

METER REGISTRATION

PRODUCT GUIDE



Identify and order the meter registers, printers, presets, and accessories that best fit your application.

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INTRODUCTION

Veeder-Root is the world's largest manufacturer of registers and printers for metering devices. These meter registers are sold to almost all meter manufacturers as part of a metering package. This means that Veeder-Root meter registers are employed in many different industrial applications, requiring various types of unit designations, graduations, presets and flow rate ratios.

This guide will assist customers in specifying replacement meter registers, presets and printers.

The meter register line consists of the following basic components:

- 2 Registers (whole numbers and tenths)
- 4 Printers (accumulative, zero-start, for both whole and tenths units)
- 2 Presets (4-figure and 5-figure)

When these eight basic components are combined with the large number of possible crystals (plastic face plates), there are a few thousand possible part numbers to describe a special meter register stack. To simplify ordering and stocking of a meter register stack, the most commonly ordered register combinations are listed on the following pages. Many of these can be easily converted for different applications by changing crystals.

METER REGISTER, PRINTER AND PRESET 7892 SERIES



METER REGISTER PART NUMBER GUIDE

Old Style*	New Style	Application and Description	Old Style*	New Style	Application and Description
Meter Register Only			Meter Register with Zero-Start Printer (Face Down – For Veeder-Root-style ticket)		
0169100-001	0788700-001	Bulk terminal; Registers only; Gallons crystal; Right-hand wheel 0-9, with 10 graduations	0169300-001		
0169200-005	0788700-002	Tank truck; Gallons crystal with decimal; Right-hand wheel 0-9, with 10 graduations	0795200-001 **	0789000-001	Bulk terminal: Gallons crystal: Right-hand wheel 0-9, with 10 graduations
0169200-001	0788700-009	Barrels; Right-hand wheel 00-95, with 100 graduations	0169400-001		
0169100-022	0788700-013	Barrels; Right-hand wheel 0-9	0795300-001 **	0789000-002	Tank truck: Gallons crystal with decimal; Right-hand wheel 0-9, with 10 graduations
N/A	0788700-036	Tank truck; Gallons crystal with decimal; Right-hand wheel 0-9, with 100 graduations (10 bisect)	N/A	0789020-001	Tank truck; Gallons crystal with decimal; Right-hand wheel 0-9, with 10 graduations: Left-hand reset
N/A	0788700-039	Bulk terminal; Gallons crystal; Right-hand wheel 0-9, with 100 graduations (10 bisect)	N/A	0789020-703	Tank truck: Specify crystal: Right-hand wheel 0-9, with 100 graduations (10 bisect): Left-hand reset
N/A	0788700-003	Bulk terminal. Liters crystal. Right-hand wheel 0-9, with 10 graduations	N/A	0789000-036	Bulk terminal: Gallons crystal: Right-hand wheel 0-9, with 100 graduations
N/A	0788700-004	Bulk terminal. Pounds crystal. Right-hand wheel 0-9, with 10 graduations	N/A	0789000-733	Tank truck: Specify crystal: Right-hand wheel 0-9, with 100 graduations
N/A	0788700-040	Bulk terminal. Liters crystal. Right-hand wheel 0-9, with 100 graduations	N/A	0789000-041	Liters with EEC Printer – will accept marker bar. Right-hand wheel 0-9, with 10 graduations
N/A	0788700-041	Liters, Right-Hand wheel 00-90, with 100 graduations	N/A	0789000-046	Liters with EEC Printer – will accept L marker bar. Right-hand wheel 00-90, with 100 graduations
Meter Register with Pulser Installed			Meter Register with Zero-Start Printer and Factory Installed Pulser		
N/A	0788702-006	Bulk terminal; 10:1 pulser; Gallons crystal; Right-hand wheel 0-9, with 10 graduations (1 Pulse per 1 Gallon)	N/A	0789010-001	Tank truck; 10:1 pulser; Gallons crystal with decimal; Right-hand wheel 0-9, with 10 graduations (1 Pulse per 1/10 Gallon)
N/A	0788702-008	Bulk terminal: 1:1 pulser; Gallons crystal; Right-hand wheel 0-9, with 10 graduations (1 Pulse per 10 Gallons)	N/A	0789010-002	Tank truck; 1 :1 pulser; Gallons crystal with decimal; Right-hand wheel 0-9, with 10 graduations (1 Pulse per 1 Gallon)
N/A	0788702-004	Tank truck; 10:1 pulser; Gallons crystal with decimal; Right-hand wheel 0-9, with 10 graduations (1 Pulse per 1/10 Gallon)	N/A	0789010-003	Bulk terminal; 10:1 pulser; Gallons crystal; Right-hand wheel 0-9, with 10 graduations (1 Pulse per 1 Gallon)
N/A	0788702-009	Tank truck; 1:1 pulser; Gallons crystal with decimal; Right-hand wheel 0-9, with 10 graduations (1 Pulse per 1 Gallon)	N/A	0789010-004	Bulk terminal; Gallons crystal; Right-hand wheel 0-9, with 10 graduations, 1:1 Pulser (1 Pulse per 1 Gallon)
N/A	0788702-005	Barrels; 1:1 pulser; Right-hand wheel 00-95, with 100 graduations (1 Pulse per 1 Barrel)			
N/A	0788702-703	Tank truck; 1:1 pulser; Specify crystal; Right-hand wheel 0-9, with 100 graduations (10 bisect) (1 Pulse per 1 Whole Unit)			
N/A	0788703-700	Right-hand wheel 0-9, with 100 graduations with 0767181-327 pulser. Specify crystal.			

* Old-style equipment, where rebuildable, requires a core exchange and will be replaced with new style.

** This part number supersedes the old style part number listed above.

METER REGISTER PART NUMBER GUIDE (CONTINUED)

Old Style*	New Style	Application and Description	Old Style*	New Style	Application and Description
Meter Register with Zero-Start Printer (Face Up – For Neptune-Type Parts)			Meter Register with Accumulative Printer and Factory Installed Pulsar		
N/A	0789002-001	Bulk terminal; Gallons crystal: Right-hand wheel 0-9, with 10 graduations	N/A	0789011-001	Tank truck: 10:1 pulser: Gallons crystal with decimal: Right-hand wheel 0-9, with 10 graduations (1 Pulse per 1/10 Gallon)
0169400-002 0795300-012 **	0789002-002	Tank Truck: Gallons crystal with decimal: Right-hand wheel 0-9, with 10 graduations	N/A	0789011-005	Bulk terminal: 10:1 pulser; Gallons crystal: Right-hand wheel 0-9, with 10 graduations (1 Pulse per 1 Gallon)
N/A	0789022-701	Tank truck; Specify crystal: Right- hand wheel 0-9, with 10 graduation; Left-hand reset	N/A	0789011-003	Barrels: 1:1 pulser; Right-hand wheel 00-95, with 100 graduations (1 Pulse per 1 Barrel)
N/A	0789002-010	Liters crystal; Printer will accept L marker bar. Right-hand wheel 0-9, with 100 graduations.	N/A	0789011-700	Bulk terminal; 1:1 pulser: Specify crystal: Right-hand wheel 0-9, with 10 graduations (1 Pulse per 10 Whole Units)
Meter Register with Accumulative Printer (Face Down – For Veeder-Root-style ticket)			Meter Preset		
0169600-005 0789800-003 **	0789001-001	Bulk terminal; Gallons crystal; Right- hand wheel 0-9, with 10 graduations	N/A	0788951-004	4-Digit preset for Brooks meter
0169500-001 0789700-001 **	0789001-002	Tank truck; Gallons crystal with decimal; Right-hand wheel 0-9, with 10 graduations	N/A	0788951-008	4-Digit preset for Smith meter
0169600-017 0789800-009 **	0789001-013	Barrels; Right-hand wheel 0-9, with 10 graduations	N/A	0788951-700	4-Digit preset for all other meters. Specify manufacturer.
0169500-003 0789700-003 **	0789001-008	Barrels; Right-hand wheel 00-95, with 100 graduations	N/A	0788901-002	5-Digit preset for Tokheim meter
N/A	0789001-031	Bulk terminal; Gallons crystal: Right-hand wheel 0-9, with 100 graduations	N/A	0788901-003	5-Digit preset for Smith meter
N/A	0789001-703	Tank truck; Specify crystal; Right-hand wheel 0-9, with 100 graduations	N/A	0788901-007	5-Digit preset for Keene meter
N/A	0789021-700	Bulk terminal; Specify crystal: Right-hand wheel 0-9, with 10 graduations: Left-hand reset	N/A	0788901-009	5-Digit preset for Brooks meter
N/A	0789021-701	Tank truck; Specify crystal: Right-hand wheel 0-9, with 10 graduations; Left-hand reset	N/A	0788901-700	5-Digit preset for all other meters. Specify manufacturer.
Meter Register with Accumulative Printer (Face Up – For Neptune-Type Parts)			Meter Register with 4-Wheel Preset***		
N/A	0789003-001	Bulk terminal; Gallons crystal: Right- hand wheel 0-9, with 10 graduations	N/A	0789150-702	Register: Right-hand wheel 0-9, with 100 graduations. Specify crystal. Specify meter manufacturer for preset drive coupling.
N/A	0789003-002	Tank truck; Gallons crystal. with decimal; Right-hand wheel 0-9, with 10 graduations	Meter Register with 5-Wheel Preset***		
			N/A	0789100-704	Register: Right-hand wheel 0-9, with 10 graduations. Specify crystal. Specify meter manufacturer for preset drive coupling.
			Meter Register with Printer and Preset***		
			N/A	Please order by specifying part numbers from the above meter register preset combinations plus the part number from printer with self-closing cover.	

* Old-style equipment, where rebuildable, requires a core exchange and will be replaced with new style.

** This part number supersedes the old style part number listed above.

*** Up/down gear plate required.

METER REGISTER PART NUMBER GUIDE (CONTINUED)

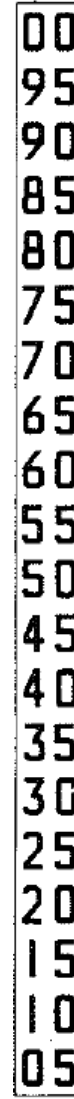
Old Style*	New Style	Application and Description
Printer Mechanisms Only		
N/A	0788800-001	Zero-start printer
N/A	0788800-003	Zero-start printer with 10ths wheel
N/A	0788802-001	Zero-start printer for Neptune-style ticket
N/A	0788802-002	Zero-start printer for Neptune-style ticket with 10ths wheel
N/A	0788801-001	Accumulative printer
N/A	0788801-003	Accumulative printer with 10ths wheel
N/A	0788803-001	Accumulative printer for Neptune- style ticket
N/A	0788803-002	Accumulative printer for Neptune-style ticket with 10ths wheel
N/A	0795100-006	Zero-start printer; Right-hand wheel 0-9, with gear for use on non-computer ticket printer
N/A	0749800-007	Accumulative printer; Right-hand wheel 0-9, with gear for use on non-computer ticket printer
N/A	0788830-001	Zero-start printer with 10ths wheel; Left-hand reset
N/A	0788832-001	Zero-start printer with 10ths wheel for Neptune style ticket; Left-hand reset
N/A	0788831-001	Accumulative printer; Left-hand reset
N/A	0788831-002	Accumulative printer with 10ths wheel; Left-hand reset

Old Style*	New Style	Application and Description
Printers with Self-Closing Cover		
N/A	0788810-001	Zero-start printer
N/A	0788810-004	Zero-start printer with 10ths wheel
N/A	0788811-001	Accumulative printer
N/A	0788811-004	Accumulative printer with 10ths wheel
N/A	0788812-003	Zero-start printer for Neptune with 10ths wheel
N/A	0788812-004	Zero-start printer for Neptune

* Old-style equipment, where rebuildable, requires a core exchange and will be replaced with new style.

7887 METER REGISTER RIGHT-HAND WHEEL SELECTION GUIDE

WHEEL SERIES 324625-XXX

					
-001 0-9 With Ten Graduations	-007 0-9 With One-Hundred Graduations & Ten Bisecting Lines	-008 00-90 With One-Hundred Graduations & Ten Bisecting Lines	-005 00-95 With One-Hundred Graduations	-006 0-9 With One-Hundred Graduations	-011 0-9 With Twenty Graduations & Ten Bisecting Lines

FACE PLATES

Each 7887 register is supplied with a Dial/Thin Crystal, a two-piece clear crystal and painted laser etched aluminum dial:

DESCRIPTION	U.S. PART NO.
Gallons	0324695-001
Gallons and Tenths	0324695-015
Liters	0324695-002
Barrels	0324695-010
Pounds	0324695-003

DESCRIPTION	U.S. PART NO.
CRYSTAL DIAL GALLONS	0324695-001
CRYSTAL DIAL LITERS	0324695-002
CRYSTAL DIAL POUNDS	0324695-003
CRYSTAL DIAL IMPERIAL GALLONS	0324695-004
CRYSTAL DIAL DEKALITERS	0324695-005
CRYSTAL DIAL METER UNITS	0324695-006
CRYSTAL DIAL BARRELS	0324695-010
CRYSTAL DIAL LITERS w/DECIMAL	0324695-012
CRYSTAL DIAL M3	0324695-014
CRYSTAL DIAL GALLONS w/DECIMAL	0324695-015
CRYSTAL DIAL LITRES	0324695-026
CRYSTAL DIAL CUBIC METRES w/DECIMAL	0324695-027
CRYSTAL DIAL DEKALITRES	0324695-029
CRYSTAL DIAL BARRELS w/DECIMAL	0324695-037
CRYSTAL DIAL LITRES w/COMMA	0324695-045
CRYSTAL DIAL LITRE L *FRE*	0401372-013
CRYSTAL DIAL LITRI L *ITA*	0401372-035

Following Face Plates are for 7889 Presets:

DESCRIPTION	U.S. PART NO.
5-Figure; Plain	0324824-001
5-Figure; Decimal between 1st & 2nd Wheel	0324824-003
4-Figure; Plain	0324824-002
4-Figure; Decimal between 1st & 2nd Wheel	0324824-004

METER REGISTER ACCESSORIES

Several accessories can be added to meter register combinations to expand the control and (usefulness of registers in product metering applications. All accessories are housed in an explosion-proof enclosure suitable for Class 1, Group D outdoor hazardous environments.

1. **Pulsers** — two types of pulsers can be factory and field mounted on all registers. This allows remote readout, printing or interface to computer terminals (e.g., 7690 remote printer).

A. Reed Contact Pulsers

- **Series 1871** 1:1 ratio gives one contact closure for each complete revolution of this pulser shaft. Its maximum pulse rate is 300 cpm.
- **Series 7697** 10:1 ratio gives ten contact closures for each complete revolution of the pulser shaft. Its maximum pulse rate is 6000 cpm.

- B. **Solid State Pulser Series 7671** uses the Hall effect principle for high-speed pulsing to computers or remote printers. The higher speed capability (50,000 cpm) makes this pulser suitable for higher resolution (1/50 and 1/100 gallon pulsing) and higher product flow rates. Dual channel feature gives the ability to check for pulser malfunction (must be incorporated in electronic controls).

2. **Tray Sensing Switch** prevents transfer of product until the ticket tray has been put in the start position and the start reading has been printed on the part (if inserted).

PULSER SELECTION GUIDE FOR METER REGISTER

- For selection of pulser and pulse rate, see illustrations below. Combinations of 1 pulse per gallon or 10 pulses per gallon are available.



WHOLE GALLONS CRYSTAL –
FOR **ONE PULSE EACH GALLON**
USE A 10:1 PULSER



GALLONS & TENTHS CRYSTAL –
FOR **ONE PULSE PER GALLON**
USE A 1:1 PULSER



GALLONS & TENTHS CRYSTAL –
FOR **ONE PULSE PER 1/10 GALLON** USE A 10:1 PULSER

ACCESSORIES FOR METER REGISTERS

PULSER – UL/CSA APPROVED

Part Number	Ratio	Description
0769780-012	10:1	Pulser only
0187180-050	1:1	Pulser only
0767181-327	100:1	Pulser only

7887 SERIES REGISTERS

Part Number	Ratio	Description
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FOR REGISTERS WITH SERIAL NO. 372024 AND BELOW:

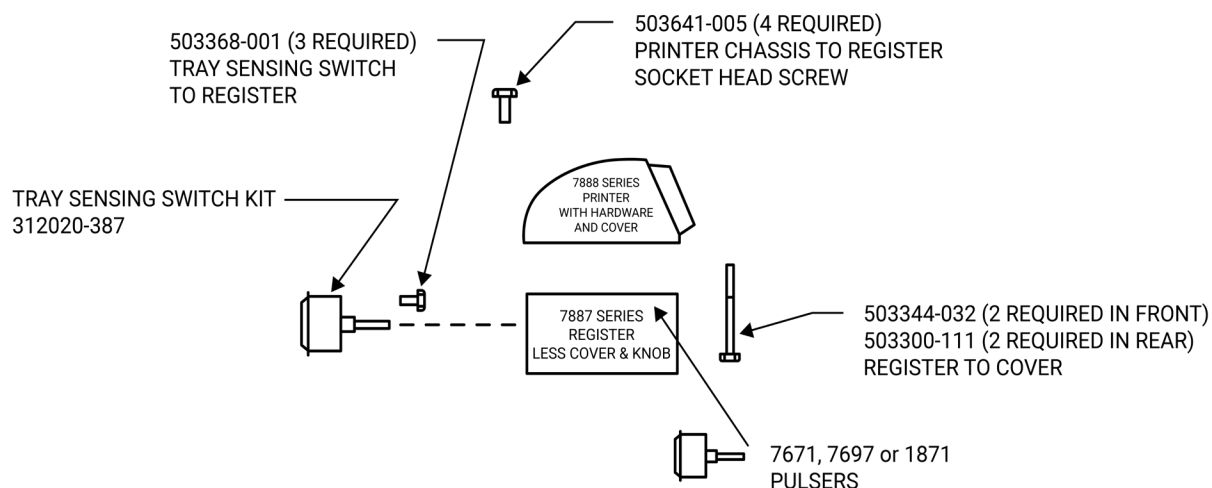
0312020-452	10:1	Pulsers, predrilled housing, totalizer, drive gear bracket group, pinion shaft, gearing, label, mounting hardware, seal, seal wire, and instructions
0312020-453	1:1	Pulser, otherwise the same as 0312020-452
0312020-907	100:1	Pulser, otherwise the same as 0312020-452

FOR REGISTERS WITH SERIAL NO. 372025 AND ABOVE:

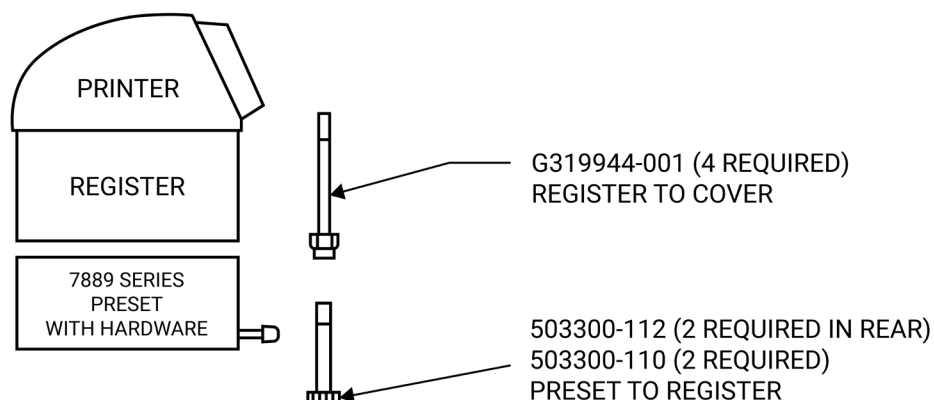
0312020-905	10:1	Pulser, predrilled housing, label, gearing, mounting hardware, seal, seal wire, and instructions
0312020-906	1:1	Pulser, otherwise the same as 0312020-905
0312020-908	100:1	Pulser, otherwise the same as 0312020-905
0370020-009	N/A	3 Bolt Pulser mounting hardware

TRAY SENSING SWITCH KIT

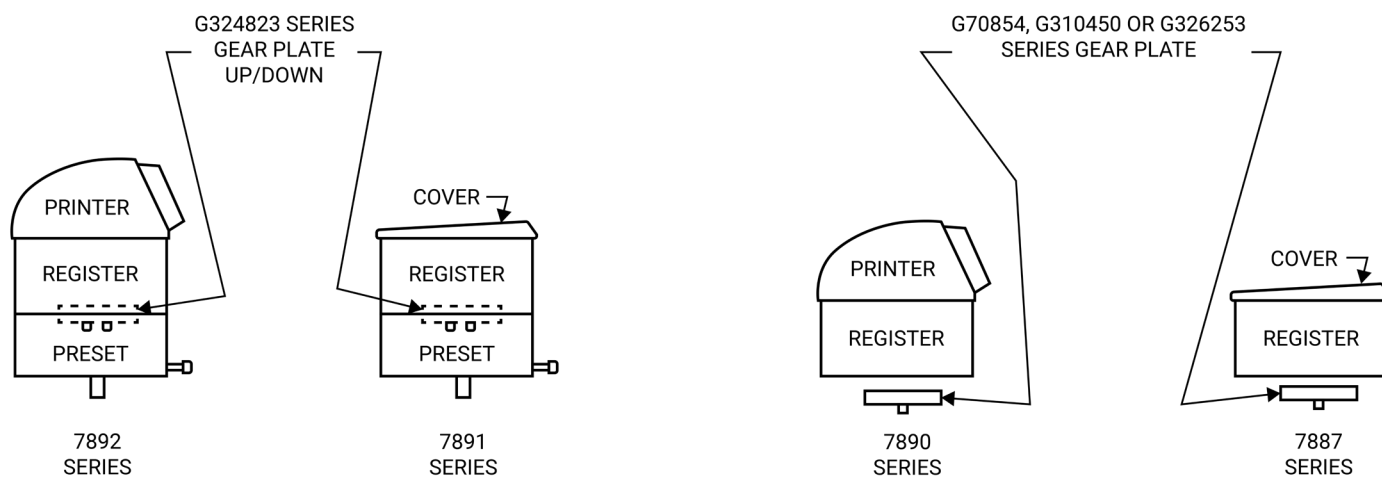
Part Number	Description
0312020-387	Tray Sensing switch with complete hardware and template for drilling holes



ACCESSORIES FOR METER REGISTERS

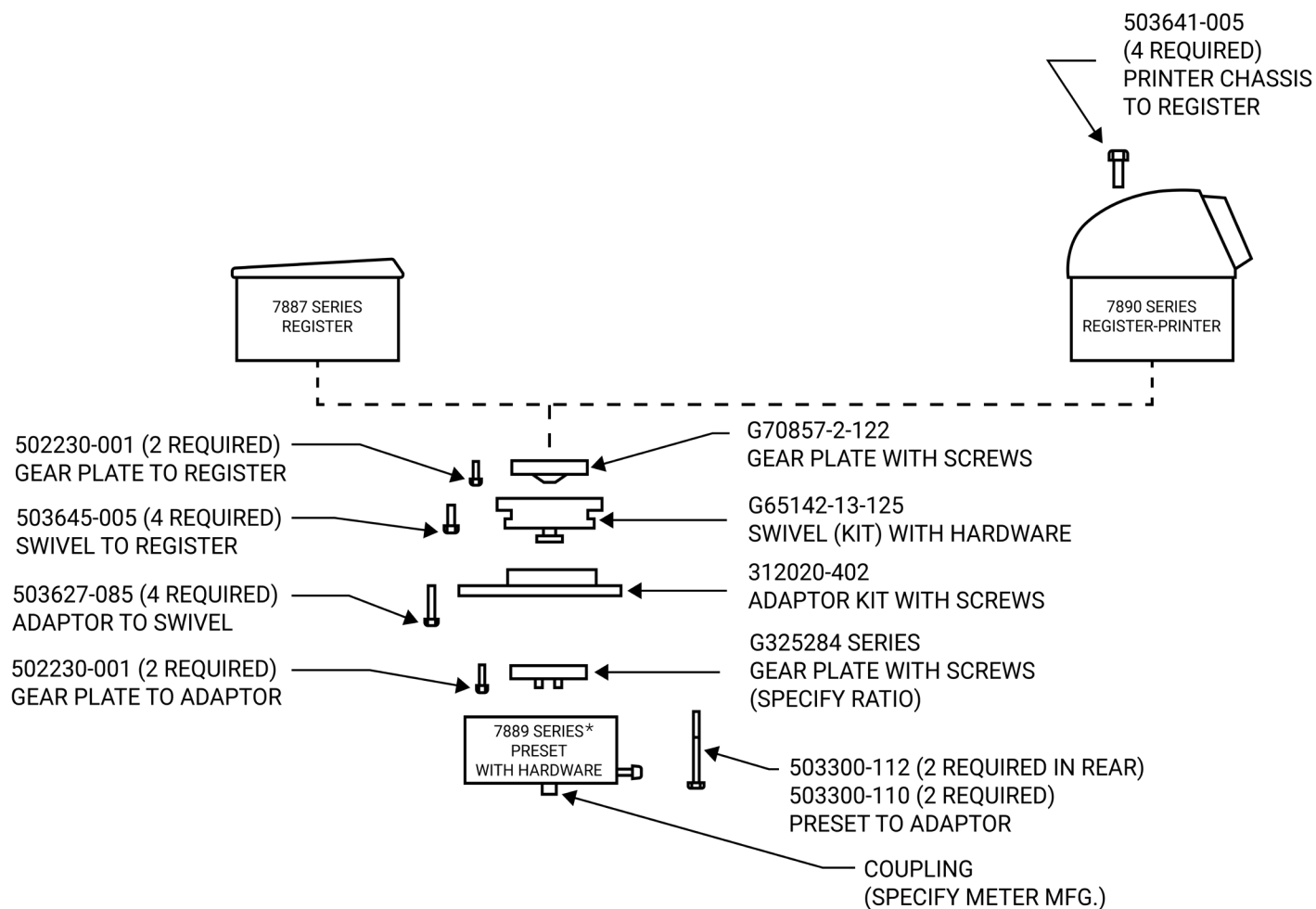


METER REGISTER COMBINATIONS



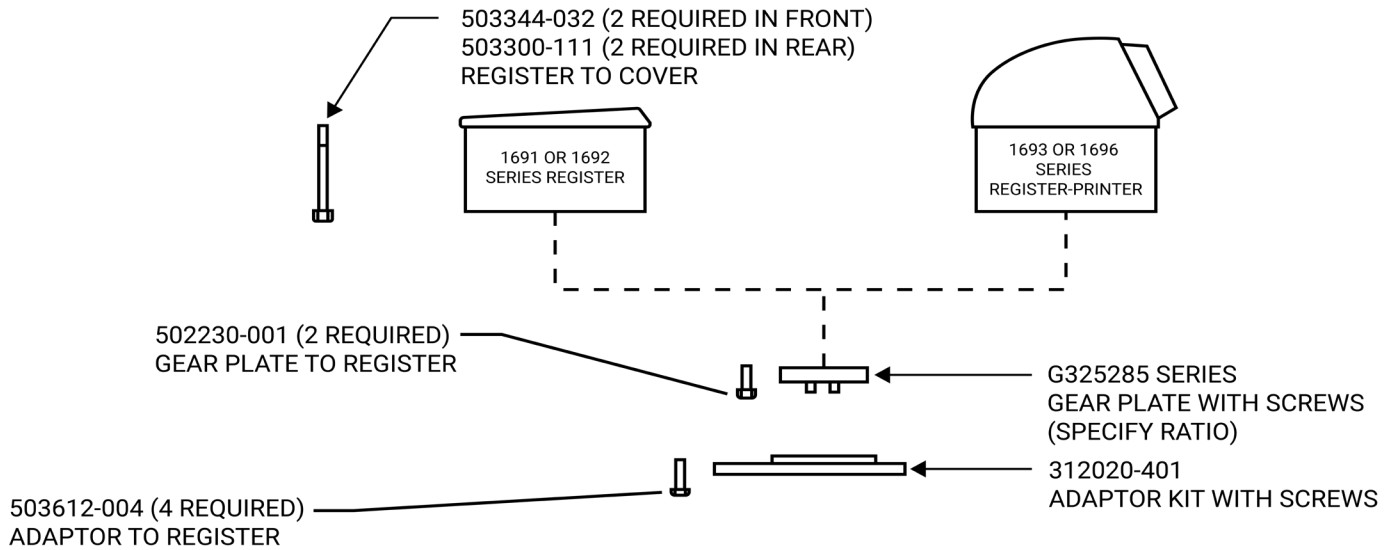
When ordering gear plates, it will be necessary to specify direction of **shaft rotation**. This can be done by looking from the bottom of the Register/Preset/Printer and/or Gear Plate Assembly. Observe the shaft rotation (clockwise [CW] or counterclockwise [CCW]) that causes the numbers to advance.

PRESET/REGISTER/PRINTER WITH SWIVEL



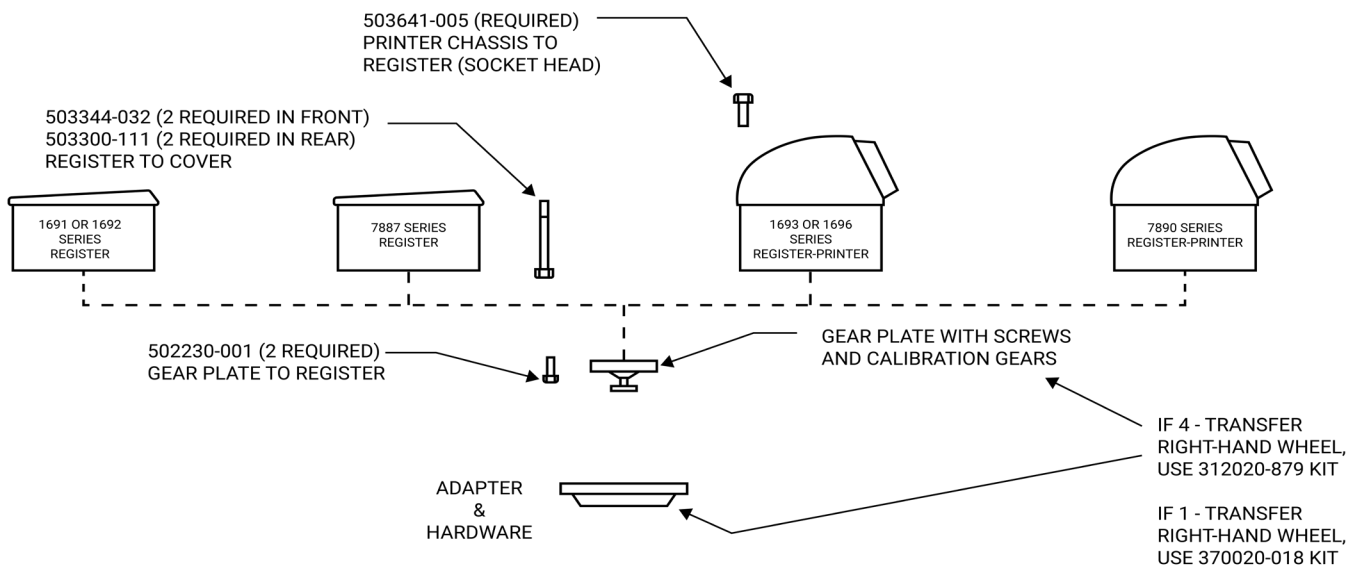
* Not used on LPG Applications.

MOUNTING OLD-STYLE REGISTER ON NEW-STYLE PRESET



METER ADAPTER KITS

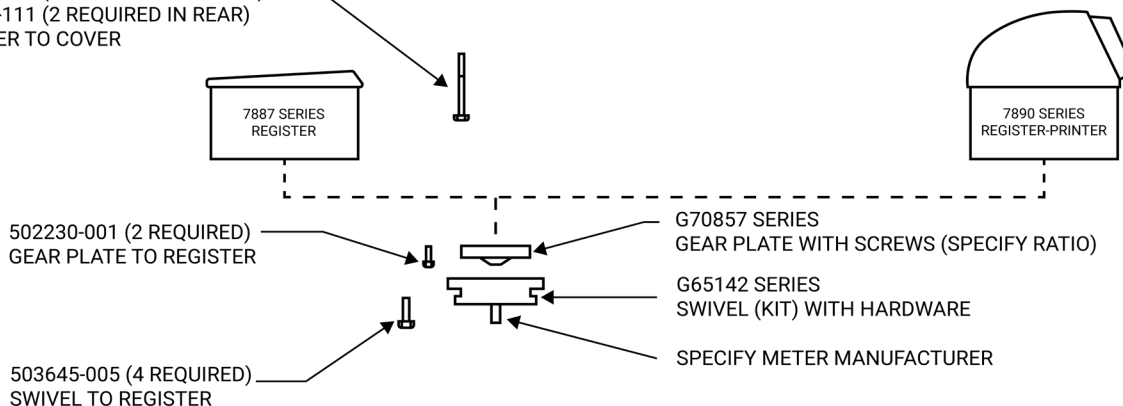
NEPTUNE CONVERSION ($\frac{3}{4}$ " OR 1" SIZE) WITH TEMPERATURE COMPENSATOR REGISTER/PRINTER – 7890 (without preset)



METER ADAPTER KITS

REGISTER WITH SWIVEL

503344-032 (2 REQUIRED IN FRONT)
503300-111 (2 REQUIRED IN REAR)
REGISTER TO COVER



Note: The gear plate is not included with this kit. The gear plate, 70857 series, must be ordered separately, specifying the ratio desired, meter manufacturer and direction rotation of the input – CW/CCW.

IMPORTANT: When a swivel kit is installed, the rotation of the gear plate to the register changes.

Example 1-A – If the rotation of the meter drive to the gear plate is clockwise, the new gear plate being ordered must be counterclockwise.

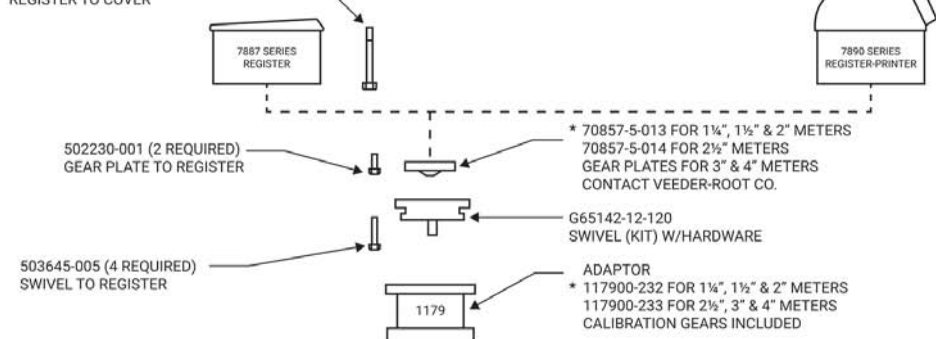
Example 1-B – If the rotation of the meter drive to the gear plate is counterclockwise, the new gear plate being ordered must be clockwise.

METER ADAPTER KITS

NEPTUNE CONVERSION ($\frac{3}{4}$ " OR 1" SIZE)** REGISTER/PRINTER – 7890 (without preset)

NEPTUNE CONVERSION ($\frac{1}{4}$ " to 4" SIZE)**

503344-032 (2 REQUIRED IN FRONT)
503300-111 (2 REQUIRED IN REAR)
REGISTER TO COVER

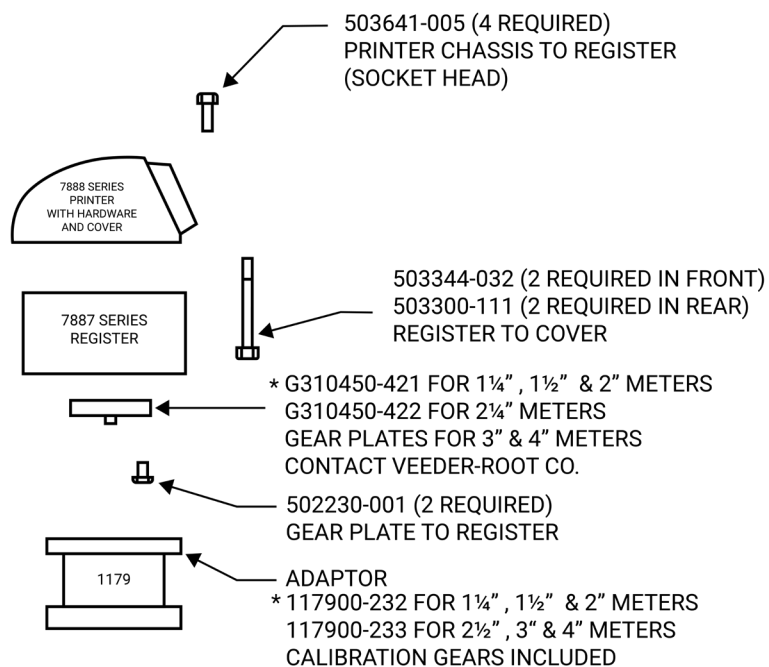


* When a temperature compensator is used on a $\frac{1}{4}$ ", $\frac{1}{2}$ ", 2", $2\frac{1}{2}$ ", 3" or 4" Neptune meter, use Adaptor 0117900-233 AND gear plate 0324823-402 with (50:53) tooth calibrating gears which should be ordered separately.

** For conversion of registers that have more than one transfer on the right-hand wheel, contact Veeder-Root Customer Service.

REGISTER/PRINTER – 7890

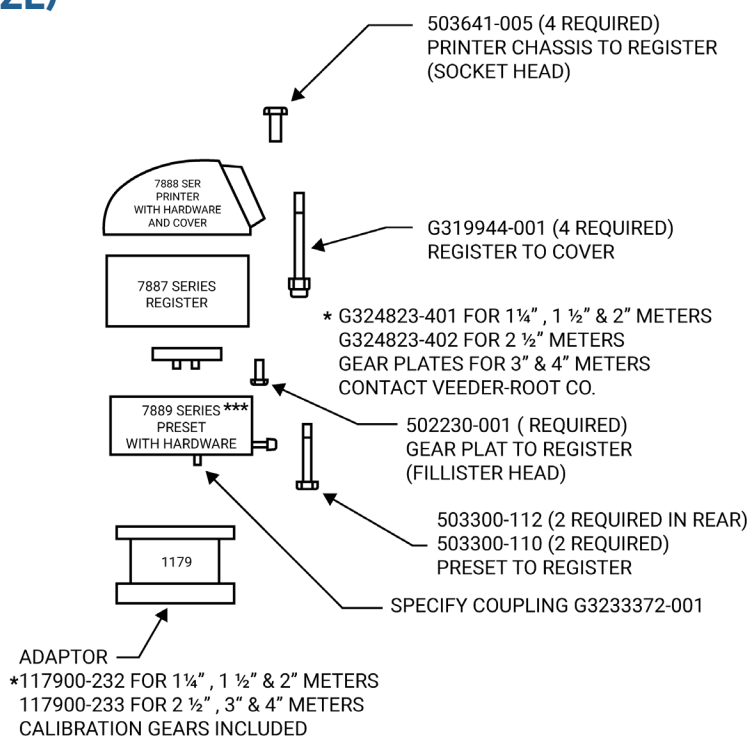
★★ For conversion of registers that have more than one transfer on the right-hand wheel, contact Veeder-Root Customer Service.



PRESET/REGISTER/PRINTER – 7892

★★ For conversion of registers that have more than one transfer on the right-hand wheel, contact Veeder-Root Customer Service.

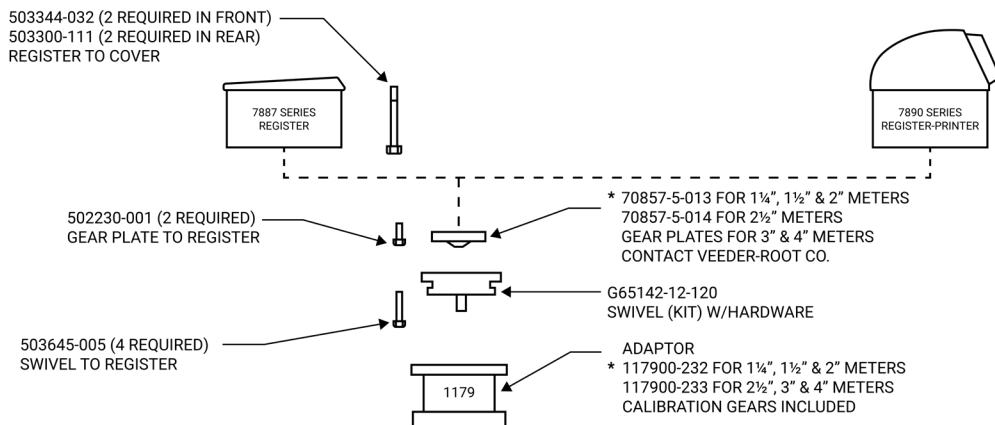
*** Not used on LPG Applications.



METER ADAPTER KITS

NEPTUNE CONVERSION (1¼ TO 4" SIZE)**

REGISTER/PRINTER/SWIVEL – 7890 (without preset)

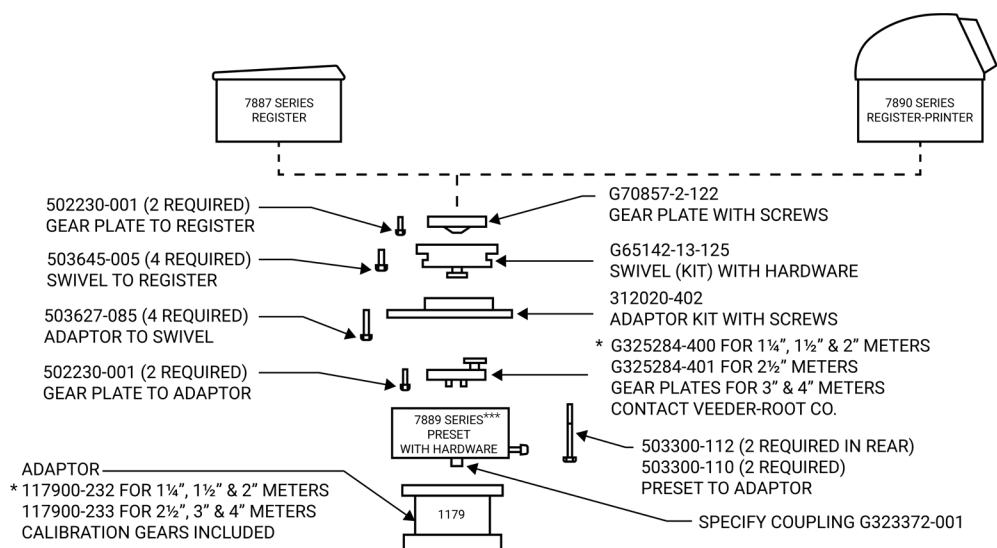


* When a temperature compensator is used on a 1¼", 1½", 2", 2½", 3" or 4" Neptune meter, use Adaptor 0117900-233 AND gear plate 0070857-014 with (50:53) tooth calibrating gears which should be ordered separately.

** For conversion of registers that have more than one transfer on the right-hand wheel, contact Veeder-Root Customer Service.

NEPTUNE CONVERSION (1¼ TO 4" SIZE)**

REGISTER/PRINTER/SWIVEL – 7892 (with preset)



* When a temperature compensator is used on a 1¼", 1½", 2", 2½", 3" or 4" Neptune meter, use Adaptor 0117900-233 AND gear plate 0325284-401 with (50:53) tooth calibrating gears which should be ordered separately.

** For conversion of registers that have more than one transfer on the right-hand wheel, contact Veeder-Root Customer Service.

*** Not used on LPG Applications.

NEPTUNE CONVERSION

Almost all meters can be adapted to accept the new Veeder-Root register.

On Neptune meters or any meter that does not have a calibration capability, the register may be calibrated with the meter using change gears mounted on the Veeder-Root gear plate.

The procedure for adapting a Veeder-Root register to a Neptune meter is as follows:

1. Determine the ratio of the Neptune register. Observe the marking on the "R" and "S" gears. On Model 400 Series and Model 800 Series, these can be seen by removing the register, turning it upside down and recording the numbers stamped on each gear. In this procedure we assume the register is close to calibration.

2. Divide "S" by "R" and read down the ratio column in the Neptune Conversion and Calibration Table to find the appropriate ratio:

For example: R = 31

S = 33

Ratio = $33/31 = 1.0645$ or 1.064

3. Look across to the Veeder-Root column for the closest ratio. In the example above, 1.064:

A = 50

B = 47

4. Mount the appropriate gears and run a proof.

5. Record the error. If outside allowed limit, go to Step (6).

If within limit, your conversion is complete.

6. Recalibration: Calculation of Adjustment Factor. The Veeder-Root gear plate is used to recalibrate a Neptune meter. For Veeder-Root gears, a 0.001 change in ratio equals 23 cubic inches change of product on a 100 gallon proof. Use the following equation to calculate adjustment factor:

$$A_{f100} = (\text{Proof Error} \div 23) \times 0.001$$

In the previous example, if we were over 500 cubic inches in a 100 gallon proof:

$$A_{f100} = (500 \text{ in.}^3 \div 23) \times 0.001 = 0.0217$$

Since we are over product, add the adjustment factor to the ratio:

Old Ratio 1.0645

Adj. Factor 0.0217

1.0862

The closest Veeder-Root gears are A = 63, B = 58, which is a ratio of 1.0862.

Recheck to make sure the meter is properly calibrated.
(Reference: 231 cu.in. = 1 U.S. Gallon)

VEEDER-ROOT CALIBRATION GEAR PLATE SCHEMATIC

HOW TO CHANGE GEARS

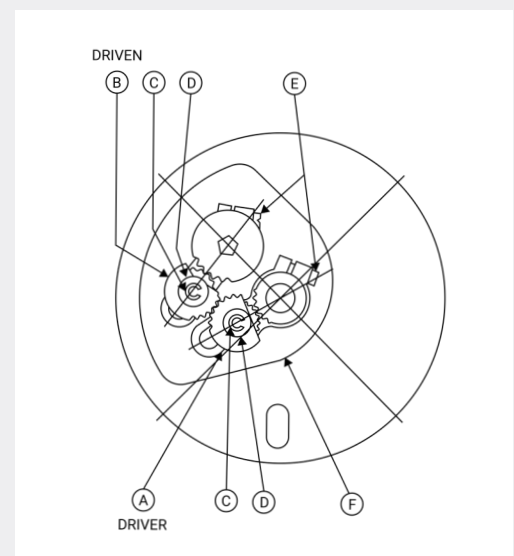
1. Remove retaining ring "C" and washer "D".
2. Lift off gear "A", or "B", or "A" and "B" and replace them with desired combination.

Note: Gear centers are adjusted to accommodate different combinations by loosening screws "E" and swinging gear arm into desired position, then retightening screw.

Care must be taken to keep gearing within line "F" marked on change gear plate.

When gear change has been made, replace change gear plate in register, and replace register on adaptor. Follow same testing procedure until register is accurately calibrated, then seal by running seal wire thru holes in adaptor screws.

By changing gears labeled "A" and "B" according to the calibration table, the meter can be brought into calibration.



NEPTUNE CONVERSION AND CALIBRATION TABLE

RATIO	NEPTUNE		VEEDER-ROOT		CALIBRATION ADJUSTMENT TO PROOF TEST	RATIO	NEPTUNE		VEEDER-ROOT	
	R	S	A	B			R	S	A	B
1.0156	–	–	65	64	ADJUSTMENT FACTOR	1.041	48	50	51	49
1.0158	–	–	64	63		1.041	24	25	50	48
1.0161	–	–	63	62		1.042	–	–	49	47
1.0164	–	–	62	61		1.043	23	24	48	46
1.0166	–	–	61	60		1.044	–	–	47	45
1.0169	–	–	60	59		1.045	22	23	46	44
1.0172	–	–	59	58		1.046	–	–	45	43
1.0175	–	–	58	57		1.047	–	–	44	42
1.0178	–	–	57	56		1.048	21	22	65	62
1.0182	–	–	56	55		1.048	–	–	43	41
1.0185	–	–	55	54		1.049	–	–	64	61
1.0188	–	–	54	53		1.050	–	–	42	40
1.0192	–	–	53	52		1.050	20	21	63	60
1.0196	–	–	52	51		1.050	–	–	62	59
1.020	–	–	51	50		1.051	–	–	61	58
1.0204	–	–	50	49		1.052	19	20	60	57
1.0208	–	–	49	48		1.053	–	–	59	56
1.02127	–	–	48	47		1.054	–	–	58	54
1.0217	–	–	47	46		1.055	18	19	57	54
1.0222	–	–	46	45		1.056	–	–	56	53
1.0227	–	–	45	44		1.057	–	–	55	52
1.0232	–	–	44	43		1.058	34	36	54	51
1.0238	–	–	43	42		1.060	33	35	53	50
1.0243	–	–	42	41		1.061	–	–	52	49
1.025	–	–	41	40		1.062	32	34	51	48
1.028	35	36	–	–		1.063	–	–	50	47
1.031	32	33	65	63		1.064	31	33	50	47
1.032	–	–	64	62		1.0652	–	–	49	46
1.032	–	–	63	61		1.0655	–	–	65	61
1.0333	–	–	62	60		1.0666	30	32	48	45
1.0338	30	31	61	59		1.0666	–	–	64	60
1.034	29	30	60	58		1.067	–	–	63	59
1.0351	28	29	59	57		1.0681	29	31	47	44
1.0357	–	–	58	56		1.0689	–	–	62	58
1.036	–	–	57	55		1.069	–	–	46	43
1.0370	–	–	56	54		1.070	–	–	61	57
1.0377	27	28	55	53		1.0714	28	30	45	42
1.038	26	27	54	52		1.0714	–	–	60	56
1.039	–	–	53	51		1.072	–	–	59	55
1.040	25	26	52	50		1.073	–	–	44	41

SHORT PRODUCT
 (–) Deduct

OVER PRODUCT
 (+) Add

Note: Not all gears listed are included in kits. Gears not included may be purchased separately.

Note: Some ratios have more than one combination.

NEPTUNE CONVERSION AND CALIBRATION TABLE (CONTINUED)

RATIO	NEPTUNE		VEEDER-ROOT		CALIBRATION ADJUSTMENT TO PROOF TEST	RATIO	NEPTUNE		VEEDER-ROOT	
	R	S	A	B			R	S	A	B
1.074	27	29	58	54	ADJUSTMENT FACTOR	1.115	26	29	58	52
1.075	–	–	43	40		1.116	–	–	48	43
1.075	–	–	57	53		1.117	–	–	57	51
1.076	26	28	56	52		1.119	–	–	47	42
1.078	–	–	55	51		1.120	–	–	56	50
1.080	25	27	54	50		1.120	25	28	65	58
1.081	–	–	53	49		1.121	–	–	46	41
1.0833	24	26	52	48		1.1224	–	–	55	49
1.0833	–	–	65	60		1.1228	–	–	64	57
1.084	–	–	64	59		1.125	–	–	63	56
1.085	–	–	51	47		1.125	24	27	54	48
1.0862	23	25	63	58		1.125	–	–	45	40
1.0869	–	–	50	46		1.1272	–	–	62	55
1.087	–	–	62	57		1.1276	–	–	53	47
1.088	–	–	49	45		1.129	31	35	61	54
1.089	–	–	61	56		1.130	–	–	52	46
1.091	–	–	48	44		1.132	–	–	60	53
1.091	22	24	60	55		1.133	30	34	51	45
1.092	–	–	59	54		1.134	–	–	59	52
1.093	32	35	47	43		1.136	–	–	50	44
1.094	–	–	58	53		1.138	29	33	–	–
1.095	–	–	46	42		1.139	–	–	49	43
1.096	31	34	57	52		1.140	–	–	57	50
1.097	–	–	45	41		1.1428	28	32	56	49
1.098	–	–	56	51		1.1428	–	–	48	42
1.100	30	33	44	40		1.145	–	–	55	48
1.100	–	–	55	50		1.146	–	–	47	41
1.101	–	–	65	59		1.148	27	31	54	47
1.102	–	–	54	49		1.150	–	–	46	40
1.103	29	32	64	58		1.152	–	–	53	46
1.104	–	–	53	48		1.153	26	30	60	52
1.105	–	–	63	57		1.155	–	–	52	45
1.106	–	–	52	47		1.159	–	–	51	44
1.107	28	31	62	56		1.160	25	29	58	50
1.108	–	–	51	46		1.162	–	–	50	43
1.109	–	–	61	55		1.166	–	–	49	42
1.111	–	–	60	54		1.170	–	–	48	41
1.111	27	30	50	45		1.175	–	–	47	40
1.1132	–	–	59	53						
1.1136	–	–	49	44						

SHORT PRODUCT
 (–) Deduct

OVER PRODUCT
 (+) Add

GEAR PLATES FOR SMITH METER				GEAR PLATES FOR TOKHEIM METER			
REGISTER/PRINTER GEAR PLATE NUMBER	RATIO	TYPE	INPUT	REGISTER/PRINTER GEAR PLATE NUMBER	RATIO	TYPE	INPUT
0070854-125*	1:1	1	CW	0310450-110*	1:1	1	CW
0070854-092*	2:1	1	CW	PISTON METER			
0070854-089*	8.4:1	4	CW	0310450-708*	4:1	7	CCW
0070854-118*	10:1	4	CW	WITH V-R PRESET UP/DOWN GEAR PLATE			
WITH V-R PRESET UP/DOWN GEAR PLATE				0324823-100	1:1	1	CW
0324823-100	1:1	1	CW	0324823-400	10:1	4	CW
0324823-101	2:1	1	CW	PISTON METER UP/DOWN GEARPLATE			
0324823-403	8.4:1	4	CW	0324823-704	4:1	7	CCW
0324823-400	10:1	4	CW	WHEN SWIVEL IS IN SYSTEM Order this Gear Plate			
WITH V-R PRESET UP/DOWN GEAR PLATE Order this Gear Plate when Swivel Input is CW				0070857-122	1:1	2	CCW
0070857-122	1:1	2	CCW	0070857-019	10:1	5	CCW
0070857-092	2:1	2	CCW	PISTON METER SWIVEL GEARPLATE			
0070857-019	10:1	5	CCW	0070857-036	4:1	4	CW
* Includes Forked Coupling (0068845-005)				* Includes Special Slotted Coupling (0065004-010)			
GEAR PLATES FOR BROOKS METER				SWIVEL TO NEW STYLE PRESET (7889)			
REGISTER/PRINTER GEAR PLATE NUMBER	RATIO	TYPE	INPUT	REGISTER/PRINTER GEAR PLATE NUMBER	RATIO	TYPE	INPUT
0310450-126*	1:1	1	CW	0325284-100	1:1	1	CW
0310450-420*	10:1	4	CW	0325284-200	1:1	2	CCW
0310450-223*	1:1	2	CCW	0325284-101	2:1	1	CW
0310450-717*	10:1	7	CCW	0325284-404	8.4:1	4	CW
WITH V-R PRESET UP/DOWN GEAR PLATE				0325284-403	10:1	4	CW
0324823-100	1:1	1	CW	GEAR PLATES FOR OLD STYLE REGISTER (1690) ON NEW STYLE PRESET (7889)			
0324323-400	10:1	4	CW	REGISTER/PRINTER			
0324823-200	1:1	2	CCW	GEAR PLATE NUMBER			
0324823-702	10:1	7	CCW	RATIO			
WHEN SWIVEL IS IN SYSTEM Order this Gear Plate when Swivel Input is CW				TYPE			
0070857-122	1:1	2	CCW	INPUT			
0070857-019	10:1	5	CCW	0325285-100	1:1	1	CW
Order this Gear Plate when Swivel Input is CCW				0325285-200	1:1	2	CCW
0070857-186	1:1	1	CW	0325285-101	2:1	1	CW
0070857-025	10:1	4	CW	0325285-401	10:1	4	CW
* Includes Square End Shaft Coupling (0070659-089)				LIQUID CONTROLS METERS			
Note: For Brodie Conversion, specify adapter 0117900-095 and brass half coupling 0033775-005 on your purchase order for either the gear plate or preset drive coupling.				FOR MORE INFORMATION ON GEAR PLATES, CALL THE LIQUID CONTROLS CUSTOMER SERVICE at +1.800.458.5262.			
Order this Gear Plate with Brass Half Coupling for Register/Printer with Brodie Meter				When ordering gear plates, it will be necessary to specify direction of shaft rotation. This can be done by looking from the bottom of the Register/Preset/Printer and/or Gear Plate Assembly. Observe the shaft rotation (clockwise [CW] or counterclockwise [CCW]) that causes the numbers to advance.			
0070854-017	1:1	2	CCW				
0070854-028	10:1	5	CCW				

When ordering gear plates, it will be necessary to specify direction of **shaft rotation**. This can be done by looking from the bottom of the Register/Preset/Printer and/or Gear Plate Assembly. Observe the shaft rotation (clockwise [CW] or counterclockwise [CCW]) that causes the numbers to advance.

GEAR PLATE ASSEMBLY

GEAR LIST FOR TYPE 1 (Item 103)

PART NO.	NO. OF TEETH	DESCRIPTION
0032996-038	38	Gear
0032996-042	42	Gear
0032996-043	43	Gear
0032996-046	46	Gear
0032996-048	48	Gear
0032996-049	49	Gear
0032996-050	50	Gear
0032996-051	51	Gear
0032996-052	52	Gear
0032996-053	53	Gear
0032996-054	54	Gear
0032996-055	55	Gear
0032996-056	56	Gear
0032996-057	57	Gear
0032996-058	58	Gear
0032996-059	59	Gear
0032996-060	60	Gear
0032996-061	61	Gear
0032996-062	62	Gear
0032996-063	63	Gear
0032996-064	64	Gear
0032996-065	65	Gear
0032996-066	66	Gear

GEAR LIST FOR TYPE 1 (Item 103)

PART NO.	NO. OF TEETH	DESCRIPTION
0032996-067	67	Gear
0032996-068	68	Gear
0032996-069	69	Gear
0032996-070	70	Gear
0032996-071	72	Gear
0032996-075	75	Gear
0032996-076	76	Gear
0032996-078	78	Gear
0032996-080	80	Gear

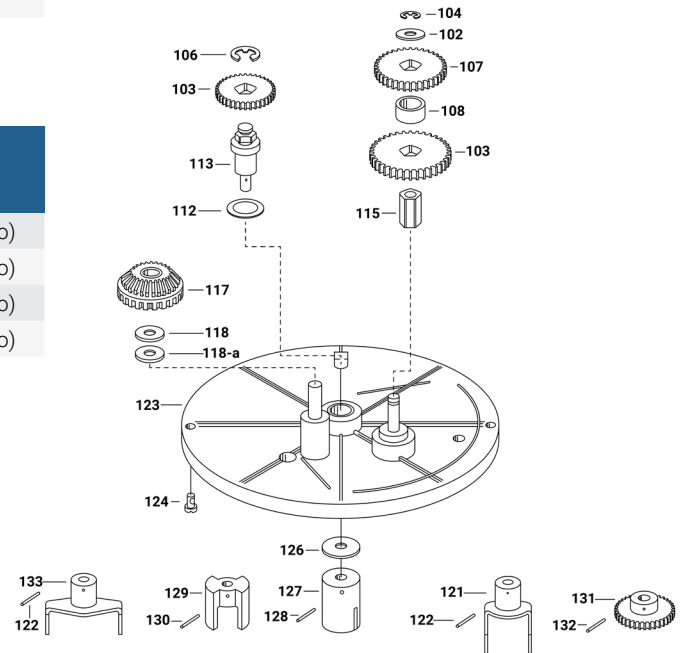
For the Gears Above:

The sum of the number of teeth in two meshing gears **MUST** equal 118

LARGER TOOTH GEARS FOR RATIO SHOWN

0073296-195	39T Gear (For 1:1 ratio)
0073296-130	26T Gear (For 2:1 ratio)
0073296-195	39T Gear (For 1:1 ratio)
0073296-260	52T Gear (For 2:1 ratio)

TYPE 1 – CLOCKWISE INPUT

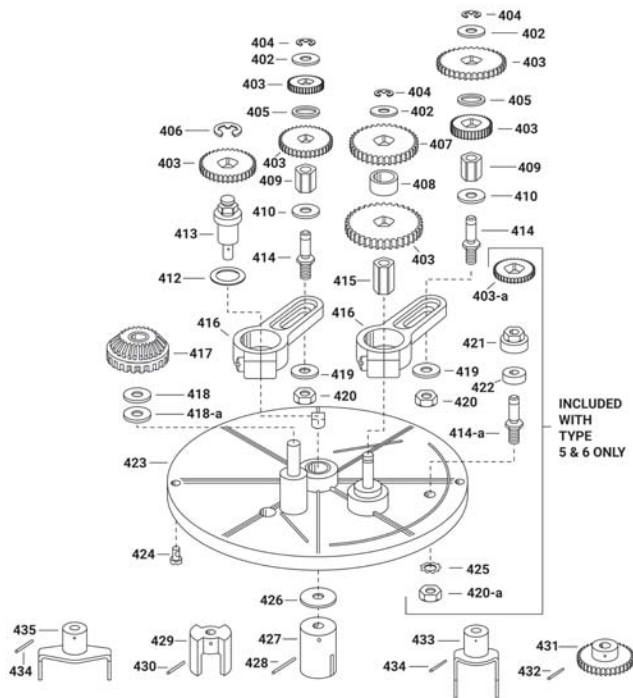


ITEM NO.	PART NO.	DESCRIPTION	QUANTITY PER UNIT
102	0011071-135	Washer (0.010)	1
103	See Gear List	Change Gears	2
104	0511807-001	Retaining Ring	1
106	0511810-001	Retaining Ring	1
107	0070827-005	Gear (25T)	1
108	0014571-792	Spacer	1
112	0011071-929	Washer (0.010)	1
113	0070659-010	Drive Shaft	1
115	0033534-050	Bushing	1
117	0070828-005	Gear Assembly	1
118	0011071-479	Washer (0.030)	1

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY PER UNIT
118a	0011071-333	Washer (0.020)	As Req.
	0011071-325	Washer (0.010)	As Req.
	0011071-803	Washer (0.005)	As Req.
121	0068845-005	Forked Coupling (Smith)	1
122	0510107-002	Groove Pin for Forked Coupling	1
123	0070856-010	Gear Plate	1
124	0502230-001	Flat Fil Hd. Screw (8-32 x 1/4")	2
126	0011071-933	Washer (0.010)	1
127	0065004-005	Coupling	1
128	0510105-177	Groove Pin (1/16" x 5/8")	1
129	0033775-005	Coupling	1
130	0510107-002	Groove Pin (1/16" x 7/16")	1
131	0032948-015	24T Gear	1
	0065116-005	36T Gear	
132	0510107-002	Groove Pin for 24T Gear	1
	0510108-001	Groove Pin for 36T Gear	
133	0323372-001	Forked Coupling (Neptune)	1

GEAR PLATE ASSEMBLY

TYPE 2 – COUNTERCLOCKWISE INPUT



GEAR LIST FOR TYPE 2 (Item 203)

PART NO.	NO. OF TEETH	DESCRIPTION
0032996-028	28	Gear
0032996-029	29	Gear
0032996-030	30	Gear
0032996-031	31	Gear
0032996-032	32	Gear
0032996-033	33	Gear
0032996-034	34	Gear
0032996-035	35	Gear
0032996-036	36	Gear
0032996-037	37	Gear
0032996-038	38	Gear
0032996-039	39	Gear
0032996-040	40	Gear
0032996-041	41	Gear
0032996-042	42	Gear
0032996-043	43	Gear
0032996-044	44	Gear
0032996-045	45	Gear
0032996-046	46	Gear
0032996-047	47	Gear
0032996-048	48	Gear
0032996-049	49	Gear
0032996-050	50	Gear
0032996-051	51	Gear
0032996-052	52	Gear
0032996-053	53	Gear
0032996-054	54	Gear
0032996-055	55	Gear

GEAR LIST FOR TYPE 2 (Item 203)

PART NO.	NO. OF TEETH	DESCRIPTION
0032996-056	56	Gear
0032996-057	57	Gear
0032996-058	58	Gear
0032996-059	59	Gear
0032996-060	60	Gear
0032996-061	61	Gear
0032996-062	62	Gear
0032996-063	63	Gear
0032996-064	64	Gear
0032996-065	65	Gear
0032996-066	66	Gear
0032996-067	67	Gear
0032996-068	68	Gear
0032996-069	69	Gear
0032996-070	70	Gear
0032996-071	72	Gear
0032996-075	75	Gear
0032996-076	76	Gear
0032996-078	78	Gear
0032996-080	80	Gear

LARGER TOOTH GEARS

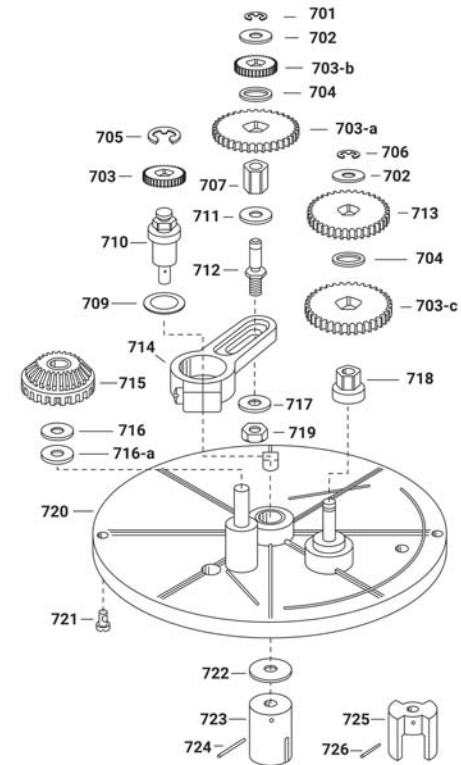
0073296-110	22	Gear
0073296-130	26	Gear
0073296-195	39	Gear
0073296-220	44	Gear
0073296-260	52	Gear

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY PER UNIT
202	0011071-135	Washer (0.010)	2
203	See Gear List	Change Gears	3
204	0511807-001	Retaining Ring	2
206	0511810-001	Retaining Ring	1
207	0070827-005	Gear (25T)	1
208	0014571-792	Spacer	1
209	0074843-005	Bushing	1
210	0011071-171	Washer (0.020)	1
212	0011071-929	Washer (0.010)	1
213	0070659-010	Drive Shaft	1
214	0326586-001	Stud	1
215	0033534-050	Bushing	1
216	0033534-005	Swing Arm Assembly	1
217	0070828-005	Gear Assembly	1
218	0011071-479	Washer (0.030)	1

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY PER UNIT
218a	0011071-333	Washer (0.020)	As Req.
	0011071-325	Washer (0.010)	As Req.
	0011071-803	Washer (0.005)	As Req.
219	0011071-187	Washer (0.031)	1
220	0511038-001	Hex Nut (10-32)	1
221	0068845-005	Forked Coupling (Smith)	1
222	0510107-002	Groove Pin for Forked Coupling	1
223	0070856-010	Gear Plate	1
224	0502230-001	Flat Fil Hd. Screw (8-32 x 1/4")	2
226	0011071-933	Washer (0.010)	1
227	0065004-005	Coupling	1
228	0510105-177	Groove Pin (1/16" x 5/8")	1
229	0033775-005	Coupling	1
230	0510107-002	Groove Pin (1/16" x 7/16")	1
231	0032948-015	24T Gear	1
	0065116-005	36T Gear	
232	0510107-002	Groove Pin for 24T Gear	1
	0510108-001	Groove Pin for 36T Gear	
233	0323372-001	Forked Coupling (Neptune)	1

GEAR PLATE ASSEMBLY

TYPE 3 – CLOCKWISE INPUT



GEAR LIST FOR TYPE 3 (Item 303)

PART NO.	NO. OF TEETH	DESCRIPTION
0077348-005	19	*Gear
0311427-120	20	*Gear
0032996-028	28	Gear
0032996-029	29	Gear
0032996-030	30	Gear
0032996-031	31	Gear
0032996-032	32	Gear
0032996-033	33	Gear
0032996-034	34	Gear
0032996-035	35	Gear
0032996-036	36	Gear
0032996-037	37	Gear
0032996-038	38	Gear
0032996-039	39	Gear
0032996-040	40	Gear
0032996-041	41	Gear
0032996-042	42	Gear
0032996-043	43	Gear
0032996-044	44	Gear
0032996-045	45	Gear
0032996-046	46	Gear
0032996-047	47	Gear
0032996-048	48	Gear
0032996-049	49	Gear
0032996-050	50	Gear
0032996-051	51	Gear

GEAR LIST FOR TYPE 3 (Item 303)

PART NO.	NO. OF TEETH	DESCRIPTION
0032996-052	52	Gear
0032996-053	53	Gear
0032996-054	54	Gear
0032996-055	55	Gear
0032996-056	56	Gear
0032996-057	57	Gear
0032996-058	58	Gear
0032996-059	59	Gear
0032996-060	60	Gear
0032996-061	61	Gear
0032996-062	62	Gear
0032996-063	63	Gear
0032996-064	64	Gear
0032996-065	65	Gear
0032996-066	66	Gear
0032996-067	67	Gear
0032996-068	68	Gear
0032996-069	69	Gear
0032996-070	70	Gear
0032996-071	72	Gear
0032996-075	75	Gear
0032996-076	76	Gear
0032996-078	78	Gear
0032996-080	80	Gear
0032996-084	84	Gear

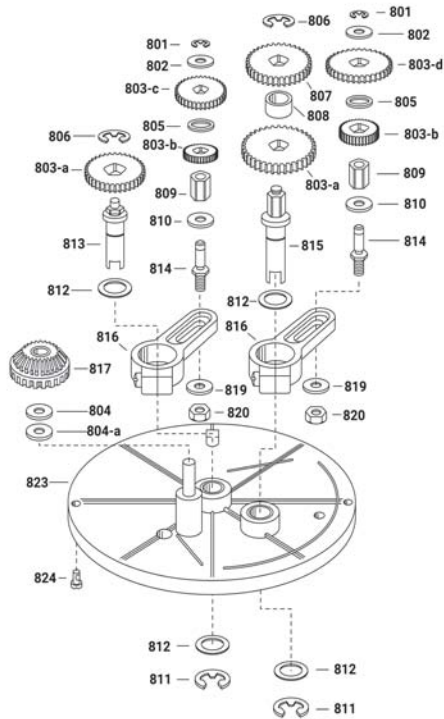
* Round hub/round hole

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY PER UNIT
302	0011071-135	Washer (0.010)	3
303	See Gear List	Change Gears	4
304	0511807-001	Retaining Ring	3
306	0511810-001	Retaining Ring	1
307	0070827-005	Gear (25T)	1
308	0014571-792	Spacer	1
309	0074843-005	Bushing	2
310	0011071-171	Washer (0.020)	2
312	0011071-929	Washer (0.010)	1
313	0070659-010	Drive Shaft (for Pentagon Hole Gears)	1
313a	0070659-025	Drive Shaft (for Round Hub/Round Hole Gear)	1
314	0326586-001	Stud	2
315	0033534-050	Bushing	1
316	0033534-005	Swing Arm Assembly	2
317	0070828-005	Gear Assembly	1
318	0011071-479	Washer (0.030)	1

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY PER UNIT
318a	0011071-333	Washer (0.020)	As Req.
	0011071-325	Washer (0.010)	As Req.
	0011071-803	Washer (0.005)	As Req.
319	0011071-187	Washer (0.031)	2
320	0511038-001	Hex Nut (10-32)	2
321	0068845-005	Forked Coupling (Smith)	1
322	0510107-002	Groove Pin for Forked Coupling	1
323	0070856-010	Gear Plate	1
324	0502230-001	Flat Fil.Hd. Screw (8-32 x 1/4")	2
326	0011071-933	Washer (0.010)	1
327	0065004-005	Coupling	1
328	0510105-177	Groove Pin (1/16" x 5/8")	1
329	0033775-005	Coupling	1
330	0510107-002	Groove Pin (1/16" x 7/16")	1
331	0032948-015	24T Gear	1
	0065116-005	36T Gear	
332	0510107-002	Groove Pin for 24T Gear	1
	0510108-001	Groove Pin for 36T Gear	
333	0323372-001	Forked Coupling (Neptune)	1

GEAR PLATE ASSEMBLY

TYPE 4 – CLOCKWISE INPUT TYPES 5 & 6 – COUNTERCLOCKWISE INPUT



GEAR LIST FOR TYPE 4 (Item 403)

PART NO.	NO. OF TEETH	DESCRIPTION
0077348-005	19	*Gear
0032996-019	19	**Gear
00311427-120	20	*Gear
00311427-110	20	**Gear
00311427-130	26	**Gear
0032996-028	28	Gear
0032996-029	29	Gear
0032996-030	30	Gear
0032996-031	31	Gear
0032996-032	32	Gear
0032996-033	33	Gear
0032996-034	34	Gear
0032996-035	35	Gear
0032996-036	36	Gear
0032996-037	37	Gear
0032996-038	38	Gear
0032996-039	39	Gear
0032996-040	40	Gear
0032996-041	41	Gear
0032996-042	42	Gear
0032996-043	43	Gear
0032996-044	44	Gear
0032996-045	45	Gear
0032996-046	46	Gear
0032996-047	47	Gear
0032996-048	48	Gear
0032996-049	49	Gear

* Round hub/round hole

GEAR LIST FOR TYPE 4 (Item 403)

PART NO.	NO. OF TEETH	DESCRIPTION
0032996-050	50	Gear
0032996-051	51	Gear
0032996-052	52	Gear
0032996-053	53	Gear
0032996-054	54	Gear
0032996-055	55	Gear
0032996-056	56	Gear
0032996-057	57	Gear
0032996-058	58	Gear
0032996-059	59	Gear
0032996-060	60	Gear
0032996-061	61	Gear
0032996-062	62	Gear
0032996-063	63	Gear
0032996-064	64	Gear
0032996-065	65	Gear
0032996-066	66	Gear
0032996-067	67	Gear
0032996-068	68	Gear
0032996-069	69	Gear
0032996-070	70	Gear
0032996-071	72	Gear
0032996-075	75	Gear
0032996-076	76	Gear
0032996-078	78	Gear
0032996-080	80	Gear
0032996-084	84	Gear

** Pentagon hub/round hole

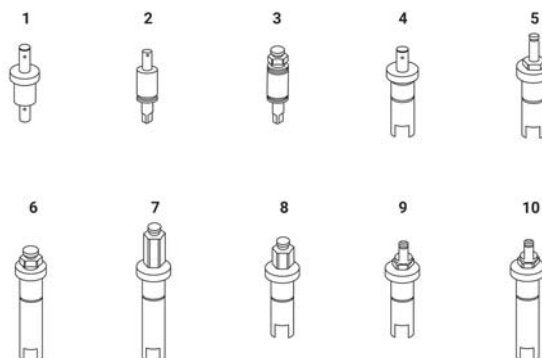
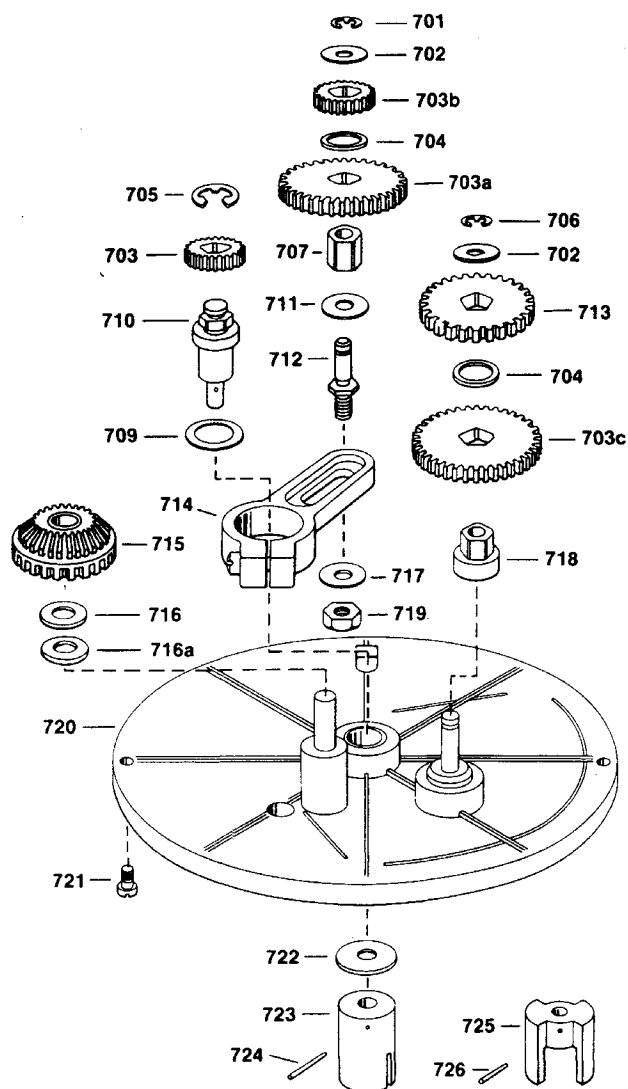
ITEM NO.	PART NO.	DESCRIPTION	TYPE 4 QUANTITY PER UNIT	TYPE 5 & 6 QUANTITY PER UNIT
402	0011071-135	Washer (0.010)	2	3
403	See Gear List	Change Gears	6	6
403a	See Gear List	Change Gears	–	1
404	0511807-001	Retaining Ring	3	3
405	0011071-199	Washer (0.047)	2	2
406	0511810-001	Retaining Ring	1	1
407	0070827-005	Gear (25T)	1	1
408	0014571-792	Spacer	1	1
409	0033534-015	Bushing	2	2
410	0011071-171	Washer (0.020)	2	2
412	0011071-929	Washer (0.010)	1	1
413	0070659-010	Drive Shaft	1	1
414	0326586-001	Stud	2	2
414a	0326586-001	Stud	–	1
415	0033534-050	Bushing	1	1
416	0033534-005	Swing Arm Assembly	2	2
417	0070828-005	Gear Assembly	1	1
418	0011071-479	Washer (0.030)	1	1
418a	0011071-333	Washer (0.020)	As Req.	As Req.
	0011071-325	Washer (0.010)	As Req.	As Req.
	0011071-803	Washer (0.005)	As Req.	As Req.
419	0011071-187	Washer (0.031)	2	2

ITEM NO.	PART NO.	DESCRIPTION	TYPE 4 QUANTITY PER UNIT	TYPE 5 & 6 QUANTITY PER UNIT
420	0511038-001	Hex Nut (10-32)	2	2
420a	0511038-001	Hex Nut (10-32)	–	1
421	0074843-005	Bushing	–	1
422	0065009-005	Spacer	–	1
423	0070856-010	Gear Plate	1	1 (Type 5)
	0070856-025	Gear Plate	–	1 (Type 6)
424	0502230-001	Flat Fil. Hd. Screw (8-32 x 1/4")	2	2
425	0510002-001	Lockwasher	–	1
426	0011071-933	Washer (0.010)	1	1
427	0065004-005	Coupling	1	1
428	0510105-177	Groove Pin (1/16" x 5/8")	1	1
429	0033775-005	Coupling	As Req.	As Req.
430	0510107-002	Groove Pin (1/16" x 7/16")	As Req.	As Req.
431	0032948-015	24T Gear	As Req.	As Req.
	0065116-005	36T Gear	As Req.	As Req.
432	0510107-002	Groove for 24T Gear	As Req.	As Req.
	0510108-001	Groove for 36T Gear	As Req.	As Req.
433	0068845-005	Forked Coupling (Smith)	As Req.	As Req.
434	0510107-002	Groove Pin for Forked Coupling	–	–
435	0323372-001	Forked Coupling (Neptune)	As Req.	As Req.

GEAR PLATE ASSEMBLY

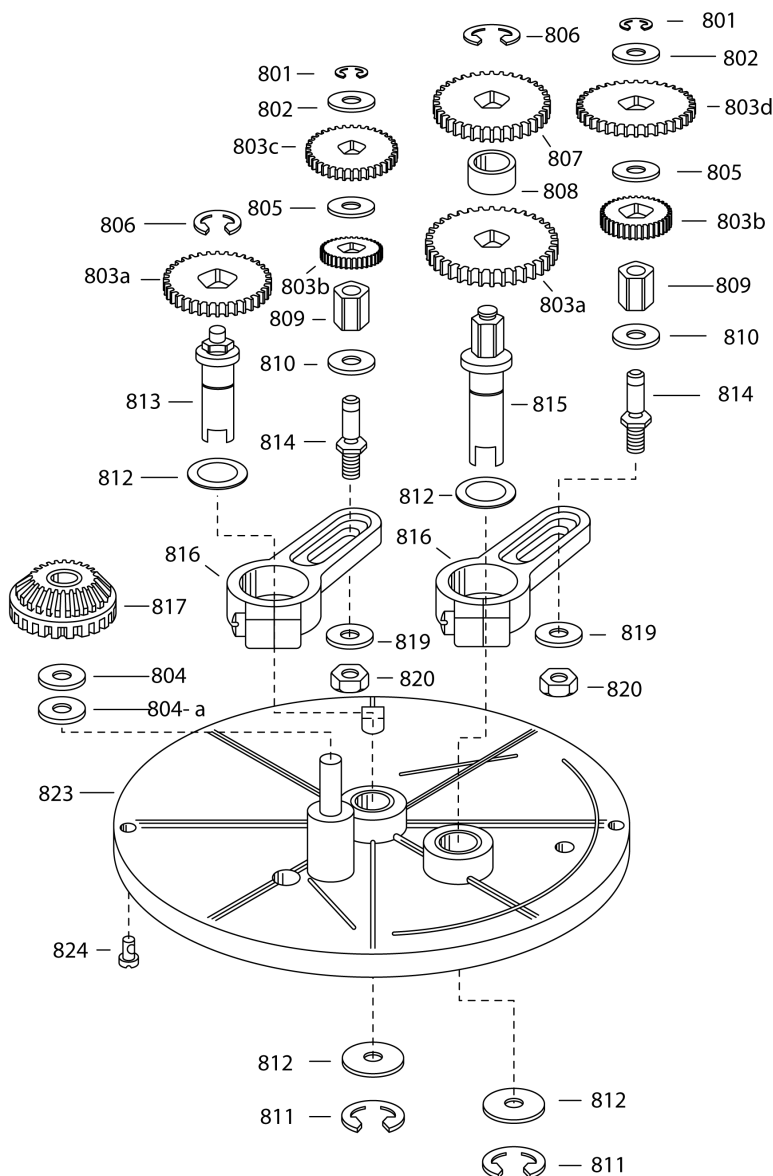
TYPE 7 – COUNTERCLOCKWISE INPUT

ITEM NO.	PART NO.	DESCRIPTION	QUANTITY PER UNIT
701	0511807-001	Retaining Ring	1
702	0011071-135	Washer (0.010)	2
703	0032996-033	33T Gear (For 4:1 ratio)	1
	0032996-028	28T Gear (For 8:1 ratio)	1
703a	0032996-066	66T Gear (For 4:1 ratio)	1
	0032996-084	84T Gear (For 8:1 ratio)	1
703b	0032996-033	33T Gear (For 4:1 ratio)	1
	0032996-030	30T Gear (For 8:1 ratio)	1
703c	0032996-066	66T Gear (For 4:1 ratio)	1
	0032996-080	80T Gear (For 8:1 ratio)	1
704	0011071-199	Washer (0.047)	2
705	0511810-001	Retaining Ring	1
706	0511807-001	Retaining Ring	1
707	0033534-015	Bushing	1
709	0011071-929	Washer (0.010)	1
710	0070659-010	Drive Shaft	1
711	0011071-171	Washer (0.020)	1
712	0326586-001	Stud	1
713	0070827-005	Gear (25T)	1
714	0033534-005	Swing Arm Assembly	1
715	0070828-005	Gear Assembly	1
716	0011071-479	Washer (0.030)	1
716a	0011071-333	Washer (0.020)	As Req.
	0011071-325	Washer (0.010)	As Req.
	0011071-803	Washer (0.005)	As Req.
717	0011071-187	Washer (0.031)	1
718	0076551-005	Bushing	1
719	0511038-001	Hex Nut (10-32)	1
720	0070856-010	Gear Plate	1
721	0502230-001	Flat Fil. Hd. Screw (8-32 x 1/4")	2
722	0011071-933	Washer (0.010)	1
723	0065004-005	Coupling	1
724	0510105-177	Groove Pin (1/16" x 5/8")	1
725	0033775-005	Coupling	1
726	0510107-002	Groove Pin	1



UP-DOWN GEAR PLATE ASSEMBLY FOR USE WITH PRESET

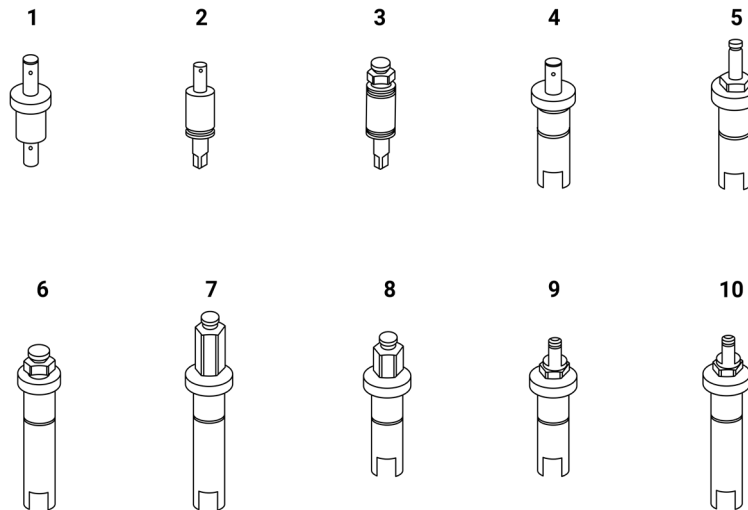
TYPE 4 – COUNTERCLOCKWISE INPUT



ITEM NO.	PART NO.	DESCRIPTION	QUANTITY PER UNIT
801	0511807-001	Retaining Ring	2
802	0011071-135	Washer	2
803a	See Gear List 403	Change Gear	2
803b	See Gear List 403	Change Gear	2
803c	See Gear List 403	Change Gear	1
803d	See Gear List 403	Change Gear	1
804	0011071-479	Washer	1
804a	0011071-333	Washer (0.020)	As Req.
	0011071-325	Washer (0.010)	As Req.
	0011071-803	Washer (0.005)	As Req.
805	0011071-199	Washer	2
806	0511810-001	Retaining Ring	2
807	0070827-005	Spur Gear	1
808	0014571-792	Spacer	1
809	0033534-015	Bushing	2
810	0011071-171	Washer	2
811	0511816-001	Retaining Ring	2
812	0011071-929	Washer	4
813	0070659-086	Drive Shaft	1
	0070659-092	Drive Shaft (For Round Hub/ Round Hole Gear)	1
814	0326586-001	Stud	2
815	0070659-085	Shaft	1
816	S-33534-005	Arm Group	2
817	0070828-005	Gear Group	1
819	0011071-187	Washer	2
820	0511038-001	Nut	2
823	0070856-090	Gear Plate Group	1
824	0502230-001	Screw	2

GEAR PLATE ASSEMBLY

MISCELLANEOUS DRIVE SHAFTS FOR GEAR PLATES



ITEM NO.	PART NO.	DESCRIPTION AND USE
1	0070659-025	Drive Shaft for use with Round Hub Round Hole Gear on Standard Gear Plate
2	0070659-088	Drive Shaft with Brooks Square End and for Round Hub Round Hole Gear on Standard Gear Plate
3	0070659-089	Drive Shaft with Brooks Square End and for 1 Pentagon Hole Gear on Standard Gear Plate
4	0070659-092	Up-Down Shaft for use with Round Hub Round Hole Gear — Standard Extension for Preset
5	0070659-094	Up-Down Shaft for use with 3 Gears (1 on Pentagon and 2 Free on Shaft) — Standard Extension for Preset — Split Ratio
6	0070659-091	Up-Down Shaft for use with 1 Pentagon Hole Gear — Longer Extension to pass through Adaptor to Preset
7	0070659-090	Up-Down Shaft for use with 2 Pentagon Hole Gears plus a Spacer between — Longer Extension to pass through Adaptor to Preset
8	0070659-095	Up-Down Shaft for use with 2 Pentagon Hole Gears plus a Washer between — Standard Extension for Preset — Split Ratio
9	0070659-096	Up-Down Shaft with Tang for 1:1 Ratio Direct Drive Up and for use with 1 Pentagon Hole Gear — Standard Extension for Preset — Split Ratio
10	0070659-097	Up-Down Shaft with Tang for 1:1 Ratio Direct Drive Up and for use with 1 Pentagon Hole Gear — Longer Extension to pass through Adaptor to Preset — Split Ratio

METER REGISTER

ORDER INFORMATION

If you are unable to identify the part number from the Meter Register Selection Guide, the following information will assist Veeder-Root in identifying a satisfactory replacement.

Name Plate Information from existing unit

1. Part No. _____
2. Serial No. _____
3. Meter manufacturer _____
4. Meter model and size _____

Application (Check Required Elements)

1. ☐ Register fill-in information
Graduations (page 5) _____
Right-hand wheel (page 6) _____
Crystals (page 6) _____
EEC Type _____
2. ☐ Printer (Check) – specify mechanisms (pages 2, 3 and 4)
 - ☐ Zero-start
 - ☐ Accumulative
 - ☐ Neptune-style Part (Direct Reading)
 - ☐ EEC Type
3. ☐ Preset – specify type (page 3)
 - ☐ 4-Figure, first stage setting at (_____) Whole number, (_____) Tenths
 - ☐ 5-Figure, first stage setting at (_____) Whole number, (_____) Tenths
 - ☐ EEC Type, 3-stage knockoff
4. ☐ Accessories
 - ☐ Swivel (pages 10, 12 and 14)
 - ☐ Gear Plate (page 18)
 - ☐ Pulser (7671 - 7697 - 1871) (pages 2, 4 and 8)
 - ☐ Tray Sensing Switch (page 8)
5. Rotation (pages 12 and 18) ☐ CW ☐ CWW
6. Gear Plate Ratio (page 18)



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Notes



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