

**ROBINSON  
MANUFACTURING**  
COMPANY INCORPORATED

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**MANUFACTURING SINCE 1954**

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**[www.robinsonmfgcoinc.com](http://www.robinsonmfgcoinc.com)**



## **PRODUCT WARRANTY**

Robinson Manufacturing warrants products manufactured by Robinson Manufacturing to be free of defective material and workmanship for one year from the date of shipment by Robinson Manufacturing. The liability of Robinson Manufacturing for defective equipment during the warranty period shall be limited to the repair of such equipment or replacement thereof without charge for parts or labor provided by Robinson Manufacturing. Robinson Manufacturing shall be so liable only if Robinson Manufacturing is contacted in regard to such defect immediately after its discovery

Buyer should return the defective product under warranty to Robinson Manufacturing only after receipt of Robinson Manufacturing's specific permission to do so. This warranty does not extend to any Robinson Manufacturing product which has been subject to misuse, neglect, accident, modification or improper installation, or any product which has been repaired or altered by persons not expressly approved by Robinson Manufacturing. Robinson Manufacturing will not be liable for damages, loss or expense directly or indirectly arising from the use of the products or for any liability from their use either separately or in combination with other equipment or material or for any other cause.

## **MERCHANDISE RETURNS**

No goods should be returned to Robinson Manufacturing without specific authorization. All authorized returns for merchandise shipped by Robinson Manufacturing less than 6 months previously which are returned for any reason other than valid warranty claims will be charged a 15% restocking charge plus any expense necessary to place the merchandise in saleable condition. The restocking charge shall be 25% for goods shipped by Robinson Manufacturing more than 6 months but less than 1 year previously. No returns for credit will be accepted after 1 year from original Robinson Manufacturing shipment. Returns should be shipped freight prepaid.





**Model 820A** 4 place head  
**Model 821A** 2 place head

**T**he second generation of the Robinson ELECTRICALLY HEATED centrifuge that operates from the vehicle's 12-volt system.

**Centrifuge features include:**

1. A circular design offering a high-efficiency unit that meets or exceeds the RCF requirements of API and ASTM.
  2. A rheostat control with an "off" position for a slow, smooth start and speed control.
  3. Top-entry motor removal for replacement without removing the centrifuge from its mountings.
  4. A motor mount plate with a ball bearing provides stabilizing support for the motor shaft.
  5. One-inch thick mounting feet to reduce casting failures.
  6. Lid, spring supported to keep it open. Designed with a hole in the center so that the centrifuge RPM's can be checked with a hand held tachometer with the centrifuge lid closed.
  7. A pre-heater section located in the front of the centrifuge for easy access to the operator.
  8. Flip-up pre-heater covers, with positive mechanical tension to keep the covers closed. Easy-to-grasp design for easy opening.
9. Easy switch replacement with modular designed front control panel. The modular control panel can be removed simply by removing four screws and unplugging the switches. This feature allows the following:
    - A. Individual switches can be replaced in the modular control panel without removing the centrifuge from the vehicle.
    - B. The complete control panel can be replaced without removing the centrifuge from the vehicle. The old control panel can be serviced at a work bench.
  10. Easy heater assembly replacement in the pre-heater section. The heaters are connected to the switch with quick connect terminals. Remove two screws and lift the heater assembly out of the pre-heater pockets.
  11. New switches that are IP 68 rated. The rating signifies complete protection against dust and prolonged effect of moisture.
  12. Simplified method of testing the electrical components.
  13. Three independent electrical circuit design.
    - A. One circuit operates the motor that spins the samples.
    - B. A second circuit, controlled by an "on-off" switch and thermostat, heats the centrifuge bowl. When the sample is placed in the centrifuge at 140°F, the pre-set thermostat prevents the sample temperature from dropping below 125°F as specified by API and ASTM.
    - C. The third circuit is for the pre-heater section, which is comparable to a separate two-place electrical heater built into the centrifuge. It is operated by a "high-off-low" switch and controlled by the operator. Depending upon the oil sample's starting temperature, it raises the temperature of two samples to 140°F in minutes.
  14. Space-saver design because a separate heater is not required.
  15. A self-reset circuit breaker near the vehicle's battery protects the centrifuge's circuit, as well as the vehicle.
  16. When the vehicle is not running, an external contactor, wired to the ignition, prevents the heaters from drawing energy from the battery.

**Specifications:** 100ml short cone, 12 VDC electrically heated, Weight 60 lbs., 22" x 20" x 11-1/2".



**T**he second generation of the Robinson ELECTRICALLY HEATED centrifuge that operates from the vehicle's 12-volt system.

**Centrifuge features include:**

1. A circular design offering a high-efficiency unit that meets or exceeds the RCF requirements of API and ASTM.
2. A rheostat control with an "off" position for a slow, smooth start and speed control.
3. Top-entry motor removal for replacement without removing the centrifuge from its mountings.
4. A motor mount plate with a ball bearing provides stabilizing support for the motor shaft.
5. One-inch thick mounting feet to reduce casting failures.
6. Slide open, two section lid, designed with a hole in the center so that the centrifuge RPM's can be checked with a hand held tachometer with the centrifuge lid closed. This feature is especially efficient where room above the centrifuge is limited. This feature also reduces heat loss because it does not require that the complete lid be open for the operator to insert and remove the samples from inside the centrifuge.
7. A pre-heater section located in the front of the centrifuge for easy access to the operator.
8. Flip-up pre-heater covers, with positive mechanical tension to keep the covers closed. Easy-to-grasp design for easy opening.
9. Easy switch replacement with modular designed front control panel. The modular control panel can be removed simply by removing four screws and unplugging the switches. This feature allows the following:
  - A. Individual switches can be replaced in the modular control panel without removing the centrifuge from the vehicle.
  - B. The complete control panel can be replaced without removing the centrifuge from the vehicle. The old control panel can be serviced at a work bench.
10. Easy heater assembly replacement in the pre-heater section. The heaters are connected to the switch with quick connect terminals. Remove two screws and lift the heater assembly out of the pre-heater pockets.
11. New switches that are IP 68 rated. The rating signifies complete protection against dust and prolonged effect of moisture.
12. Simplified method of testing the electrical components.
13. Three independent electrical circuit design.
  - A. One circuit operates the motor that spins the samples.
  - B. A second circuit, controlled by an "on-off" switch and thermostat, heats the centrifuge bowl. When the sample is placed in the centrifuge at 140°F, the pre-set thermostat prevents the sample temperature from dropping below 125°F as specified by API and ASTM.
  - C. The third circuit is for the pre-heater section, which is comparable to a separate two-place electrical heater built into the centrifuge. It is operated by a "high-off-low" switch and controlled by the operator. Depending upon the oil sample's starting temperature, it raises the temperature of two samples to 140°F in minutes.
14. Space-saver design because a separate heater is not required.
15. A self-reset circuit breaker near the vehicle's battery protects the centrifuge's circuit, as well as the vehicle.
16. When the vehicle is not running, an external contactor, wired to the ignition, prevents the heaters from drawing energy from the battery.

**Specifications:** 100ml short cone, 12 VDC electrically heated, Weight 60 lbs., 22" x 20" x 11-1/2".



**Model 820B** 4 place head  
**Model 821B** 2 place head





**Model 870AT**

**T**he Robinson 120 Volt ELECTRICALLY HEATED centrifuge with pre-heater section.

**Centrifuge features include:**

1. A circular design offering a high-efficiency unit that meets or exceeds the RCF requirements of API and ASTM.
2. A rheostat control with an "off" position for a slow, smooth start and speed control.
3. A pre-heater section located in the front of the centrifuge. Space saving design because a separate heater is not required.
4. Lid designed with hole in the center so that the centrifuge RPM's can be checked with a hand held tachometer with the centrifuge lid closed.
5. Three independent electrical circuit design.
  - A. One circuit operates the motor that spins the samples.
  - B. A second circuit, controlled by an "on-off" switch and thermostat, heats the centrifuge bowl. When the sample is placed in the centrifuge at 140°F, the preset thermostat prevents the sample temperature from dropping below 135°F as specified by API and ASTM.
  - C. The third circuit is for the pre-heater section, which is like a separate two-place electrical heater built into the centrifuge. It is operated by a high-off-low"switch and controlled by the operator. Depending upon the oil sample's starting temperature, it raises the temperature of two samples to 140°F in minutes.

**Specifications:** All 870 series, 120 VAC, 60 Hz, 1 phase. Weight 65 lbs., 22" x 20" x 11-1/2".

- Model 870A** 100ml short cone, 4 place head - 2 heated pre-heater pockets.
- Model 870A4** Same as 870A except with 4 heated pre-heater pockets.
- Model 870AT** Same as 870A except with a 15 minute timer.
- Model 870AT4** Same as 870A4 except with a 15 minute timer.
- Model 872A** Same as the 870A but 230 VAC, single phase.
- Model 872AT** Same as the 872A except with a 15 minute timer.
- Model 874A4** 100ml pear shape, 4 place head - 4 heated pre-heater pockets.
- Model 874AT4** Same as the 874A4 except with a 15 minute timer.



**T**he Robinson 120 Volt Centrifuge.

**Centrifuge features include:**

1. A circular design offering a high-efficiency unit that meets or exceeds the RCF requirements of API and ASTM.
2. A rheostat control with an "off" position for a slow, smooth start and speed control.
3. Lid designed with a hole in the center so that the centrifuge RPM's can be checked with a hand held tachometer with the centrifuge lid closed.

**Specifications:** 120 VAC, 60 Hz, 1 phase.  
Weight 40 lbs., 20" diameter x 11-1/2".

- Model 850** 100ml short cone, 4 place head, non-heated
- Model 860** 100ml pear shape, 4 place head, non-heated
- Model 875** 100ml short cone, 4 place head, heated
- Model 880** 100ml pear shape, 4 place head, heated



**T**he Robinson AIR DRIVEN centrifuge. Centrifuge features include:

1. A circular design offering a high-efficiency unit that meets or exceeds the RCF requirements of API and ASTM.
2. A pressure regulator control with an "off" position for a slow, smooth start and speed control.
3. Lid designed with a hole in the center so that the centrifuge RPM's can be checked with a hand held tachometer with the centrifuge lid closed.
4. Non-lubricated air motor. Requires no lubricator, eliminating the need for oil, service and maintenance.

**Specifications:** 100ml short cone, air driven motor. Inlet pressure max 100 psi, operating pressure 65 to 75 psi, air consumption 6 to 7 CFM. Weight 40 lbs., 20" diameter x 11-1/2".

- Model 890** 4 place head Short Cone  
**Model 891** 2 place head Short Cone  
**Model 898** 4 place head Pear Shape  
**Model 899** 2 place head Pear Shape

**T**he Robinson ELECTRICALLY HEATED-AIR DRIVEN centrifuge. Designed for use in Class 1, Division 2, Group D hazardous areas.

**Centrifuge features include:**

1. A circular design offering a high-efficiency unit that meets or exceeds the RCF requirements of API and ASTM.
2. A pressure regulator control with an "off" position for slow, smooth start and speed control.
3. Lid designed with a hole in the center so that the centrifuge RPM's can be checked with a hand held tachometer with the centrifuge lid closed.
4. Non-lubricated air motor. Requires no lubricator, eliminating the need for oil, service and maintenance.
5. A pre-heater section located in the front of the centrifuge for easy access to the operator.
6. Two independent electrical circuit design.
  - A. One circuit, controlled by an on-off switch and thermostat, heats the centrifuge bowl. When the sample is placed in the centrifuge at 140°F, the pre-set thermostat prevents the sample temperature from dropping below 135°F as specified by API and ASTM.
  - B. The second circuit is for the pre-heater section and is also controlled by an on-off switch and thermostat. Depending upon the oil sample's starting temperature, it will raise the temperature of two samples to 140°F in a few minutes.

**Specifications:** 100ml short cone, 120 VAC electrical heated, air driven motor. Inlet pressure max 100 PSI. Operating pressure 65 to 75 PSI, Air Consumption 6 to 7 CFM. Weight 76 lbs., 24" x 28" x 11-1/2".



- Model 894A** 4 place head Short Cone  
**Model 895A** 2 place head Short Cone  
**Model 896A** 4 place head Pear Shape  
**Model 897A** 2 place head Pear Shape

## HEATED

Model	Volts	No. of Tubes	Tube Size ml	Heating Method	Pre-Heater	Dimensions			Wg. lbs.
						Lg.	Wd.	Hg.	
<b>600</b>	12 DC	4	12.5	Water	yes	18"	14"	9"	31
<b>610</b>	12 DC	4	12.5	Electric	yes	18"	14"	9"	31
<b>620</b>	115 AC	4	12.5	Electric	yes	18"	14"	9"	32
<b>621</b>	230 AC	4	12.5	Electric	yes	18"	14"	9"	32
<b>720</b>	115 AC	8	12.5	Electric	no	20"	16"	10"	33
<b>721</b>	230 AC	8	12.5	Electric	no	20"	16"	10"	33
<b>820A/B</b>	12 DC	4	100 SC	Electric	yes	23-1/2"	20"	11-1/2"	60
<b>821A/B</b>	12 DC	2	100 SC	Electric	yes	23-1/2"	20"	11-1/2"	60
<b>822</b>	12 DC	4	100 SC	Electric	no	21-1/2"	20"	11-1/2"	36
<b>823</b>	12 DC	2	100 SC	Electric	no	21-1/2"	20"	11-1/2"	36
<b>824</b>	12 DC	4	100 PS	Electric	no	21-1/2"	20"	11-1/2"	36
<b>825</b>	12 DC	2	100 PS	Electric	no	21-1/2"	20"	11-1/2"	36
<b>844</b>	12 DC	4	100 PS	Electric	yes	23-1/2"	20"	11-1/2"	60
<b>845</b>	12 DC	2	100 PS	Electric	yes	23-1/2"	20"	11-1/2"	60
<b>870A</b>	115 AC	4	100 SC	Electric	yes	23-1/2"	20"	11-1/2"	65
<b>872A</b>	230 AC	4	100 SC	Electric	yes	23-1/2"	20"	11-1/2"	65
<b>874A</b>	115 AC	4	100 PS	Electric	yes	23-1/2"	20"	11-1/2"	65
<b>875</b>	115 AC	4	100 SC	Electric	no	21-1/2"	20"	11-1/2"	40
<b>880</b>	115 AC	4	100 PS	Electric	no	21-1/2"	20"	11-1/2"	40
<b>892*</b>	Air	4	100 SC	Electric	no	22"	28"	11-1/2"	48
<b>893*</b>	Air	2	100 SC	Electric	no	22"	28"	11-1/2"	48
<b>894A</b>	Air	4	100 SC	Electric	yes	24"	28"	11-1/2"	76
<b>895A</b>	Air	2	100 SC	Electric	yes	24"	28"	11-1/2"	76
<b>896A</b>	Air	4	100 PS	Electric	yes	23-1/2"	20"	11-1/2"	76
<b>897A</b>	Air	2	100 PS	Electric	yes	23-1/2"	20"	11-1/2"	76

\* Available in Pear Shape



**SERIES 600**



**SERIES 700**



**SERIES 500/800**  
WITHOUT PRE-HEATER SECTION



**SERIES 800**  
WITH PRE-HEATER SECTION



## NON-HEATED



**572  
PORTABLE  
TYPE**



**574  
STATIONARY  
TYPE**

Model	No. of Volts	No. of Tubes	Tube Size ml	Dimensions			Wg. lbs.
				Lg.	Wd.	Hg.	
<b>500</b>	12 DC	4	12.5	14"	14"	9"	21
<b>510</b>	115 AC	4	12.5	14"	14"	9"	24
<b>550</b>	12/115	4	12.5	14"	14"	9"	24
<b>701</b>	12/115	8	12.5	20"	16"	10-1/2"	33
<b>702</b>	12/230	8	12.5	20"	16"	10-1/2"	33
<b>703</b>	115/230	8	12.5	20"	16"	10-1/2"	33
<b>710</b>	115 AC	8	12.5	20"	16"	10-1/2"	33
<b>830</b>	12 DC	4	100 SC	21-1/2"	20"	11-1/2"	36
<b>840</b>	12 DC	4	100 PS	21-1/2"	20"	11-1/2"	36
<b>850</b>	115 AC	4	100 SC	21-1/2"	20"	11-1/2"	40
<b>860</b>	115 AC	4	100 PS	21-1/2"	20"	11-1/2"	40
<b>890</b>	Air	4	100 SC	22"	28"	11-1/2"	40
<b>891</b>	Air	2	100 SC	22"	28"	11-1/2"	40
<b>898</b>	Air	4	100 PS	22"	28"	11-1/2"	40
<b>899</b>	Air	2	100 PS	22"	28"	11-1/2"	40

## OPEN CENTRIFUGES

Model	Volts	No. of Tubes	Size ml	Type	Dia. of Swing	Wg. lbs.
<b>570</b>	12 DC	2	12.5	Stationary	13-1/2"	5-1/4
<b>571</b>	12 DC	4	12.5	Stationary	13-1/2"	5-1/2
<b>572</b>	12 DC	2	12.5	Portable	13-1/2"	5-1/4
<b>573</b>	12 DC	4	12.5	Portable	13-1/2"	5-1/2
<b>574</b>	12 DC	2	100 SC	Stationary	16-1/4"	5-1/2
<b>575</b>	12 DC	2	100 SC	Portable	16-1/4"	5-1/2
<b>576</b>	12 DC	2	100 PS	Stationary	17-1/4"	5-1/2
<b>577</b>	12 DC	2	100 PS	Portable	17-1/4"	5-1/2



**100B028  
SAMPLE  
HEATER**



**560  
HAND  
CENTRIFUGE**

**100B029  
SAMPLE  
HEATER**

## HAND CENTRIFUGES

Die-cast aluminum body. Speed is attained through a 16 to 1 ratio of the pinion gear. Wide sweep crank has a spring clutch which assures effortless and safe start-up and stopping.

Model	No. of Tubes	Tube Size (ml)	Weight
<b>560</b>	2	12.5	6 lbs.
<b>561</b>	2	100 SC	7 lbs.
<b>562</b>	2	100 PS	7 lbs.
<b>563</b>	4	12.5	6-1/4 lbs.

## OIL SAMPLE HEATERS

Oil sample heaters for preheating diluent and heating crude oil sample-diluent mixture prior to centrifuging. Available in both 12 volt DC and 115 volt AC. The 100 ml short cone models are equipped with a high-low switch for rapid heating and operator control of the sample temperature.

Catalog Number	Description	Voltage
<b>100B028</b>	4-place 12.5ml	12 VDC
<b>100B029</b>	2-place 100ml SC	12 VDC
<b>100B030</b>	4-place 12.5ml	115 VAC
<b>100B031</b>	2-place 100ml SC	115 VAC
<b>100B032</b>	2-place 100ml PS	12 VDC
<b>100B033</b>	2-place 100ml PS	115 VAC



## THIEVES

### BUTTERFLY VALVE TYPE

#### OIL THIEF

The Robinson Oil Thief is a proven design in oil thieves. The valve closure assembly is on the inside of the barrel, which makes a more compact unit at the bottom, allowing the thief to pass through an opening as small as 5 inches in diameter. The bottom casting has four legs which makes the thief a stable hydrometer cylinder. The top casting has a hanger for hanging the thief. It offers a single trip action, simple tension adjustment, simple seal and "O" ring replacement, adjustable graduated trip rod and viton seals.



**110D003**

**110D011**

#### CLEAR BARREL

Model	Size Inches	Capacity ml/oz.	Weight lbs.
<b>110D002</b>	12	673/22	4-1/2
<b>110D003</b>	16	928/31	5
<b>110D004</b>	18	1057/35	5-1/2
<b>110D005</b>	24	1441/48	6

#### BRASS BARREL

Model	Size Inches	Capacity ml/oz.	Weight lbs.
<b>110D010</b>	12	756/25	5
<b>110D011</b>	16	1044/34	6-1/2
<b>110D012</b>	18	1188/39	7
<b>110D013</b>	24	1630/55	8

#### ALUMINUM BARREL

Model	Size Inches	Capacity ml/oz.	Weight lbs.
<b>110D014</b>	12	756/25	4-1/2
<b>110D015</b>	16	1044/34	5
<b>110D016</b>	18	1188/39	5-1/4
<b>110D017</b>	24	1630/55	6

All thieves can be graduated in 10ths and 100ths of a foot on special request.

## ACCESSORIES FOR OIL THIEF

### DRAIN VALVES



Special designed drain valves can be installed at any position on the thief barrel. The oil is drained by simply compressing the valve head with the thumb. This eliminates the twisting and turning of the standard petcock.

There are two models.

The low profile sticks out approximately 9/16 of an inch from the barrel. If installed near the trip rod tube, the tube helps protect it from bumping or catching on the tank.

The extended drain model sticks out approximately 13/16 of an inch from the barrel.

Both valves come completely assembled. Just drill and secure the valve in place.

**Model 110B012** Low Profile

**Model 110B013** Extended Drain



## THIEVES SLIDE VALVE TYPE

### OIL THIEF

The Robinson slide valve designed thief is made in three models, clear barrel, brass barrel and aluminum barrel. All three models offer the following features: single trip action, full opening with slide valve closure, two adjustable springs, hanger on the top casting for hanging the thief on the tank hatch, adjustable graduated trip rod and hexagon shaped closure spring adjuster head for easier spring adjustment.



**110D007**

**110D019**

### CLEAR BARREL

Model	Size Inches	Capacity ml/oz.	Weight lbs.
<b>110D006</b>	12	710/24	5
<b>110D007</b>	16	976/33	5-1/2
<b>110D008</b>	18	1125/38	5-3/4
<b>110D009</b>	24	1510/51	6

### BRASS BARREL

Model	Size Inches	Capacity ml/oz.	Weight lbs.
<b>110D018</b>	12	799/27	6-1/2
<b>110D019</b>	16	1065/36	7
<b>110D020</b>	18	1243/42	7-1/2
<b>110D021</b>	24	1658/56	8-1/2

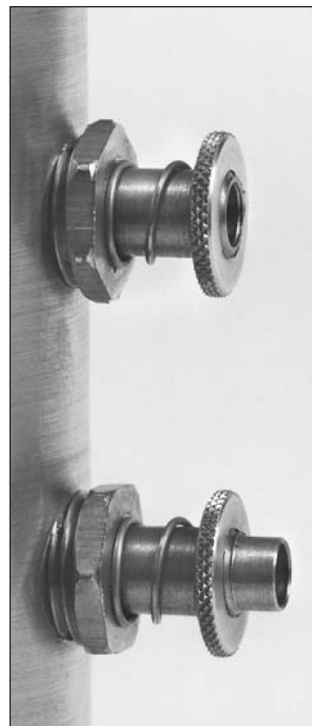
### ALUMINUM BARREL

Model	Size Inches	Capacity ml/oz.	Weight lbs.
<b>110D022</b>	12	799/27	5
<b>110D023</b>	16	1065/36	5-1/2
<b>110D024</b>	18	1243/42	5-3/4
<b>110D025</b>	24	1658/56	6

All thieves can be graduated in 10ths and 100ths of a foot on special request.

## ACCESSORIES FOR OIL THIEF

### DRAIN VALVES



Special designed drain valves can be installed at any position on the thief barrel. The oil is drained by simply compressing the valve head with the thumb. This eliminates the twisting and turning of the standard petcock.

There are two models.

The low profile sticks out approximately 9/16 of an inch from the barrel. If installed near the trip rod tube, the tube helps protect it from bumping or catching on the tank.

The extended drain model sticks out approximately 13/16 of an inch from the barrel.

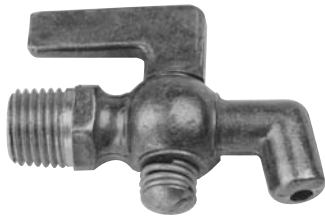
Both valves come completely assembled. Just drill and secure the valve in place.

**Model 110B012** Low Profile

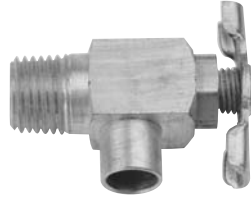
**Model 110B013** Extended Drain



## DRAIN COCKS

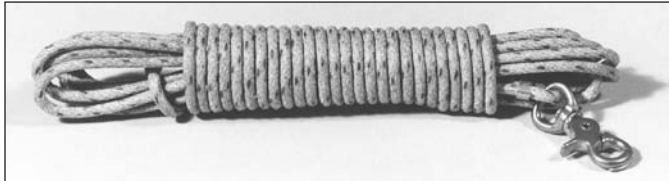


**Model 110A106**  
Bibb Nosed 1/4" NPT



**Model 110A107**  
Angle Drain 1/4" NPT

## ROPE, Oil thief



**Unmarked** thief rope, made of 1/4" 100% cotton sash cord.

**Model 110B016** Specify length.

**Marked** thief rope, made of 1/4", 100% cotton sash cord. The rope is marked every two feet with brass ferrules so that the depth of the thief can be easily discerned.

**Model 110B017** Marked for 12" thief. Specify length.

**Model 110B018** Marked for 16" thief. Specify length.

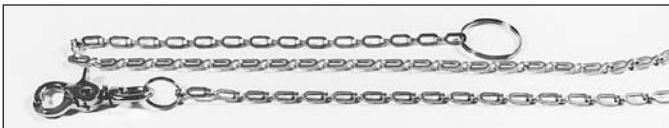
**Model 110B019** Marked for 18" thief. Specify length.

**Model 110B020** Marked for 24" thief. Specify length.

## CHAIN

Brass thief chain, complete with fittings.

**Model 110B025** Specify length.



## GLASS

Beveled sight glass for checking B S & W.  
2" x 4" x 1/4"

**Model 110A108**



## WIND JAMMER, oil thief

Clear plastic cylinder that protects the hydrometer stem from the wind, allowing more accurate gravity readings. Slides into the thief barrel and gives 360 degree protection, the wind will not affect the hydrometer stem. The reading can be taken from any side.

**Model 110A321**

## SAMPLERS

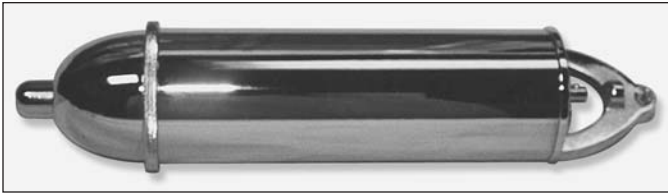


### QUICK THIEF

The Robinson Quick Thief (100cc) is made entirely of brass. Machined to the highest quality, the top inlet opening is provided with a sure seal seat. Samples may be collected at intermediate levels by simply lowering the thief and snapping the wrist. Each thief is furnished with a 20 foot cord which is marked off in one foot intervals from the inlet opening. If ropes longer than 20' are required please specify.

**Model 110B001** Quick Thief

**Model 110B026** Rope, Quick Thief



### BACON BOMB

For sample taking of liquid products at the bottom or intermediate points of a vessel.

- Model 110A109** 32 ounces
- Model 110A110** 16 ounces
- Model 110A111** 8 ounces
- Model 110A112** 4 ounces Slim type 9" x 1-7/8"



### SAMPLER, Flask

Brass sampling flask for obtaining a running sample and/or samples at the bottom or at intermediate levels of various type of storage tanks. Dimensions 3-7/8" x 15-1/2" high, 19-3/4" high with bail extended.

Weight – Lead weighted 82 oz, Brass weighted 69 oz. ASTM designation D 4057 - 88.

#### Model 110B028

32 ounces, with 3/4" opening. Lead weighted.

#### Model 110B029

32 ounces, with 1-1/2" opening. Lead Weighted.

#### Model 110B037

32 ounces, with 3/4" opening. Brass Weighted.

#### Model 110B038

32 ounces, with 1-1/2" opening. Brass Weighted.



### BOTTLE CARRIER

For carrying Boston round one quart (32 oz.) bottles.

**Model 110B031** 6 place

**Model 110B050** 8 place

**Model 110B051** 12 place



### SAMPLER, Glass Bottle

Brass or Stainless Steel construction to hold one quart glass Boston round bottle or a 16 ounce glass bottle. ASTM designation D 4057 - 88.

**Model 110B030** 32 ounces, brass construction, lead weighted. Dimensions: 4-1/2" x 12-3/4", 15-1/2" with eyebolt extended. Weight 60 oz.

**Model 110B032** 32 ounces, brass constructed, brass weighted. Dimensions: 4-1/2" x 12-3/4", 15-1/2" with eyebolt extended. Weight 47 oz.

**Model 110B033** 32 ounces, stainless steel constructed, stainless steel weighted. 4-1/2" x 12-3/4", 15-1/2" with eyebolt extended. Weight 45 oz.

**Model 110B036** 16 ounces, brass construction, brass weighted. Dimensions: 3-1/2" x 11", 13-1/2" with eyebolt extended. Weight 38 oz.

**Model 110B042** 16 ounces, stainless steel construction, stainless steel weighted. 3-1/2" x 11", 13-1/2" with eyebolt extended. Weight 33 oz.



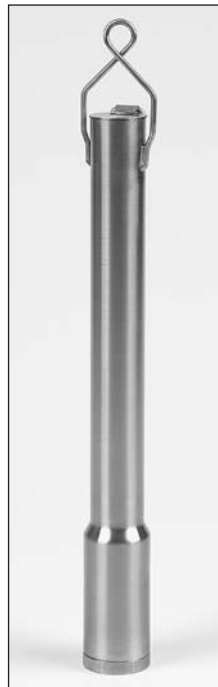
**SAMPLER, R.O.B.** Right Off the Bottom

All brass construction. Utilized to scrape a sediment and water samples from the bottom of a storage tank. The sampler is lowered to the bottom of the tank, as it hits the bottom it falls over and then drugg along the bottom. Dimensions: 3" diameter x 12" long. Weight 62 oz. Capacity 30 oz.

**Model 110B034**



**110B035**



**110B046**

**SAMPLER, Zone**

Stainless Steel construction. It is designed to take samples of liquids from any section or level (zone) of various types of storage tanks. The sampler is lowered through the liquid, the top cover and the bottom valve open, allowing the liquid to pass through. When the lowering of the sampler is stopped at the designated zone, the top cover and bottom valve close and a sample is secured.

**Model 110B035**  
Capacity 800 ml (26 oz.)  
Dimensions: 3" x 16".  
Weight 48 oz.

**Model 110B046**  
Capacity 210 ml (7 oz.)  
Dimensions: 1-3/4" x 15".  
Weight 21 oz.

**TRI-SAMPLER**

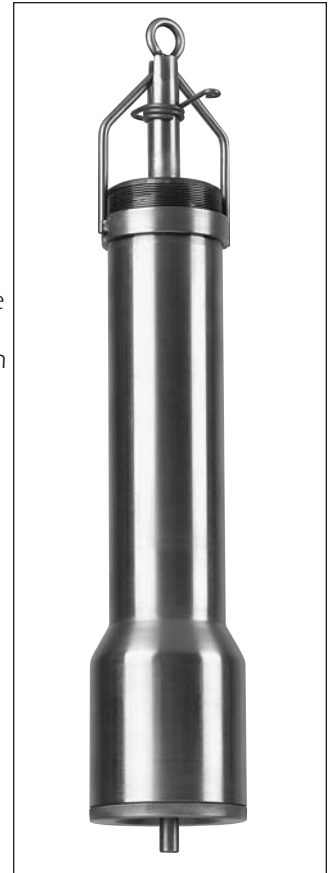
Stainless Steel construction. The Tri-sampler is designed to take three different type of liquid samples, zone sample, bottom sample and running sample.

**Bottom sample.** The sampler is lowered until it makes contact with the bottom of the tank. The bottom valve opens and the sample is taken. When the sampler is lifted, the bottom valve closes and the sample is secured.

**Zone sample.** The top cover and bottom valve are manually open. The sampler is lowered through the liquid, allowing the liquid to pass through. At the desired height (zone) the wrist is lightly snapped and the top cover and bottom valve close, the sample is secured.

**Running sample.** The sampler has a orifice plate at the top, with four orifice openings, 5/16" (8mm), 15/64" (6mm), 5/32" (4mm) and 5/64" (2mm). The bottom valve is closed and secured, the desired orifice size is opened at the top. The sampler is lowered into the liquid and retrieved at a constant speed to secure the desired sample.

**Model 110B043** Capacity 800 ml (26 oz.)  
Dimensions: 3" x 16-1/2". Weight 62 oz.



**2 lb. Weights, Brass & Stainless Steel**

For weighted bottles. Two pounds, stainless steel or brass.

**Model 110B047** Stainless Steel

**Model 110B049** Brass



**NOZZLE  
EXTENSION**

Brass nozzle extension  
and stainless steel  
spacer for RVP sample  
gathering.

**Model 110A316**

Brass nozzle extension

**Model 110A317**

Stainless Steel spacer for  
vapor recovery hose.



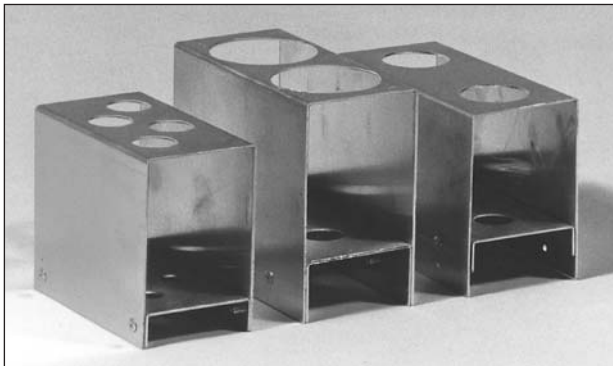
## CARRYING CASES



### TRAY, Gaugers

Aluminum construction, with internal dividers to keep the different pieces of equipment from damaging each other. Two swing out handles for better balance and accessibility to the equipment. Tube holders are available as part of the tray or separately. Dimensions: 21-1/2" x 8-1/2" x 3-1/2".

Catalog Number	Description
<b>300D016</b>	Tray only
<b>300D017</b>	Tray with 12.5 ml tube holder
<b>300D018</b>	Tray with 100 ml SC tube holder
<b>300D019</b>	Tray with 100 ml PS tube holder



### TUBE HOLDERS

Catalog Number	Description
<b>300B020</b>	Tube holder, 12.5 ml
<b>300B021</b>	Tube holder, 100 ml SC
<b>300B022</b>	Tube holder, 100 ml PS



### CHEST, Gaugers

Sturdy constructed, flat top tool chest. Made of light gauge steel. It can accommodate a 12", 16" or 18" thief, a gauging tape, tank thermometer, Hydrometer case and other gauger's equipment.

Dimensions:  
20"L x 9"H x 7"D. Weight 10 lbs.

Catalog Number	Description
<b>300D023</b>	Chest with tray
<b>300D024</b>	Chest, without tray
<b>300D025</b>	Chest with 12.5 ml tube holder. No tray
<b>300D026</b>	Chest with 100 ml SC tube holder. No tray
<b>300D027</b>	Chest with 100 ml PS tube holder. No tray
<b>300A028</b>	Tray only

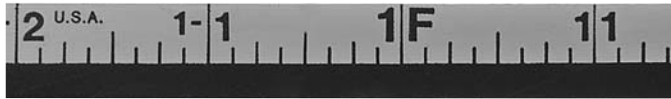
## GAUGING TAPES



### TAPES, Gauging

Oil gauging tapes, one-half inch wide made of steel. Tapes come complete with frame and lock-handle. Graduated in feet, inches and 1/8 inches.

#### BLADE STYLES



**Chrome-Nubian Combination** "Double Duty"



**Chrome Clad**



**Nubian**

Chrome-Nubian Combination	Chrome	Nubian	Length Feet
<b>401B000</b>	<b>401B007</b>		18
<b>401B001</b>	<b>401B008</b>	<b>401B015</b>	25
<b>401B002</b>	<b>401B009</b>		33
<b>401B003</b>	<b>401B010</b>	<b>401B017</b>	50
<b>401B004</b>			66
<b>401B005</b>			75
<b>401B006</b>			100

#### REFILLS

Chrome-Nubian Combination	Chrome	Nubian	Length Feet
<b>401A021</b>	<b>401A028</b>		18
<b>401A022</b>	<b>401A029</b>	<b>401A036</b>	25
<b>401A023</b>	<b>401A030</b>		33
<b>401A024</b>	<b>401A031</b>	<b>401A038</b>	50
<b>401A025</b>			66
<b>401A026</b>			75
<b>401A027</b>			100

### TAPES, Gauging-10ths and 100ths

Oil gauging tape, one-half inch wide made of steel. Tapes come complete with frame and lock-handle. Graduated in feet, 10ths and 100ths.

#### Chrome-Nubian Combination

Complete Tape	Refill	Length Feet
<b>401B042</b>	<b>401A046</b>	50

#### Chrome

Complete Tape	Refill	Length Feet
<b>401B391</b>	<b>401A392</b>	100

### TAPES, Gauging-Stainless Steel

Oil Gauging tape, one-half inch wide made of stainless steel. Tape comes complete with frame and lock-handle. Graduated in feet, inches and 1/8 inches.

Complete Tape	Refill	Length Feet
<b>401B049</b>	<b>401A054</b>	33
<b>401B050</b>	<b>401A055</b>	50

### TAPES, Gauging - Metric/English

Oil gauging tape, one-half inch wide made of steel. Tapes come complete with frame and lock-handle. Graduated in meters, centimeters and millimeters/Feet, inches and 1/8 inches.

Chrome-Nubian Combination	Refills	Length	
		Meters	Feet
<b>401B059</b>	<b>401A068</b>	15	50
<b>401B060</b>	<b>401A069</b>	20	66
<b>401B061</b>	<b>401A070</b>	30	100

### OUTAGE TAPES

Used for outage measurement. The outage tapes are the same as the inage tapes except that the zero point is on the inside of the swivel hook.

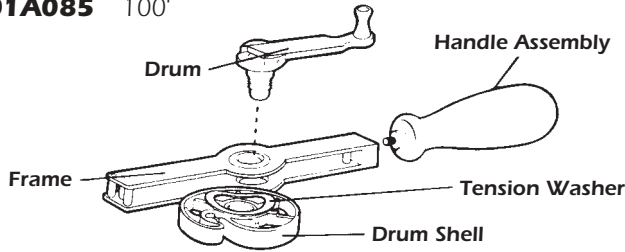
When using the outage gauging tapes, the tape is lowered into the tank until the plumb bob just penetrates the liquid. The tape is then read at the reference point of the tank. The tape is rewound and the liquid level is read directly from the plumb bob. The reading on the plumb bob is added to tape reading, giving the total outage gauge.

Chrome Complete Tape	Refills	Length Feet
<b>401B393</b>	<b>401A394</b>	50
<b>401B395</b>	<b>401A396</b>	66

## REELS—Complete Frame

Order frame for mounting the length of tape needed.

- 401B083** 18' - 33'
- 401B084** 50' - 75'
- 401A085** 100'



## PARTS—Gauging Reels

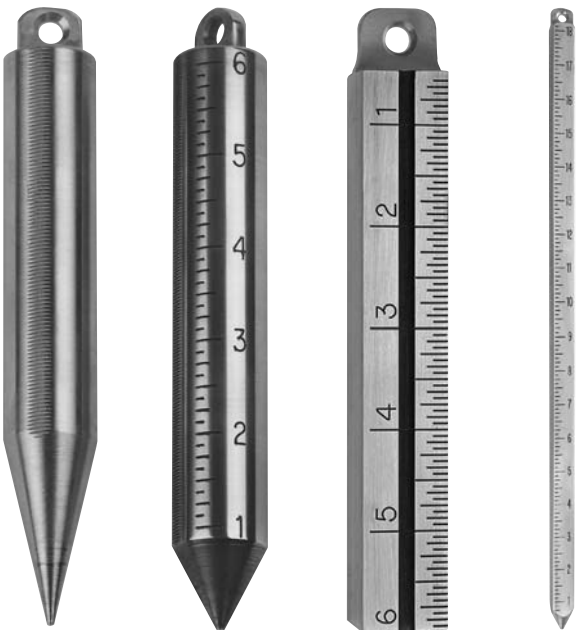
Catalog Number	Description
<b>401B086</b>	Handle
<b>401A087</b>	Washer, Tension
<b>401A088</b>	Drum Shell
<b>401B089</b>	Drum 18' - 33'
<b>401B090</b>	Drum 50' - 75'
<b>401A091</b>	Drum 100'
<b>401B092</b>	Frame 18' - 33'
<b>401B093</b>	Frame 50' - 75'
<b>401A094</b>	Frame 100'

## ACCESSORIES - GAUGING TAPES

### Plumb Bobs

- | Catalog Number | Description  |
|----------------|--|
| <b>401A096</b> | Plumb Bob - brass, one inch round, 6 inches long, 20 oz, with long tapered point and serrated on one side.   |
| <b>401A097</b> | Plumb Bob - stainless steel, one inch round, 6 inches long with long tapered point and serrated on one side.   |
| <b>401B098</b> | Plumb Bob - brass, one inch round, 6 inches long with short tapered point with removable screw tip point of Ampco metal, which is similar to brass but harder, serrated on one side. |
| <b>401A099</b> | Plumb Bob - brass, one inch round, 6 inches long, 21.5 oz., graduated in inches and 1/8 inches, short tapered point and serrated on one side.  |
| <b>401A100</b> | Plumb Bob - brass, one inch round, 6 inches long, 21.5 oz., graduated in 10ths and 100ths of a foot, short tapered point and serrated on one side.                                   |

- | Catalog Number | Description   |
|----------------|---|
| <b>401A101</b> | Plumb Bob - brass, one inch round, 6 inches long, 21.5 oz., graduated in centimeters and 2 millimeters subdivisions, short tapered point and serrated on one side.  |
| <b>401A102</b> | Plumb Bob - brass, one inch round, 6 inches long, 21.5 oz., combination English/Metric graduations, inches and 1/8 inches on one side and centimeters and 2 millimeters subdivisions on the other side, short tapered point and serrated on one side.           |
| <b>401A103</b> | Plumb Bob - brass- outage - for determining tank outage, rather than contents, 7/8 inch square, 6 inches long,, 20oz., graduated in inches and 1/16 inches.   |
| <b>401A104</b> | Plumb Bob - brass, 5/8 inch square, 18 inches long, 34 oz., graduated in inches and 1/8 inches and serrated on one side the entire length. <b>Note: Tapes can be cut to fit 401A104 bob. Charges given on request.</b>  |
| <b>401A105</b> | Plumb Bob - brass, outage, for determining tank outage rather than contents, 7/8 inch square, 6 inches long, 20 oz., graduated in centimeters and 2 millimeters subdivisions.   |
| <b>401A296</b> | Plumb Bob - stainless steel, one inch round, 6 inches long, 20 oz., combination English / Metric graduations, inches and 1/8 inches on one side and centimeters and 2 millimeters subdivisions on the other side, short tapered point and serrated on one side. |
| <b>401A300</b> | Plumb Bob - stainless steel, one inch round, 6 inches long, 20 oz., graduated in inches and 1/8 inches, short tapered point and serrated on one side.   |
| <b>401A301</b> | Plumb Bob - stainless steel, one inch round, 6 inches long, 20, oz., graduated in centimeters and 2 millimeters subdivisions, short tapered point and serrated on one side.   |
| <b>401A304</b> | Plumb Bob - brass, 5/8 inch square, 18 inches long, 34 oz., graduated in 10ths and 100ths of a foot and serrated on one side the entire length.   |



**401A096    401A099    401A103    401A104**



Catalog Number	Description
<b>401A305</b>	Plumb Bob - brass, 5/8 inch square, 18 inches long, 34 oz., combination English/Metric graduations, inches and 1/8 inches on one side and centimeters and 2 millimeters subdivisions on the other side, serrated on one side the entire length.
<b>401A316</b>	Plumb Bob - brass, extension outage bob, 5/8 inch square, 12 inches long, 23 oz., for determining tank outage rather than contents using a inage tape, graduated in inches and 1/16 inches.
<b>401A341</b>	Plumb Bob - brass, outage, for determining tank outage rather than contents, 7/8 inches square, 6 inches long, 20 oz., combination English/Metric graduations, inches and 1/8 inches on one side and centimeters and 2 millimeters subdivisions on the other side.
<b>401A371</b>	Plumb Bob - brass, outage, for determining tank outage rather than contents, 3/4 inches square, 12 inches long, 32 oz., combination English/Metric graduations, inches and 1/16 inches on one side and centimeters and 2 millimeters subdivisions on the other side.
<b>401A373</b>	Plumb Bob - brass, outage, for determining tank outage rather than contents, 3/4 inches square, 12 inches long, 32 oz., English graduations, inches and 1/16 inches subdivisions.
<b>401A374</b>	Plumb Bob - brass, inage, 5/8 inches square, 12 inches long, 23 oz., graduated in inches and 1/8 inches, short tapered point and serrated on one side.
<b>401A376</b>	Plumb Bob- brass, outage,for determining tank outage rather than contents, 3/8 by 1 inch rectangular, 12 inches long, 21.8 oz., combination English/Metric graduations, inches and 1/16 inches on one side and centimeters and 2 millimeters subdivisions on the other side.
<b>401A377</b>	Plumb Bob - brass, outage, for determining tank outage rather than contents, 3/8 by 1 inch rectangular, 12 inches long, 21.8 oz., English graduations, inches and 1/16 inches subdivisions.
<b>401A385</b>	Plumb Bob - Brass, inage, 1/4 inch by 1 inch rectangular, 25 inches long, 30 oz. graduated in inches and 1/8 inches.
<b>401B388</b>	Plumb Bob - brass, one inch round with short tapered point with removable screw tip point of Ampco metal, which is similar to brass but harder, serrated on one side, graduated combination English/Metric graduations, inches and 1/8 inches on one side and centimeters and 2 millimeters subdivisions on the other side.
<b>401B389</b>	Plumb Bob - brass, one inch round with short tapered point" with removable screw tip point of Ampco metal, which is similar to brass but harder, serrated on on one side, graduated in inches and 1/8 inches.

## THERMOBOBS, Inches

A six inch hollowed brass plumb bob graduated in inches and 1/4 inches, with built-in thermometer.

### Complete Units

Catalog Number	Temp. Range °F
<b>401B106</b>	-20 to 120
<b>401B107</b>	20 to 180
<b>401B108</b>	20 to 220

### Refills

Catalog Number	Temp. Range °F
<b>401B112</b>	-20 to 120
<b>401B113</b>	20 to 180
<b>401B114</b>	20 to 220



## THERMOBOBS, Centimeters

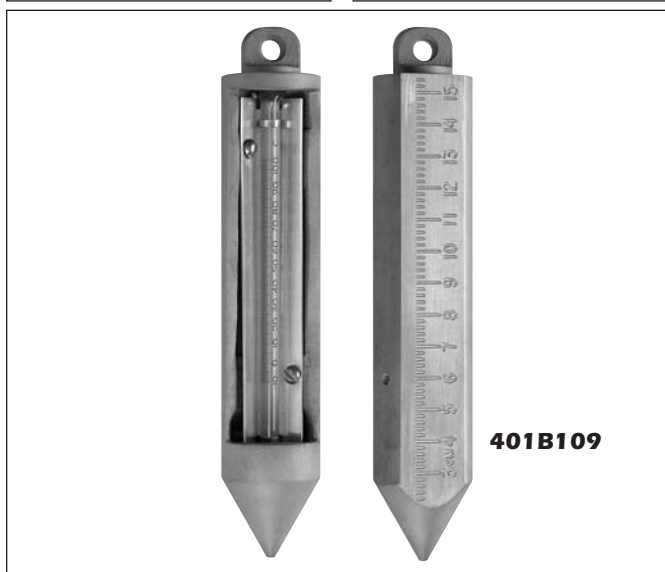
A six inch hollowed brass plumb bob graduated in centimeters and 2 millimeter subdivisions, with built-in thermometer.

### Complete Units

Catalog Number	Temp. Range °C
<b>401B109</b>	-30 to 50
<b>401B110</b>	-10 to 85
<b>401B111</b>	-10 to 105

### Refills

Catalog Number	Temp. Range °C
<b>401B115</b>	-30 to 50
<b>401B116</b>	-10 to 85
<b>401B117</b>	-10 to 105





## WIPER-Gauging Tape

- 401A118** "Little Joe"
- 401A193** Rubber cylinder and core.
- 401A194** Rubber cylinder, core, screws and nuts.

## GAUGING PASTE



- 401A119** Kolor Kut, water indicating, 12 tubes per case.



- 401A120** Kolor Kut, gasoline indicating, 12 jars per case.

## GAUGING PASTE, Modified

Alcohol additives are completely soluble in fuels in all proportions when they are water-free, but relatively small amounts of water can cause separation of alcohol from the fuel. Alcohol prefers water over hydrocarbons and will absorb water to a point that it is insoluble in fuel and cause phase separation. At this point the mixture settling to the bottom of the storage tank is predominantly alcohol. The alcohol in this phase separated solution masks the water from the standard water finding paste.

- 401A397** Kolor Kut, modified water indicating (M-3)  
2.5 oz jars, 12 tubes per case.



## TANK STRAPPING EQUIPMENT

Item	Catalog Number	Description
1	<b>401A121</b> (100') <b>401A122</b> (200')	Tape, strapping, chrome clad 1/4" graduated in feet and decimal feet. Four arm reel with lock handle.
2	<b>401A124</b> (100') <b>401A125</b> (200')	Refill Refill
3	<b>401A127</b>	Stencils, interlocking 4", 0-9
4	<b>401A128</b>	Stencils, interlocking 4", letters
5	<b>401A129</b>	Stencils, interlocking 2", 0-9
6	<b>401A130</b>	Stencils, interlocking 2", letters
7	<b>401A131</b>	Magnet
8	<b>401A132</b>	Paint, stencil, spray, black
9	<b>401A133</b>	Paint, stencil, spray, red
10	<b>401A134</b>	Paint, stencil, spray, white
11	<b>401A135</b>	Paint, stencil, spray
12	<b>401A136</b>	Handle, tension, tape
13	<b>401A137</b>	Ring, tape
14	<b>401A138</b>	Rule, 6'
15	<b>401A139</b>	Handle, clamp
16	<b>401A140</b>	Awl 6"
17	<b>401A141</b>	Caliper, inside 6"
18	<b>401A142</b>	Caliper, outside 6"
19	<b>401A143</b>	Dividers, spring 6"
20	<b>401A144</b>	Gauge, depth
21	<b>401A145</b>	Trammels 6" pointers
22	<b>401A146</b>	Margin Trowel
23	<b>401A147</b>	Crayon, blue
24	<b>401A148</b>	Tool box, steel

\*Strapping pole see 401B200





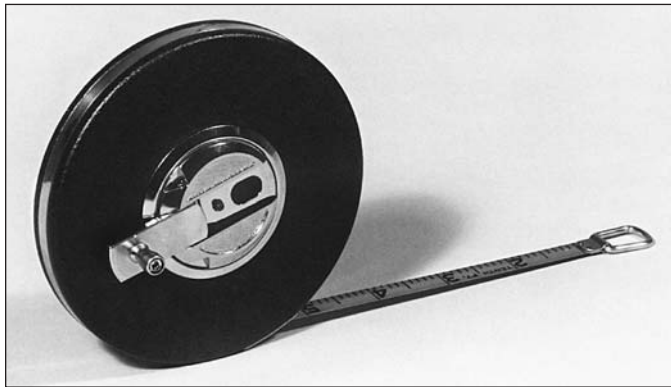
### DERRICK TAPE

For measuring castings or pipe standing in a derrick. Chrome clad, 1/4" x 100' tape, graduated in feet and decimal feet. Fitted with hook ring with ribbed face at zero.

- 401A149** Complete tape
- 401A150** Refill
- 401A151** Hook and ring for derrick tape

### TAPE, MEASURING, Steel, Chrome Clad

Professional quality tape, 3/8 inches wide, black markings on satin chrome finish, housed in a rugged, vinyl-covered steel case, with easy action metal winding drums.



#### Tape, Graduated in feet, 10ths and 100ths

Complete tape	Refill	Length Feet
<b>401A152</b>	<b>401A156</b>	50
<b>401A154</b>	<b>401A158</b>	100

#### Tape, Graduated in feet, inches and 8ths

Complete tape	Refill	Length Feet
<b>401A160</b>	<b>401A164</b>	50
<b>401A162</b>	<b>401A166</b>	100

### HOOK, Tape

For above measuring tapes. Easily attached or removed. Zero falls at inside of hook.

- 401A168** Hook for 3/8" wide tape.



### DISPENSER, PUMP

For solvent to dilute the oil sample and/or cleaning gauging and testing equipment. 32 ounce capacity.

**401B178**



### GLOVES

Neoprene coated, knit lined and super-flexible. Dipped rough finish makes handling of wet surfaces safe and easy. Job fitted for handling in oil, solvents, caustics and alcohols.

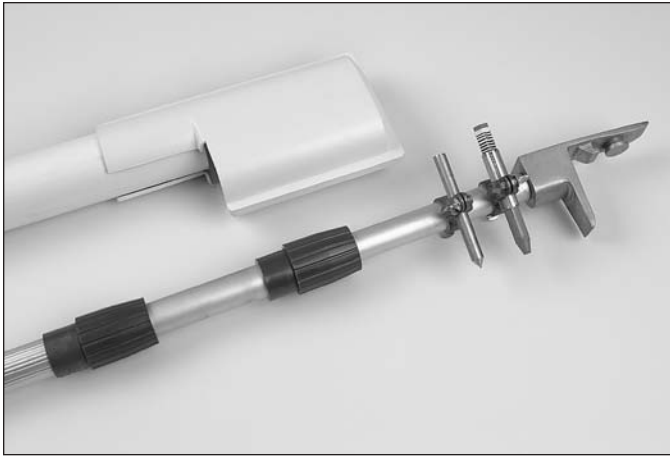
Catalog Number	Size
<b>401A179</b>	Small
<b>401A180</b>	Medium
<b>401A181</b>	Large
<b>401A182</b>	Extra Large



### DRAFT SURVEY T-BAR

Used for outage measurements for draft calculations.

**401A372**



### TANK STRAPPING POLE

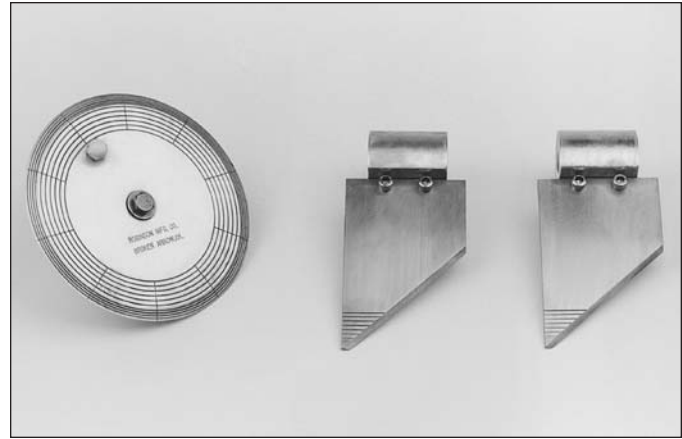
Telescopic pole that requires no assembly. It is constructed of aluminum made up in three six foot sections with the strapping head, scribe and chalk holder attached to the last section. Permits the strapping of the tank from the ground. With the use of the scribe and chalk the height location of each tank ring that is to be measured is marked. The strapping line ring is attached to the strapping head and the strapping line is walked around the tank. The line is then moved into position over the marks with the use of the fingers on the strapping head. Weight 3-1/2 lbs., Length 80".

- 401B200** Strapping pole complete.
- 401B205** Chalk holder.
- 401B209** Scribe holder.

### CARRYING CASE, Strapping Pole

Constructed of PVC for easy carrying and storage. Protects the pole from damage. Weight 14 lbs., Length 86".

- 401B201**



### INCRUSTATION POLE

For determining the incrustation thickness of crude oil storage tanks. Consists of a strapping pole, rotating disc, and two shears. The rotating disc and shears are constructed of brass. The disc and shears are engraved with 10 depth indicating marks. Starting at the edge of the instrument, 4 marks at 1/16" intervals and 6 marks at 1/8" intervals. The rotating disc and/or shears attach to the strapping pole and are passed over the inside vertical tank walls at various locations. The build-up is recorded and reported as required.

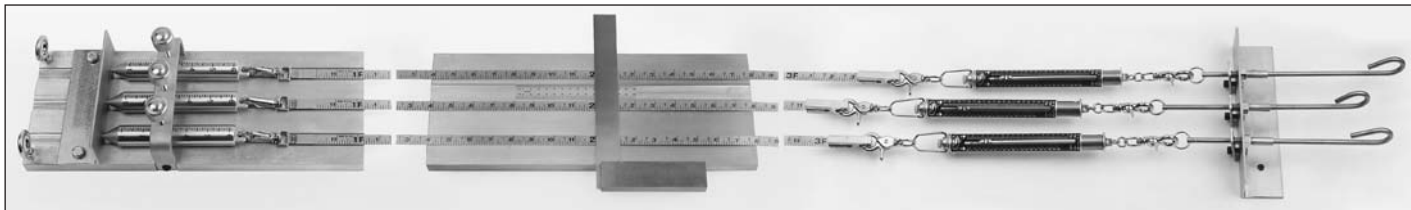
- 401B222** Incrustation Kit, Pole, Disc and Two Shears.
- 401B223** Disc only.
- 401B224** Two Shears only.
- 401B235** Pole only.



### GAUGE TAPE VERIFICATION KIT

Used to verify working gauge tapes against a certified gauge tape. One or two tapes can be verified at the same time. It can be a permanent or temporary installation. The kit comes complete with a verified dead weight that is calibrated at 10 pounds with an accuracy of +/- .20 of an ounce. Manual of Petroleum Measurement Standards, Chapter 3, Section 1A.

- Model 401B306**



## HYDROMETERS

Made in accordance with API specifications and calibrated to API scale Modulus 141.5 at 60°F. All hydrometers are of precision grade. The hydrometers are constructed with a solid alloy ballast and designed to permit quick penetration to the settling point, creating no air bubbles. Scale is sealed in place by a red glass strap fused to the stem and at the top of the gravity scale even with the last number line.

### CERTIFIED HYDROMETER

**Certified hydrometers are available upon request.**

Hydrometers are certified at three points on the hydrometer scale as specified by NIST (formerly NBS). On the combined form, the thermometer is provided with a 60°F test point correction. Each instrument is accompanied by a document of certification that includes the correction of each point tested.



### HYDROMETERS, API, Combined. Thermometer in the bottom. Length 15"

Catalog Number	Range Deg.	Division	Temp. Range °F
403A021	-1 to 11	0.1	0 to 150
403A022	9 to 21	0.1	0 to 150
403A023	19 to 31	0.1	0 to 150
403A024	29 to 41	0.1	0 to 150
403A025	39 to 51	0.1	0 to 150
403A026	49 to 61	0.1	0 to 150
403A027	59 to 71	0.1	0 to 150
403A028	69 to 81	0.1	0 to 150
403A029	79 to 91	0.1	0 to 150
403A030	89 to 101	0.1	0 to 150
403A032	29 to 45	0.1	0 to 150
403A033	10 to 30	0.2	0 to 150
403A034	20 to 40	0.2	0 to 150
403A035	30 to 50	0.2	0 to 150
403A036	40 to 60	0.2	0 to 150
403A037	50 to 70	0.2	0 to 150
403A038	60 to 80	0.2	0 to 150
403A039	70 to 90	0.2	0 to 150
403A040	80 to 100	0.2	0 to 150
403A041	10 to 45	0.5	0 to 150
403A042	45 to 90	0.5	0 to 150
403A043	30 to 90	1.0	0 to 150
403A045	-1 to 11	0.1	30 to 220
403A046	9 to 21	0.1	30 to 220
403A047	19 to 31	0.1	30 to 220
403A048	29 to 41	0.1	30 to 220
403A049	39 to 51	0.1	30 to 220
403A050	49 to 61	0.1	30 to 220
403A051	59 to 71	0.1	30 to 220
403A052	69 to 81	0.1	30 to 220
403A053	79 to 91	0.1	30 to 220

### HYDROMETERS, API Combination Form. Thermometer in Stem. Length 15"

Catalog Number	Range Deg.	Division	Temp. Range °F
403A054	-1 to 11	0.1	30 to 220
403A055	9 to 21	0.1	30 to 220
403A056	19 to 31	0.1	30 to 220
403A057	29 to 41	0.1	30 to 220
403A058	39 to 51	0.1	30 to 220
403A059	49 to 61	0.1	30 to 220
403A060	10 to 30	0.2	30 to 220
403A061	20 to 40	0.2	30 to 220
403A062	30 to 50	0.2	30 to 220

### HYDROMETERS, API, Combination Form. Thermometer in the Bottom. Length 7 1/2"

Catalog Number	Range Deg.	Division	Temp. Range °F
403A063	-1 to 11	0.2	20 to 130
403A064	9 to 21	0.2	20 to 130
403A065	19 to 31	0.2	20 to 130
403A066	29 to 41	0.2	20 to 130
403A067	39 to 51	0.2	20 to 130
403A068	49 to 61	0.2	20 to 130
403A069	59 to 71	0.2	20 to 130
403A070	69 to 81	0.2	20 to 130
403A071	79 to 91	0.2	20 to 130
403A072	89 to 101	0.2	20 to 130
403A073	10 to 30	0.5	20 to 130
403A074	20 to 40	0.5	20 to 130
403A075	30 to 50	0.5	20 to 130
403A076	40 to 60	0.5	20 to 130
403A077	50 to 70	0.5	20 to 130
403A078	60 to 80	0.5	20 to 130
403A079	70 to 90	0.5	20 to 130
403A080	80 to 100	0.5	20 to 130
403A081	10 to 45	1.0	20 to 130
403A082	45 to 90	1.0	20 to 130



### HYDROMETERS, API, Plain, Length 13"

Catalog Number	Range Deg.	Division
403A001	-1 to 11	0.1
403A002	9 to 21	0.1
403A003	19 to 31	0.1
403A004	29 to 41	0.1
403A005	39 to 51	0.1
403A006	49 to 61	0.1
403A007	59 to 71	0.1
403A008	69 to 81	0.1
403A009	79 to 91	0.1
403A010	89 to 101	0.1

**HYDROMETERS, Specific Gravity, Plain Form for general testing of heavy liquids. Temperature of Standardization 60/60°F**

Catalog Number	Range	Divisions	Length
<b>403A090</b>	1.000 to 1.220	.002	12"
<b>403A091</b>	1.000 to 2.000	.01	12"
<b>403A092</b>	1.000 to 1.225	.002	6"

**HYDROMETER, Specific Gravity LPG. Combined Form. ASTM No. 101H. 360mm**

Catalog Number	Range Deg.	Divisions	Temp. Range °F
* <b>403A093</b>	0.500 to 0.650	0.001	30 to 90
<b>403A094</b>	0.500 to 0.650	0.001	0 to 120
<b>403A235</b>	0.450 to 0.650	0.002	30 to 120

\* For use in 407B046, Pressure Hydrometer Cylinder

**HYDROMETER, Brine**

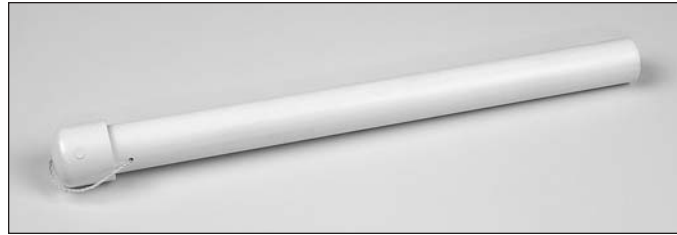
Catalog Number	Range Deg.	Divisions	Length
<b>403A095</b>	0 to 100%	1%	12"

**HYDROMETERS, ASTM DENSITY, Kg/m<sup>3</sup> Combined Form. Temperature Standardization 15°C Thermometer in Body. Length 380mm**

Catalog Number	ASTM Number	Range kg/m <sup>3</sup>	Div. kg/m <sup>3</sup>	I Body Therm. Rge.
<b>403A236</b>	300H	600/650	0.5	-20/65°C
<b>403A237</b>	301H	650/700	0.5	-20/65°C
<b>403A238</b>	302H	700/750	0.5	-20/65°C
<b>403A239</b>	303H	750/800	0.5	-20/65°C
<b>403A240</b>	304H	800/850	0.5	-20/65°C
<b>403A241</b>	305H	850/900	0.5	-20/65°C
<b>403A242</b>	306H	900/950	0.5	-20/65°C
<b>403A243</b>	307H	950/1000	0.5	-20/65°C
<b>403A244</b>	308H	1000/1050	0.5	-20/65°C
<b>403A245</b>	309H	1050/1100	0.5	-20/65°C

**HYDROMETERS, ASTM DENSITY, Kg/m<sup>3</sup> Plain Form. Temperature Standardization 15°C Length 330mm**

Catalog Number	ASTM Number	Range kg/m <sup>3</sup>	Div. kg/m <sup>3</sup>
<b>403A236</b>	311H	600/650	0.5
<b>403A247</b>	312H	650/700	0.5
<b>403A248</b>	313H	700/750	0.5
<b>403A249</b>	314H	750/800	0.5
<b>403A250</b>	315H	800/850	0.5
<b>403A251</b>	316H	850/900	0.5
<b>403A252</b>	317H	900/950	0.5
<b>403A253</b>	318H	950/1000	0.5
<b>403A254</b>	319H	1000/1050	0.5
<b>403A255</b>	320H	1050/1100	0.5



**CASE, HYDROMETER, Auxiliary**

For field storage of extra, spare or seldom used (certified) hydrometers. This case will protect the hydrometer from shock or rough handling. Constructed of heavy wall PVC tubing, fully cushioned with a felt liner.

Catalog Number	Capacity	Size
<b>403B086</b>	Single	15"
<b>403B087</b>	Single	7-1/2"



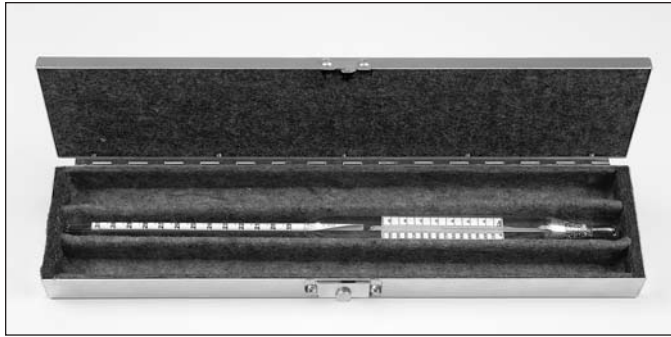
**403B088** Spring loaded hinge. 16-1/2 x 4-3/4 x 2

**CASE, HYDROMETER, Three Place. Flip Top**

For carrying three 15 inch hydrometers. It is made of plastic with separate compartments, each compartment lined with felt. The lid has a 30° angle cut, which allows it to arc away from the hydrometers when open, thus preventing stem breakage. There are two models to choose from. The model (**403B088**) above has a spring loaded hinge that holds the lid open or closed under spring tension and the model below (**403B089**) is equipped with a standard hinge and a positive tension-type latch which holds the lid securely closed until released.



**403B089** Positive tension latch. 16-1/2 x 4-3/4 x 2



**CASE, HYDROMETER, Three Place. Aluminum**

For carrying three 15 inch hydrometers. Suite case style.  
Dimensions 15-3/4" x 4-5/8" x 1-3/8", Weight 1-1/2 lbs.

**Catalog Number 403B092**



**401B171**

**HEATER, HYDROMETER Gravity Sample.**

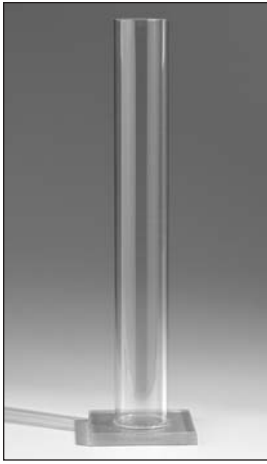
For low gravity oil where the hydrometer gravity test cannot be made without heating the oil sample. Two models are available.

Catalog Number	Type Mounting	Heating Source	Size In's	Weight Lbs.
<b>403B171</b>	Floor	12 VDC	16 x 7	7
<b>403B172</b>	Floor	120 VAC	16 x 7	7

**CYLINDER, Replacement.**

**403B114** Replacement cylinder for floor mounted units.  
**Aluminum.**

**403A261** Replacement cylinder for floor mounted units.  
**Glass.**



**CYLINDER, HYDROMETER, Plastic.**



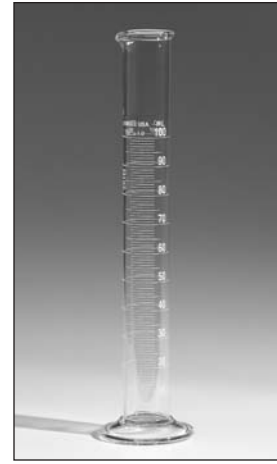
**CYLINDER, HYDROMETER, Brass.**



**CYLINDER, HYDROMETER, Glass with pour spout.**



**CYLINDER, GRADUATED, Plastic.**



**CYLINDER, GRADUATED, Glass.**

**CYLINDER, HYDROMETER, Plastic**

Ideal for use in testing the gravity of crude oil. Transparent and light weight.

Catalog Number	Cylinder ID	Height
<b>403B096</b>	1 - 3/8"	15"
<b>403B097</b>	1 - 7/8"	8"
<b>403B098</b>	1 - 7/8"	15"
<b>403B256</b> (with pour spout)	1 - 7/8"	15"

**CYLINDER, HYDROMETER, Brass**

Catalog Number	Cylinder ID	Height
<b>403B099</b>	1 - 7/8"	15"

**CYLINDER, HYDROMETER, Glass with pourout.**

Catalog Number	Cylinder ID	Height	Capacity
<b>403A100</b>	38 mm	375 mm	340 ml
<b>403A101</b>	50 mm	375 mm	600 ml

**CYLINDERS, GRADUATED, Plastic**

Calibrated to contain/deliver at 20°C. Single molded-in metric scale, transparent with pour-out spout. Compatible with virtually any chemical for typical brief use. Shatterproof with large base.

Catalog Number	Capacity ml	Sub-Division ml
<b>403A102</b>	100	1
<b>403A103</b>	500	5
<b>403A104</b>	1000	10
<b>403A105</b>	2000	20

**CYLINDERS, GRADUATED, Glass.**

Calibrated to deliver. Single metric scale with 0 at the bottom and total graduated capacity at the top line. With pour out spout.

Catalog Number	Capacity ml	Sub-Division ml
<b>403A106</b>	25	1
<b>403A107</b>	50	1
<b>403A108*</b>	100	1
<b>403A109</b>	500	5
<b>403A110</b>	1000	10
<b>403A111</b>	2000	20

\* ASTM distillation test

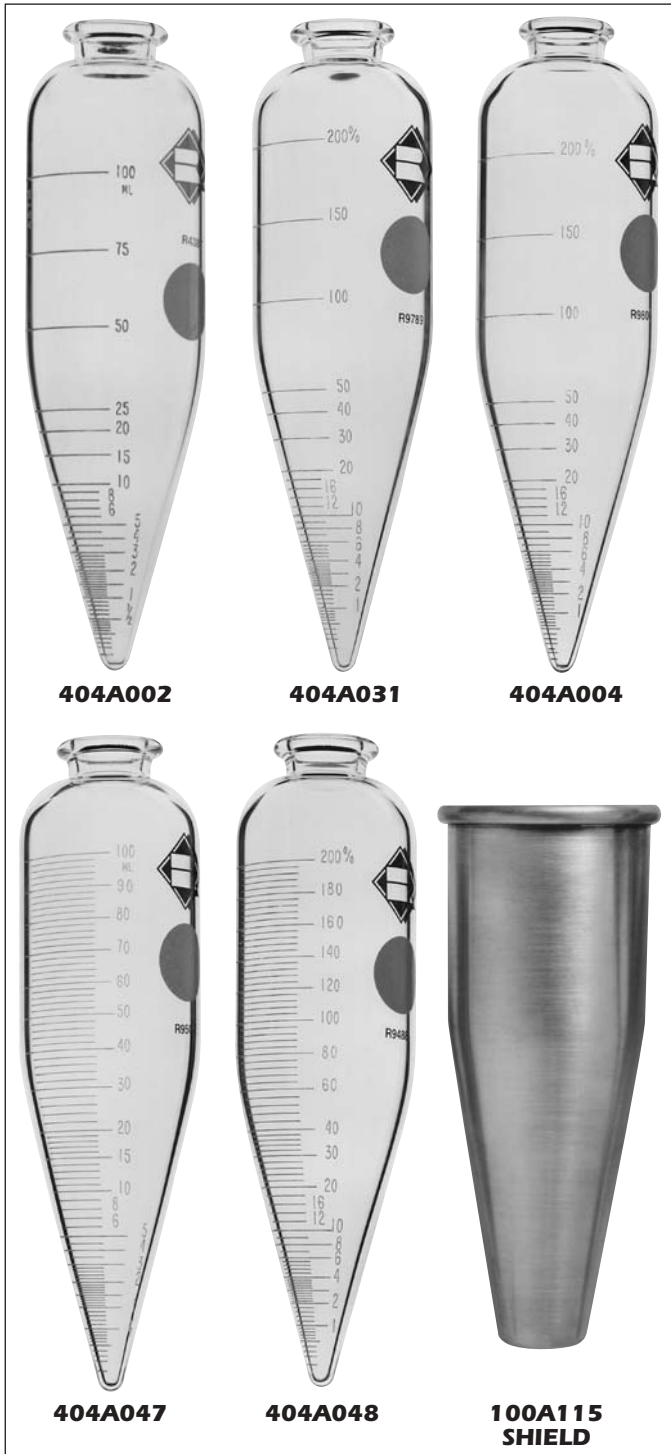


**WIND JAMMER, hydrometer cylinder**

Clear plastic cylinder that protects the hydrometer stem from the wind, allowing more accurate gravity readings. Slides over the hydrometer cylinder and gives 360 degree protection. The wind will not affect the hydrometer stem. The reading can be taken from any side.

**Catalog Number 403A257**

# CENTRIFUGE TUBES



## **CENTRIFUGE TUBE, 100 ml., Short Cone, Etched**

Made to API/ASTM standards and graduated in percent. The divisions of graduation are 0 to 0.5 ml., in 0.05 ml., 0.5 to 2 ml. in 0.1 ml., 2 to 3 ml. in 0.2 ml., 3 to 5 ml. in 0.5 ml., 5 to 10 ml. in 1 ml., 10 to 25 in 5 ml. and at 50, 75 and 100 ml.

**Catalog Number 404A002**

## **CENTRIFUGE TUBE, 100 ml. Short Cone, 200%, Etched**

Made to API/ASTM standards and graduated in 200 parts to permit the direct reading of percentage of S&W in the test sample containing equal volumes of crude oil and diluent. The divisions of graduation are 0 to 1% in 0.1%, 1 to 4% in 0.2%, 4 to 6% in 0.4%, 6 to 10% in 1%, 10 to 20% in 2%, and at 30%, 40%, 50%, 100%, 150% and 200%.

**Catalog Number 404A031**

## **CENTRIFUGE TUBE, 100 ml. Short Cone 200%, Etched**

Made to API/ASTM standards and graduated in 200 parts to permit the direct reading of percentage of S&W in the test sample containing equal volumes of crude oil and diluent. The divisions of graduation are 0 to 0.2% in 0.05%, from 0.2% to 1% in 0.1%, 1 to 4% in 0.2%, 4 to 6% in 0.4%, 6 to 10% in 1%, 10 to 20% in 2% and at 30%, 40%, 50%, 100%, 150% and 200%.

**Catalog Number 404A004**

## **CENTRIFUGE TUBE, 100 ml. Short Cone, Etched**

Made to API/ASTM standards and graduated in percent. The divisions of graduation are 0 to 0.5 ml. in 0.05 ml., 0.5 to 2 ml. in 0.1 ml., 2 to 3 ml. in 0.2 ml., 3 to 5 ml. in 0.5 ml., 5 ml. to 20 ml. in 1 ml. and 20 to 100 ml. in 2 ml.

**Catalog Number 404A047**

## **CENTRIFUGE TUBE, 100 ml. Short Cone 200%, Etched**

Made to API/ASTM standards and graduated in 200 parts to permit the direct reading of percentage of S&W in the test sample containing equal volumes of crude oil and diluent. The divisions of graduation are 0 to 1% in 0.1%, 1 to 4% in 0.2%, 4 to 6% in 0.4%, 6 to 10% in 1%, 10 to 40% in 2% and 40 to 200% in 4%.

**Catalog Number 404A048**

### **CERTIFIED CENTRIFUGE TUBES** Certified tubes are available upon request.

Certified tubes are volumetrically checked at 15 points.

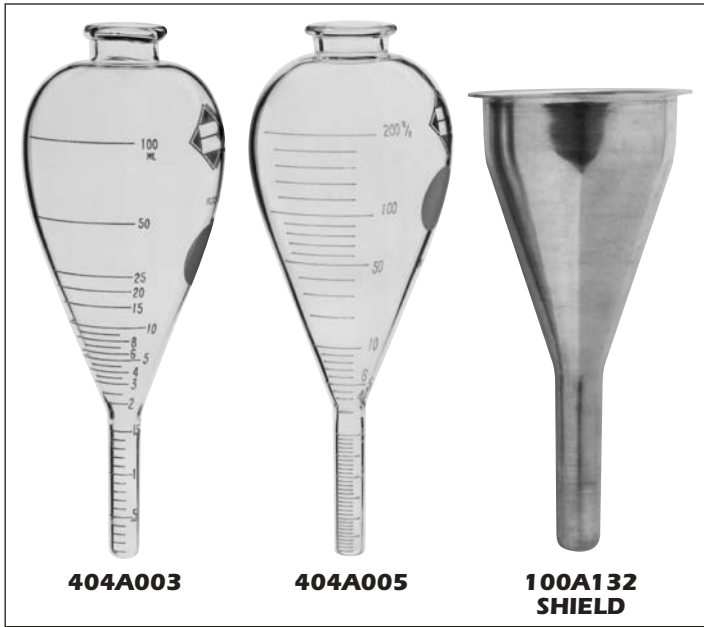
There are two types of certified tubes available:

1. Factory certified accompanied by a certificate of accuracy.  
(add FV to the part number when ordering)
2. Independent laboratory certified accompanied by an actual value certification.  
(add C15 to the part number when ordering)



All of our 100 ml. Short Cone tubes are now available with threads.

Please call for details.



**CENTRIFUGE TUBE, 100 ml., Pear Shape**

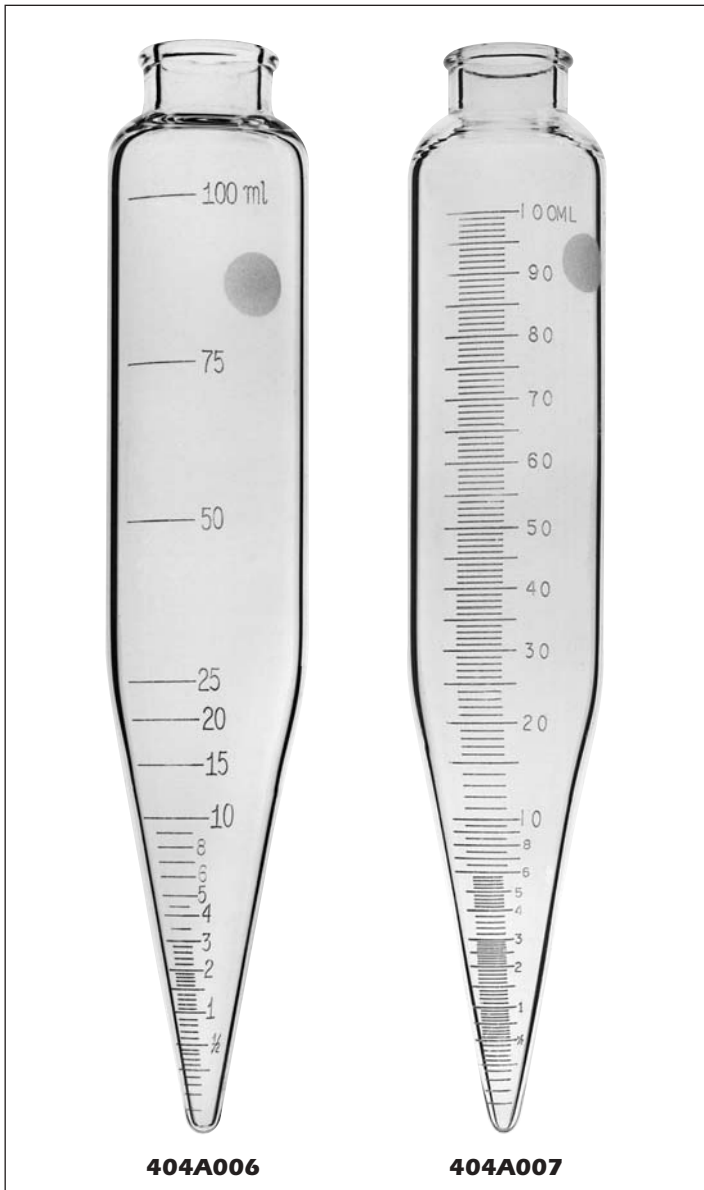
Made to API/ASTM standards and graduated in percent. The divisions of graduation are, in the stem 0 to 1.5 ml. in 0.1 ml., the body from 1.5 to 5 ml. in 0.5 ml., 5 to 10 ml. in 1 ml. and at 15, 20, 25, 50 and 100 ml.

**Catalog Number 404A003**

**CENTRIFUGE TUBE, 100 ml. Pear Shape 200%**

Made to API/ASTM standards and graduated in 200 parts to permit the direct reading of percentage of S&W in the test sample containing equal volumes of crude oil and diluent. The divisions of graduation are, in the stem 0 to 3% in 0.1%, the body from 3 to 5% in 0.5%, 5 to 10% in 1%, 10 to 100% in 10%, from 100 to 200% in 20%.

**Catalog Number 404A005**



**CENTRIFUGE TUBE, 100 ml. Long Cone, 8 inch**

Made to API/ASTM standards and graduated in percent. The divisions of graduation are 0 to 0.5 ml. in .05 ml., 0.5 to 2 ml. in 0.1 ml., 2 to 3 ml. in 0.2 ml., 3 to 5 ml. in 0.5 ml., 5 to 10 ml. in 1.0 ml., 10 to 25 ml. in 5 ml. and 25 to 100 ml. in 25 ml.

**Catalog Number 404A006**

**CENTRIFUGE TUBE, 100 ml. Long Cone, 8 inch California Style**

Made to API/ASTM standards and graduated in percent. The divisions of graduation are 0 to 1 ml. in 0.05 ml., 1 to 3 ml. in 0.10 ml., 3 to 6 ml. in 0.20 ml., 6 to 10 ml. in 0.50 ml. and 10 to 100 ml. in 1.0 ml.

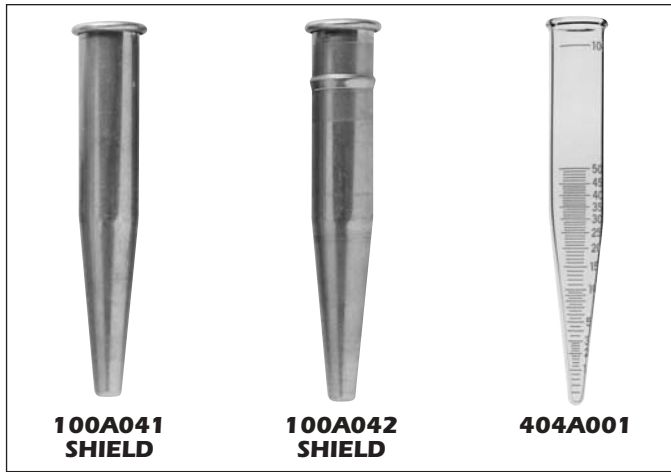
**Catalog Number 404A007**

**WEATHERING TUBE, 100 ml. Long Cone, 8 inch**

For determination of residues in Liquefied petroleum gases (LP). Made with a 3 mm vent hole located 180 degrees from the front of the tube. ASTM method 1837 and D2158.

Made to API/ASTM standards and graduated in percent. The divisions of graduation are 0 to 0.5 ml. in 0.05 ml., 0.5 ml. to 3.0 ml. in 0.1 ml., 3.0 to 5.0 ml. in 0.5 ml., 5.0 ml. to 100 ml. in 1.0 ml.

**Catalog Number 404A038**



**CENTRIFUGE TUBE, 12.5 ml.**

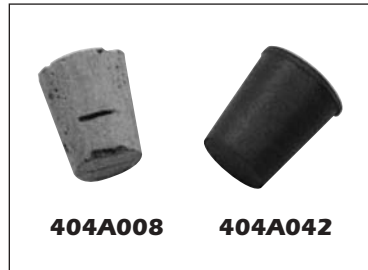
Made to API/ASTM standards and graduated in percent. The divisions of graduation are 0 to 3 percent in 0.2 percent, from 3 to 10 percent in 0.5 percent, from 10 to 50 percent in 1.0 percent and at 100 percent.

**Catalog Number 404A001**

**STOPPERS, Centrifuge Tubes**

For use with the 100 ml. glass tubes. Prevents fluids from spilling.

**404A008** Cork  
**404A042** Neoprene



**BRUSHES, Centrifuge Tubes**

**404A040** Short cone  
**404A041** 12.5 ml.

**BOTTLES**



**BOTTLES, Plastic - Round**

Low density polyethylene bottles. Translucent, impact resistance and leak-proof screw closures.

**Narrow Mouth**

Catalog Number	Size ml/oz.	Color	Case lot
<b>404A009</b>	250/8	Translucent	72
<b>404A010</b>	500/6	Translucent	48
<b>404A011</b>	1000/32	Translucent	24
<b>404A012</b>	4 lt./gal.	Translucent	6

**Wide Mouth**

Catalog Number	Size ml/oz.	Color	Case lot
<b>404A029</b>	125/4	Translucent	72
<b>404A013</b>	250/8	Translucent	72
<b>404A014</b>	500/16	Translucent	48
<b>404A015</b>	1000/32	Translucent	24



**BOTTLES, Plastic - Rectangular**

Low density polyethylene bottles. Translucent or amber, impact resistance and leak-proof screw closures.

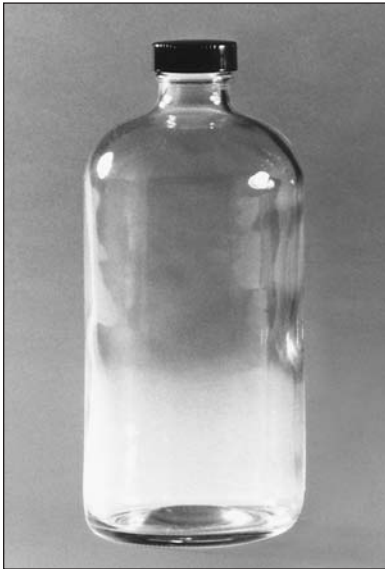
Catalog Number	Size ml/oz.	Color	Case lot
<b>404A052</b>	500/16	Translucent	24
<b>404A053</b>	500/16	Amber	24



**WASH BOTTLE**

Wide-mouth for fast easier filling. Contents can be dispensed without tipping. Closure is leak-proof.

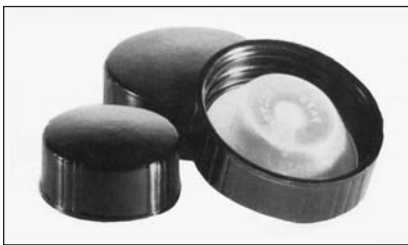
- 404A016** 500ml/16oz
- 404A019** 1000ml/32oz



**BOTTLES, Glass Round**

**Clear Boston Rounds - Narrow Mouth**

Catalog Number	Size oz.	Closure Type	Case Lot
<b>404B017</b>	16	Screw, Plastic	12
<b>404B018</b>	32	Screw, Plastic	12



**POLYSEAL CAP, black phenolic**

- 404A046** 32oz. Boston Round & 4oz. French Square
- 404A051** Centrifuge Tube



**BOTTLES, Glass French Squares**

**Wide Mouth**

Catalog Number	Size oz.	Plastic Cap	Case Lot
<b>404B021</b>	1	Screw	280
<b>404B022</b>	4	Screw	96
<b>404B023</b>	8	Screw	84
<b>404B024</b>	32	Screw	24

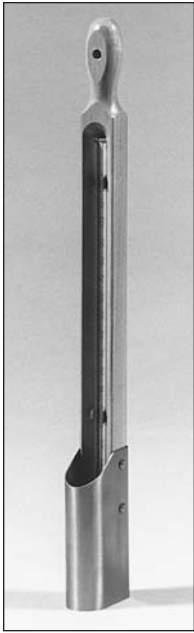


**BOTTLES, Glass Prescription**

**Oval Clear - Graduated**

Catalog Number	Size oz.	Plastic Cap	Case Lot
<b>404B025</b>	6	Screw	48

# TANK THERMOMETERS



## THERMOMETER, TANK Woodcase

Tank thermometer meets all API and ASTM specifications. This thermometer case is designed for hand use in testing the temperature of crude oil in an open tank. It is equipped with spring clips for replacement of the thermometers.

### Woodback - Standard Case

Catalog Number	Temp. Range	Divisions Deg.
<b>405B001</b>	-30 to 120°F	1°F
<b>405B002</b>	0 to 180°F	1°F
<b>405B003</b>	20 to 220°F	1°F
<b>405B004</b>	170 to 500°F	2°F
<b>405B005</b>	-34 to 49°C	.5°C
<b>405B006</b>	-18 to 82°C	.5°C
<b>405B007</b>	0 to 105°C	.5°C

### CASE, Only-Woodback

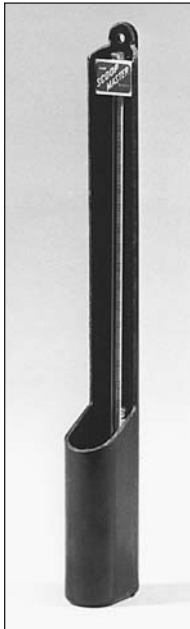
Catalog number **405A015** Standard Cup

## THERMOMETER, TANK "Scoopmaster"

The unit is of single mold construction, black, heat resistant plastic. Impervious to hydrocarbons and petroleum products.

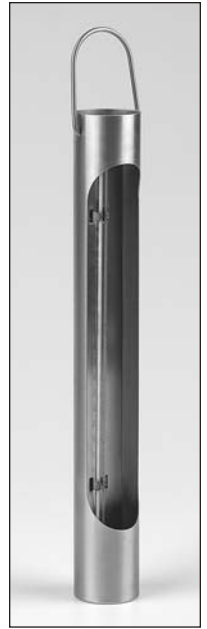
### "Scoopmaster"

Catalog Number	Temp. Range	Divisions Deg.
<b>405B017</b>	-30 to 120°F	1°F
<b>405B018</b>	0 to 180°F	1°F
<b>405B019</b>	20 to 220°F	1°F
<b>405B020</b>	-34 to 49°C	5°C
<b>405B021</b>	-18 to 82°C	5°C
<b>405B022</b>	0 to 105°C	5°C



### CASE, Only-"Scoopmaster"

Catalog number **405A023** Scoopmaster case



## THERMOMETER, TANK Stainless Steel Cup Case

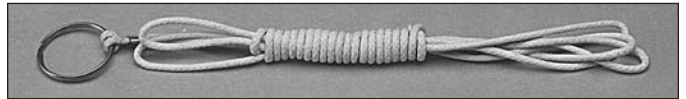
For use in corrosive materials, 1-3/4" OD x 13" long, with stainless steel spring slips for ease of thermometer replacement.

### Stainless Steel Cup

Catalog Number	Temp. Range	Divisions Deg.
<b>405B553</b>	-30 to 120°F	1°F
<b>405B554</b>	0 to 180°F	1°F
<b>405B555</b>	20 to 220°F	1°F
<b>405B556</b>	170 to 500°F	2°F
<b>405B557</b>	-34 to 49°C	.5°C
<b>405B558</b>	-18 to 82°C	.5°C
<b>405B559</b>	-7 to 105°C	.5°C

### CASE, Only-Stainless Steel Cup

Catalog number **405B529**



### CORD

For lowering the tank thermometer into tank. Cotton cord 1/8" diameter, complete with ring from which to hang the tank thermometer.

Catalog number **405B024** Specify length.



### REFILLS - Thermometer, Tank

Refills fit all three units, Woodback, Scoopmaster, and the Stainless Steel Cup.

Catalog Number	Temp. Range	Divisions Deg.
<b>405A025</b>	-30 to 120°F	1°F
<b>405A026</b>	0 to 180°F	1°F
<b>405A027</b>	20 to 220°F	1°F
<b>405A028</b>	170 to 500°F	2°F
<b>405A029</b>	-34 to 49°C	.5°C
<b>405A030</b>	-18 to 82°C	.5°C
<b>405A031</b>	-7 to 105°C	.5°C

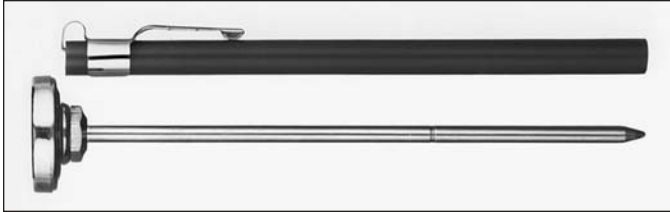


## BI-METAL THERMOMETERS

Bi-Metal thermometers are made of stainless steel and are corrosion resistant to most chemicals. The dial is easy to read and is made with a bi-metallic helix coil dampened with silicone for minimum pointer vibration.

### THERMOMETERS, Bi-Metal, Pocket Type with Case

This handy pocket size thermometer has a 1" head and a 5" stem, with a recalibration feature.



Catalog Number	Temp. Range °F	Divisions Deg. °F
405A032	25 to 125	1
405A033	-40 to 180	2
405A034	0 to 220	2



### THERMOMETER, Bi-Metal - Laboratory Type

This thermometer has a 1-3/4" head and standard stem length of 5" or 8". Unit includes an adjustable clamp, a manual pre-set indicating pointer and a recalibration feature.

Catalog Number 5" stem	Catalog Number 8" stem	Temp. Range °F	Division Deg. °F
405A035	405A038	-40 to 160	2
405A036	405A039	0 to 220	2
405A037	405A040	50 to 500	5



### THERMOMETER, Bi-Metal - General Purpose Back Connected

Stainless steel construction, 1-3/4" indicator dial, corrosion resistant to most chemicals. Bi-Metallic element dampened with silicone for minimum pointer vibration and maximum heat transfer. Standard 1/4" NPT connection, available in 1/8" NPT.

Catalog Number 2 1/2" stem	Catalog Number 4" stem	Catalog Number 6" stem	Temp. Range °F	Division Deg. °F
405A041	405A045	405A049	-40 to 160	2
405A042	405A046	405A050	0 to 250	2
405A044	405A048	405A052	50 to 500	5



### THERMOMETER, Bi-Metal - Industrial Back Connected

Stainless steel construction, 3 inch dial, stem diameter 0.25 inches, corrosion resistant to most chemicals. Bi-Metallic elements dampened with silicone for minimum pointer vibration and maximum heat transfer. Standard 1/2" NPT connection.

Catalog Number 2 1/2" stem	Catalog Number 4" stem	Catalog Number 6" stem	Temp. Range °F	Division Deg. °F
405A053	405A057	405A061	-40 to 160	2
405A054	405A058	405A062	0 to 250	2
405A056	405A060	405A064	50 to 500	5





**THERMOMETER,  
Bi-Metal, Industrial Bottom Connected**

Stainless steel construction, 3 inch dial, stem diameter 0.25 inches, actuated by super-sensitive bi-metallic helix coil, stem can be located at any position around the entire circumference of the head, 1/2" NPT connection. Can be recalibrated.

Catalog Number 2 1/2" stem	Catalog Number 4" stem	Catalog Number 6" stem	Temp. Range °F	Division Deg. °F
405A065	405A069	405A073	-40 to 160	2
405A066	405A070	405A074	0 to 250	2
405A068	405A072	405A076	50 to 500	5



**THERMOWELLS, Bi-Metal Thermometers**

Designed and manufactured to assure a perfect alignment of the thermometer sensing element, 3/4" x 1/2" NPT. Made of 304 stainless steel.

Catalog Number	Stem Length
405A077	2-1/2"
405A078	4"
405A079	6"

**BUSHING-Thermometer-304 Stainless Steel**

Catalog Number	Size	Rating
405A080	1/4" x 1/2"	3000 psi
405A081	1" x 1/2"	3000 psi



**THERMOMETER, Bi-Metal, Industrial, Bottom Connected, Adjustable Angle**

Head may be turned or tilted to any angle. Stainless steel construction, 5 inch dial, stem diameter 0.25 inches, external calibration, hermetically sealed, 1/2" NPT connection.

Catalog Number 2 1/2" stem	Catalog Number 4" stem	Catalog Number 6" stem	Temp. Range °F	Division Deg. °F
405A497	405A500	405A503	-40 to 160	2
405A498	405A501	405A504	0 to 250	2
405A499	405A502	405A505	50 to 500	5





## DIGITAL TEMPERATURE

Ruggedized to withstand a 10 ft. drop, easy-to-read LCD display, auto power off, data hold and continuous update.

### Specifications:

- Range: -40 to 300°F
- Accuracy:  $\pm 0.2^\circ\text{F}$
- Probe: 5" stem
- Power: Button battery
- Carrying Case: Plastic sheath

**Catalog number 405A168**



## THERMO PROBE TP-7

Designed to provide the operator with an easy and accurate method for temperature readings. Has a temperature range of 14 to 370°F/-10 to 88°C, a platinum RTD temperature sensor, LCD display with back light, low battery indicator, flexible graphite-impregnated teflon cable, stainless steel sensor components and enclosure of high impact plastic. Offered in three cable lengths, 50', 75' and 110'. 13-1/2 x 7-1/2 x 4-1/2 in. Weight 3 lbs with 75' cable. Intrinsically safe for use in hazardous locations Class 1, Div. 1 Groups ABCD

**Catalog number 405A175**



## ELECTRO-THERM DIGITAL TEMPERATURE TESTER

An economical digital temperature tester ideal for field work. Portable and light weight with high-tech features for fast, accurate readings in a wide temperature range.

### Specifications:

- Range: -40 to 300°F / -40 to 150°C
- Resolution: 0.1°F or °C
- Accuracy:  $\pm 0.2^\circ\text{F}$  or °C
- Display: Easy to read, backlighted LCD 4 digits with one decimal point
- Probe: 4 inch, detachable
- Power: 9 volt battery
- Carrying Case: Durable shock resistant plastic
- Size: 9-1/2" x 6-1/2" x 2-1/2" (case closed)
- Weight: 1 lb.

**Catalog number 405A176**

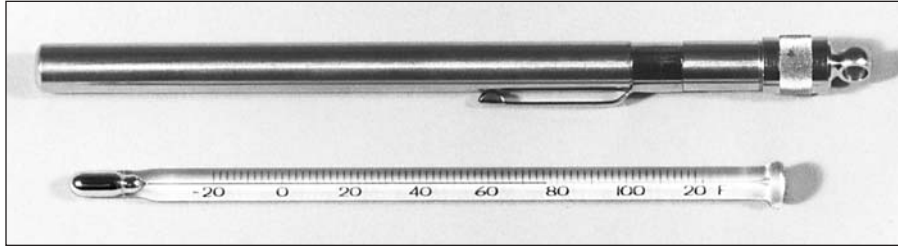


## ONECAL

Specially designed for use in hazardous environment with outstanding characteristics regarding safety, easiness of operation, accuracy reliability and cost efficient maintenance. Has a temperature range of -40 to 325°F/-40 to 163°C, LCD display, FEP jacket cable, stainless steel sensor components, high impact plastic and automatic battery shut off. One reference point calibration. SCS: Surrounding compensation system and CRC: Cable resistance compensation. Offered in three cable lengths, 50', 75' and 110'. Weight 3 lbs with 75' cable. Intrinsically safe for use in hazardous locations Class 1, Div. 1 Groups C&D

**Catalog number 405A178**

**THERMOMETERS, Pocket, Precision, Mercury Filled, Etched stem, Mounted in a aluminum case with a pocket clip, 6 inch length total immersion.**



**Complete Units**

Catalog Number	Temp. Range °F	Division Deg. °F
405B154	-30 to 120	2
405B155	0 to 220	2
405B156	30 to 500	5

**Refills**

Catalog Number	Temp. Range °F	Division Deg. °F
405A157	-30 to 120	2
405A158	0 to 220	2
405A159	30 to 500	5

**Complete Units**

Catalog Number	Temp. Range °C	Division Deg. °C
405B160	-35 to 50	1
405B161	-20 to 105	1
405B162	-2 to 260	3

**Refills**

Catalog Number	Temp. Range °C	Division Deg. °C
405A163	-35 to 50	1
405A164	-20 to 105	1
405A165	-2 to 260	3

**THERMOMETERS, Maximum Registering**

**Complete Units**

Catalog Number	Temp. Range °F	Division Deg. °F
405B549	30 to 220	2
405B550	50 to 500	2

**Refills**

Catalog Number	Temp. Range °F	Division Deg. °F
405A551	30 to 220	2
405A552	50 to 500	2



**NO MERCURY THERMOMETERS**

**PermaTherm® Thermometers**

PermaTherm is a registered trademark of Miller & Weber, Inc.

**Performance** PermaTherm thermometers have precise tolerances, low uncertainty, and quick response time like mercury instruments. Tolerance is the maximum permissible error of the instrument. Uncertainty is the maximum expected error of any reported reading. Response time is the time needed to get a reliable reading.

**Safety** PermaTherm's STB blue liquid is safer than both mercury and most traditional spirit thermometer liquids. The proprietary formula is biodegradable, nontoxic, and nonhazardous.

**Legibility** The dark blue liquid is easily read against the white-backed stem.

**ASTM-like Precision** PermaTherm meets all ASTM standards for accuracy, tolerance and uncertainty.

**Please call us for availability**

## THERMOMETERS, ASTM

Cat. No.	Test	A.S.T.M. No.	Scale Range	Div.	Len. mm.	Imm. mm.
<b>405A250</b>	Partial Immersion	1 C	-20 to 150°C	1°C	322	76
<b>405A251</b>	Partial Immersion	1 F	0 to 302°F	2°F	322	76
<b>405A252</b>	Partial Immersion	2 C	-5 to 300°C	1°C	390	76
<b>405A253</b>	Partial Immersion	2 F	20 to 580°F	2°F	390	76
<b>405A254</b>	Partial Immersion	3 C	-5 to 400°C	1°C	413	76
<b>405A255</b>	Partial Immersion	3 F	20 to 760°F	2°F	413	76
<b>405A256</b>	Acid Heat	4 C	-1 to 105°C	5°C	381	152
<b>405A257</b>	Acid Heat	4 F	30 to 220°F	1°F	381	152
<b>405A258</b>	Cloud & Pour	5 C	-38 to 50°C	1°C	231	108
<b>405A259</b>	Cloud & Pour	5 F	-36 to 120°F	2°F	231	108
<b>405A260</b>	Low Cloud & Pour	6 C	-80 to 20°C	1°C	232	76
<b>405A261</b>	Low Cloud & Pour	6 F	-112 to 70°F	2°F	232	76
<b>405A262</b>	Low Distillation	7 C	-2 to 300°C	1°C	386	Total
<b>405A263</b>	Low Distillation	7 F	30 to 580°F	2°F	386	Total
<b>405A264</b>	High Distillation	8 C	-2 to 400°C	1°C	386	Total
<b>405A265</b>	High Distillation	8 F	30 to 760°F	2°F	386	Total
<b>405A266</b>	Pensky-Martens Low	9 C	-5 to 110°C	5°C	287	57
<b>405A267</b>	Pensky-Martens Low	9 F	20 to 230°F	1°F	287	57
<b>405A268</b>	Pensky-Martens High	10 C	90 to 370°C	2°C	287	57
<b>405A269</b>	Pensky-Martens High	10 F	200 to 700°F	5 °F	287	57
<b>405A270</b>	Open Flash	11 C	-6 to 400°C	2°C	308	25
<b>405A271</b>	Open Flash	11 F	20 to 760°F	5°F	308	25
<b>405A272</b>	Gravity	12 C	-20 to 102°C	.2°C	420	Total
<b>405A273</b>	Gravity	12 F	-5 to 215°F	.5°F	420	Total
<b>405A274</b>	Loss on Heat	13 C	155 to 170°C	.5°C	169	Total
<b>405A275</b>	Paraffin Wax M.P.	14 C	38 to 82°C	.1°C	377	79
<b>405A276</b>	Paraffin Wax M.P.	14 F	100 to 180°F	.2°F	377	79
<b>405A277</b>	Low Softening Point	15 C	-2 to 80°C	.2°C	397	Total
<b>405A278</b>	Low Softening Point	15 F	30 to 180°F	.5°F	397	Total
<b>405A279</b>	High Softening Point	16 C	30 to 200°C	.5°C	397	Total
<b>405A280</b>	High Softening Point	16 F	85 to 392°F	.1°F	397	Total
<b>405A281</b>	Saybolt Viscosity	17 C	19 to 27°C	.1°C	275	Total
<b>405A282</b>	Saybolt Viscosity	17 F	66 to 80°F	.2°F	275	Total
<b>405A283</b>	Saybolt Viscosity	18 C	34 to 42°C	.1°C	275	Total
<b>405A284</b>	Saybolt Viscosity	18 F	94 to 108°F	.2°F	275	Total
<b>405A285</b>	Saybolt Viscosity	19 C	49 to 57°C	.1°C	275	Total
<b>405A286</b>	Saybolt Viscosity	19 F	120 to 134°F	.2°F	275	Total
<b>405A287</b>	Saybolt Viscosity	20 C	57 to 65°C	.1°C	275	Total
<b>405A288</b>	Saybolt Viscosity	20 F	134 to 148°F	.2°F	275	Total
<b>405A289</b>	Saybolt Viscosity	21 C	79 to 87°C	.1°C	275	Total
<b>405A290</b>	Saybolt Viscosity	21 F	174 to 188°F	.2°F	275	Total
<b>405A291</b>	Saybolt Viscosity	22 C	95 to 103°C	.1°C	275	Total
<b>405A292</b>	Saybolt Viscosity	22 F	204 to 218°F	.2°F	275	Total
<b>405A293</b>	Engler Viscosity	23 C	18 to 28°C	.2°C	212	90
<b>405A294</b>	Engler Viscosity	24 C	39 to 54°C	.2°C	237	90
<b>405A295</b>	Engler Viscosity	25 C	95 to 105°C	.2°C	212	90
<b>405A296</b>	Stability Test of Nitrocellulose	26 C	130 to 140°C	.1°C	463	Total
<b>405A297</b>	Turpentine Distillation	27 C	147 to 182°C	.5°C	301	76



<b>Cat. No.</b>	<b>Test</b>	<b>A.S.T.M. No.</b>	<b>Scale Range</b>	<b>Div.</b>	<b>Len. mm.</b>	<b>Imm. mm.</b>
<b>405A298</b>	Kinematic Viscosity	28 F	97.5 to 102.5°F	.1°F	305	Total
<b>405A299</b>	Kinematic Viscosity	29 F	127.5 to 132.5°F	.1°F	305	Total
<b>405A300</b>	Kinematic Viscosity	30 F	207.5 to 212.5°F	.1°F	305	Total
<b>405A301</b>	Reid Vapor Pressure Air Chamber	31 F	-30 to 120°F	1°F	305	Total
<b>405A302</b>	Aniline Point	33 C	-38 to 42°C	.2°C	419	50
<b>405A303</b>	Aniline Point	33 F	-36.5 to 107.5°F	.5°F	419	50
<b>405A304</b>	Aniline Point	34 C	25 to 105°C	.2°C	419	50
<b>405A305</b>	Aniline Point	34 F	77 to 221°F	.5°F	419	50
<b>405A306</b>	Aniline Point	35 C	90 to 170°C	.2°C	419	50
<b>405A307</b>	Aniline Point	35 F	194 to 338°F	.5°F	419	50
<b>405A308</b>	Titer Test	36 C	-2 to 68°C	.2°C	405	45
<b>405A309</b>	Solvents Distillation	37 C	-2 to 52°C	.2°C	395	100
<b>405A310</b>	Solvents Distillation	38 C	24 to 78°C	.2°C	395	100
<b>405A311</b>	Solvents Distillation	39 C	48 to 102°C	.2°C	395	100
<b>405A312</b>	Solvents Distillation	40 C	72 to 126°C	.2°C	395	100
<b>405A313</b>	Solvents Distillation	41 C	98 to 152°C	.2°C	395	100
<b>405A314</b>	Solvents Distillation	42 C	95 to 255°C	.5°C	395	100
<b>405A315</b>	Kinematic Viscosity	43 F	-61 to -29°F	.2°F	420	Total
<b>405A316</b>	Kinematic Viscosity	44 C	18.6 to 21.4°C	.05°C	305	Total
<b>405A317</b>	Kinematic Viscosity	44 F	66.5 to 71.5°F	.1°F	305	Total
<b>405A318</b>	Kinematic Viscosity	45 C	23.6 to 26.4°C	.05°C	305	Total
<b>405A319</b>	Kinematic Viscosity	45 F	74.5 to 79.5°F	.1°F	305	Total
<b>405A320</b>	Kinematic Viscosity	46 C	48.6 to 51.4°C	.05°C	305	Total
<b>405A321</b>	Kinematic Viscosity	46 F	119.5 to 124.5°F	.1°F	305	Total
<b>405A322</b>	Kinematic Viscosity	47 C	58.6 to 61.4°C	.05°C	305	Total
<b>405A323</b>	Kinematic Viscosity	47 F	137.5 to 142.5°F	.1°F	305	Total
<b>405A324</b>	Kinematic Viscosity	48 F	177.5 to 182.5°F	.1°F	305	Total
<b>405A325</b>	Stormer Viscosity	49 C	20 to 70°C	.2°C	305	65
<b>405A326</b>	Gas Calorimeter Inlet	50 F	54 to 101°F	.1°F	468	Total
<b>405A327</b>	Gas Calorimeter Outlet	51 F	69 to 116°F	.1°F	468	Total
<b>405A328</b>	Gas Calorimeter Flue	52 F	54 to 101°F	.1°F	209	Total
<b>405A329</b>	Butadiene Boiling Point Range	52 C	-10 to 5°C	.1°C	162	Total
<b>405A330</b>	Benzene Freezing Point	53 C	-0.6 to 10.4°C	.1°C	189	Total
<b>405A331</b>	Congealing Point	54 C	20 to 100°C	.2°C	312	Total
<b>405A332</b>	Congealing Point	54 F	68 to 213°F	.5°F	312	Total
<b>405A333</b>	Bomb Calorimeter	56 C	19 to 35°C	.02°C	585	Total
<b>405A334</b>	Bomb Calorimeter	56 F	66 to 95°F	.05°F	585	Total
<b>405A335</b>	Tag Closed Tester Low Range	57 C	-20 to 50°C	.5°C	287	57
<b>405A336</b>	Tag Closed Tester Low Range	57 F	-4 to 122°F	1°F	287	57
<b>405A337</b>	Tank	58 C	-34 to 49°C	.5°C	303	Total
<b>405A338</b>	Tank	58 F	-30 to 120°F	1°F	303	Total
<b>405A339</b>	Tank	59 C	-18 to 82°C	.5°C	303	Total
<b>405A340</b>	Tank	59 F	0 to 180°F	1°F	303	Total
<b>405A341</b>	Tank	60 C	77 to 260°C	1°C	303	Total
<b>405A342</b>	Tank	60 F	170 to 500°F	2°F	303	Total
<b>405A343</b>	Petrolatum Melting Point	61 C	32 to 127°C	.2°C	381	79
<b>405A344</b>	Petrolatum Melting Point	61 F	90 to 260°F	.5°F	381	79



<b>Cat. No.</b>	<b>Test</b>	<b>A.S.T.M. No.</b>	<b>Scale Range</b>	<b>Div.</b>	<b>Len. mm.</b>	<b>Imm. mm.</b>
<b>405A345</b>	Precision	62 C	-38 to 2°C	.1°C	379	Total
<b>405A346</b>	Precision	62 F	-36 to 35°F	.2°F	379	Total
<b>405A347</b>	Precision	63 C	-8 to 32°C	.1°C	379	Total
<b>405A348</b>	Precision	63 F	18 to 89°F	.2°F	379	Total
<b>405A349</b>	Precision	64 C	25 to 55°C	.1°C	379	Total
<b>405A350</b>	Precision	64 F	77 to 131°F	.2°F	379	Total
<b>405A351</b>	Precision	65 C	50 to 80°C	1°C	379	Total
<b>405A352</b>	Precision	65 F	122 to 176°F	.2°F	379	Total
<b>405A353</b>	Precision	66 C	75 to 105°C	.1°C	379	Total
<b>405A354</b>	Precision	66 F	167 to 221°F	.2°F	379	Total
<b>405A355</b>	Precision	67 C	95 to 155°C	.2°C	379	Total
<b>405A356</b>	Precision	67 F	203 to 311°F	.5°F	379	Total
<b>405A357</b>	Precision	68 C	145 to 205°C	.2°C	379	Total
<b>405A358</b>	Precision	68 F	293 to 401°F	.5°F	379	Total
<b>405A359</b>	Precision	69 C	196 to 305°C	.5°C	379	Total
<b>405A360</b>	Precision	69 F	383 to 581°F	1°F	379	Total
<b>405A361</b>	Precision	70 C	295 to 405°C	.5°C	379	Total
<b>405A362</b>	Precision	70 F	563 to 761°F	1°F	379	Total
<b>405A363</b>	Oil in Wax	71 C	-37 to 21°C	.5°C	355	76
<b>405A364</b>	Oil in Wax	71 F	-35 to 70°F	1°F	355	76
<b>405A365</b>	Kinematic Viscosity	72 F	-2.5 to 2.5°F	.1°F	305	Total
<b>405A366</b>	Kinematic Viscosity	73 C	-41.4 to -38.6°C	.05°C	305	Total
<b>405A367</b>	Kinematic Viscosity	73 F	-42.5 to -37.5°F	.1°F	305	Total
<b>405A368</b>	Kinematic Viscosity	74 F	-67.5 to -62.5°F	.1°F	305	Total
<b>405A369</b>	Antifreeze Freezing Point	75 F	-35 to 35°F	.5°F	408	100
<b>405A370</b>	Antifreeze Freezing Point	76 F	-65 to 5°F	.5°F	408	100
<b>405A371</b>	Saybolt Viscosity	77 F	245 to 265°F	.5°F	275	Total
<b>405A372</b>	Saybolt Viscosity	78 F	295 to 315°F	.5°F	275	Total
<b>405A373</b>	Saybolt Viscosity	79 F	345 to 365°F	.5°F	275	Total
<b>405A374</b>	Saybolt Viscosity	80 F	395 to 415°F	.5°F	275	Total
<b>405A375</b>	Saybolt Viscosity	81 F	445 to 465°F	.5°F	275	Total
<b>405A376</b>	Fuel Rating Engine	82 C	-15 to 105°C	1°C	162	30
<b>405A377</b>	Fuel Rating Engine	82 F	0 to 220°F	2°F	162	30
<b>405A378</b>	Fuel Rating Air	83 C	15 to 70°C	1°C	171	40
<b>405A379</b>	Fuel Rating Air	83 F	60 to 160°F	1°F	171	40
<b>405A380</b>	Fuel Rating Office Tank	84 C	25 to 80°C	1°C	382	249
<b>405A381</b>	Fuel Rating Office Tank	84 F	75 to 175°F	1°F	382	249
<b>405A382</b>	Fuel Rating Surge	85 C	40 to 150°C	1°C	310	181
<b>405A383</b>	Fuel Rating Surge	85 F	100 to 300°F	2°F	310	181
<b>405A384</b>	Fuel Rating Mix	86 C	95 to 175°C	1°C	167	35
<b>405A385</b>	Fuel Rating Mix	86 F	200 to 350°F	2°F	167	35
<b>405A386</b>	Fuel Rating Coolant	87 C	150 to 205°C	1°C	172	40
<b>405A387</b>	Fuel Rating Coolant	87 F	300 to 400°F	1°F	172	40
<b>405A388</b>	Vegetable Oil Flash	88 C	10 to 200°C	1°C	287	57
<b>405A389</b>	Vegetable Oil Flash	88 F	50 to 392°F	2°F	287	57
<b>405A390</b>	Solidification Point	89 C	-20 to 10°C	.1°C	370	76
<b>405A391</b>	Solidification Point	90 C	0 to 30°C	.1°C	370	76
<b>405A392</b>	Solidification Point	91 C	20 to 50°C	.1°C	370	76
<b>405A393</b>	Solidification Point	92 C	40 to 70°C	.1°C	370	76
<b>405A394</b>	Solidification Point	93 C	60 to 90°C	.1°C	370	76
<b>405A395</b>	Solidification Point	94 C	80 to 110°C	.1°C	370	76
<b>405A396</b>	Solidification Point	95 C	100 to 130°C	.1°C	370	76
<b>405A397</b>	Solidification Point	96 C	120 to 150°C	.1°C	370	76

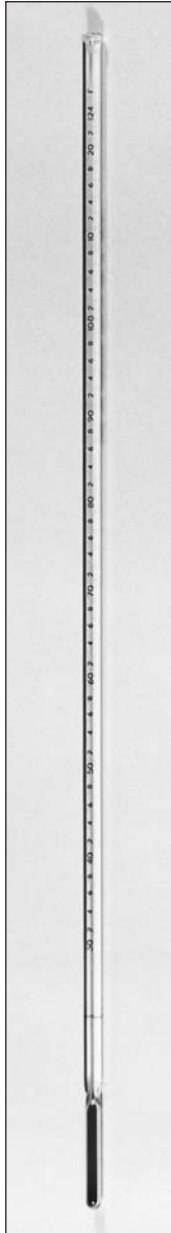
<b>Cat. No.</b>	<b>Test</b>	<b>A.S.T.M. No.</b>	<b>Scale Range</b>	<b>Div.</b>	<b>Len. mm.</b>	<b>Imm. mm.</b>
<b>405A398</b>	Tank	97 C	-18 to 49°C	.5°C	303	Total
<b>405A399</b>	Tank	97 F	0 to 120°F	1°F	303	Total
<b>405A400</b>	Tank	98 C	16 to 82°C	.5°C	303	Total
<b>405A401</b>	Tank	98 F	60 to 180°F	1°F	303	Total
<b>405A402</b>	Weathering Test	99 F	-55 to 40°F	.5°F	302	35
<b>405A403</b>	Solidification Point	100 C	145 to 205°C	.2°C	370	76
<b>405A404</b>	Solidification Point	101 C	195 to 305°C	.5°C	370	76
<b>405A405</b>	Solvents Distillation	102 C	123 to 177°C	.2°C	395	100
<b>405A406</b>	Solvents Distillation	103 C	148 to 202°C	.2°C	395	100
<b>405A407</b>	Solvents Distillation	104 C	173 to 227°C	.2°C	395	100
<b>405A408</b>	Solvents Distillation	105 C	198 to 252°C	.2°C	395	100
<b>405A409</b>	Solvents Distillation	106 C	223 to 277°C	.2°C	395	100
<b>405A410</b>	Solvents Distillation	107 C	248 to 302°C	.2°C	395	100
<b>405A411</b>	Saybolt Viscosity	108 F	270 to 290°F	.5°F	275	Total
<b>405A412</b>	Saybolt Viscosity	109 F	320 to 340°F	.5°F	275	Total
<b>405A413</b>	Kinematic Viscosity	110 C	133.6 to 136.4°C	.05°C	305	Total
<b>405A414</b>	Kinematic Viscosity	110 F	272.5 to 277.5°F	.1°F	305	Total
<b>405A415</b>	Tar Acids Distillation	111 C	170 to 250°C	.2°C	395	100
<b>405A416</b>	Benzene Freezing Point	112 C	4 to 6°C	.02°C	215	Total
<b>405A417</b>	Bituminous Softening Point	113 C	-1 to 175°C	.5°C	406	Total
<b>405A418</b>	Bituminous Softening Point	113 F	30 to 350°F	1°F	406	Total
<b>405A419</b>	Aviation Fuel Freezing Point	114 C	-80 to 20°C	.5°C	300	Total
<b>405A420</b>	Beckmann Differential	115 C	0 to 6°C .01°C	640	Total	
<b>405A421</b>	Bomb Calorimeter	116 C	18.9 to 25.1°C	.01°C	609	Total
<b>405A422</b>	Bomb Calorimeter	117 C	23.9 to 30.1°C	.01°C	609	Total
<b>405A423</b>	Kinematic Viscosity	118 C	28.6 to 31.4°C	.05°C	305	Total
<b>405A424</b>	Kinematic Viscosity	118 F	83.5 to 88.5°F	.1°F	305	Total
<b>405A425</b>	Freezing Point	119 C	-38.3 to -30°C	.1°C	420	100
<b>405A426</b>	Freezing Point	119 F	-37 to -22°F	.2°F	420	100
<b>405A427</b>	Kinematic Viscosity	120 C	38.5 to 41.5°C	.05°C	305	Total
<b>405A428</b>	Kinematic Viscosity	121 C	98.5 to 101.5°C	.05°C	305	Total
<b>405A429</b>	Brookfield Viscosity	122 C	-45 to -35°C	.1°C	300	Total
<b>405A430</b>	Brookfield Viscosity	123 C	-35 to -25°C	.1°C	300	Total
<b>405A431</b>	Brookfield Viscosity	124 C	-25 to -15°C	.1°C	300	Total
<b>405A432</b>	Brookfield Viscosity	125 C	-15 to -5°C	.1°C	300	Total
<b>405A540</b>	Kinematic Viscosity	126 C	-27.4 to -24.6°C	.05°C	305	Total
<b>405A541</b>	Kinematic Viscosity	126 F	-17.5 to -12.5°F	.1°F	305	Total
<b>405A542</b>	Kinematic Viscosity	127 C	-21.4 to -18.6°C	.05°C	305	Total
<b>405A543</b>	Kinematic Viscosity	128 C	-1.4 to 1.4°C	.05°C	305	Total
<b>405A544</b>	Kinematic Viscosity	128 F	29.5 to 34.5°F	.1°F	305	Total
<b>405A545</b>	Kinematic Viscosity	129 C	91.6 to 94.4°C	.05°C	305	Total
<b>405A546</b>	Kinematic Viscosity	129 F	197.5 to 202.5°F	.1°F	305	Total
<b>405A547</b>	Tank-Lens Front	130 C	-7 to 105°C	.5°C	305	Total
<b>405A548</b>	Tank-Lens Front	130 F	20 to 220°F	1.0°F	305	Total



## CERTIFIED THERMOMETERS

**Certified thermometers are available upon request.**

Thermometers are certified by an independent laboratory or by the factory and are both traceable to NIST (formerly NBS).  
Each instrument is accompanied by a document of certification that includes the correction at each temperature tested.



### Thermometer, Chemical, Precision grade

Total Immersion	3"/76mm Immersion	Temp. Range	Division Deg.	Length
<b>405A433</b>	<b>405A439</b>	-30 to 120°F	1°F	12"
<b>405A434</b>	<b>405A440</b>	0 to 120°F	1/2°F	12"
<b>405A435</b>	<b>405A441</b>	0 to 230°F	2°F	12"
<b>405A436</b>	<b>405A442</b>	0 to 300°F	2°F	12"
<b>405A437</b>	<b>405A443</b>	20 to 500°F	2°F	16"
<b>405A438</b>	<b>405A444</b>	20 to 750°F	5°F	16"
<b>405A445</b>	<b>405A450</b>	-35 to 50°C	1°C	305 mm
<b>405A446</b>	<b>405A451</b>	-20 to 110°C	1°C	305 mm
<b>405A447</b>	<b>405A452</b>	-20 to 150°C	1°C	305 mm
<b>405A448</b>	<b>405A453</b>	-10 to 260°C	1°C	405 mm
<b>405A449</b>	<b>405A454</b>	-10 to 400°C	2°C	405 mm

### Thermometer, Chemical, Extreme Precision grade

Total Immersion	3"/76mm Immersion	Temp. Range	Division Deg.	Length
<b>405A455</b>	<b>405A479</b>	-30 to 120°F	0.2°F	24"
<b>405A456</b>	<b>405A458</b>	30 to 124°F	0.2°F	18"
	<b>405A457</b>	30 to 120°F	0.1°F	24"
<b>405A459</b>		-35 to 50°C	0.1°C	24"
<b>405A460</b>	<b>405A461</b>	-1 to 51°C	0.1°F	18"
	<b>405A528</b>	30 to 214°F	0.5°F	18"
	<b>405A539</b>	30 to 214°F	0.2°F	24"

### Thermometer, other

Catalog Number	Description	Immersion	Temp. Range	Division Deg.	Length
<b>405A462</b>	Dewpoint	Total	-30 to 110°F	1°F	10"
<b>405A463</b>	Dewpoint	Total	-90 to 40°F	1°F	10"
<b>405A464</b>	Propane & Butane Testing	Total	-70 to 70°F	1°F	9 1/2"

## ACCESSORIES, THERMOMETER



### ARMORS, Thermometer, Nickel Plated

Catalog Number	For Thermometers Length
405A465	12"
405A466	15"
405A467	16"
405A468	18"
405A469	24"



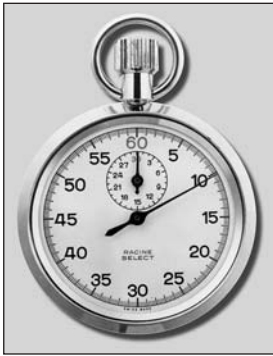
### CASES, Carrying Thermometer

Aluminum case\* with felt-lining, and screw cap.

Catalog Number	For Thermometer Length
405B473	12"
405B474	15"
405B475	16"
405B476	18"
405B477	24"
405A478	cap, thermometer threaded

\*Special lengths available.

## ACCESSORIES - OTHER



### STOPWATCH - For Industrial use.

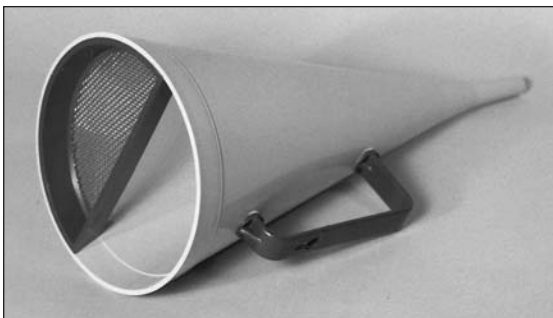
Sixty second dial. Long hand registers fifths of seconds and the small hand registers minutes, up to 30. Start, stop and flyback are activated from the crown. It has a lever movement and unbreakable mainspring. The case is nickel plated.

**Catalog Number 406A001** 7 Jewels

### STOPWATCH - Digital

Electronic timer, with 1/100th of a second resolution. Three button arrangement. One is for lap time and reset, one for the mode and the third for start-stop.

**Catalog Number  
406A004**



### FUNNEL, Viscometer, Marsh

Used to obtain an indication of the relative viscosity of drilling mud. The funnel is molded from a tough, durable plastic that resists breaking or cracking. A brass lined orifice assures consistency in all readings.

**Catalog Number 406A005**

### CUP - Plastic

A measuring cup to be used in conjunction with the Marsh Funnel Viscometer. Raised molded marking on the inside, handle and dual pour out.

**Catalog Number  
406A006**

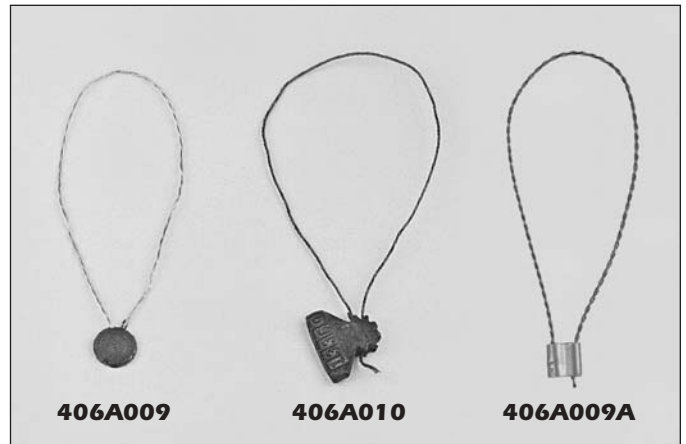
1000 ml/32 oz



### PRESS, Lead sealing

For use with lead seals. Available with blank dies or marking dies (7/16" diameter) for one or both sides of the lead disc. Four (4) characters maximum per die.

Catalog Number	Description	Size
<b>406A007</b>	Bulldog	2-1/2" x 5"
<b>406A008</b>	Cut-R-Press	1-1/2" x 8"



### SEAL - LEAD

Twisted wire and lead seal. 7/16" diameter lead seal with 18", 4 ply, 30 gauge galvanized wire. Numbered seal can include the company initials on one side, 5 characters maximum, and consecutive numbers, 6 numbers maximum, on the other side. Minimum quantity 1000.

#### Plain Seals

**406A009** Galvanized Wire

**406A009C** Copper Wire

**406A009S** Stainless Steel Wire

**406A009A** Aluminum head, galvanized wire

#### Numbered Seals

**406A010** Galvanized Wire

**406A010C** Copper Wire

**406A010S** Stainless Steel Wire

#### DIES, Lead Sealing 1/2"

**406A011** Blank or engraved



### GLOBE MECHANICAL SEAL

Precision built to stay locked. Embossed identity and consecutive numbering. Lettering part has a maximum capacity of 18 characters including spaces and periods. 8-1/2" long with 5/16" head. Minimum quantity 1000.

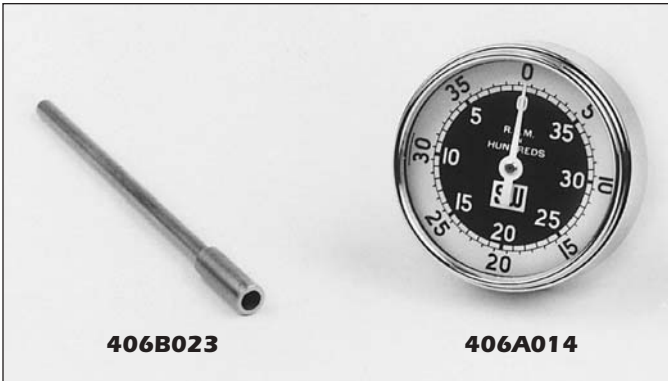
**406A012** Globe mechanical seal.



### PREMIER AUTOMATIC SEAL

Self-locking, permanent mechanical closure. 8-3/4" x 5/16" metal strap can be embossed with name and consecutive numbering. Lettering part has a maximum capacity of 15 characters including spaces and periods. Minimum quantity 1000.

**406A013** Premier automatic seal.



### TACHOMETER

Hand held tachometer for checking speed of centrifuges. Operates clockwise or counter clockwise up to 4000 rpm's. 2-3/4 inch diameter face.

**406A014** Tachometer.

### EXTENSION, Tachometer

An extension for the tachometer to enable checking the rpm's of the centrifuge with the lid closed. Six inches long.

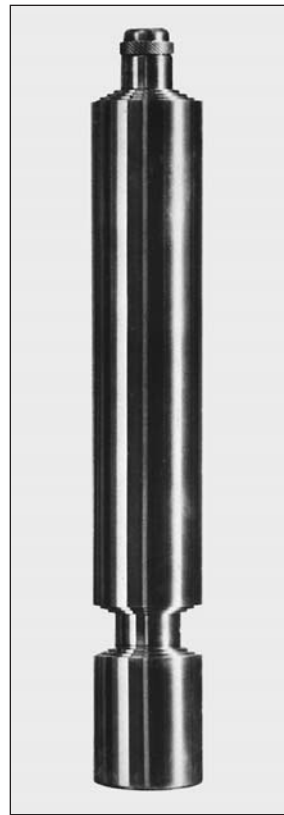
**406A015** Extension, tachometer.



### BRUSH-LAC SIGHT GLASS

Brush, For cleaning LAC unit sight glass, 3/4" x 3" brush body, 30" over all length.

**406A016**



### REID VAPOR PRESSURE BOMBS IMMERSION TYPE

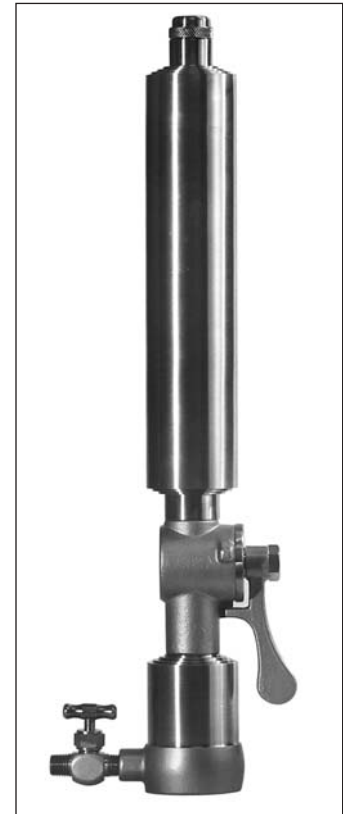
For the determination of vapor pressure of gasoline, volatile crude oil and other volatile petroleum products with pressure under 26 psi. Confirms to ASTM D323 and related specifications.

#### Model 407A001

Stainless Steel Construction

#### Model 407A002

Nickel plated brass construction.



### PRESSURE TYPE

For the determination of vapor pressure of volatile petroleum products with pressures ranging from 26 to 100 psi. Confirms to ASTM D323 and related specifications.

#### Model 407A003

Stainless Steel Construction.

#### Model 407A004

Nickel plated brass construction.



**LIQUEFIED  
PETROLEUM  
GAS TYPE**

For the determination of vapor pressure of liquefied petroleum gases (lpg). Confirms to ASTM D1267 and related specifications.

**Model 407A005**  
Stainless Steel Construction.



**FLEXIBLE  
CONNECTING HOSE**

Nylon lined with knurled handwheels. The hose has a stranded copper wire wound spirally under the reinforcing layers of the hose to electrically connect the two 1/4" NPT female connectors.

**407A025** Stainless steel connectors, 24"  
**407A026** Brass connectors, 24"

**REID VAPOR PRESSURE  
GAUGES**

Large 4-1/2" dial for precise reading and repeatability. Brass 1/4" IPS male thread fitting to attach to bomb. Bronze Bourdon tube, recalibrating screw and carrying handle. Conforms to ASTM D323 and D1267.



**PARTS RVP BOMBS**

- 407A006** Gauge adapter
- 407A007** Seal "O" ring upper
- 407A008** Gas chamber, stainless steel
- 407A009** Gas chamber, nickel plated brass
- 407A010** Seal "O" ring lower
- 407A011** Liquid chamber, 1 opening type, stainless steel
- 407A012** Liquid chamber, 1 opening type, nickel plated brass
- 407A013** Plug valve
- 407A014** Seal cap for plug valve
- 407A015** Seal ring for plug valve, 2 required
- 407A016** Packing for plug valve
- 407A017** Liquid chamber, 2 opening type, stainless steel
- 407A018** Liquid chamber, 2 opening type, nickel plated brass
- 407A019** Needle valve, for liquid chamber
- 407A020** Packing, needle valve
- 407A021** Tip, needle valve
- 407A022** LPG conversion adapter, stainless steel
- 407A023** Cap
- 407A024** Cap with chain



**407A022**

Model Number	Range PSI	Figure interval	Div. PSI
<b>407A028</b>	0 - 15	1	0.1
<b>407A029</b>	0 - 30	2	0.2
<b>407A031</b>	0 - 60	4	0.25
<b>407A032</b>	0 - 100	5	0.5
<b>407A034</b>	0 - 300	10	1
<b>407A035</b>	0 - 600	20	2

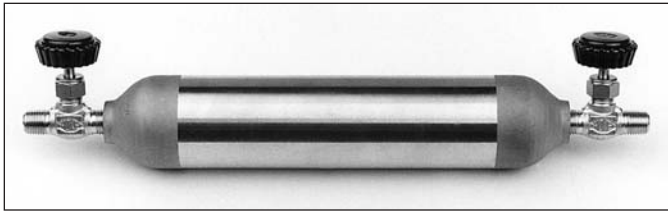
**REID VAPOR  
PRESSURE BOMB  
BATH**

Constant temperature water bath for determination of liquid petroleum products and liquefied petroleum gases. Flush mount bench top installation with double-wall construction and fiberglass insulated stainless steel tank. Microprocessor temperature control, ±0.2°F, with maximum temperature 212°F. Conforms to ASTM D323, and D1267.



Dimensions: 15" x 15" x 36". Weight 67 lbs.

**Model 407A037** Four bomb capacity

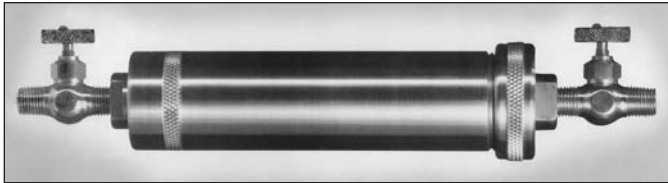


### SAMPLE BOMBS

Sample cylinders are manufactured in accordance with D.O.T. specifications. The cylinders are designed for safe, reliable containment of gas or liquid samples during drawing, storage and handling or transport per D.O.T. regulations. Constructed of 304 stainless steel, with female pipe threads in each end.

<b>407B039</b>	100ml	<b>407B042</b>	600ml*
<b>407B040</b>	300ml	<b>407B043</b>	1000ml
<b>407B041</b>	500ml		

\* Not D.O.T. approved.



### CORROSION TEST BOMB

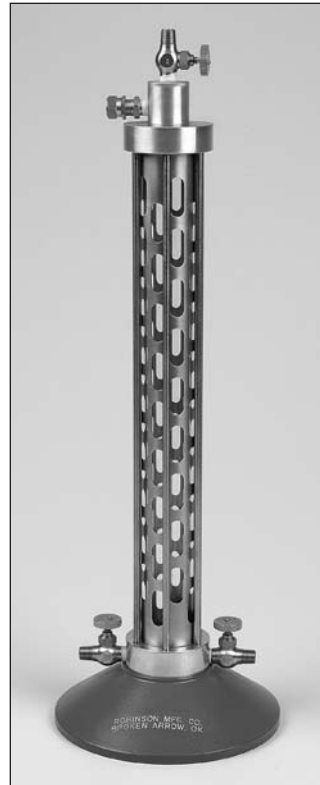
For conducting the test for copper strip corrosion by liquefied petroleum (LP) gases according to ASTM D1838. Constructed of stainless steel, with two 1/4" needle valves and knurled threaded cap with "O" ring seal.

**407A044** Corrosion test bomb.  
For connecting hose see 407A025

### COPPER STRIP

To be used with the above 407A044 Corrosion Test Bomb. The strip is smooth ready for final polishing and cleaning. It is 1/2" x 3" x 1/8" with a hole on the end for hanging in the bomb.

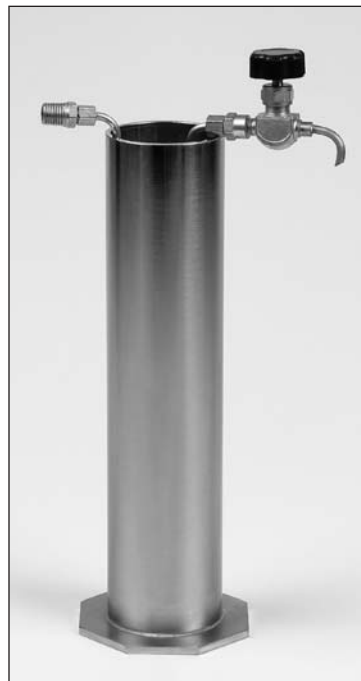
**407A045** Copper Strip



### CYLINDER, HYDROMETER LPG

To determine the specific gravity of liquefied petroleum gases, (LPG), such as propane and butane and other light hydrocarbons under vapor pressure conditions corresponding to the temperature of the liquid. The cylinder is constructed of a transparent plastic barrel held between aluminum end plates with stainless steel tie-rods and stainless steel safety guard. Working pressure is 200 psi and a relief valve is attached and set for this pressure. Conforms to ASTM-D1657 and GPA2140. For specific gravity hydrometers see the hydrometer section of the catalog.

- 407B046** Cylinder, Hydrometer complete
- 407A047** Cylinder, plastic barrel, replacement
- 407A048** Gasket, pressure
- 403A093** Hydrometer, LPG (see Hydrometers)



### PRE-COOLING APPARATUS

For determining the volatility and residues of Liquefied Petroleum Gases. Brass cooling vessel 2-3/4" (7cm) x 12" (30cm) with 20 foot (6m) copper cooling coil, compression fittings and needle valve. Weight 96 oz. ASTM designation D1837; D2158 and GPA2140.

**Model 407B074**



### **FLASH POINT TESTER PENSKY-MARTENS**

For determination of flash point of fuel oils, lube oils, suspensions of solids and other liquids according to ASTM D93. Equipped with a 750 watt heating element and heat control with reference dial. Operates on 120 volts A.C. Thermometer not included. For thermometers see 405A267, P-M low ASTM 9F and 405A269, P-M high ASTM 10F. Dimensions: 11" x 7" x 18" high. Weight 38 lbs.

#### **Model 407A049**

Flash Point Tester, Tag Closed Cup



### **FLASH POINT TESTER TAG CLOSED CUP**

For determination of flash points of liquids below 175°F, according to ASTM D56. Complete with water bath, cover assembly with tag closed cup flashing mechanism, two thermometer wells, test flame gauge, cup, orifice, 150 watt heater and reference dial for temperature adjustments. Operates on 120 volt A.C. Thermometers not included. For thermometers see 405A267, ASTM 9F, and 405A336, ASTM 57F Dimensions, 5" x 10". Weight 7 lbs.

#### **Model 407A050**

Flash Point Tester, Tag Closed Cup.



### **FLASH POINT TESTER CLEVELAND OPEN CUP**

For determination of flash and fire points of all petroleum products except fuel oils and those having an open cup flash point below 175°F., according to ASTM D92. Equipped with 750 watt heating element, stepless control, adjustable test flame and flash cup, Thermometer not included. For thermometer see 405A271, ASTM 11F. Operates on 120 volts A.C. Dimensions, 11" x 6" x 15". Weight 21 lbs.

#### **Model 407A051**

Flash Point Tester, Cleveland Open Cup

