 | 500 mL × 5 mL, PMP, Nalgene® |
| #153-09-2 | 1,000 mL × 10 mL, PMP, Nalgene® |

### LUBRICANTS

| #100-60-32 | Grease, Multi-Purpose, Mystik JT-6 |
| #153-55 | Stopcock Grease, 150 g, Silicone |
| #153-56 | Stopcock Grease, Lubriseal, 75 g Tube |
| #165-44-2 | Anti Seize Compound, Silver, 7g Pouch |

### MIXER ACCESSORIES

| #152-01 | Armature for Hamilton Beach® Mixer, 115 Volt |
| #152-02 | Armature for Hamilton Beach® Mixer, 230 Volt |
| #152-35 | Powerstat® for Variable Mixing Speeds, 115 Volt |
| #152-36 | Powerstat® for Variable Mixing Speeds, 230 Volt |
| #152-40 | Container for Hamilton Beach® Mixers, Stainless Steel |
| #152-41 | Upper Agitator Button for Hamilton Beach® 1 and 3 Spindle Mixers |
| #152-42 | Lower Agitator Button for Hamilton Beach® 1 and 3 Spindle Mixers |
| #152-43 | Impeller Blade for Multi-Mixer |
| #152-44 | Screw for Hamilton Beach® Lower Agitator Button |
| #152-51 | Sound Resistant Case for Multi-Mixer, Stainless Steel |

### O-RINGS AND GASKETS

#### Aging Cells

| #175-03 | O-ring for OFITE Style Aging Cell, Inside, PEEK |
| #175-04 | Gasket for Old-Style Inner Caps, Teflon® |
| #175-09-2 | O-ring for OFITE Style Aging Cell, Inside, Viton® |
| #175-09-1 | O-ring for OFITE Style Aging Cell, Inside, Teflon® |
| #175-46 | O-ring for Outside of Aging Cell, Teflon® |
| #175-54 | O-ring for Outside of Aging Cell, Buna-N |
| #175-62 | O-ring for Teflon® Liner Plug, Viton® |
| #175-63 | O-ring for Teflon® Liner Lid (Piston), Viton® |
| #170-17 | O-ring for Valve Stem |

#### Differential Sticking Tester

| #150-52 | Gasket for Sticking Tester, Neoprene |
| #150-53 | Gasket for Sticking Tester, Plastic |
| #150-56 | O-ring for Test Cell |
| #170-13 | O-ring for Test Cell, Buna-N |
| #142-56 | O-ring for Torque Plate |
| #170-17 | O-ring for Valve Stem |

### Filter Press, API

| #141-05 | Gasket, ¼” Thick, Neoprene |
| #141-05-1 | Gasket, ¼” Thick, Neoprene |
| #140-60-09 | Gasket for Half-Area Filter Press |
| #142-58 | Gasket for MB T-Fitting and CO₂ Head |
| #142-54 | O-ring for 12B T-Fitting |
| #142-60 | O-ring for 12B and MB Filter Press Cell |
| #140-60-01 | O-ring for Bleeder Valve |
| #140-71 | O-ring for Deadweight Hydraulic Assembly |
| #142-56 | O-ring for Model MB and 12B Cell Coupling |

### Filter Press, HTHP

| #170-07 | O-ring for Back Pressure Receiver, 15 mL |
| #171-11 | O-ring for Back Pressure Receiver, 100 mL |
| #140-60-01 | O-ring for Bleeder Valve |
| #170-13-2 | O-ring for Test Cell, Nitrile |
| #170-13-3 | O-ring for Test Cell, Viton® 75D* |
| #171-190-060 | O-ring for Test Cell, Viton® 90D** |
| #170-13-1 | O-ring for Test Cell, Teflon® |
| #142-58 | O-ring for Model MB Coupling |
| #171-52 | O-ring for Model MB Test Cell |
| #171-99 | O-ring for Piston, Viton® 75D* |
| #171-190-061 | O-ring for Piston, Viton® 90D** |
| #700-100-096 | O-ring for Piston Bleed Port, Viton® 75D* |
| #171-190-056 | O-ring for Piston Bleed Port, Viton® 90D** |
| #120-910-028 | O-ring for Rupture Disk, Viton® 75D* |
| #171-190-058 | O-ring for Rupture Disk, Viton® 90D** |
| #170-77 | O-ring for Spacer on Ceramic Filters, Nitrile |
| #170-17 | O-ring for Valve Stem, Viton® 75D* |
| #171-190-057 | O-ring for Valve Stem, Viton® 90D** |

### Garrett Gas Train

| #151-13 | O-ring for 1st Chamber |
| #151-12 | O-ring for 2nd and 3rd Chamber |
| #142-58 | O-ring for Fitting |
| #151-11 | O-ring for Flow Meter Tube |
| #151-10 | O-ring for Dräger-tube® |

### Mud Balance, Pressurized

| #100-70-06 | O-ring for Lid |
| #142-54 | O-ring for Top of Check Valve |
| #142-56 | O-ring for Bottom of Check Valve |
| #170-07 | O-ring for Plunger Assembly |

### Regulators

| #143-00-9 | O-ring for CONCOA/AIRCO Regulator |
| #143-02-13 | O-ring for Puncture Head Assembly, CO₂, Bulb |
| #143-02-14 | O-ring for Puncture Head Assembly, Holder |
| #143-22 | Gasket for Puncturing Pin |

### Retorts

| #165-15-4 | O-ring for Ultra-Torr Fitting |

---

* For tests up to 400°F (204.4°C)
** For tests above 400°F (204.4°C)
### PH PAPER
- PHRONT Dispenser pH Paper, pH 2-10, 1-11
- PHRONT "A" pH Refill, pH 2-10, Box of 5 rolls
- PHRONT "B" pH Refill, pH 1-11, Box of 5 rolls
- PH Sticks, 0 - 14, Box of 100
- PH Sticks, 7.5 - 14, Box of 100
- PHRONT Dispenser pH Paper, pH 6-8, 8-9.5
- PHRONT pH Refill, pH 6-8, Box of 5 rolls
- PHRONT pH Refill, pH 6-11, Box of 5 rolls
- PHRONT Dispenser pH Paper, pH 10-12, 12.5-14
- PHRONT Dispenser pH Paper, pH 8-9-5, 10-12

### PIPETTES
- 1.0 mL × .01 mL, PYREX®, Case of 12
- 1 mL × .01 mL, KIMAX®
- 1 mL × .01 mL, Plastic
- 2 mL × .1 mL, KIMAX®
- 2 mL × .1 mL, Glass, Disposable, Pack of 50
- 5 mL × .1 mL, KIMAX®
- 10 mL × .1 mL, KIMAX®
- 25 mL × .2 mL, Disposable
- 10 mL, Disposable, Safety Bulb
- 10 mL, Disposable, with Bottle and Bulb, Automatic
- Dropper Pipette, 2 mL, Naigene®
- Eppendorf Variable Pipettor, 10 - 100 μL × .1 μL
- Eppendorf Variable Pipettor, 100 - 1,000 μL × 1 μL
- Pipette Tips, 1 - 200 μL Range
- Pipette Tips, 200 - 1,000 μL Range
- Pipette Filler, up to 10 mL, Fast Release
- Transfer Pipette, Not Graduated, 5 mL, Polyethylene

### REGULATORS AND ASSEMBLIES
- Dead Weight Hydraulic Assembly for Filter Press
- CO₂ Pressure Assembly with Top Cap, CONCO/AIRCO
- CO₂ Pressure Assembly, CONCO/AIRCO Low Pressure
- CO₂ Pressure Assembly, CONCO/AIRCO High Pressure
- CO₂ Pressure Assembly, Victor, High Pressure
- Dual N₂ Manifold, 1,350 and 750 PSI
- Regulator, CONCO/AIRCO, Low Pressure
- Regulator, CONCO/AIRCO, High Pressure
- Regulator, Victor, Low Pressure
- Regulator, Victor, High Pressure
- Regulator, Victor, N₂, 200 and 3,000 PSI Gauges
- Repair Kit, CONCO/AIRCO
- Repair Kit, Victor, Low Pressure
- Repair Kit, Victor, High Pressure

### RETORT RECEIVERS, VERIFIED
- 10 mL, 0 - 100%
- 20 mL, 0 - 100%
- 50 mL, 0 - 100%

### SPATULAS
- Brass Scoop, 4" Length
- Spatula, Micro-Spoon, 9" Flat Handle
- Spatula, Porcelain, 123 mm
- Spatula for 10 mL Retort, 2" × ¼” Blade
- Spatula for 20 mL Retort, 5 ¾" × 1 ¼” Blade
- Spatula for 50 mL Retort and Ministill, 3.75” × 1 ¼”
- Spatula with Rounded-Tip Blade, 4” × ¼”
- Spatula with Rounded-Tip Blade, 6” × 1”

### STIRRING BARS
- Magnetic, ½” × ¼”
- Magnetic, ¾” × ¼”
- Magnetic, 1” × ¼”
- Magnetic, 1 ½” × ¾”
- Magnetic, 2” × ¾”
- Spinwedge, 1 ¼” × ½”

### STIRRING RODS
- 4", Polyethylene,
- 6", Glass
- 10 ¾", Polyethylene

### SYRINGES
- 1 mL, Disposable, Luer-Lok™ Tip
- 2 mL, Glass-Tip
- 3 mL, Disposable, Luer-Lok™ Tip
- 3 mL, Disposable with 20 g Needle
- 5 mL, Disposable, Luer-Lok™ Tip
- 5 mL, Disposable with 20 g Needle
- 5 mL, Glass-Tip
- 10 mL, Luer-Lok™ Tip, Disposable
- 10 mL, Disposable, with 20 g Needle
- 10 mL, Glass-Tip
- 10 mL, Veterinary
- 20 mL, Disposable without Needle
- 60 mL, Disposable without Needle
- BD Precision Glide Disposable Needle
- Filter for Syringe, 25 mm, 0.45 μm, PTFE

### TEST TUBES
- 15 × 125 mm, ~16 mL, Glass
- 18 × 150 mm, ~28 mL, Glass
- 18 × 150 mm, ~29 mL, Glass with Rubber Stopper
- 20 × 1.2 × 150 mm, Glass
- 20 × 150 mm, ~29 mL, Glass
- 25 mm, 0.45 μm, PTFE
- Rack for 8 Test Tubes, Poly
**Laboratory - Supplies**

<table>
<thead>
<tr>
<th>THERMOMETERS</th>
<th>TUBES, MISCELLANEOUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>#154-24</td>
<td>ASTM 90C, Glass, 0° - 30°C × 0.1°C</td>
</tr>
<tr>
<td>#154-26</td>
<td>ASTM 34F, Glass, 77° - 221°F × 0.5°F</td>
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<tr>
<td>#154-28</td>
<td>Digital, NIST Traceable, 8” Stem, -58° - 302°F (50° - 150°C)</td>
</tr>
<tr>
<td>#154-30</td>
<td>Digital, 4” Probe, 14° - 392°F (-10° - 200°C)</td>
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<tr>
<td>#154-32</td>
<td>Traceable, Full-Scale, Battery-Powered, -58° - 500°F (-50° - 250°C)</td>
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<tr>
<td>#154-33</td>
<td>5” Stem, Metal Dial, 0° - 220°F (-10° - 100°C)</td>
</tr>
<tr>
<td>#154-35</td>
<td>5” Stem, Metal Dial, 0° - 220°F</td>
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<tr>
<td>#154-36</td>
<td>Spirit-Filled (Non-Mercury), -20° - 105°C</td>
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<tr>
<td>#154-37</td>
<td>Type K, Digital, 50° - 1999°F (50° - 1300°C)</td>
</tr>
<tr>
<td>#154-38</td>
<td>General Purpose, Total Immersion, Mercury-Filled, Glass, 0° - 230°F</td>
</tr>
<tr>
<td>#154-40</td>
<td>Digital, 4” Probe, 14° - 392°F (-10° - 200°C)</td>
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<tr>
<td>#154-41</td>
<td>4” Stem, Metal Dial, 0° - 220°F</td>
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<td>#154-42</td>
<td>5” Stem, Metal Dial, 0° - 220°F</td>
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<tr>
<td>#154-43</td>
<td>Type K, Digital, 50° - 1999°F (50° - 1300°C)</td>
</tr>
<tr>
<td>#154-44</td>
<td>Probe required. See page 186 for more information.</td>
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<th>TIMERS</th>
<th>VALVES</th>
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<tr>
<td>#155-05</td>
<td>Electronic, Battery (AAA) Powered</td>
</tr>
<tr>
<td>#155-10</td>
<td>30 Minute Interval</td>
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<tr>
<td>#155-20</td>
<td>60 Minute Interval</td>
</tr>
<tr>
<td>#155-25</td>
<td>Stopwatch, Digital</td>
</tr>
<tr>
<td>#155-26</td>
<td>Stopwatch, Bodytronic</td>
</tr>
<tr>
<td>#172-15-1</td>
<td>Timer for Oven, Electronic, 7 Day, 115 / 230 Volt</td>
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<thead>
<tr>
<th>TITRATION DISHES</th>
<th>TRANSFORMERS AND CONVERTERS</th>
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<tbody>
<tr>
<td>#153-26</td>
<td>Polyethylene</td>
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<tr>
<td>#153-26-1</td>
<td>Casserole, 140 mL Handle, Porcelain</td>
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<tr>
<td>#153-26-1</td>
<td>Polyethylene</td>
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<tr>
<td>#153-26-1</td>
<td>Casserole, 140 mL Handle, Porcelain</td>
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<td>#111-15</td>
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<td>#130-43</td>
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<td>#130-74</td>
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<td>#152-32</td>
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</tr>
<tr>
<td>#152-36</td>
</tr>
<tr>
<td>#174-21</td>
</tr>
</tbody>
</table>

#151-08 | Flow Meter Tube for Garrett Gas Train |
#151-01 | Dispersion Tube for Garrett Gas Train, Glass |
#165-05 | Receiver Tube with Certificate, 0 - 100% × 0.1%, 0 - 10 mL × 0.1 mL, 10 mL |
#165-06 | Receiver Tube with Certificate, 0 - 100% × 0.1%, 0 - 20 mL × 0.1 mL, with Certificate, 20 mL |
#165-07 | Receiver Tube with Certificate, 0 - 100% × 0.5%, 0 - 50 mL × 0.25 mL, 50 mL |
#167-30 | Sand Content Tube, Graduated to 20%, Glass |
#166-12 | Shearometer Tube, 5 g, Aluminum |
#166-10 | Shearometer Tube with Weight Support, 20 g, Stainless Steel |
#299-10-4 | Turbidity Tubes, Set of 4 |

#171-97 | Ball Valve for PPT Cell Outlet, ¾” NPT |
#171-98 | Ball Valve for PPT Inlet Pressure Line, ¼” NPT |
#170-32 | Needle Valve, Male, ¼” × ¼” NPT |
#170-34 | Needle Valve, Male, ¼” × ¼” NPT |
#171-25-1 | Relief Valve for Dual Nitrogen Manifold, 750 PSI |
#171-25-2 | Relief Valve for Dual Nitrogen Manifold, 1350 PSI |
#171-96-1 | Safety Bleeder Valve, ¼” NPT |
#171-92 | Safety Relief Valve for PPT Inlet, 2000 PSI |
#171-92-1 | Safety Relief Valve for PPT Inlet, 4000 PSI |
#171-25-3 | Safety Relief Valve for PPT Inlet, 5500 PSI |
#175-16 | Valve Stem for Aging Cells |
#170-16 | Valve Stem for HTHP Test Cells |
#171-90-08 | Valve Stem for PPT Cell Hydraulics Entry |
#171-90-09 | Valve Stem for PPT Cell Filtrate Outlet |
#171-90-10 | Valve Stem for PPT Receiver Entry |
### SIEVES

#### Sieve, Brass Frame, 3" Diameter, 1" Deep

<table>
<thead>
<tr>
<th>Part#</th>
<th>Mesh</th>
<th>Mesh Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>#167-21</td>
<td>4</td>
<td>4.75 mm (0.187&quot;)</td>
</tr>
<tr>
<td>#167-22</td>
<td>5</td>
<td>3.55 mm (0.157&quot;)</td>
</tr>
<tr>
<td>#167-23</td>
<td>6</td>
<td>3.35 mm (0.132&quot;)</td>
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<tr>
<td>#167-24</td>
<td>7</td>
<td>2.80 mm (0.111&quot;)</td>
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<tr>
<td>#167-25</td>
<td>8</td>
<td>2.36 mm (0.0937&quot;)</td>
</tr>
<tr>
<td>#167-26</td>
<td>10</td>
<td>2.00 mm (0.0787&quot;)</td>
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<tr>
<td>#167-27</td>
<td>12</td>
<td>1.70 mm (0.0661&quot;)</td>
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<tr>
<td>#167-28</td>
<td>14</td>
<td>1.40 mm (0.0555&quot;)</td>
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<tr>
<td>#167-29</td>
<td>16</td>
<td>1.18 mm (0.0469&quot;)</td>
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<tr>
<td>#167-31</td>
<td>18</td>
<td>1.00 mm (0.0394&quot;)</td>
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<tr>
<td>#167-31-1</td>
<td>20</td>
<td>850 µm (0.0331&quot;)</td>
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<tr>
<td>#167-32</td>
<td>25</td>
<td>710 µm (0.0280&quot;)</td>
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<td>#167-33</td>
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<td>#167-34</td>
<td>40</td>
<td>425 µm (0.0165&quot;)</td>
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<td>#167-35</td>
<td>45</td>
<td>355 µm (0.0138&quot;)</td>
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<td>#167-36</td>
<td>50</td>
<td>300 µm (0.0117&quot;)</td>
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<td>#167-37</td>
<td>60</td>
<td>250 µm (0.0098&quot;)</td>
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<td>#167-38</td>
<td>70</td>
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<td>#167-39</td>
<td>80</td>
<td>180 µm (0.0070&quot;)</td>
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<tr>
<td>#167-40</td>
<td>100</td>
<td>150 µm (0.0059&quot;)</td>
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<tr>
<td>#167-41</td>
<td>120</td>
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<tr>
<td>#167-41-1</td>
<td>140</td>
<td>106 µm (0.0041&quot;)</td>
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<td>#167-41-2</td>
<td>170</td>
<td>90 µm (0.0035&quot;)</td>
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<tr>
<td>#167-42</td>
<td>200</td>
<td>75 µm (0.0029&quot;)</td>
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<tr>
<td>#167-42-1</td>
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<td>63 µm (0.0024&quot;)</td>
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<tr>
<td>#167-43</td>
<td>270</td>
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<tr>
<td>#167-43-1</td>
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<tr>
<td>#167-44</td>
<td>400</td>
<td>38 µm (0.0015&quot;)</td>
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<tr>
<td>#167-45</td>
<td>450</td>
<td>32 µm (0.0013&quot;)</td>
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#### US Sieve No.

<table>
<thead>
<tr>
<th>US Sieve No.</th>
<th>Mesh per Linear Inch</th>
<th>Opening (in)</th>
<th>Opening (µm)</th>
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<tbody>
<tr>
<td>50</td>
<td>52.38</td>
<td>0.117</td>
<td>297</td>
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<tr>
<td>70</td>
<td>72.45</td>
<td>0.0083</td>
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<tr>
<td>100</td>
<td>101.01</td>
<td>0.0059</td>
<td>149</td>
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<td>140</td>
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<td>0.0041</td>
<td>105</td>
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<tr>
<td>200</td>
<td>200.00</td>
<td>0.0029</td>
<td>74</td>
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<td>270</td>
<td>270.26</td>
<td>0.0021</td>
<td>53</td>
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<tr>
<td>325</td>
<td>323.00</td>
<td>0.0017</td>
<td>44</td>
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</tbody>
</table>

*1 Micron (µm) = ½₄₄₂₀₄₀° or ⅛₀₀₀₀ mm

### Accessories

- **#167-84** Sieve Pan (Collector), 8" × 2" (20 × 5 cm), Brass
- **#167-85** Sieve Cover, 8" (20.3 cm) Diameter, Brass

### Sieve Shaker

- **#167-86** Ro-Tap, for Six 8" Diameter Sieves, 1,750 RPM, 115 Volt, 60 Hz
- **#167-87** Ro-Tap, for Six 8" Diameter Sieves, 1,450 RPM, 230 Volt, 50 Hz
Reagents

**Acetic Acid / Potassium Acetate Buffer UN3265**
#216-00 16 oz (500 mL)

**Acetic Acid, Glacial UN2789**
#230-25 8 oz (250 mL)
#230-26 32 oz (1 L)

**Acetone UN1090**
#280-31 16 oz (500 mL)

**Aerosol**
#131-16 ½ oz (15 mL)

**Aluminum Chloride, 0.1M**
#290-03 8 oz (250 mL)

**Ammonium Fluoride, 10% Solution, UN3287**
#211-00 32 oz (1 L)

**Ammonium Hydroxide Concentrate, UN2672**
#212-00 16 oz (500 mL)

**Ammonium Persulfate, UN1444**
#214-00 100 gr.

**Aniline Solution, UN1547**
#145-81 2 oz (60 mL)
#145-84 8 oz (250 mL)

**API Evaluation Base Clay**
#191-00 5 gal (20 L)

**API Test Calibration Barite**
#191-02 2 gal (8 L)

**API Test Standard Calibration/Reference Bentonite**
#191-01 2 gal (8 L)

**Barium Chloride, Standard Solution**
#285-36-10 8 oz (250 mL)
#285-36 16 oz (500 mL)

**Barium Chloride, 10% Solution, Neutralized UN3287**
#285-07 8 oz (250 mL)
#285-07-10 16 oz (500 mL)

**Barium Chloride, Saturated Solution, UN3287**
#285-08 8 oz (250 mL)
#285-08-10 16 oz (500 mL)
#285-12-1 1 gal (3.785 L)

**Boric Acid, 2% Solution**
#230-22 8 oz (250 mL)
#230-21 16 oz (500 mL)
#230-20 32 oz (1 L)

**Boric Acid, 3% Solution**
#230-23 8 oz (250 mL)

**Bromide Water UN1744**
#144-941 16 oz (500 mL)

**Bromocresol Green Indicator Solution**
#246-00 2 oz (60 mL)
#246-01 8 oz (250 mL)
#246-00-1 1 gal (3.785 L)

**Bromocresol Green - Methyl Orange Indicator Solution**
#240-05 2 oz (60 mL)
#240-06 8 oz (250 mL)

**Bromocresol Green - Methyl Red Indicator Solution**
#245-00 2 oz (60 mL)
#245-01 8 oz (250 mL)
#245-00-1 1 gal (3.785 L)

**Bromophenol Blue Indicator Solution**
#285-34 2 oz (60 mL)

**BufferPowder, Hardness**
#205-21 100 g

**Buffer Solution, Hardness, Versenate®, Ammonium Hydroxide UN2672**
#205-04-01 1 oz (30 mL)
#205-04 2 oz (60 mL)
#205-05 8 oz (250 mL)
#205-05-10 16 oz (500 mL)
#205-05-20 32 oz (1 L)
#205-04-2 64 oz (1.85 L)
#205-04-3 2.5 gal (10 L)
#205-04-5 5 gal (20 L)

**Buffer Solution, pH 4, Standard @ 75°F (25°C)**
#147-20 16 oz (500 mL)
#147-20-1 1 gal (3.785 L)
#147-06-4 Single Pouch

**Buffer Solution, pH 7, Standard @ 75°F (25°C)**
#147-30 16 oz (500 mL)
#147-30-1 1 gal (3.785 L)
#147-06-5 Single Pouch

**Buffer Solution, pH 10, Standard @ 75°F (25°C)**
#147-40 16 oz (500 mL)
#147-40-1 1 gal (3.785 L)
#147-06-6 Single Pouch

**Calcium Buffer Solution, Versenate®, Sodium Hydroxide UN1824**
#205-14-01 1 oz (30 mL)
#205-14 2 oz (60 mL)
#205-14-6 8 oz (250 mL)
#205-14-4 16 oz (500 mL)
#205-14-2 32 oz (1 L)
#205-14-3 64 oz (1.85 L)
#205-14-5 2.5 gal (10 L)
#205-14-6 5 gal (20 L)

**Calcium Carbonate Powder, Precipitated**
#285-00 35 gram
#285-00-1 100 gram

**Calcium Chloride, Anhydrous**
#253-50 500 gram

**Calcium Chloride, 2% Solution**
#285-15 16 oz (500 mL)

**Calcium Chloride, Saturated**
#153-59-4 4 oz (120 mL)

**Calcium Hydroxide - Low Nitrate**
#144-90-01 ½ lb Jar

* May require special handling for shipping.
<table>
<thead>
<tr>
<th>Reagents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Indicator Solution</td>
<td></td>
</tr>
<tr>
<td>#250-00</td>
<td>2 oz, (60 mL)</td>
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<tr>
<td>#250-02</td>
<td>8 oz, (250 mL)</td>
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<tr>
<td>#250-00-1</td>
<td>1 gal, (3.785 L)</td>
</tr>
<tr>
<td>#250-01</td>
<td>Antifreeze, 2 oz, (60 mL)</td>
</tr>
<tr>
<td>#250-03</td>
<td>Antifreeze, 8 oz, (250 mL)</td>
</tr>
<tr>
<td>#250-01-1</td>
<td>Antifreeze, 1 gal, (3.785 L)</td>
</tr>
<tr>
<td><em>Calcium Nitrate Crystals, UN1454</em></td>
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</tr>
<tr>
<td>#253-51</td>
<td>500 g</td>
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<td><em>Calcium Nitrate Solution, Saturated UN3139</em></td>
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<tr>
<td>#153-59-5</td>
<td>4 oz (120 mL)</td>
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<tr>
<td>Calcium Sulfate, Anhydrous</td>
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<tr>
<td>#285-06</td>
<td>58 g</td>
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<tr>
<td>Calcium Titration Solution, No. 1</td>
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<tr>
<td>#205-22</td>
<td>2 oz (60 mL)</td>
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<tr>
<td>#205-24</td>
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<td><em>Calcium Titration Solution, No. 2 UN3287</em></td>
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<tr>
<td>#205-23</td>
<td>2 oz (60 mL)</td>
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<tr>
<td>#205-25</td>
<td>16 oz (500 mL)</td>
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<td>Calcon Powder</td>
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<td>#205-26</td>
<td>40 g</td>
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<tr>
<td>Calibration Fluid, Silicone, Certified</td>
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<tr>
<td>#132-84</td>
<td>20 cP, 16 oz (500 mL)</td>
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<tr>
<td>#132-81</td>
<td>50 cP, 16 oz (500 mL)</td>
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<tr>
<td>#132-80</td>
<td>100 cP, 16 oz (500 mL)</td>
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<tr>
<td>#132-83</td>
<td>200 cP, 16 oz (500 mL)</td>
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<tr>
<td>#132-83-1</td>
<td>200 cP, 1 gal (3.785 L)</td>
</tr>
<tr>
<td>#132-82</td>
<td>500 cP, 16 oz (500 mL)</td>
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<tr>
<td>CalVer® 2 Indicator Powder</td>
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<tr>
<td>#210-00</td>
<td>10 g</td>
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<tr>
<td>#210-00-2</td>
<td>20 g</td>
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<tr>
<td>#210-00-1</td>
<td>100 g</td>
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<tr>
<td><em>Citric Acid, 2M, Demulsifier, IPA Solution UN1219</em></td>
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<tr>
<td>#151-20-1</td>
<td>16 oz (500 mL)</td>
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<tr>
<td>Congo Red Solution</td>
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<tr>
<td>#221-00</td>
<td>2 oz (60 mL)</td>
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<tr>
<td>Cresol Red Indicator Solution</td>
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<tr>
<td>#290-02</td>
<td>2 oz (60 mL)</td>
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<tr>
<td>#290-02-02</td>
<td>8 oz (250 mL)</td>
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<td>#290-02-1</td>
<td>1 gal (3.785 L)</td>
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<tr>
<td>Defoamer, Octyl Octanol Alcohol</td>
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<td>Defoamer, Silicone Solution</td>
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<td>#205-50</td>
<td>2 oz (60 mL)</td>
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<tr>
<td>#205-51</td>
<td>8 oz (250 mL)</td>
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<tr>
<td>Deionized Water</td>
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<tr>
<td>#206-03</td>
<td>2 oz (60 mL)</td>
</tr>
<tr>
<td>#206-00</td>
<td>4 oz (120 mL)</td>
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<tr>
<td>#206-01</td>
<td>8 oz (250 mL)</td>
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<tr>
<td>#206-02</td>
<td>16 oz (500 mL)</td>
</tr>
<tr>
<td>#206-04</td>
<td>32 oz (1 L)</td>
</tr>
<tr>
<td>#206-05</td>
<td>.5 gal (2 L)</td>
</tr>
<tr>
<td>#206-06</td>
<td>1 gal (3.785 L)</td>
</tr>
<tr>
<td>#206-07</td>
<td>2.5 gal (10 L)</td>
</tr>
<tr>
<td>#206-08</td>
<td>5 gal (20 L)</td>
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<tr>
<td>#147-06-7</td>
<td>Rinse Water Single Pouch</td>
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<tr>
<td>Dispersant Solution</td>
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<tr>
<td>#205-30</td>
<td>32 oz (1 L)</td>
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<tr>
<td>Eriochrome Black T</td>
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<tr>
<td>#205-28</td>
<td>25 gram</td>
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<tr>
<td><em>Ethanol (Ethyl Alcohol) UN1987</em></td>
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<tr>
<td>#280-32</td>
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<tr>
<td>Ethylene Glycol</td>
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<td>#152-55-4</td>
<td>32 oz (1 L)</td>
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<tr>
<td>Fluoride Ion Solution, 0.0100M</td>
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<tr>
<td>#216-02</td>
<td>32 oz (1 L)</td>
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<td>Fluoride Ion Solution, 0.0010M</td>
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<tr>
<td>#216-03</td>
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<tr>
<td><em>Formaldehyde, 4% Solution UN2209</em></td>
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<tr>
<td>#213-00</td>
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<tr>
<td>Heater Bath Oil</td>
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<tr>
<td>#130-78-25</td>
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<tr>
<td>High pH Indicator Solution</td>
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<tr>
<td>#147-42</td>
<td>2 oz (60 mL)</td>
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<tr>
<td>#147-44</td>
<td>8 oz (250 mL)</td>
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<tr>
<td>Hydraulic Oil</td>
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<tr>
<td>#171-96-1</td>
<td>32 oz (1 L)</td>
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<tr>
<td>#171-96-2</td>
<td>1 gal (3.785 L)</td>
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<tr>
<td>Hydrochloric Acid Solution, .02 N (N/50)</td>
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<tr>
<td>#275-04</td>
<td>8 oz (250 mL)</td>
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<tr>
<td>#275-04-02</td>
<td>16 oz (500 mL)</td>
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<tr>
<td>#275-02-1</td>
<td>1 gal (3.785 L)</td>
</tr>
<tr>
<td>#275-05-1</td>
<td>Antifreeze, 1 gal (3.785 L)</td>
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<tr>
<td>Hydrochloric Acid Solution, .1 N (N/10)</td>
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<tr>
<td>#275-02</td>
<td>8 oz (250 mL)</td>
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<tr>
<td>#275-10</td>
<td>16 oz (500 mL)</td>
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<tr>
<td>Hydrochloric Acid Solution, .2 N (N/5)</td>
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<tr>
<td>#275-06</td>
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<tr>
<td>#275-06-2</td>
<td>64 oz (1.85 L)</td>
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<td><em>Hydrochloric Acid Solution, .5 N (N/2) UN1789</em></td>
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<tr>
<td>#290-01</td>
<td>2 oz (60 mL)</td>
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<tr>
<td>#290-01-02</td>
<td>8 oz (250 mL)</td>
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<tr>
<td><em>Hydrochloric Acid Solution, 1 N UN1789</em></td>
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<tr>
<td>#275-08-1</td>
<td>8 oz (250 mL)</td>
</tr>
<tr>
<td>#275-08</td>
<td>32 oz (1 L)</td>
</tr>
<tr>
<td>#275-08-2</td>
<td>64 oz (1.85 L)</td>
</tr>
</tbody>
</table>

*May require special handling for shipping.*
## Reagents

<table>
<thead>
<tr>
<th>Reagent Description</th>
<th>Code</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Hydrochloric Acid Solution, 5 N UN1789</td>
<td>#275-12</td>
<td>8 oz (250 mL)</td>
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<td>#275-09</td>
<td>32 oz (1 L)</td>
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<tr>
<td>Hydrochloric Acid, 10% Solution UN1789</td>
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<td>#275-03-02</td>
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<tr>
<td>Hydrochloric Acid 15% Solution UN1789</td>
<td>#275-07-02</td>
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<td>#275-07</td>
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<td>Hydrochloric Acid 20% Solution UN1789</td>
<td>#275-11</td>
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<td>Hydrochloric Acid 37% Solution UN1789</td>
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<td>Hydrogen Peroxide 3% Solution</td>
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<td>#200-10</td>
<td>4 oz (120 mL)</td>
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<td></td>
<td>#200-11</td>
<td>8 oz (250 mL)</td>
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<td></td>
<td>#200-12</td>
<td>16 oz (500 mL)</td>
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<td></td>
<td>#200-13</td>
<td>32 oz (1 L)</td>
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<td>#200-09-1</td>
<td>1 gal (3.785 L)</td>
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<tr>
<td>Indicator Powder, Hardness</td>
<td>#205-20</td>
<td>100 g</td>
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<td>Indicator Solution (Calmagite), Versenate® Hardness</td>
<td>#205-02</td>
<td>2 oz (60 mL)</td>
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<td>#205-02-4</td>
<td>8 oz (250 mL)</td>
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<td>#205-02-2</td>
<td>16 oz (500 mL)</td>
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<tr>
<td></td>
<td>#205-02-3</td>
<td>32 oz (1 L)</td>
</tr>
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<td>#205-02-1</td>
<td>1 gal (3.785 L)</td>
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<tr>
<td></td>
<td>#205-03</td>
<td>Antifreeze, 2 oz (60 mL)</td>
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<td>#205-03-3</td>
<td>Antifreeze, 32 oz (1 L)</td>
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<td>#205-03-1</td>
<td>Antifreeze, 1 gal (3.785 L)</td>
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<tr>
<td>Iodine Titrating Solution</td>
<td>#145-553</td>
<td>8 oz (250 mL)</td>
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<tr>
<td>Iron Buffer Solution</td>
<td>#285-40</td>
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<td></td>
<td>#285-41</td>
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<td>#285-42</td>
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<tr>
<td>Iron Indicator Solution UN1993</td>
<td>#285-37</td>
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<td>#285-38</td>
<td>8 oz (250 mL)</td>
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<td>#285-39</td>
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<tr>
<td>Iron Sulfide Detection Solution UN2922</td>
<td>#280-02</td>
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<tr>
<td>Isopropyl Alcohol, UN1219</td>
<td>#165-68</td>
<td>32 oz (1 L)</td>
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<td>#280-10</td>
<td>1 gal (3.785 L)</td>
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<td>#280-10-5</td>
<td>5 gal (20 L)</td>
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<tr>
<td>Isopropyl Alcohol (99%) - Deionized Water Solution, 1:1 Mix UN1219</td>
<td>#280-15</td>
<td>32 oz (1 L)</td>
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</tbody>
</table>

* May require special handling for shipping.
Paraformaldehyde Solution “A”  
#145-301  2 oz (60 mL)  
#145-311  Antifreeze, 2 oz (60 mL)

Paraformaldehyde Solution “B”  
#145-302  2 oz (60 mL)  
#145-312  Antifreeze, 2 oz (60 mL)

Paraformaldehyde Solution “C”  
#145-303  2 oz (60 mL)  
#145-313  Antifreeze, 2 oz (60 mL)

Paraformaldehyde Solution “D”  
#145-304  2 oz (60 mL)  
#145-314  Antifreeze, 2 oz (60 mL)

Phenol Red Serum, (Aerobic Bacteria Culture)  
#180-36  10 cc

Phenol Solution, 5% UN2821  
#144-943  8 oz (250 mL)

Phenolphthalein Indicator Solution  
#220-00  2 oz (60 mL)  
#220-01  8 oz (250 mL)  
#220-02  16 oz (500 mL)  
#220-03  32 oz (1 L)  
#220-00-1  1 gal (3.785 L)

Potassium Chloride Solution  
#285-11  4 oz (120 mL)

Potassium Chromate Solution  
#215-00  2 oz (60 mL)  
#215-02  8 oz (250 mL)  
#215-04  16 oz (500 mL)  
#215-05  32 oz (1 L)  
#215-00-1  1 gal (3.785 L)  
#215-01  Antifreeze, 8 oz (250 mL)  
#215-03  Antifreeze, 16 oz (500 mL)  
#215-05  Antifreeze, 32 oz (1 L)  
#215-01-1  Antifreeze, 1 gal (3.785 L)

Potassium Hydroxide, 25% Solution UN1814  
#217-00  16 oz (500 mL)

Potassium Hydroxide, 0.1 N (N/10), in Methanol, UN1230  
#285-43  8 oz (250 mL)  
#217-05  16 oz (500 mL)

Potassium Hydroxide, 8 N, UN1814  
#253-56  2 oz (60 mL)  
#253-57  4 oz (120 mL)  
#253-55  16 oz (500 mL)  
#253-55-2  64 oz (1.85 L)

Potassium Iodide, 5% Solution  
#145-72  8 oz (250 mL)

Potassium Iodide Crystals  
#144-944  50 gram

Potassium Iodide - Iodate Solution  
#145-554  8 oz (250 mL)

Potassium Nitrate, Saturated UN1319  
#153-59-6  4 oz (120 mL)

Potassium Nitrate Crystals UN1486  
#253-53  500 gram

Propylene Glycol Normal Propyl Ether (PNP) UN1993  
#280-30-02  16 oz (500 mL)  
#280-30-01  32 oz (1 L)  
#280-30  1 gal (3.785 L)  
#280-30-5  5 gal (20 L)

QAS (Quaternary Ammonium Salt) Solution  
#285-32  16 oz (500 mL)

Reinecke Salt (Ammonium Reineckate), in 1 oz French Square Bottle with Cap  
#295-21  0.75 gram

Rev Dust  
#191-10  50 lb Bag

Silver Nitrate Crystals, UN1493  
#265-15  1 lb (453.6 g)

Silver Nitrate Solution, 0.001 g Cl-/mL, 0.0282 N, 1,000 ppm  
#265-15  4 oz (120 mL)  
#265-00  8 oz (250 mL)  
#265-02  16 oz (500 mL)  
#265-04  32 oz (1 L)  
#265-00-1  1 gal (3.785 L)  
#265-01  Antifreeze, 8 oz (250 mL)  
#265-03  Antifreeze, 16 oz (500 mL)  
#265-05  Antifreeze, 32 oz (1 L)  
#265-01-1  Antifreeze, 1 gal (3.785 L)

Silver Nitrate, 0.141 N  
#265-14  16 oz (500 mL)

Silver Nitrate Solution, 0.01 g Cl-/mL, 0.282 N, 10,000 ppm  
#265-13  4 oz (120 mL)  
#265-06  8 oz (250 mL)  
#265-08  16 oz (500 mL)  
#265-10  32 oz (1 L)  
#265-06-1  1 gal (3.785 L)  
#265-07  Antifreeze, 8 oz (250 mL)  
#265-09  Antifreeze, 16 oz (500 mL)  
#265-11  Antifreeze, 32 oz (1 L)  
#265-07-1  Antifreeze, 1 gal (3.785 L)

Sodium Chloride, Crystals  
#253-52  500 gram

Sodium Chloride, 10,000 ppm Cl⁻  
#235-00  4 oz (120 mL)

Sodium Chloride, Saturated  
#153-59-7  4 oz (120 mL)

Sodium Chromate Solution  
#145-401  “A”, 2 oz (60 mL)  
#145-402  “B”, 2 oz (60 mL) UN1789  
#145-403  “C”, 2 oz (60 mL)

Sodium Hexametaphosphate, Crystals  
#205-41  500 g

Sodium Hexametaphosphate, 10% Solution  
#205-40  32 oz (1 L)

* May require special handling for shipping.
Reagents

*Sodium Hydroxide Pellets, UN1823
#260-02 2 oz (60 g)

Sodium Hydroxide Solution, .02 N (N/50)
#285-44 2 oz (60 mL)
#285-45 8 oz (250 mL)

*Sodium Hydroxide Solution, .1 N (N/10)
#260-00 2 oz (60 mL)
#260-01 16 oz (500 mL)
#260-00-1 1 gal (3.785 L)

*Sodium Hydroxide Solution, .2 N (N/5)
#260-08 8 oz (250 mL)
#260-08-2 64 oz (1.85 L)

*Sodium Hydroxide Solution, 1 N UN1824
#285-33-01 4 oz (120 mL)
#285-33 8 oz (250 mL)
#285-33-1 16 oz (500 mL)
#285-33-2 64 oz (1.85 L)
#285-33-3 2.5 gal (10 L)
#285-33-5 5 gal (20 L)

*Sodium Hydroxide Solution, 5 N UN1824
#285-33-01 4 oz (120 mL)
#285-33 8 oz (250 mL)
#285-33-1 16 oz (500 mL)
#285-33-2 64 oz (1.85 L)
#285-33-3 2.5 gal (10 L)
#285-33-5 5 gal (20 L)

*Sodium Hydroxide Solution, 6 N UN1824
#260-06 8 oz (250 mL)
#260-06-1 32 oz (1 L)

*Sodium Hydroxide Solution, 8 N UN1824
#260-10 2 oz (60 mL)
#260-07 8 oz (250 mL)
#260-07-1 16 oz (500 mL)

*Sodium Hydroxide, 15% Solution UN1824
#260-09 4 oz (120 mL)

*Sodium Hypochlorite Solution, UN1791
#261-00 8 oz (250 mL)

*Sodium Perchlorate Solution, UN3139
#285-13 8 oz (250 mL)
#285-10 16 oz (500 mL)
#285-14 32 oz (1 L)
#285-13-2 64 oz (1.85 L)

Sodium Sulfate, Anhydrous
#145-82 28 gram

Sodium Sulfate, 10% Solution
#262-00 8 oz (250 mL)

Sodium Sulfite, 0.05% Solution
#145-71 8 oz (250 mL)

Sodium Thiosulfate Solution, 0.01 N (N/100)
#262-05 8 oz (250 mL)

Sodium Thiosulfate Solution, 0.1 N (N/10)
#262-06 8 oz (250 mL)

*Stannic Chloride, 10% Solution UN3264
#290-04 16 oz (500 mL)
#290-04-2 64 oz (1.85 L)

Starch Indicator Solution
#145-551 2 oz (60 mL)

STPB (Sodium Tetrphenylborate) Solution
#285-31 16 oz (500 mL)

*Sulfate Buffer Solution UN1789
#145-552 2 oz (60 mL)

Sulfite Indicator Solution
#255-00 2 oz (60 mL)
#255-02 8 oz (250 mL)
#255-04 32 oz (1 L)
#255-01 Antifreeze, 2 oz (60 mL)
#255-03 Antifreeze, 8 oz (250 mL)

Sulfate Reducer Vials, (Anaerobic Bacteria Culture)
#180-38 10 cc

*Sulfite Buffer Solution UN1789
#145-552 2 oz (60 mL)

Sulfide Indicator Solution
#145-501 “A”, 2 oz (60 mL)
#145-502 “B”, 2 oz (60 mL) UN1789
#145-503 “C”, 2 oz (60 mL)

Sulfuric Acid, 0.02 N (N/50)
#230-17-01 1 oz (30 mL)
#230-17 4 oz (120 mL)
#230-08 8 oz (250 mL)
#230-04 16 oz (500 mL)
#230-06 32 oz (1 L)
#230-08-2 64 oz (1.85 L)
#230-08-3 2.5 gal (10 L)
#230-08-5 5 gal (20 L)
#230-09 Antifreeze, 8 oz (250 mL)
#230-05 Antifreeze, 16 oz (500 mL)
#230-07 Antifreeze, 32 oz (1 L)
#230-09-2 Antifreeze, 64 oz (1.85 L)
#230-09-3 Antifreeze, 2.5 gal (10 L)
#230-09-5 Antifreeze, 5 gal (20 L)

Sulfuric Acid, 0.1 N (N/10)
#230-00-01 1 oz (30 mL)
#230-00 2 oz (60 mL)
#230-16 4 oz (120 mL)
#230-10 8 oz (250 mL)
#230-02 16 oz (500 mL)
#230-18 32 oz (1 L)
#230-00-2 64 oz (1.85 L)
#230-00-3 2.5 gal (10 L)
#230-00-5 5 gal (20 L)
#230-01 Antifreeze, 2 oz (60 mL)
#230-11 Antifreeze, 8 oz (250 mL)
#230-03 Antifreeze, 16 oz (500 mL)
#230-01-2 Antifreeze, 64 oz (1.85 L)
#230-01-3 Antifreeze, 2.5 gal (10 L)
#230-01-5 Antifreeze, 5 gal (20 L)

*Sodium Hydroxide Solution, 0.2 N (N/5)
#260-00 2 oz (60 mL)
#260-03 8 oz (250 mL)
#260-01 16 oz (500 mL)
#260-00-1 1 gal (3.785 L)

*Sodium Hydroxide Solution, 1 N (N/10)
#260-00 2 oz (60 mL)
#260-03 8 oz (250 mL)
#260-01 16 oz (500 mL)
#260-00-1 1 gal (3.785 L)

*Sodium Hydroxide Solution, 2 N (N/5)
#260-08 8 oz (250 mL)
#260-08-2 64 oz (1.85 L)

*Sodium Hydroxide Solution, 2 N (N/10)
#260-00 2 oz (60 mL)
#260-03 8 oz (250 mL)
#260-01 16 oz (500 mL)
#260-00-1 1 gal (3.785 L)

*Sodium Hydroxide Solution, 5 N (N/10)
#260-00 2 oz (60 mL)
#260-03 8 oz (250 mL)
#260-01 16 oz (500 mL)
#260-00-1 1 gal (3.785 L)

*Sodium Hydroxide Solution, 10 N (N/10)
#260-00 2 oz (60 mL)
#260-03 8 oz (250 mL)
#260-01 16 oz (500 mL)
#260-00-1 1 gal (3.785 L)

*Sodium Hydroxide Solution, 15 N (N/10)
#260-00 2 oz (60 mL)
#260-03 8 oz (250 mL)
#260-01 16 oz (500 mL)
#260-00-1 1 gal (3.785 L)

*Sodium Hydroxide Solution, 20 N (N/10)
#260-00 2 oz (60 mL)
#260-03 8 oz (250 mL)
#260-01 16 oz (500 mL)
#260-00-1 1 gal (3.785 L)

* May require special handling for shipping.
## Reagents

*Sulfuric Acid, 5 N, UN2796*  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>#230-15-01</td>
<td>1 oz (30 mL)</td>
</tr>
<tr>
<td>#230-15</td>
<td>2 oz (60 mL)</td>
</tr>
<tr>
<td>#230-12</td>
<td>4 oz (120 mL)</td>
</tr>
<tr>
<td>#230-13</td>
<td>8 oz (250 mL)</td>
</tr>
<tr>
<td>#230-13-1</td>
<td>16 oz (500 mL)</td>
</tr>
<tr>
<td>#230-14</td>
<td>32 oz (1 L)</td>
</tr>
<tr>
<td>#230-12-1</td>
<td>64 oz (1.85 L)</td>
</tr>
<tr>
<td>#230-12-3</td>
<td>2.5 gal (10 L)</td>
</tr>
<tr>
<td>#230-12-5</td>
<td>5 gal (20 L)</td>
</tr>
</tbody>
</table>

**Xylene/IPA (Isopropanol) Solution, 1:1 mix, UN1993**  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>#280-25</td>
<td>1 gal (3.785 L)</td>
</tr>
<tr>
<td>#280-25-5</td>
<td>5 gal (20 L)</td>
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*Xylene Solution, UN1307*  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>#280-20</td>
<td>1 gal (3.785 L)</td>
</tr>
<tr>
<td>#280-20-5</td>
<td>5 gal (20 L)</td>
</tr>
</tbody>
</table>

**THI-2000 Total Indicator Solution**  
205-19 2 oz (60 mL)

**Thymolphthalein Indicator Solution**  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
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</thead>
<tbody>
<tr>
<td>#225-00</td>
<td>2 oz (60 mL)</td>
</tr>
<tr>
<td>#225-01</td>
<td>8 oz (250 mL)</td>
</tr>
<tr>
<td>#225-02</td>
<td>16 oz (500 mL)</td>
</tr>
<tr>
<td>#225-03</td>
<td>32 oz (1 L)</td>
</tr>
</tbody>
</table>

**Triethanolamine : Tetraethylenepentamine : Water (1:1:2), Masking Agent**  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
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<tbody>
<tr>
<td>#261-55-01</td>
<td>1 oz (30 mL)</td>
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<tr>
<td>#261-55</td>
<td>2 oz (60 mL)</td>
</tr>
<tr>
<td>#261-50</td>
<td>16 oz (500 mL)</td>
</tr>
</tbody>
</table>

**Triethanolamine, 10% Solution**  
#205-55 32 oz (1 L)

**Titrating Solution (EDTA), Hardness, Versenate®, 2 EPM, 1 mL**  
= 40 mg/L Ca\(^{2+}\), .001M  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>#205-08</td>
<td>4 oz (120 mL)</td>
</tr>
<tr>
<td>#205-09</td>
<td>8 oz (250 mL)</td>
</tr>
<tr>
<td>#205-10</td>
<td>16 oz (500 mL)</td>
</tr>
<tr>
<td>#205-11</td>
<td>32 oz (1.85 L)</td>
</tr>
<tr>
<td>#205-00-1</td>
<td>1 gal (3.785 L)</td>
</tr>
<tr>
<td>#205-07</td>
<td>Antifreeze, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#205-12</td>
<td>Antifreeze, 16 oz (500 mL)</td>
</tr>
<tr>
<td>#205-07-1</td>
<td>Antifreeze, 1 gal (3.785 L)</td>
</tr>
</tbody>
</table>

**Titrating Solution (EDTA), Hardness, Versenate®, 20 EPM, 1 mL**  
= 400 mg/L Ca\(^{2+}\), .01M  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>#205-08</td>
<td>4 oz (120 mL)</td>
</tr>
<tr>
<td>#205-10</td>
<td>8 oz (250 mL)</td>
</tr>
<tr>
<td>#205-12</td>
<td>16 oz (500 mL)</td>
</tr>
<tr>
<td>#205-17</td>
<td>32 oz (1 L)</td>
</tr>
<tr>
<td>#205-08-1</td>
<td>1 gal (3.785 L)</td>
</tr>
<tr>
<td>#205-09</td>
<td>Antifreeze, 4 oz (120 mL)</td>
</tr>
<tr>
<td>#205-11</td>
<td>Antifreeze, 8 oz (250 mL)</td>
</tr>
<tr>
<td>#205-13</td>
<td>Antifreeze, 16 oz (500 mL)</td>
</tr>
<tr>
<td>#205-09-1</td>
<td>Antifreeze, 1 gal (3.785 L)</td>
</tr>
</tbody>
</table>

**Titrating Solution (EDTA), Hardness, Versenate®, 200 EPM, 1 mL**  
= 4,000 mg/L, .1M  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
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<tbody>
<tr>
<td>#205-17-1</td>
<td>4 oz (120 mL)</td>
</tr>
<tr>
<td>#205-17-2</td>
<td>8 oz (250 mL)</td>
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<tr>
<td>#205-17-3</td>
<td>16 oz (500 mL)</td>
</tr>
<tr>
<td>#205-17-4</td>
<td>32 oz (1 L)</td>
</tr>
<tr>
<td>#205-17-5</td>
<td>1 gal (3.785 L)</td>
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</table>

**Wetting Agent**  
<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
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</thead>
<tbody>
<tr>
<td>#280-00</td>
<td>1 oz (30 mL)</td>
</tr>
<tr>
<td>#280-00-1</td>
<td>1 gal (3.785 L)</td>
</tr>
<tr>
<td>#280-01</td>
<td>Antifreeze, 1 oz (30 mL)</td>
</tr>
</tbody>
</table>

* May require special handling for shipping.
## Reagents

<table>
<thead>
<tr>
<th>Reagent Name</th>
<th>UN#</th>
<th>Packing Group</th>
<th>Hazard Class</th>
<th>NFPA Rating</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Health</td>
<td>Flammability</td>
</tr>
<tr>
<td>Acetic Acid, Glacial</td>
<td>UN2789</td>
<td>II</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Acetic Acid, Potassium Acetate Buffer</td>
<td>UN3265</td>
<td>II</td>
<td>8</td>
<td>3</td>
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<tr>
<td>Acetone</td>
<td>UN1090</td>
<td>II</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ammonium Fluoride, 10% Solution</td>
<td>UN3287</td>
<td>III</td>
<td>6.1</td>
<td>3</td>
</tr>
<tr>
<td>Ammonium Hydroxide, Concentrated Solution</td>
<td>UN2672</td>
<td>III</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Ammonium Persulfate</td>
<td>UN1444</td>
<td>III</td>
<td>5.1</td>
<td>3</td>
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<tr>
<td>Aniline Solution</td>
<td>UN1547</td>
<td>II</td>
<td>6.1</td>
<td>3</td>
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<tr>
<td>Arcosolv® PNP Solution</td>
<td>UN1993</td>
<td>III</td>
<td>3.0</td>
<td>1</td>
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<tr>
<td>Barium Chloride, 10%</td>
<td>UN3287</td>
<td>III</td>
<td>6.1</td>
<td>2</td>
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<tr>
<td>Buffer Solution, Hardness</td>
<td>UN2672</td>
<td>III</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Calcium Buffer Solution</td>
<td>UN1824</td>
<td>III</td>
<td>8</td>
<td>3</td>
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<tr>
<td>Calcium Nitrate</td>
<td>UN1454</td>
<td>III</td>
<td>5.1</td>
<td>2</td>
</tr>
<tr>
<td>Calcium Nitrate, Saturated</td>
<td>UN3139</td>
<td>III</td>
<td>5.1</td>
<td>2</td>
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<tr>
<td>Calcium Titration Solution II</td>
<td>UN3287</td>
<td>I</td>
<td>6.1</td>
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<tr>
<td>Citric Acid, Demulsifier, IPA Solution</td>
<td>UN1219</td>
<td>II</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ethanol (Ethyl Alcohol)</td>
<td>UN1987</td>
<td>II</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Formaldehyde Solution</td>
<td>UN2209</td>
<td>III</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Hydrochloric Acid, 0.5 N - 37%</td>
<td>UN1789</td>
<td>II</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>IPA/Xylene</td>
<td>UN1993</td>
<td>II</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Iron Sulfide Detection Solution</td>
<td>UN2922</td>
<td>II</td>
<td>8</td>
<td>3</td>
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<tr>
<td>Isopropyl Alcohol</td>
<td>UN1219</td>
<td>II</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Isopropyl Alcohol (99%) / Deionized Water</td>
<td>UN1219</td>
<td>II</td>
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<td>2</td>
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<tr>
<td>Nitric Acid, 1 and 3 N</td>
<td>UN2031</td>
<td>II</td>
<td>8</td>
<td>3</td>
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<tr>
<td>Orthophosphoric Acid</td>
<td>UN1805</td>
<td>III</td>
<td>8</td>
<td>3</td>
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<tr>
<td>Phenol Solution, 5%</td>
<td>UN2821</td>
<td>II</td>
<td>6.1</td>
<td>3</td>
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<tr>
<td>Potassium Chromate, AF</td>
<td>UN1230</td>
<td>II</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Potassium Hydroxide 0.1 N in Methanol</td>
<td>UN1230</td>
<td>II</td>
<td>3</td>
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<tr>
<td>Potassium Hydroxide, 8.0 N</td>
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<td>8</td>
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<tr>
<td>Potassium Hydroxide, 25% Solution</td>
<td>UN1814</td>
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<td>8</td>
<td>3</td>
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<tr>
<td>Potassium Nitrate, Crystals</td>
<td>UN1486</td>
<td>III</td>
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<tr>
<td>Potassium Nitrate, Saturated</td>
<td>UN3139</td>
<td>III</td>
<td>5.1</td>
<td>1</td>
</tr>
<tr>
<td>Propylene Glycol Normal Propyl Ether (PNP)</td>
<td>UN1993</td>
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<tr>
<td>Silver Nitrate Crystals</td>
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<td>Sodium Chromate B Solution</td>
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<tr>
<td>Sodium Hydroxide Pellets</td>
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<td>II</td>
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<tr>
<td>Sodium Hydroxide, 1.0 N, 2.0 N</td>
<td>UN1824</td>
<td>II</td>
<td>8</td>
<td>3</td>
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<tr>
<td>Sodium Hydroxide, 15%,20%,6 N,8 N</td>
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<td>II</td>
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<td>3</td>
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<tr>
<td>Sodium Hydroxide Solution, AF</td>
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<td>II</td>
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<td>2</td>
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<tr>
<td>Sodium Hypochlorite Solution</td>
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<td>3</td>
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<tr>
<td>Sodium Perochlorate Solution</td>
<td>UN3139</td>
<td>II</td>
<td>5.1</td>
<td>2</td>
</tr>
<tr>
<td>Stannic Chloride, 10%</td>
<td>UN3264</td>
<td>II</td>
<td>8</td>
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<tr>
<td>Sulfate Indicator Solution</td>
<td>UN1789</td>
<td>III</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Sulfite Buffer Solution</td>
<td>UN1789</td>
<td>II</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Sulfite Ion &quot;B&quot; Solution</td>
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<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Sulfuric Acid, 5 N</td>
<td>UN2796</td>
<td>II</td>
<td>8</td>
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</tr>
<tr>
<td>Xylene</td>
<td>UN1307</td>
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</tr>
</tbody>
</table>

### Packing Groups

- **Group I - Great Danger**: 3 = Flammable Liquids, 0 = Ordinary, 0 = Will not burn, 0 = Stable: not reactive with water
- **Group II - Medium Danger**: 5.1 = Oxidizer, 1 = Slight Hazard, 1 = Ignores if preheated, 1 = Unstable if heated
- **Group III - Minor Danger**: 6.1 = Toxic Substance, 2 = Hazardous, 2 = Ignores if moderately heated, 2 = Violent chemical heated

### Hazard Class

- 8 = Corrosive, 2 = Will not burn, 1 = Stable: not reactive with water
- 9 = Miscellaneous, 4 = Deadly, 3 = Shock and heat may detonate

---

*United Parcel Service (UPS) will not ship*
INDICATOR SOLUTIONS

Some reagents, when in solution, change color when the pH of the solution reaches a certain level. The pH range over which the reagent changes color is both narrow and exact, making it useful for colorimetric pH testing. No two indicators change color in exactly the same pH range. Below is a list of the common indicators used for pH determination.

Bromocresol Green
Yellow - 4.0 / Blue - 5.4

Bromocresol Green - Methyl Red
Pink - 4.6 / BlueGreen - 5.2

Bromophenol Blue
Yellow - 3.0 / Blue - 4.6

Calmagite
Red - Ca\(^{2+}\) - Mg\(^{2+}\) / Blue - EDTA

Congo Red
Blue - 3.0 / Red - 5.0

Cresol Red
Orange - 2.0 / Yellow - 3.0 / Red - 8.8

Methyl Orange
Pink - 3.2 / Yellow - 4.4

Methyl Purple
Purple - 4.8 / Green - 5.4

Methyl Red
Pink - 4.2 / Yellow - 6.2

Phenolphthalein, 0.5%
Colorless - 8.0 / Pink - 10.0

Phenol Red, 0.02%
Yellow - 6.8 / Red - 8.2

Potassium Chromate
Yellow - xs Cl\(^{-}\) / Red - xs Ag\(^{+}\)

Starch Indicator
Colorless = No Iodine / Blue = Iodine

Thymolphthalein, 0.05%
Colorless - 9.3 / Blue - 10.5

Water Hardness
Red - Ca\(^{2+}\) - Mg\(^{2+}\) / Blue - EDTA

COMMON METRIC CONVERSIONS

Liquid
1 fl oz = 29.57 mL
2 fl oz = 59.15 mL
4 fl oz = 118.29 mL
8 fl oz = 236.59 mL
16 fl oz = 1 pint = 473.18 mL
32 fl oz = 1 quart = 946.35 mL
128 fl oz = 1 gallon = 3,785.41 mL

Length
1 micron (µm) = 0.001 mm = \(\frac{1}{25400}\) inch
10 mm = 1 cm = 0.394 inch
25.4 mm = 2.54 cm = 1 inch
30.48 cm = 0.3048 meter = 1 foot
39.37 inch = 1.094 yards = 1 meter
1,000 meters = 1 kilometer = 0.621 mile

Weight
.0353 oz = 1 g
1 oz = 28.35 g
2 oz = 56.70 g
8 oz = 226.8 g
16 oz = 1 lb = 453.6 g = .454 kg

Temperature
\(^\circ\)C = (\(^\circ\)F - 32) \times \frac{5}{9}
\(^\circ\)F = (\(^\circ\)C \times \frac{9}{5}) + 32

Pressure
1 PSI = 6.9 kilopascal (kPa)
dynes/cm\(^2\) = 0.100 pascal (Pa)
Miscellaneous:
mg/L = parts/million (ppm) \times \text{specific gravity}
General Terms and Conditions of Sales

The term “Buyer” as used in this document shall mean the company purchasing the goods, materials, equipment or other services as described in the Sales Order (collectively, the “Goods”). The term “Seller” as used in this document shall mean OFI Testing Equipment, Inc. Collectively Buyer and Seller are referred to as the “Parties” and individually as “Party.” Any Sales Order accepted by Buyer shall operate as an acceptance of these terms and conditions which are expressly incorporated into any such Sales Order.

1. **Entire Agreement:** The Sales Order embodies the entire agreement between Buyer and Seller. The Parties shall not be bound by nor liable for any statement, representation, promise or understanding not set forth herein. Nothing contained in proposals, correspondence, discussions or negotiations prior to the date of the Sales Order shall alter or amend the terms of the Sales Order unless specifically incorporated herein. No changes, amendments, substitutions or modifications of any of the terms and conditions hereof shall be valid unless reduced to writing and signed by both Parties in accordance with the changes clause of the Sales Order.

2. **Changes:** Buyer and Seller, through their assigned respective representatives may at any time make agreed changes, in writing, including but not limited to changes in any one or more of the following: (1) Drawings or specifications; (2) Additions to or deletions from quantities ordered; (3) Delivery schedule; (4) Method of shipment or packing; and/or (5) Place of delivery. However, the Sales Order shall only be modified by written amendments or revisions executed by the representatives of Buyer and Seller.

3. **Price and Payment:** The purchase price shall be as set out on the face of the Sales Order. Seller shall be paid, except as otherwise stated in the Sales Order, upon submission of proper invoices, the prices stipulated herein for Goods delivered and accepted or services rendered and accepted. Sales Order payment terms are net thirty (30) calendar days from the date of Delivery of the Goods. Those provisions of the Sales Order that by their nature survive completion of the Sales Order shall remain in full force and effect after completion. Customer agrees to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. Remittance shall be in U.S. Dollars.

4. **Delivery:** Subject to the provisions of Article 5, delivery of Goods shall be made ex works (Incoterms 2010) Seller’s facility ("Delivery") unless otherwise expressly agreed to in writing by the Parties. Seller will not be liable for delays in performing its obligations to the extent such delays are caused by any unforeseeable condition which is beyond Seller's reasonable control and which could not be avoided by the exercise of ordinary diligence. Acts of God, such as storms or floods, as well as government priorities, acts of civil or military authorities, fires, storms, epidemics, war or riot, work stoppages, accidents, casualties, inability to procure supplies and raw materials, delays in transportation, shortage of cars are examples of events which will be excusable for being beyond Seller's reasonable control provided that within fourteen (14) calendar days of the discovery of the commencement of any excusable delay, Seller provides Buyer with notice of such delay and the anticipated duration. In the event the Goods are not shipped within seven (7) days of the stipulated Delivery date due to any action or inaction of Buyer, Seller retains the right, at its discretion, to charge storage fees to Buyer, which such fees shall not exceed ten (10) percent of the Sales Order amount. If delivery of any special items is delayed by Buyer for more than thirty (30) days after completion, Seller may invoice for such items and hold for Buyer's disposition for a reasonable period of time. Buyer shall make payment for such special items within thirty (30) days from date of invoice.

5. **Title and Risk of Loss:** Title to all Goods furnished by Seller hereunder shall transfer to Buyer upon payment of all amounts due by Buyer to Seller under the Sales Order. Notwithstanding the foregoing, Seller shall be responsible for and shall bear any and all risk of loss or damage to the Goods until Delivery thereof in accordance with the delivery provisions of the Sales Order. Upon such Delivery, risk of loss or damage shall pass to Buyer.

6. **Quality Standards:** Seller shall comply with the standards of quality specified in Seller's Quality Policy as set out at http://www.ofite.com/quality-policy. Buyer's authorized representatives shall be afforded free access during normal working hours to facilities of Seller and to Seller's sub-suppliers in order to monitor compliance with quality requirements. Buyer's right to inspect, examine, and test the Goods shall extend through the manufacturing process.

7. **Warranties and Guarantees:** Seller warrants that all Goods shall be free from liens and defects in title, and shall conform in all respects to the terms of the Sales Order and the specifications applicable to the Goods. All Goods shall be furnished subject to Seller’s standard manufacturing variations and practices. Unless the warranty period is otherwise extended in writing by the Parties, the following warranty shall apply: if, at any time prior to twelve (12) months from the date of Invoice, the Goods, or any part thereof, do not conform to these warranties or to the specifications applicable thereto, and Seller is so notified in writing upon discovery, Seller shall promptly repair or replace the defective Goods. Notwithstanding the foregoing, Seller's warranty obligations shall not extend to any use by Buyer of the Goods in conditions more severe than the Seller's recommendations nor to any defects which were visually observable by Buyer but which are not promptly brought to Seller's attention.

In the event that Buyer has purchased installation and commissioning services on applicable Goods the above warranty shall extend for an additional period of twelve (12) months from the date of the original warranty expiration for such Goods.

In the event that the Seller is requested to provide customized research and development for Buyer, Seller shall use its best efforts but makes no guarantees to Buyer that any Goods will be provided.

Any non-defective items returned by Buyer during the applicable 90 day period from date of invoice are subject to a 15% restocking fee. Items returned must be received by OFI Testing equipment in original condition for it to be accepted.

Seller makes no other warranties or guarantees to Buyer, either express or implied and the warranties provided in this clause shall be exclusive of any other warranties, including ANY IMPLIED OR STATUTORY WARRANTIES OF FITNESS FOR PURPOSE, MERCHANTABILITY AND OTHER STATUTORY REMEDIES WHICH ARE WAIVED.

8. **Intellectual Property Rights:** The term "Intellectual Property Rights" shall mean (a) all patents, rights in designs, copyrights, computer software, programs and topography rights, in each case whether registered or not; (b) all proprietary information, including, without limitation, trade secrets, know-how, manufacturing and production processes and techniques, and research and development information, discoveries, formulas, processes, plans, specifications, software, drawings, illustrations, copyrightable works or ideas or materials (and all documentation related thereto); (c) all registrations and applications for registration for any of the foregoing; and/or (d) all rights under licenses and consents in relation to any of the foregoing.

Buyer and Seller and each of their affiliates shall retain any right, title and interest in their respective Intellectual Property Rights developed, invented, created, improved, acquired or obtained (i) prior to the effective date of the Sales Order; (ii) during the term of the Sales Order; (iii) pursuant to the Sales Order; and (iv) at all times associated with the Goods.

Seller hereby grants Buyer one non-exclusive, royalty-free, nontransferable license in and to those Seller Intellectual Property Rights necessary for Buyer's use of the Goods.

9. **Compliance:** Seller warrants that all Goods sold hereunder shall have been produced, sold, delivered and furnished in compliance with all applicable laws and regulations to which the Goods are subject.

10. **Assignment:** Neither Party to the Sales Order shall assign, transfer or sublet the Sales Order, any portion thereof or any of the obligations, benefits, or interests contained therein or created thereby in any manner whatsoever without the prior written consent of the other Party.

11. **Non-Waiver:** Failure by either Party to insist upon strict performance of any of the terms and conditions hereof, or failure to delay to exercise any rights or remedies provided herein or by law shall not release the other Party from any of the obligations of the Sales Order and shall not be deemed a waiver of any right of the Parties to insist upon strict performance hereof or any of its rights or remedies set forth in the Sales Order.
12. **Indemnities:** Notwithstanding anything to the contrary contained elsewhere herein but subject always to the transfer of risk of loss as set out in Article 5, Seller shall release, protect, defend, indemnify and hold harmless Buyer, its parent, subsidiary and affiliated companies, any assignees of Buyer and its and all of their officers, directors, members, employees and representatives (collectively “Buyer Group”) from and against any loss, cost, claim, obligation to indemnify another, suit, judgment, award or damage on account of any illness, injury, death, loss or damage to Seller’s employees and in any case of loss or damage to Seller’s property arising out of or relating to the provision of any Goods under the Sales Order and REGARDLESS OF WHETHER CAUSED OR BROUGHT ABOUT BY SELLER GROUP’S NEGLIGENCE (INCLUDING ACTIVE, PASSIVE, SOLE, JOINT OR CONCURRENT NEGLIGENCE) OR ANY OTHER THEORY OF LEGAL LIABILITY, INCLUDING STRICT LIABILITY, BREACH OF CONTRACT, BREACH OF WARRANTY AND INCLUDING PRE-EXISTING CONDITIONS.

Notwithstanding anything to the contrary contained elsewhere herein, but subject always to the transfer of risk of loss as set out in Article 5, Buyer shall defend, protect, indemnify and hold harmless Seller, its parent, subsidiary and affiliated companies, any assignees of Seller and its and all of their officers, directors, members, employees and representatives (collectively “Seller Group”) from and against any loss, cost, claim, obligation to indemnify another, suit, judgment, award or damage on account of any illness, injury, death, loss or damage to Buyer’s employees and in any case of loss or damage to Buyer’s property arising out of or relating to the provision of the Goods under the Sales Order and REGARDLESS OF WHETHER CAUSED OR BROUGHT ABOUT BY SELLER GROUP’S NEGLIGENCE (INCLUDING ACTIVE, PASSIVE, SOLE, JOINT OR CONCURRENT NEGLIGENCE) OR ANY OTHER THEORY OF LEGAL LIABILITY, INCLUDING STRICT LIABILITY, BREACH OF CONTRACT, BREACH OF WARRANTY AND INCLUDING PRE-EXISTING CONDITIONS.

The indemnity obligations voluntarily assumed by Seller and Buyer under this Article shall be supported by liability insurance and shall have coverage of not less than $2,000,000 per occurrence, and which shall be primary to any other insurances provided by the indemnity. Seller agrees to have its underwriters name Buyer as additional assured and waive subrogation against Buyer, but only to the extent of the risks for which Seller has agreed to assume responsibility and indemnify or release Buyer under the Sales Order. Buyer agrees to have its underwriters name Seller as additional assured and waive subrogation against Seller, but only to the extent of the risks for which Buyer has agreed to assume responsibility and indemnify or release Seller under the Sales Order. Additional assureds shall be entitled to the full limits of all policies actually obtained, including excess or umbrella insurances. The limits and coverage of the said insurances shall in no way limit the liabilities or obligations assumed by the parties under this Article. If it is judicially determined that the monetary limits of insurance required hereunder or the indemnities assumed under this Article exceed the maximum monetary limits or scope permitted under applicable law, it is agreed that said insurance requirements or indemnities shall automatically be amended to conform to the maximum monetary limits or scope permitted under such law.

13. **Choice of Law:** The laws of the State of Texas shall control the validity, construction and interpretation of the Sales Order excluding any conflicts of laws principles which would direct the substantive law of another jurisdiction to apply.

14. **Arbitration:** All claims, disputes or controversies arising out of, or in relation to the interpretation, application or enforcement of the Sales Order, including all claims of arbitrability, shall be decided by resort of either Seller or Buyer to arbitration utilizing a single arbitrator in accordance with the Commercial Rules of the American Arbitration Association. The arbitration shall be held in Houston. The arbitrator shall apply the choice of law as set forth in Article 13 exclusive of its principles of conflicts of laws for determination of the rights and remedies under the Agreement and for all aspects of the award hereunder. The arbitrator shall have the right to award attorney fees and costs to the prevailing party. The decision of the arbitrator shall be final, binding and enforceable in any court of competent jurisdiction and Seller and Buyer agree that there shall be no appeal from the arbitrator’s decision. All statutes of limitation that would otherwise be applicable shall apply to any arbitration proceeding. The right to arbitrate shall survive the termination of the Sales Order.

15. **Consequential Damages:** Notwithstanding anything to the contrary contained elsewhere herein, each Party for and on behalf of itself and its parent, subsidiary and affiliated companies releases the other Party and their parent, subsidiary and affiliated companies from any claims for consequential, incidental, indirect or punitive damages of any kind or character, including, but not limited to, loss of use, loss of profit, loss of revenue, loss of product or production, delayed production, loss of business opportunity or business relations (collectively “Consequential Damages”) whenever arising out of, in connection with or related to the Sales Order or as a result of, relating to or in connection with the Goods or the activities under the Sales Order, and no claim shall be made by either Party, its parent, subsidiary and affiliated companies against the other Party, its parent, subsidiary and affiliated companies REGARDLESS OF WHETHER SUCH CLAIM IS BASED OR CLAIMED TO BE BASED ON NEGLIGENCE (INCLUDING SOLE, JOINT, ACTIVE, PASSIVE, GROSS OR CONCURRENT NEGLIGENCE), UNSEAWARENESS, UNAIRWORTHINESS, FAULT, BREACH OF WARRANTY, BREACH OF CONTRACT, STATUTE, STRICT LIABILITY OR OTHERWISE AND INCLUDING PRE-EXISTING CONDITIONS.

16. **Termination:** In the absence of a breach of any of the conditions of any Sales Order, the Sales Order may not be canceled, terminated or modified by either Party, whether in whole or in part, except with the written consent of both Parties.

17. **Severability:** If, in any legal proceeding, it is determined that any provision herein is unenforceable under applicable law, the unenforceable provision shall automatically be amended to conform to that which is enforceable under the law. In any event, the validity or enforceability of any provision shall not affect any other provision of the Sales Order, and the Sales Order shall be construed and enforced as if such provision had not been included.

18. **Third Parties:** Except as specifically provided for elsewhere herein, these terms and conditions shall not be construed to confer any benefit on any third party not a Party to the Sales Order nor shall it provide any rights to such third party to enforce its provisions.

19. **Confidentiality:** The Parties shall maintain in confidence, not disclose to any third party, and not use, except for the specific purpose of performing under the Sales Order, all information furnished one Party to the other Party in connection with the Sales Order.

20. **CISG Waiver:** The Parties acknowledge and agree that the United Nations Convention on Contracts for the International Sale of Goods (“CISG”) shall not apply to any of the obligations of either Party, the services provided or to the sale of any goods under the Sales Order. Notwithstanding anything to the contrary contained elsewhere herein, Seller’s limitation of liability for any claim of defective Goods or services arising during the above warranty period shall be limited to repair or replacement of the claimed defective Goods and Buyer shall return such claimed defective Goods to Seller’s manufacturing facility.

21. **Export Compliance:** Buyer shall be responsible for determining all export licensing requirements and obtaining all necessary export licenses and authorizations as required by the laws of the United States of America, including, but not limited to, the United States Department of Defense, the United States Department of Commerce, the United States Department of the Treasury, and any other department or agency thereof that imposes and obligates relating to the export of goods, materials or intellectual property, including those of foreign government (i.e., non-United States) governments. Buyer represents that no Goods shall be provided to, either directly or indirectly, any end-user prohibited by any applicable U.S. law. Buyer shall assume all liability and shall indemnify Seller from and claims or damages on account of failing to file for and properly obtain all such export licenses and authorizations relating to the sale of the Goods by Seller to Buyer.
OFI Testing Equipment, Inc.
Customer Order Form

### SHIP TO: (UPS will not ship to P.O. Box)

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**PURCHASE ORDER NUMBER:**

- Payment Enclosed $ (Include Freight and Taxes if Applicable)
- Please Bill Me
  - OFITE Customer Account#: 
- Credit Card Sales, Personal/Company
  - Account Number: 
  - Expiration Date: 
- VISA
- MASTERCARD
- AMERICAN EXPRESS
- PLEASE SEND CATALOG

**Name:**
(Please PRINT Name as it Appears on Card)

**Signature:**

### QTY  Part #  Description  Unit Price  Total Price

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Mail/Shipping: 11302 Steeplecrest Dr. · Houston, TX · 77065 · U.S.A.
Tele: (713) 880-9885 or (877) 837-8683 (toll free) · Fax: (713) 880-9886 · E-Mail: sales@ofite.com

You can also order online at www.ofite.com!
Application for Credit

(Please Type or Print Legibly)

Application is hereby made for an open credit account with net 30-day terms.

APPLICANT:
Legal Name of Firm: ____________________________ Subsidiary of: ____________________________

INVOICE ADDRESS:
Street or PO Box: ____________________________ Phone Number: ____________________________
City/State/Zip: ____________________________ Fax Number: ____________________________

Preferred Method for Receiving Invoices (Circle One): __________________________________________
Mail / Email / Both

SHIPPING ADDRESS:
Street: ____________________________ Phone Number: ____________________________
City/State/Zip: ____________________________ Fax Number: ____________________________

TYPE OF BUSINESS:
Check One: Corporation ☐ Partnership ☐ Proprietorship ☐
Date Established: ____________________________ Fed. Tax ID No: ____________________________

BANK REFERENCE:
Bank Name: ____________________________ Account No: ____________________________ Type of Acc’t: ____________________________
Address: ____________________________ City/State/Zip: ____________________________ Contact: ____________________________
Phone No: ____________________________ Fax No: ____________________________

TRADE REFERENCES:
Name: ____________________________ Phone: ____________________________ Fax No: ____________________________
Address: ____________________________ City/State/Zip: ____________________________ Acc’t/Cust No: ____________________________

Name: ____________________________ Phone: ____________________________ Fax No: ____________________________
Address: ____________________________ City/State/Zip: ____________________________ Acc’t/Cust No: ____________________________

Name: ____________________________ Phone: ____________________________ Fax No: ____________________________
Address: ____________________________ City/State/Zip: ____________________________ Acc’t/Cust No: ____________________________

FINANCIAL HISTORY (If yes to any of the following, give details on another page.)

Yes ☐ No ☐
Have you ever filed bankruptcy or reorganization for benefit of creditors?

Yes ☐ No ☐
Have you ever been sued by any person or entity for alleged nonpayment of a debt?

Yes ☐ No ☐
Is your inventory pledged as collateral?

Yes ☐ No ☐
Are your accounts receivables factored or pledged as collateral?

PURCHASING AGENTS:
Name/Title: ____________________________ Name/Title: ____________________________ Name/Title: ____________________________
Purchase Order Number Required with Order: ☐ Yes ☐ No ☐ Sometimes ☐

Signature of Authorizing Officer: ____________________________ Date: ____________________________ Phone No: ____________________________

Please Print Name: ____________________________ Title: ____________________________ Fax No: ____________________________

Mail/Shipping: 11302 Steeplecrest Dr. · Houston, TX · 77065 · U.S.A.
Tele: (713) 880-9885 or (877) 837-8683 (toll free) · Fax: (713) 880-9886 · E-Mail: sales@ofite.com

You can also order online at www.ofite.com!
OFI Testing Equipment, Inc.
Repair Order Form

Send Repairs To:
11302 Steeplecrest Dr.
Houston, TX 77065 U.S.A.

Please submit a separate form for each piece of equipment.

Serial #: _______________________________________
Are you sending accessories? □ None □ Case □ Other ___________________

SHIP TO: (UPS will not ship to a P.O. Box)
COMPANY: _______________________________________
ADDRESS: _______________________________________
CITY: ___________________ STATE: _______________
COUNTRY: __________________ ZIP: _______________
NAME/DEPT: _______________________
PHONE: _______________________________________
EMAIL: _______________________________________
SHIP METHOD: ________________________________

EQUIPMENT (Check One)
□ 130-10-C Model 800 Viscometer
□ 130-10 Model 800 (No Case)
□ 130-76-C Model 900 Viscometer
□ 130-76 Model 900 (No Case)
□ 130-60 6-Speed Viscometer
□ 132-00 Hand Crank Rheometer
□ 165-00-1 10 mL Retort Kit
□ 165-00 10 mL Removable Retort
□ 165-80 20 mL Retort Kit
□ 165-80-2 20 mL Electronic Retort Kit
□ 165-14-1 50 mL Retort Kit
□ 165-14-2 50 mL Electronic Retort Kit
□ 170-00-1 175 mL HTHP Heat Jacket
□ 171-55 250 mL HTHP Heat Jacket
□ Other* ___________________________

OPTIONAL PRE-WORK
□ Report of “As Found” Condition
Includes a certificate documenting the condition and calibration check of the instrument at the time it was received by OFITE. Additional $100 charge applies.

□ Diagnostic
An estimate of charges for As Needed repairs based on a physical inspection of the instrument. Additional $100 charge applies.

□ Certified Repair
Fixed pricing. 5-business day turnaround. Fully refurbished with all parts known to fail. Includes calibration.

□ As Needed

□ Restock (Retort Only)
□ Consumables
□ Chamber
□ Condenser

□ Warranty
RMA # Required: ________________________________

*Not available for Certified Repair

Description of the problem or work to be performed:
________________________________________________________________________________________________________
________________________________________________________________________________________________________

If you have a warranty claim, contact your OFITE Sales Representative at 713-880-9885 or 877-837-8683 for an RMA number.

OFITE warranties all products that have been operated and maintained in accordance with the guidelines in the instruction manual. New products and “Certified Repairs” come with a twelve (12) month limited warranty. Any equipment repaired “As Needed” comes with a ninety (90) day limited warranty.
Model 800 Viscometer with Retractable Legs...40
Double Walled Circulating Cup...44
Cup Heater, 115 Volt...43
Sag Shoe Assembly...45
Cup Holder, 230 Volt...43
Thermocur, 115 Volt...43
Thermocur, 230 Volt...43
Thermocur with Removable Stainless Steel Cup, 115 Volt...43
Thermocur with Removable Stainless Steel Cup, 230 Volt...43
Model 900 Viscometer, 230 Volt...43
Universal Heat Cup, 230 Volt...44
Universal Heat Cup, 115 Volt...44
Model 900 Viscometer, 115 Volt...39, 163
Model 900 Pressurized Viscometer...38, 163
Resistivity Meter, Analog...150
CON 450 Conductivity Meter...166
Resistivity Meter, Digital...150
Emulsion Stability Tester...149
Hand Crank Rheometer...41
API Filter Press, Wall Mount, Basic...55
API Filter Press, Wall Mount, with CO2 Pressure Assembly...55
API Filter Press, Bench Mount, Basic...50
API Filter Press, Bench Mount, with CO2 Pressure Assembly...52
API Filter Press, Bench Mount, with Regulator and Hose...52
API Filter Press, 4 Unit...56
API Filter Press, 6 Unit...56
Filter Press, Half Area, with CO2 Pressure Assembly...56
API Filter Press, Bench Mount, Dead Weight Hydraulic Assy...54
CO2 Pressure Assembly with Top Cap...60
Regulator, Low Pressure, Victor, 3000 PSI...92
Regulator, Model MB, with CO2 Pressure Assembly...53
Regulator, Low Pressure, CONCO/AIRCO...92
CO2 Puncture Head Assembly...60
Regulator Repair Kit, CONCO/AIRCO...92
Regulator Repair Kit, Victor...93
Regulator Repair Kit, Victor...93
API Filter Press, Wall Mount, with Carrying Case...55
Rig Laboratory...125
Chloride Content Kit...132
Chloride and Alkalinity Kit...131
Chloride and Water Hardness...131
Chloride, Alkalinity, and Water Hardness...131
Underbalance Drilling Test Kit (UBD)...128
Calcium and Magnesium Kit...133
Nitrile-Ion Test Kit...141
Thiocyanate Ion Test Kit...142
Water Analysis Kit...145
Millipore Membrane Filter Tester...167
Filtrate Analysis Kit...130
Total Dissolved Test Kit...130
Sulfate Ion Test Kit...137
Parafomaldehyde Test Kit...138
Parafomaldehyde Test Kit with Antifreeze...138
Sodium Chromate Test Kit...137
Sulfur-Dioxide Test Kit...137
Sulfide Ion Test Kit No. 2...136
Hydrogen Sulfide Detection Kit...136
Zine Carbonate Test Kit...142
Zinc in Brines Determination Kit...143
Sulfite Test Kit...137
Aniline Point Determination Kit, 230 Volt...142
Aniline Point Determination Kit, 115 Volt...141
Brine Test Kit...146
Portapak pH Meter Kit, Oakton pH5+, pH/Temp...183
Ion 700 Meter, pH/mV/Temp...182
Portable pH Meter Kit, Oakton Ion 6+, pH/mV/Temp...183
pH Electrode, Double Junction, Glass, Refillable, Amber...185
pH Electrode, Double Junction, Glass, Refillable, Flushable, PTFE Junction...185
pH Electrode, Double Junction, Glass, Refillable, Fluoropolymer PTFE Junction...185
Ion Selective Electrode, Potassium...182
Ion Selective Electrode, Hardness...182
Ion Selective Electrode, Calcium...182
Ion Selective Electrode, Chloride...182
Ion Selective Electrode, Iodide...182
Ion Selective Electrode, Fluoride...182
pH Electrode, Single Junction, Epoxyl, Sealed, Economical...185
pH Electrode, Single Junction, Epoxyl, Sealed, Economical...185
Hach Model H260 pH Meter with Probe...183
Potassium Ion Test Kit, Test Strip Method...143
QUANTOFIX Chloride Test Sticks...129
QUANTOFIX Nitrate Test Strips...129
QUANTOFIX Sulfide Test Strips...129
SolChek Total Hardness Test Strips...129

| #150-50 | Differential Sticking Tester | 208 |
| #150-80-1 | Dynamic Linear Swell Meter, 230 Volt | 147 |
| #150-80 | Dynamic Linear Swell Meter, 115 Volt | 147 |
| #150-93 | Stirring Hot Plate, 115 Volt | 177 |
| #150-94 | Stirring Hot Plate, 230 Volt | 177 |
| #150-87 | Bulk Hardness Tester | 151 |
| #151-00 | Garrett Gas Train Kit | 135 |
| #151-20 | Garrett Gas Train Analysis for Active Sulfides Kit | 135 |
| #152-10 | Hamilton Beach® Blender, Single Spindle, 115 Volt | 175 |
| #152-10 | Hamilton Beach® Blender, Three Spindle, 230 Volt | 175 |
| #152-13-1 | Hamilton Beach® Blender, 230 Volt | 165 |
| #152-13 | Hamilton Beach® Blender, 115 Volt | 165 |
| #152-16-1 | Silverson® LSM-A Lab Mixer, 230 Volt | 173 |
| #152-16-2 | Silverson® LMA-A Lab Mixer, 115 Volt | 173 |
| #152-18-1 | Laboratory Mixer, 230 Volt | 174 |
| #152-18 | Laboratory Mixer, 115 Volt | 174 |
| #152-20 | Hamilton Beach® Blender, Three Spindle, 115 Volt | 175 |
| #152-22 | Hamilton Beach® Blender, Three Spindle, 115 Volt | 175 |
| #152-25 | Powerstat® 1, 115 Volt | 198 |
| #152-36 | Powerstat®, 230 Volt | 200 |
| #152-45 | Heated Magnetic Stirrer with Stir Bar, 115 Volt | 177 |
| #152-46 | Heated Magnetic Stirrer with Stir Bar, 230 Volt | 177 |
| #152-49 | Stirring Hot Plate, 115 Volt | 177 |
| #152-50 | Multimixer, 115 Volt, 60 Hz | 179 |
| #152-52-I | Multimixer, 230 Volt, 50 Hz | 179 |
| #152-55-1 | Bath/Circulator, 230 Volt | 145 |
| #152-56-1 | Bath/Circulator, 115 Volt | 145 |
| #152-57-1 | Precision Water Bath, 28 Liter | 179 |
| #152-57 | Precision Water Bath, 10 Liter | 179 |
| #152-60-1 | Waring Blender with Glass Container, 230 Volt | 176 |
| #152-60 | Waring Blender with Glass Container, 115 Volt | 176 |
| #152-76 | Miniature Laboratory Disperser, 115 Volt | 177 |
| #152-95 | Calimeter | 184 |
| #152-97-C | Recording Calimeter with DAIQ and Laptop | 134 |
| #152-97 | Recording Calimeter with DAIQ | 134 |
| #152-12-2 | Centrifuge, pH-Hand Control, 2 Place, 15 mL Tubes | 181 |
| #153-25-12 | Centrifuge, Portable, 2 Place, 12.5 mL Tubes, 12 Volt | 180 |
| #153-25-15 | Centrifuge, Portable, 2 Place, 12.5 mL Tubes, 115 Volt | 180 |
| #153-25-21 | Oil Thief with Sample Cock, Acrylic | 127 |
| #153-25-22 | Oil Thief with Sample Cock, Brass | 127 |
| #153-52-3 | Stir Magnetic Stirrer with Light | 180 |
| #153-53-7 | Magnetic Stirrer with TFE-Coated Stir Bar, 60 - 1200 RPM | 178 |
| #153-53-10 | Magnetic Stirrer, Battery Powered | 178 |
| #153-53-12 | Magnetic Stirrer with Digital Readout, 115 Volt | 178 |
| #153-53-13 | Magnetic Stirrer with Digital Readout, 230 Volt | 178 |
| #153-53-14 | Magnetic Stirrer with TFE-Coated Stir Bar, 200 - 2500 RPM | 178 |
| #153-57 | Handheld Refractometer | 185 |
| #153-59-01 | Hygromaster 2 Hygrometer | 169 |
| #153-221 | Centrifuge, Heated, 4 Place, 12.5 mL Tubes, 115 Volt | 180 |
| #153-221 | Centrifuge, 4 Place, 12.5 mL Tubes, 115 Volt | 180 |
| #153-222 | Centrifuge, Heated, 4 Place, 12.5 mL Tubes, 230 Volt | 180 |
| #153-223 | Centrifuge, 4 Place, 12.5 mL Tubes, 230 Volt | 180 |
| #153-244 | Centrifuge, 4 Place, 100 mL Short Cone Tubes, 115 Volt | 180 |
| #153-245 | Centrifuge, 4 Place, 100 mL Short Cone Tubes, 230 Volt | 180 |
| #153-255 | Centrifuge, Heat, 1 Place, 100 mL Short Cone, 115 Volt | 180 |
| #153-256 | Centrifuge, Heat, 1 Place, 100 mL Short Cone, 230 Volt | 180 |
| #153-256 | Centrifuge, Heat, 4 Place, 100 mL Short Cone, 230 Volt | 180 |
| #153-256 | Centrifuge, Heat, 4 Place, 100 mL Short Cone, 115 Volt | 180 |
| #153-258 | Centrifuge, Heat, 1 Place, 100 mL Short Cone Tubes, 230 Volt | 180 |
| #153-260 | Centrifuge, Heat, 1 Place, 100 mL Short Cone Tubes, 115 Volt | 180 |
| #153-260 | Centrifuge, Heat, 4 Place, 100 mL Short Cone Tubes, 230 Volt | 180 |
| #153-260 | Centrifuge, Heat, 4 Place, 100 mL Short Cone Tubes, 115 Volt | 180 |
| #153-260 | Centrifuge, Heat, 1 Place, 100 mL Short Cone Tubes, 115 Volt | 180 |
| #154-06 | Thermometer, Full Scale, Traceable | 186 |
| #154-24-5 | Thermometer, Type K, Digital, With NIST Certification | 186 |
| #154-25 | Thermometer, Type K, Digital | 186 |
| #155-25 | Digital Stopwatch | 187 |
| #160-00-1-C | Airplane Test Kit, Complete, 230 Volt | 120 |
| #160-00 | Airplane Test Kit | 120 |
| #160-00-C | Airplane Test Kit, Complete, 115 Volt | 120 |
| #160-00-C | Airplane Test Kit, Complete, 230 Volt | 120 |
| #160-01-C | Airplane Test Kit, Complete, 115 Volt | 120 |
| #160-01-C | Airplane Test Kit, Complete, 230 Volt | 120 |
| #160-01 | Offshore Test Kit, Complete, 115 Volt | 122 |
| #160-01 | Offshore Test Kit, Complete, 230 Volt | 122 |
| #161-05 | Horizontal Directional Drilling (HDD) Mud Test Kit | 125 |
| #161-10 | Basic Test Kit | 126 |
| #161-15 | Directional Drilling Test Kit | 115 |
| #161-25-1-C | Frontier Kit, Complete, 230 Volt | 122 |
| #161-25-C | Frontier Kit, Complete, 115 Volt | 122 |
| #161-70 | Iron Count Test Kit | 138 |
| #162-00-1 | International Kit, 230 Volt | 117 |
| #162-00-1 | International Kit, 115 Volt | 117 |
| #162-50 | Basic Water Well Test Kit | 124 |
Production Screen Tester ........................................................................................................ 59
Proppant Test Cells .................................................................................................................. 164

Q
QuickChek Sulphate Reducing Bacteria RC II Ten-Pak ....................................................... 139

R
Reagents ........................................................................................................................................ 194–201
Recording Atmospheric Consistometer .................................................................................. 24
Recording Calomel with DAQ ................................................................................................. 134
Regulator Repair Kit ................................................................................................................... 92
Regulators ................................................................................................................................. 92, 191
Resistivity .................................................................................................................................. 150
Retort Receiver .......................................................................................................................... 191
Retorts ....................................................................................................................................... 102–105
Reverse Phase Extraction Kit ................................................................................................... 144
RGP-560 Gas Permeameter ........................................................................................................ 157
Rig Laboratory ........................................................................................................................... 125
Roller Ovens .............................................................................................................................. 106–108

S
Safety Clamp for HTHP Fluid Loss Cells .................................................................................. 98
Sag Shoe Assembly ..................................................................................................................... 45
Sand Content Kit ........................................................................................................................ 127
Sani Check AB Kit #110, Aerobic Bacteria ............................................................................. 139
SGR-740 Spectral Gamma Ray Core Logger ............................................................................ 161
Shearometer Kit ........................................................................................................................ 42
Shearometer Tube with Weight Support .................................................................................. 42, 114
Sieves ....................................................................................................................................... 193
Silverson® L5M-A Lab Mixer ..................................................................................................... 173
Slotted Filter Disks ...................................................................................................................... 101
Sodium Chromate Test Kit ......................................................................................................... 137
Spatulas ...................................................................................................................................... 191
Stand for Filter Press Cells ........................................................................................................ 99
Static Gel Strength Measurement Device ................................................................................. 5, 8, 12
Static Sheen Test Kit .................................................................................................................. 146
Stir Light Magnetic Stirrer with Light ......................................................................................... 177
Stirred Fluid Loss Tester ........................................................................................................... 30
Stirring Bars ............................................................................................................................... 191
Stirring Hot Plate ....................................................................................................................... 177
Stirring Rods ............................................................................................................................... 191
Sulfate Ion Test Kit ..................................................................................................................... 137
Sulfide Ion Test Kit ..................................................................................................................... 136
Sulfite Test Kit ............................................................................................................................ 137
Swelling ..................................................................................................................................... 147
Syringe ....................................................................................................................................... 191

T
Teflon® Liner for Aging Cells .................................................................................................... 116
Temperature Control Unit ........................................................................................................... 46
Test Tubes .................................................................................................................................... 191
Thermocouple Assembly for HTHP Filter Press ..................................................................... 88
Thermocups ................................................................................................................................. 43
Thermometers ............................................................................................................................ 186, 192
Thickening Time ........................................................................................................................ 19–23
Thiocyanate Ion Test Kit ........................................................................................................... 142
Timers ........................................................................................................................................ 192
Titration Dishes .......................................................................................................................... 192
Total Hardness Titration Kit ...................................................................................................... 133
Transformers and Converters .................................................................................................... 192
Triple Beam Balance .................................................................................................................. 172
Tubes .......................................................................................................................................... 192
Turbidity Meter .......................................................................................................................... 165

U
Ultrasonic Cement Analyzer ...................................................................................................... 5, 6, 10
Underbalance Drilling Test Kit (UBD) ....................................................................................... 128
Universal Heat Cup .................................................................................................................... 44

V
Valves ........................................................................................................................................ 192
Viscosity ..................................................................................................................................... 39–45
Volumetric Cement Expansion Device .................................................................................... 34

W
Waring Blender ............................................................................................................................ 176
Water Analysis Kit ....................................................................................................................... 145
Water Bath .................................................................................................................................. 17, 45

Z
Zinc in Brines Determination Kit ................................................................................................ 143
Zine Carbonate Test Kit ............................................................................................................. 142
OFI Testing Equipment, Inc.

11302 Steeplecrest Dr.
Houston, Texas 77065

Phone: 832-320-7300
Toll Free: 877-TEST-MUD
Fax: 713-880-9886

Email: sales@ofite.com

www.OFITE.com

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