



GASBOY

SERIES 4860

METER-REGISTER

INSTALLATION/OPERATION/PARTS

MANUAL

035352

Rev. 03/07/03

INSTALLERS - IMPORTANT

In addition to installation information, this manual contains warnings, safeguards and procedures on the use and care of the Series 4860 Meter-Register. Please leave this manual with the meter owner after the installation is complete.

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GASBOY INTERNATIONAL LLC LANSDALE, PA

IMPORTANT WARNINGS AND SAFEGUARDS

Gasoline and petroleum products are flammable. To avoid injury or death to persons or damage to equipment or property, follow these listed warnings and other warnings and precautions outlined in this manual when installing, using, or working around this equipment. Check with GASBOY Technical Services for compatibility of liquids with pump materials.

TURN OFF AND LOCK OUT ALL POWER TO PUMP BEFORE PERFORMING SERVICE, MAINTENANCE OR IN THE EVENT OF A FUEL SPILL.

All products must be installed by a qualified installer and used in conformance with all building, fire, and environmental codes and other safety requirements applicable to its installation and use, including, but not limited to, NFPA 30, NFPA 30A, NFPA 395 & NFPA 70. A qualified installer is familiar with fuel systems installations under the above stated building, fire, and environmental codes and other safety requirements for the particular type of installation.

This product is only part of a fuel dispensing system and additional equipment and accessories, such as, but not limited to, breakaway connectors, shear valves, pressure regulators, flow limiters, and other safety devices may be necessary to meet the applicable codes.

For maximum safety, we recommend that all employees be trained as to the location and procedure for turning off power to the entire system. Instructions regarding proper operation of the equipment along with the appropriate safety warnings should be posted in plain view at the fuel island.

Before performing service or maintenance (including changing of fuel filters or strainers) or in the event of a fuel spill, turn off and lock out all power to the system. In battery-powered pumps, disconnect power source. In submersible pump applications, turn off and lock out power at the master panel and close any impact valves to the submersible pump and any other dispensers which use that submersible pump. AC power can feed back into a shut-off dispenser when dispensers share a common submersible pump or starter relay. Also block islands so no vehicles can pull up to the dispenser when the dispenser is being worked on.

DO NOT use Teflon tape for any pipe threads in the product.

DO NOT use consumer pumps for pumping fuel or additives into aircraft.

DO NOT use commercial pumps for direct fueling of aircraft without filters and separators necessary to ensure product purity.

DO NOT use where sanitary design is required (for food products for human consumption) or with water-based liquids.

DO NOT smoke near the pump or when using the pump.

DO NOT use near open flame or electrical equipment which may ignite fumes.

DO NOT permit the dispensing of gasoline or other petroleum products into a vehicle with its motor running.

DO NOT permit the dispensing of gasoline or other petroleum products into unapproved containers or into approved containers in or on vehicles including trucks. All containers must be filled on the ground to prevent static discharge. Always use Approved and Listed hoses and nozzles with electric pumps and dispensers.

DO NOT block open the nozzle in any manner. Nozzles shall conform to UL and NFPA code requirements for attended or unattended service.

DO ensure that the pump is equipped with proper filters based on the product being dispensed and its intended use.

DO wear safety goggles and protective clothes when dispensing any liquid which may be potentially harmful or hazardous.

DO keep all parts of body and loose clothing clear of belts, pulleys, and other exposed moving parts at all times.

DO require washing and changing of clothes if fuel is spilled on a person or his/her clothing. Keep away from open flames, sparks, or people smoking.

DO provide a receptacle for catching product from pump/meter when servicing.

DO clean up product spills on the driveway. Turn off and lock out all power prior to cleanup.

DO insure pump is properly grounded.

DO insure hose is compatible with fluid being dispensed.

DO inspect hose, nozzle, and pump on a regular basis for wear, damage, or other conditions which may create a safety or environmental hazard.

DO make sure all pipe threads are properly cut and the inside reamed to remove burrs. Use UL classified gasoline-resisting compound on all joints of gasoline handling piping. Sealing compound must also be resistant to Gasohol (Ethanol and Methanol). Use gasoline-resistant pipe compound on male threads only; pipe compound used on female threads can be squeezed into the supply line where it can enter the product stream and become lodged in the pump or meter.

DO ensure that junction box covers are in place and properly tightened. Mating surfaces between the box and cover must be free of dirt, nicks, and scratches. All unused entries into the junction box must be properly plugged.

INSTALLATION/OPERATION/PARTS

INSTALLATION

The 4860 meter can be installed either vertically or horizontally in a piping system. The inlet and outlet are 90° apart and can be rotated in relation to the register by 90° increments. Install a strainer in the meter inlet to prevent jamming from foreign material. A 40 mesh or finer basket is required.

OPERATING CHARACTERISTICS

The 4860 meter uses a rotating disc type measuring chamber and can be calibrated using an adjusting screw. The pushbutton register records in gallons or liters up to 999 9/10. The totalizer is a 7-wheel counter which records up to 999,999.9 gallons or liters. Pushing in the reset button resets the four-wheel register to zero. Change gears permit the meter to be US gallons or liter measure. The 4860 meter will accurately measure liquids with viscosities of less than 120 SSU (60°F) (16°C) at flow rates from 4 to 15 GPM or 15 to 57 LPM. Although designed specifically for petroleum products, the 4860 meter can be used in applications where the materials are compatible with recommendations of the manufacturer of the chemical or substance under consideration.

CALIBRATION

NOTES: This meter was redesigned causing the calibration procedure to be different depending on the age of your meter. Meters made after May 10, 1995 are referred to as new style meters; meters made before that date are referred to as old style.

This meter is for consumer use only and not for re-sale. It is not sealable by Weights and Measures.

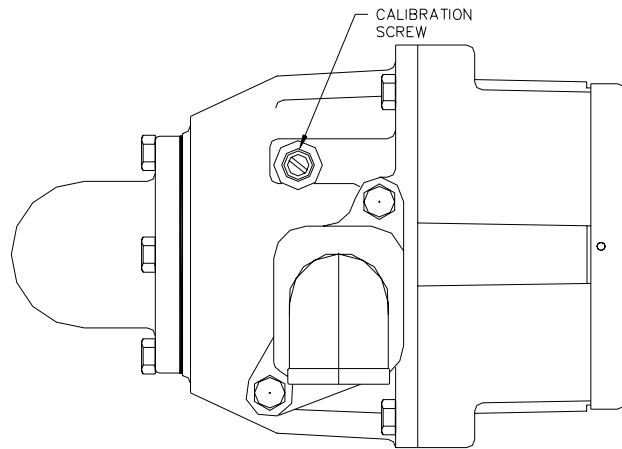
All GASBOY meters are adjusted for accurate measure for diesel within $\pm .05$ gallons at the factory. However, since the conditions of the installation can affect pump accuracy, it is the responsibility of the installer to check the pump for accuracy and make any needed adjustments.

Choose the flow rate at which the meter will be used most often for the zero calibration point. For example, if the pump is being used with an automatic nozzle, calibrate with the nozzle set on the middle or top notch position, whichever is used most frequently.

Use a certified five-gallon measure with a sight glass and scale showing cubic inches over or under an exact five gallons. Fill and drain the test measure to completely wet the interior surfaces. Reset the register to zero and deliver an exact measured five gallons into the test measure at the selected flow. Read the level of the liquid in the sight glass on the scale in \pm cubic inches.

For old style meters only, remove cap screw, exposing the slotted head calibration screw. Use a narrow blade screw driver to turn the calibration screw clockwise to correct for plus cubic inches or counterclockwise for minus cubic inches in the test measure.

Count the number of full turns and fractional turns each time for reference in judging the number and direction of any additional turns required to calibrate the meter to exact zero.



For new style meters, start with the screw turned all the way in clockwise. For gasoline calibration, turn the screw approximately two full turns counter-clockwise. For diesel, turn the screw approximately two additional full turns counter-clockwise.

Replace the cap screw (old style only). Deliver about 1/2 gallon through the meter before resetting to zero and retesting. Allow a ten second drain period each time the test measure is emptied to assure accurate measure. Adjust and retest until register is zeroed at desired flow.

SERVICE

WARNING:

To reduce the risk of electrical shock when servicing, turn off and lock out all power to the meter/pump.

NOTE: Numbers in parentheses correspond to the numbers shown on the parts illustration and parts list on pages 4 and 5.

To service the pushbutton register, remove two (one on each side) screws (2) from bezel (1). Remove bezel (1), gasket (3), and dial mask (4). Reset button (5) and spring (6) are released when dial mask is removed. Remove screws (7), reset bearing (8) and screws (11) and lift out register assembly. Drive shaft assembly (12) may be removed by taking out four bearing screws.

Replacing Bearing and Seal Assembly (Item 16, Old Style)

To replace the shaft seal or service the gear train on back of register housing (18), remove housing from meter body by taking out four screws. *NOTE: The meter housing will be full of liquid so some means should be available to catch what drains from the case and lines.* To remove gears (22-25), remove three retaining rings (20) and drive key (21). Withdraw the drive shaft and gear (14), spacer (15), meter stuffing box (16), and O-ring (17). Slide new O-ring over new bearing seal like you would slide a ring on your finger. Insert shaft (14) through spacer (15) and bearing (16) as shown in the exploded view. Press entire assembled shaft and seal through housing and seat the square of the bearing firmly into the recess in the register housing (18). Reassemble the balance of the register in reverse order of disassembly.

Replacing Bearing and Seal Assembly (Item 48, New Style)

To replace the bearing and shaft seal assembly (48), or service the gear train on back of register housing (18), remove housing from meter by taking out four screws. *NOTE: The meter housing will be full of liquid so some means should be available to catch what drains from the case and lines.* To remove gears (22-25), remove three retaining rings (20) and drive key (21). Withdraw the drive shaft and gear (14), spacer (15), and all parts of bearing and seal assembly (48). Remove the nylon washer from item 48 and note its location. Remove both oilite bearings and both O-rings from bore in register housing. Using new parts, which consist of a new nylon washer, 2 oilite bearings, and 2 O-rings, reassembly parts in reverse order. Be sure to lubricate both O-rings with an O-ring lubricant before assembling.

Reassemble Gear Train

Reassemble gear train as follows: gear (24), key (21), cluster gear (25), retaining ring (20), control block (22), and retaining ring (20).

B-SIZE MEASURING CHAMBER DISASSEMBLY

The B-size measuring chamber can be removed for cleaning by taking out the four meter body screws (33) and lifting off the register housing (18). Remove the three measuring chamber screws (26). After separating the two halves and cleaning, reassemble, making sure the metal baffle (30) is seated in the groove in the two halves and through the slot in the measuring disk (29). Do not sharply strike or drop the phenolic parts while handling. Rotate the disk (29) to make sure it turns freely and replace in the meter body (32). Do not overtighten the screws. A torque of 20-25 pounds is sufficient. When reassembling the register to the old meter body, use a new O-ring (19).

PARTS LIST

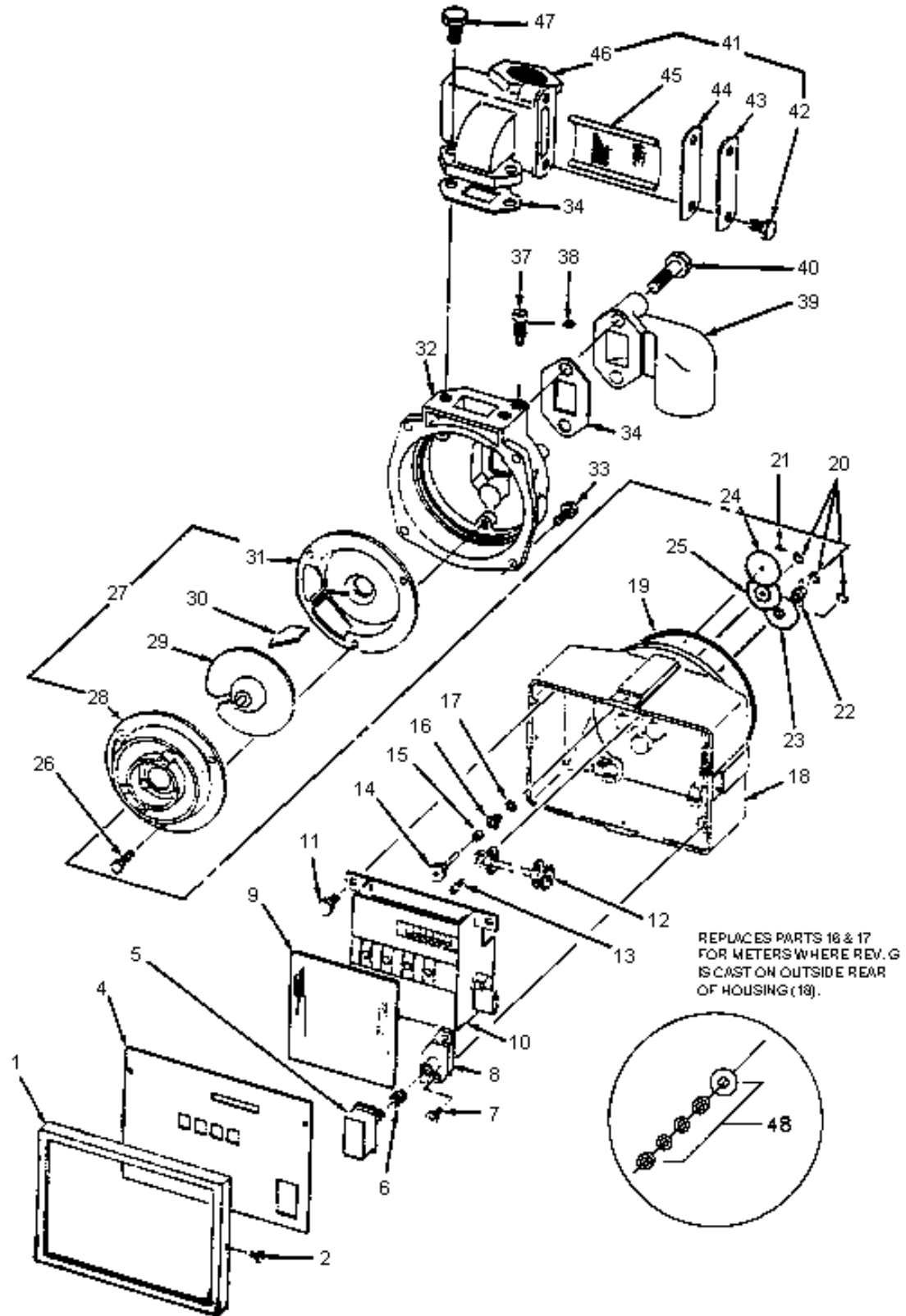
This manual lists parts information for the Model 4860 Meter. Using part numbers when ordering will expedite your order and reduce the possibility of the wrong parts being shipped. When ordering replacement parts, be sure to give the complete name and part number as shown in the appropriate parts lists.

Procedures requiring disassembly of portions of the meter should be performed by competent service personnel. Do not depend upon the repair service of a general mechanic unless he is thoroughly familiar with the mechanism. GASBOY has a distributor network which services fuel dispensing equipment and management systems in every section of the country.

WARNING:

To reduce the risk of electrical shock when servicing, turn off and lock out all power to the meter/pump.

NEW STYLE
(Mfr. after May 10,1995)



NEW STYLE METER - MANUFACTURED AFTER 5-10-95

- 036341 Meter Register, US Gallons
- 036343 Meter Register, Liters
- 036400 Register Assy., US Gallons (Consists of items 1-18, 20-25)
- 036404 Register Assy., Liters (Consists of items 1-18, 20-25)

Item	Part No.	Description	Item	Part No.	Description
1	012236	Bezel	41	063400	Inlet Flange & Strainer Assembly, 1"
2	052693	Bezel Screw	42	051880	Strainer Cover Screw
4	035309	Dial Mask, U.S. & Imperial	43	022915	Strainer Cover
	035313	Dial Mask, Liter Measure	44	027355	Strainer Cover Gasket
5	017269	Reset Button	45	063295	Strainer
6	057985	Reset Button Spring	46	003305	Strainer Body, 1", 60°
7	053737	Reset Bearing Screw	47	051985	Inlet Flange Screw
8	011816	Reset Bearing	48	036995	Bearing & Seal Assy. (new style)
9	028736	Dial Glass			<i>NOTE: New style assy. used on meters made after mid-1993. Use items 16 & 17 if no Rev is cast onto rear of housing.</i>
10	S00758	Register and Glass Assembly			
11	053901	Register Screws			
12	054513	Drive Shaft Assembly			
13	053626	Drive Shaft Assembly Screw			
14	054522	Drive Shaft and Gear			
15	056791	Spacer			
16	014095	Bearing & Seal Assy. (old style) Use item 48 if Rev G is cast onto rear of housing.			
17	048865	O-ring			
18	031020	Register Housing Assembly			
19	049075	O-ring			
20	049390	Retaining Ring			
21	031345	Drive Key			
22 -25		See Change Gears below			
26	025851	Screw, phenolic chamber			
	052750	Screw, bronze chamber			
27	019016	Measuring Chamber, phenolic (Standard, sold as assembly only. Consists of items 28-31)			
	019015	Measuring Chamber, Bronze (Optional)			
28		Measuring Chamber, Top			
29		Measuring disk			
30		Baffle			
31		Measuring Chamber, bottom			
32	012790	Meter Body			
33	051835	Meter Body Screw			
34	027055	Gasket			
37	053081	Adjusting Screw			
38	048895	O-ring			
39	003560	Discharge Flange, 1"			
40	052090	Discharge Flange Screw			

CHANGE GEARS

US - Gas and Diesel

22	012491	Control Block, 12T
	012490	Control Block, Bronze, 12T
23	028168	Cluster Gear, 12T-39T
24	028448	Drive Gear, 36T
25	028172	Cluster Gear, 15T-38T

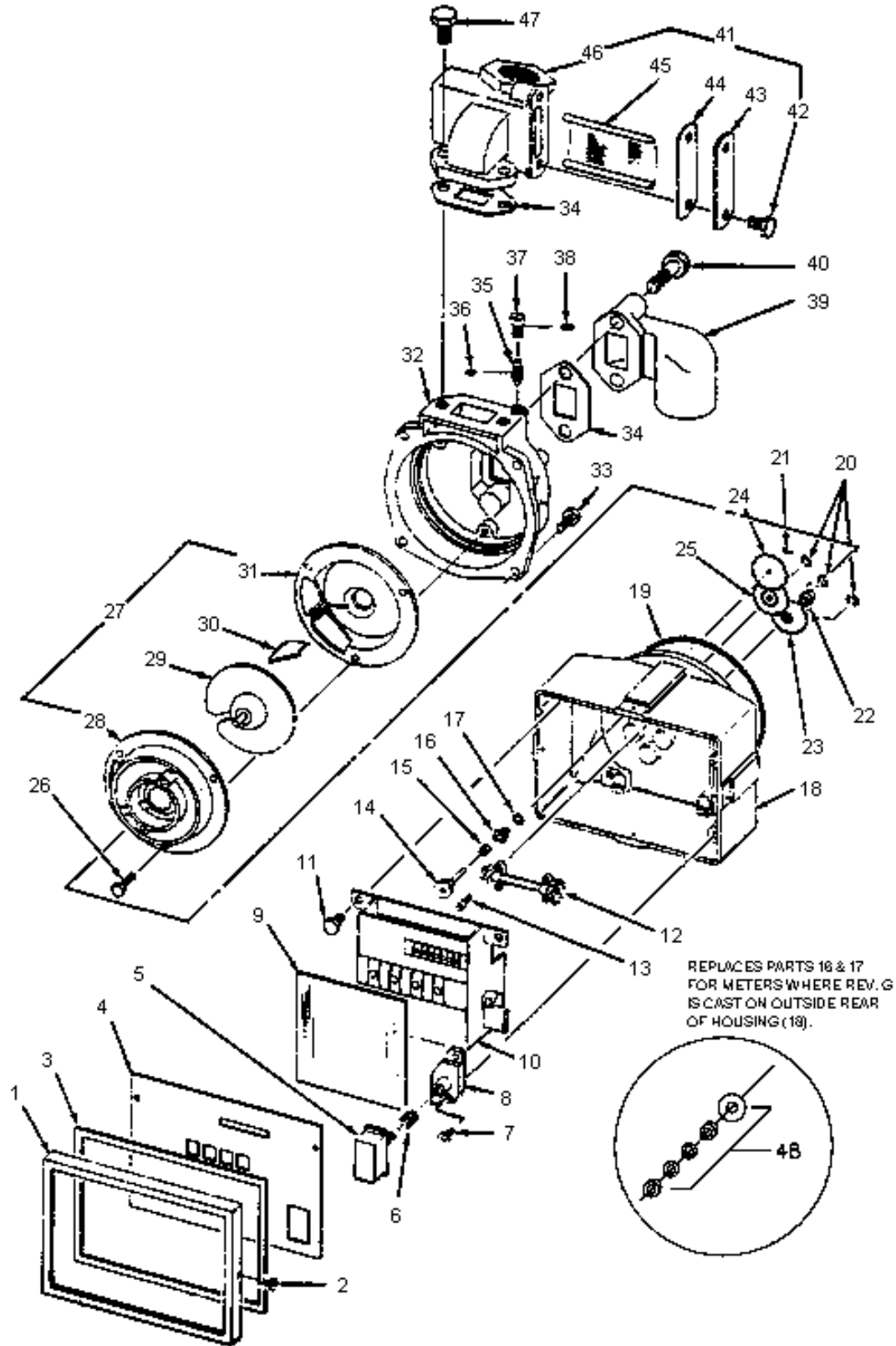
Liters - Gas and Diesel

22	012491	Control Block, 12T
	012490	Control Block, Bronze, 12T
23	028172	Cluster Gear, 15T-38T
24	028151	Drive Gear, 25T
25	028175	Cluster Gear, 29T-36T

Imperial - Gas and Diesel

22	012491	Control Block, 12T
	012490	Control Block, Bronze, 12T
23	028168	Cluster Gear, 12T-39T
24	028449	Gear, 37T
25	028174	Cluster Gear, 13-39T

OLD STYLE
(Mfr. before May 10,1995)



036341	Meter Register, US Gas	036344	Meter Register, Liter Diesel
036342	Meter Register, US Diesel	036345	Meter Register, Imperial Gas
036343	Meter Register, Liter Gas	036346	Meter Register, Imperial Diesel

036400	Register Assy., US Gasoline (Consists of items 1-18, 20-25)
036401	Register Assy., US Diesel (Consists of items 1-18, 20-25)
036404	Register Assy., Liter Gas (Consists of items 1-18, 20-25)
036405	Register Assy., Liter Diesel (Consists of items 1-18, 20-25)

Item	Part No.	Description	Item	Part No.	Description
1	012236	Bezel	41	063400	Inlet Flange & Strainer Assembly, 1"
2	052693	Bezel Screw	42	051880	Strainer Cover Screw
3	026786	Gasket	43	022915	Strainer Cover
4	035309	Dial Mask, U.S. & Imperial	44	027355	Strainer Cover Gasket
	035313	Dial Mask, Liter Measure	45	063295	Strainer
5	017269	Reset Button	46	003305	Strainer Body, 1", 60°
6	057985	Reset Button Spring	47	051985	Inlet Flange Screw
7	053737	Reset Bearing Screw	48	036995	Bearing & Seal Assy. (new style)
8	011816	Reset Bearing			<i>NOTE: New style assy. used on meters made after mid-1993. Use items 16 & 17 if no Rev is cast onto rear of housing.</i>
9	028736	Dial Glass			
10	S00758	Register and Glass Assembly			
11	053901	Register Screws			
12	054513	Drive Shaft Assembly			
13	053626	Drive Shaft Assembly Screw			
14	054522	Drive Shaft and Gear			
15	056791	Spacer			
16	014095	Bearing & Seal Assy. (old style) Use item 48 if Rev G is cast onto rear of housing.			
17	048865	O-ring			
18	031020	Register Housing Assembly			
19	049075	O-ring			
20	049390	Retaining Ring			
21	031345	Drive Key			
22	-25	See Change Gears below			
26	025851	Screw, phenolic chamber			
	052750	Screw, bronze chamber			
27	019016	Measuring Chamber, phenolic (Standard, sold as assembly only. Consists of items 28-31)			
	019015	Measuring Chamber, Bronze (Optional)			
28		Measuring Chamber, Top			
29		Measuring disk			
30		Baffle			
31		Measuring Chamber, bottom			
32	012790	Meter Body			
33	051835	Meter Body Screw			
34	027055	Gasket			
35	053080	Adjusting Screw			
36	048865	O-ring			
37	052195	Adjusting Screw Cap			
38	048895	O-ring			
39	003560	Discharge Flange, 1"			
40	052090	Discharge Flange Screw			
					CHANGE GEARS - U.S. GALLONS
			22	012491	Control Block, 12T
				012490	Control Block, Bronze, 12T
			23	028168	Cluster Gear, 12T-39T
			24	028450	Drive Gear, 37T, Gas
				028465	Drive Gear, 38T, Diesel
			25	028172	Cluster Gear, 15T-38T, Gas
				028173	Cluster Gear, 15T-39T, Diesel
					CHANGE GEARS - LITERS, TENTHS (99.9)
			22	012491	Control Block, 12T
				012490	Control Block, Bronze, 12T
			23	028172	Cluster Gear, 15T-38T, Gas
				028173	Cluster Gear, 15T-39T, Diesel
			24	028151	Drive Gear, 25T, Gas
				028171	Drive Gear, 26T, Diesel
			25	028175	Cluster Gear, 29T-36T
					CHANGE GEARS - IMPERIAL GALLONS
			22	012491	Control Block, 12T
				012490	Control Block, Bronze, 12T
			23	028168	Cluster Gear, 12T-39T
			24	028449	Drive Gear, 37T, Gas
				028163	Drive Gear, 39T, Diesel
			25	028174	Cluster Gear, 13-39T

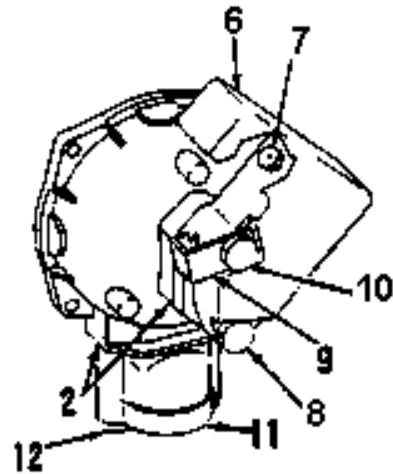
SPECIFIC METER MODEL CONFIGURATIONS

All flanged castings are interchangeable and can be mixed to match special requirements. Please consult the nearest Gasboy representative for special applications. All configurations shown on this page and the next page use the following parts list.

Item	Part No.	Description	Item	Part No.	Description
1	052000	Inlet Flange Screw	8	052105	Discharge Screw
2	027055	Gasket	9	030205	Nozzle Hook
3	003597	Inlet Flange, 3/4", 15°	10	052090	Body & Nozzle Hook Screw
4	052105	Discharge Flange Screw	11	003650	Inlet Flange, 1"
5	003542	Discharge, 3/4", Vac. breaker	12	052112	Inlet Flange Screw
6	003235	Hose Drain Valve Body	13	003560	Discharge Flange, 1"
7	066570	Vacuum Breaker			

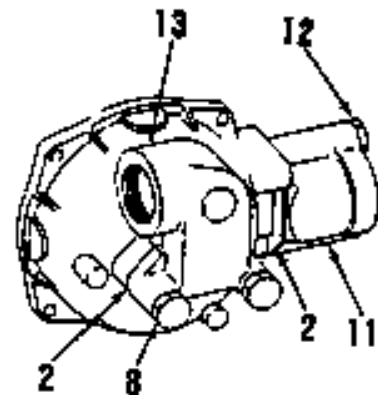
035867 Model 4860-7A For Hand Pump Applications

Hose drain valve body equipped with vacuum breaker to permit easy draining of hose and prevent siphoning on aboveground tank applications. Nozzle boot and hook provided to hang up hand pump nozzle. 1" NPT inlet; 3/4" NPT outlet.



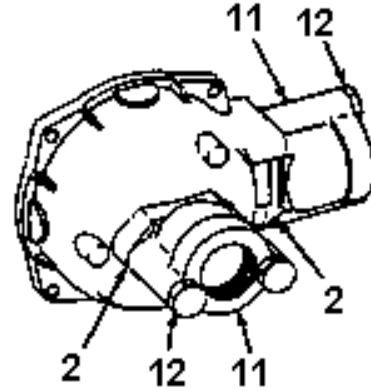
035882 Model 4860-4D For Straight Piping Applications

Register can be oriented to any of four 90° positions for proper reading to conform to vertical or horizontal straight piping requirements. 1" NPT inlet and outlet.



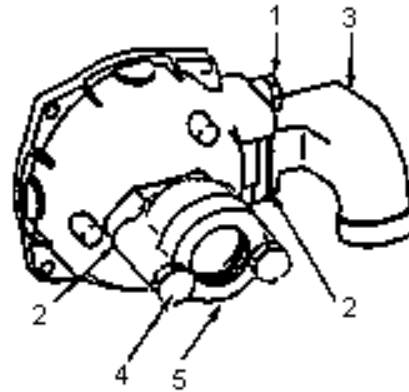
035888 Model 4860-4E
For 90° Turn Piping Applications

Register can be oriented to any of four 90° positions for proper reading to conform to piping requirements. 1" NPT inlet and outlet.



035936 Model 4860-4F
For Electric Pump Applications

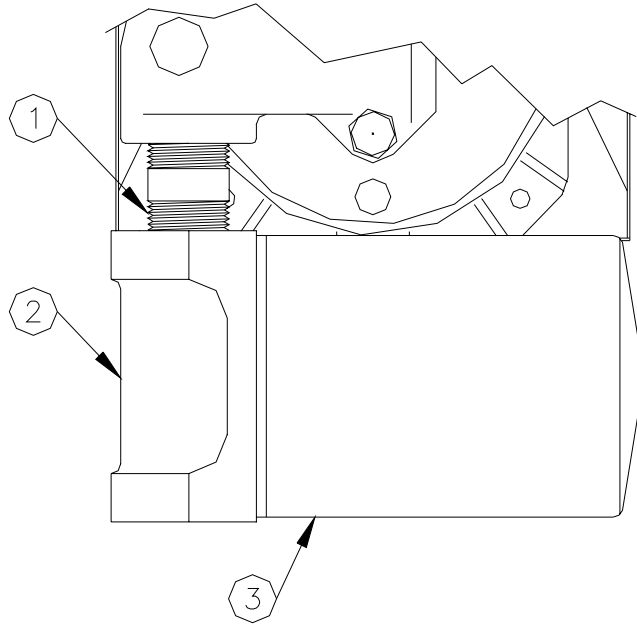
Inlet flange offset to tip register back 15° from vertical for convenient reading. Discharge flange angled at 30° to prevent hose kink at coupling. 3/4" NPT inlet and outlet.



033026 REPAIR KIT, 4860 METER

Item	Part No.	Description
1	S00758	Register and Glass Assembly
2	036995	Meter Parts-Stuffing Box
3	027055	Gasket, Inlet-Outlet
4	027355	Gasket, Strainer Cover
5	031345	Key, Spring
6	057985	Setback Spring
7	048895	O-Ring, 5/16 x 7/16
8	049075	O-Ring, 4-5/8 x 4-7/8
9	049390	E-Ring, 5-33-15
10	011816	Bearing
11	017269	Reset Button
12	014095	Bearing, Seal-Stuffing Box
13	018074	O-Ring, 5/32 x 9/32

METER BREAKDOWN/FILTER



Item	Part No.	Description
1	044512	Pipe, 1 x 1-3/4"
2	003044	Filter Adapter, 1"
3	026005	Filter, 7 Micron, Particulate only
	026015	Filter, 30 Micron, Water and Particulate
	026042	Filter, 10 Micron, Water and Particulate
	025909	Filter, 1 Micron, Particulate only, Methanol

WARRANTY

General Statements:

Gasboy International LLC warrants all new equipment manufactured by Gasboy against defective material and/or workmanship, for the warranty period specified below, when the equipment is installed in accordance with specifications prepared by Gasboy.

This warranty does not cover damage caused by accident, abuse, Acts of God, lack of surveillance of automatic recording systems, negligence, mis-application, faulty installation, improper or unauthorized maintenance, installation or use in violation of product manuals, instructions, or warnings. Under no circumstance shall Gasboy be liable for any indirect, special, or consequential damages, losses, or expenses to include, but not limited to, loss of product, loss of profits, litigation fees, or the use, or inability to use, our product for any for any purpose whatsoever.

Parts Only - During the warranty period, Gasboy will, at its option, repair or replace defective parts returned transportation prepaid to its factory.

On-Site Labor Included - Gasboy will also provide, within the Continental United States and during the warranty period, the services of an Authorized Service Representative (ASR) for on-site repair or replacement of defective parts.

Replacement Parts - Any system components that are not part of the original system order, including Island Card Readers, Pump Control Units, etc., are considered replacement parts.

Equipment	Term	Coverage
Commercial Pumps and Dispensers Full-Cabinet Consumer Pumps	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts and Labor.
Small Transfer Pumps, Meters, Pressure Regulators	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.- Excepting the Model 2020 Hand Pump, which has a 90-day warranty from date of GASBOY International's invoice.	Parts Only.
Keytrol	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts and Labor.
Fuel Management Systems: - CFN/ Profit Point - Series 1000/Fleetkey - TopKAT - Fuel Point Readers (sold with new systems)	One year from date of start-up or 15 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.- The basic warranty only applies to systems which have been started up by a Gasboy Authorized Service Representative (ASR).	Parts and Labor.
Additional Fuel Point Items: - Fuel Point Readers sold for retrofitting existing systems. - Fuel Point vehicle and dispenser components.	One year from date of start-up or 15 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts Only.
Encoders, Embossers, Modems, CRTs, and Logger Printers	Purchased with Fuel Management System (Encoders, Embossers only): 90 days from the date of start-up by a Gasboy ASR, or 180 days from date of Gasboy International's invoice, whichever occurs first. Purchased with Fuel Management System (Modems, CRTs, and Logger Printers only): Matches system warranty. Purchased Separately: 90 days from date of Gasboy International's invoice to the purchaser.	Purchased with System (Encoders, Embossers only): Parts only. Purchased with System (Modems, CRTs, Logger Printers only): Matches system warranty. Purchased Separately: Parts Only.
Air Diaphragm Pumps	Three years from date of purchase (for full warranty description, see Price List).	Parts Only.
Items not manufactured by Gasboy (ex. automatic nozzles, hoses, swivels, etc.)	Not warranted by Gasboy International (consult original manufacturer's warranty).	Not Applicable.
Replacement Parts	One year from date of Gasboy International's invoice to the purchaser.	Parts Only.

To the extent permitted by law, this warranty is made in lieu of all other warranties, expressed or implied, including warranties of freedom from patent infringement, or merchantability, or fitness for a particular purpose, or arising from a course of dealing or usage of trade. No one is authorized to vary the terms of the warranty nor may anyone make any warranty of representation, or assume any liability other than that herein stated, in connection with the sale described herein. The acceptance of any order by Gasboy International is expressly made subject to the purchaser's agreement to these conditions.



GASBOY INTERNATIONAL LLC

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