

# ***FILL-RITE***®

***A GORMAN-RUPP COMPANY***

## **Oval Gear Meters Part Number Guide**


**TM & TS Meter**

**Effective: March 2023**



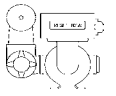

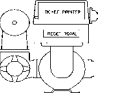

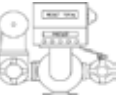
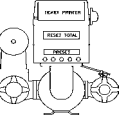







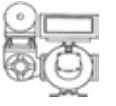
8825 Aviation Drive  
Fort Wayne, Indiana 46809  
(800) 634-2695  
[fillrite.com](http://fillrite.com)

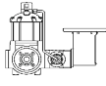
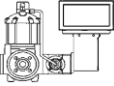
**TM METERS**

ELECTRICAL		
<b>SHE and SRS</b>		Meter Only - No Register

**TS METERS**

MECHANICAL		
<b>V03</b>		Meter Only - No Register (register ready), Calibrator, RAD adaptor, no ratio gear plate (distributor to add)
<b>V04</b>		Meter Only - Calibrator, RAD Adaptor, Ratio Gear Plate & Register
<b>V06</b>		Calibrator, RAD Adaptor, Ratio Gear Plate & Register + Strainer + Air Eliminator
<b>V07</b>		<b>V04</b> + Zero Start Ticket Printer
<b>V09</b>		<b>V06</b> + Zero Start Ticket Printer
<b>V11</b>		<b>V04</b> + 2-Stage Preset Counter + Preset Valve
<b>V13</b>		<b>V06</b> + 2-Stage Preset Counter + Preset Valve
<b>V17</b>		<b>V06</b> + 2-Stage Preset Counter + Preset Valve + Zero Start Ticket Printer

ELECTRICAL		
<b>W04</b>		Meter only - no register flange
<b>F14</b>		Meter only - with register flange (register ready)
<b>F16</b>		Register Flange (register ready) + Strainer + Air Eliminator
<b>F64</b>		Meter only - with EMR4 register
<b>F63</b>		Meter + EMR4 Register + Strainer + Air Eliminator + Solenoid Preset Valve
<b>F66</b>		Meter + EMR4 Register + Strainer + Air Eliminator

ELECTRICAL - LPG		
<b>S83</b>		SINGLE, No Register Flange + Strainer (1 Thermowell) + Air Eliminator + Relief Valve + Differential Check Valve
<b>E86</b>		SINGLE + Register Flange + Strainer (1 ThermoWell) + Air Eliminator + Relief Valve + Diff. Control Valve
<b>E96</b>		SINGLE + EMR4 Register (Temp. Comp.) + Strainer (1 Thermowell) + Air Eliminator + Relief Valve + Diff. Control Valve

# FLOW METERS - Electronic

MODEL: **TM**

**ANODIZED ALUMINUM and STAINLESS STEEL**

No strainer or Air Eliminator	<b>SHE</b> - Flow Meter Only, Hall Effect, NO Register
	<b>SRS</b> - Flow Meter Only, Reed Switch, NO Register

<b>Position 6 - 8 - Configuration</b>	6	7	8	<b>SHE</b> = Hall Effect • <b>SRS</b> = Reed Switch	
<b>Position 09 - Port Threads</b>	9	<b>A</b> = NPT ☒ <b>B</b> = BSP ☒ <b>C</b> = 1" NPT ☒ <b>D</b> = 1" BSP			
<b>Position 10 - Register</b>	10	<b>X</b> = N/A			
<b>Position 11 - Pressure Rating</b>	11	<b>K</b> = 1500 PSI			
<b>Position 12 - Rotors</b>	12	<b>A</b> = Low Viscosity-PPS • <b>K</b> = High Viscosity-PPS • <b>E</b> = Low Viscosity-SS			
<b>Position 13 - Magnets</b>	13	<b>1</b> = 1 Magnet • <b>2</b> = 2 Magnets • <b>4</b> = 4 Magnets			
<b>Position 14 - Pulsar</b>	14	<b>H</b> = Hall Effect • <b>B</b> = Reed Switch			
<b>Position 15 - Seals</b>	15	<b>B</b> = Teflon			
<b>Position 16-17 - Strainer Mesh</b>	16	17	Blank = Not Used		
<b>Position 18 - Reserved</b>	18	Blank = Not Used			

	Rotors	Seals	Bearings	LIST PRICES							
				Anodized Aluminum			Stainless Steel (316SS)				
GROUP 1 - Standard Fuels	LV	V		US GPM:	3	10	20	0.3	3	10	20
GROUP 2 - E85	LV	T		LPM:	11	37	75	1	11	37	75
GROUP 3 - ATF and HT	HV	V		PSI:	1500	1500	1500	1500	1500	1500	1500
				Bar:	100	100	100	100	100	100	100
				Dia:	3/8"	1/2"	3/4"	1/2"	3/8"	1/2"	3/4"

FLUID GROUP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	3,4, & 5:	03A	04A	06A	02D	03D	04D	06D	
2	T	M				S	H	E	A	X	K	A	4	H	B												
1,2,3	T	M				S	H	E	A	X	K	E	2	H	B												
1,2,3	T	M				S	H	E	A	X	K	E	4	H	B												
1,2,3	T	M				S	H	E	A	X	K	K	4	H	B												
2	T	M				S	H	E	B	X	K	A	4	H	B												
1,2,3	T	M				S	H	E	B	X	K	E	2	H	B												
1,2,3	T	M				S	H	E	B	X	K	K	4	H	B												
2	T	M				S	R	S	A	X	K	A	1	B	B												
1,2,3	T	M				S	R	S	A	X	K	E	1	B	B												
1,2,3	T	M				S	R	S	A	X	K	K	1	B	B												
2	T	M				S	R	S	B	X	K	A	1	B	B												
1,2,3	T	M				S	R	S	B	X	K	E	1	B	B												
1,2,3	T	M				S	R	S	B	X	K	K	1	B	B												

# FLOW METERS - Electronic

MODEL: **TM**

**ANODIZED ALUMINUM and STAINLESS STEEL**

No strainer or Air Eliminator	<b>SHE</b> - Flow Meter Only, Hall Effect, NO Register
	<b>SRS</b> - Flow Meter Only, Reed Switch, NO Register

<b>Position 6 - 8 - Configuration</b>	6	7	8	<b>SHE</b> = Hall Effect • <b>SRS</b> = Reed Switch
<b>Position 09 - Port Threads</b>	9	<b>A</b> = NPT <b>B</b> = BSP		
<b>Position 10 - Register</b>	10	<b>X</b> = N/A		
<b>Position 11 - Pressure Rating</b>	11	<b>K</b> = 1500 PSI		
<b>Position 12 - Rotors</b>	12	<b>A</b> = Low Viscosity-PPS • <b>K</b> = High Viscosity-PPS • <b>E</b> = Low Viscosity-SS		
<b>Position 13 - Magnets</b>	13	<b>1</b> = 1 Magnet • <b>2</b> = 2 Magnets • <b>4</b> = 4 Magnets		
<b>Position 14 - Pulsar</b>	14	<b>H</b> = Hall Effect • <b>B</b> = Reed Switch		
<b>Position 15 - Seals</b>	15	<b>B</b> = Teflon		
<b>Position 16-17 - Strainer Mesh</b>	16	17	Blank = Not Used	
<b>Position 18 - Reserved</b>	18	Blank = Not Used		

	Rotors	Seals	Bearings	LIST PRICES							
				Anodized Aluminum			Stainless Steel (316SS)				
GROUP 1 - Standard Fuels	LV	V	C	US GPM:	3	10	20	0.3	3	10	20
GROUP 2 - E85	LV	T	C	LPM:	11	37	75	1	11	37	75
GROUP 3 - ATF and HT	HV	V	C	PSI:	1500	1500	1500	1500	1500	1500	1500
				Bar:	100	100	100	100	100	100	100
				Dia:	3/8"	1/2"	3/4"	1/2"	3/8"	1/2"	3/4"

FLUID GROUP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	3,4, & 5:	03A	04A	06A	02D	03D	04D	06D	
1,2	T	M				D	0	5	A	X	K	E	1	B	B												
1,2	T	M				D	0	5	A	X	K	A	1	B	B												
1,2	T	M				D	0	8	A	X	K	E	1	B	B												
1,2	T	M				D	0	8	A	X	K	A	1	B	B												
1,2	T	M				T	0	C	A	X	K	A	4	H	B												
1,2	T	M				T	0	E	A	X	K	A	4	H	B												
3	T	M				D	0	5	A	X	K	K	1	B	B												
3	T	M				D	0	8	A	X	K	K	1	B	B												
3	T	M				T	0	C	A	X	K	K	4	H	B												
3	T	M				T	0	E	A	X	K	K	4	H	B												
1,2	T	M				D	0	5	B	X	K	E	1	B	B												
1,2	T	M				D	0	8	B	X	K	A	1	B	B												
1,2	T	M				D	0	5	B	X	K	E	1	B	B												
1,2	T	M				D	0	8	B	X	K	A	1	B	B												
1,2	T	M				T	0	C	B	X	K	A	4	H	B												
1,2	T	M				T	0	E	B	X	K	A	4	H	B												
3	T	M				D	0	5	B	X	K	K	1	B	B												
3	T	M				D	0	8	B	X	K	K	1	B	B												
3	T	M				T	0	C	B	X	K	K	4	H	B												
3	T	M				T	0	E	B	X	K	K	4	H	B												

# FLOW METERS - Mechanical

MODEL: **TS**  
ANODIZED ALUMINUM

No Strainer or Air Eliminator	<b>V03</b> - Flow Meter + Register adaptor (Register Ready - VR Mech. Register) - No ratio gear plate (purchased separately)
	<b>V04</b> - Flow Meter + VR Register*
	<b>V07</b> - Flow Meter + VR Register + Zero Start Ticket Printer**
	<b>V11*</b> - Flow Meter + VR Register + 2-Stage Preset Counter + Mechanical Preset Valve + Linkage
Strainer + Air Eliminator	<b>V06</b> - Flow Meter + VR Register + Strainer + Air Eliminator
	<b>V09</b> - Flow Meter + VR Register + Strainer + Air Eliminator + Zero Start Ticket Printer (7888)
	<b>V13*</b> - Flow Meter + VR Register + Strainer + Air Eliminator + 2-Stage Preset Counter + Mechanical Preset Valve + Linkage
	<b>V17*</b> - Flow Meter + VR Register + Strainer + Air Eliminator + 2-Stage Preset Counter + Mechanical Preset Valve + Linkage + Zero Start Ticket Printer

\* 7887 - Veeder Root - 5-digit register    \*\* 7888 - Veeder Root - Zero Start Ticket Printer    \*\*\* 7889 - Veeder Root - 5 digit preset counter, 2-stage shut-off  
\*Assemblies with Preset Valve - Standard gears limited to 50cSt, HV gears limited to 1,000cSt

<b>Position 09 - Pipe Flanges</b>	<b>9</b> X = No Flanges • A = NPT • B = BSP • H = Carbon Steel Weld C = Carbon Steel ANSI 150#
<b>Position 10 - Calibration on Mechanical Register</b>	<b>10</b> T = 1/10 Gal. • G = 1 Gal. • Y = 1/10 Liter • L = 1 Liter
<b>Position 11 - Pressure Rating</b>	<b>11</b> C = 150 psi
<b>Position 12 - Rotors / Bearings</b>	<b>12</b> B = LV-PPS/Carbon • C = LV-PPS/Teflon • I = HV-PPS/Carbon
<b>Position 13 - Rotor Output</b>	<b>13</b> M = Mech. Drive rotor to register
<b>Position 14 - Pulsar on the Register</b>	<b>14</b> X = N/A • D = 10:1 Dry Reed • S = 100:1 Solid State
<b>Position 15 - Internal Seals</b>	<b>15</b> A = Viton • B = Teflon
<b>Position 16 - Strainer</b>	<b>16</b> X = Not Used • S = Standard • H = High Capacity J = HC Backpressure Valve
<b>Position 17 - Strainer Mesh</b>	<b>17</b> 4 = 40 mesh, std/LV rotors • 2 = 20 mesh, std/HV rotors

GROUP	Rotors	Seals	Bearings	LIST PRICES				
				Anodized Aluminum				
				US GPM:	40	60	150	200
GROUP 1 - Standard Fuels	LV	V	C	LPM:	150	230	570	760
GROUP 2 - E85	LV	T	C	PSI:	150	150	150	150
GROUP 3 - ATF and HT	HV	V	C	Bar:	10	10	10	10
GROUP 7 - Fertilizer	LV	V	T	Dia.	1"	1½"	2"	3"

FLUID GROUP	POSITION 3,4, & 5:																		Anodized Aluminum			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	10A	15A	20A	30A
1	T	S				V	0	3	X	X	C	B	M	X	A	X	X					
2	T	S				V	0	3	X	X	C	B	M	X	B	X	X					
3	T	S				V	0	3	X	X	C	I	M	X	A	X	X					
1	T	S				V	0	4	A	G	C	B	M	D	A	X	X					
2	T	S				V	0	4	A	G	C	B	M	D	B	X	X					
1	T	S				V	0	4	A	G	C	B	M	X	A	X	X					
2	T	S				V	0	4	A	G	C	B	M	X	B	X	X					
7	T	S				V	0	4	A	G	C	C	M	X	A	X	X	see Note				
3	T	S				V	0	4	A	G	C	I	M	X	A	X	X					
1	T	S				V	0	4	A	L	C	B	M	D	A	X	X					
7	T	S				V	0	4	A	L	C	B	M	X	B	X	X					
3	T	S				V	0	4	A	L	C	I	M	D	A	X	X					
3	T	S				V	0	4	A	L	C	I	M	X	A	X	X					
1	T	S				V	0	4	A	T	C	B	M	D	A	X	X					
1	T	S				V	0	4	A	T	C	B	M	X	A	X	X	see Note				
7	T	S				V	0	4	A	T	C	C	M	X	A	X	X					
2	T	S				V	0	4	A	T	C	B	M	X	B	X	X					
3	T	S				V	0	4	A	T	C	I	M	X	A	X	X					
1	T	S				V	0	4	A	Y	C	B	M	X	A	X	X					
1	T	S				V	0	4	B	L	C	B	M	X	A	X	X					
3	T	S				V	0	4	B	L	C	I	M	X	A	X	X					
2	T	S				V	0	4	B	L	C	B	M	X	B	X	X					
1	T	S				V	0	4	B	Y	C	B	M	X	A	X	X					
2	T	S				V	0	4	B	Y	C	B	M	X	B	X	X					
1	T	S				V	0	6	A	G	C	B	M	X	A	S	4					
1	T	S				V	0	6	A	G	C	I	M	X	A	S	2					
1	T	S				V	0	6	A	L	C	B	M	X	A	S	4					
3	T	S				V	0	6	A	L	C	I	M	X	A	S	2					

Note: When using Teflon bearings, meter should operate at no more than 80% of nominal capacity to prevent excessing bearing wear.

















**FLANGES, STRAINERS, AIR ELIMINATORS, VALVES**

Component	Works with	Description	Item Number	LIST PRICE
<b>METER COMPANION FLANGES</b>				
Meter Companion Flange (square)	TS06A	Aluminum - NPT - Viton Seals	FK06A-130	
Meter Companion Flange (square)	TS10A	Aluminum - NPT - Viton Seals	FK1110-1	
Meter Companion Flange (square)	TS15A	Aluminum - NPT - Viton Seals	FK1160-1	
Meter Companion Flange (square)	TS20A	Aluminum - NPT - Viton Seals	FK1200-1	
Meter Companion Flange (square)	TS30A	Aluminum - NPT - Viton Seals	FK1300-1	
Meter Companion Flange (square)	TS06A	Aluminum - NPT - Teflon Seals	FK06A-230	
Meter Companion Flange (square)	TS10A	Aluminum - NPT - Teflon Seals	FK2110-1	
Meter Companion Flange (square)	TS15A	Aluminum - NPT - Teflon Seals	FK2160-1	
Meter Companion Flange (square)	TS20A	Aluminum - NPT - Teflon Seals	FK2200-1	
Meter Companion Flange (square)	TS30A	Aluminum - NPT - Teflon Seals	FK2300-1	
Meter Companion Flange (square)	TS06A	Aluminum - BSPP - Viton Seals	FK06A-131	
Meter Companion Flange (square)	TS10A	Aluminum - BSPP - Viton Seals	FK1111-1	
Meter Companion Flange (square)	TS15A	Aluminum - BSPP - Viton Seals	FK1161-1	
Meter Companion Flange (square)	TS20A	Aluminum - BSPP - Viton Seals	FK1201-1	
Meter Companion Flange (square)	TS30A	Aluminum - BSPP - Viton Seals	FK1301-1	
Meter Companion Flange (square)	TS06A	Aluminum - BSPP - Viton Seals	FK06A-231	
Meter Companion Flange (square)	TS10A	Aluminum - BSPP - Teflon Seals	FK2111-1	
Meter Companion Flange (square)	TS15A	Aluminum - BSPP - Teflon Seals	FK2161-1	
Meter Companion Flange (square)	TS20A	Aluminum - BSPP - Teflon Seals	FK2201-1	
Meter Companion Flange (square)	TS30A	Aluminum - BSPP - Teflon Seals	FK2301-1	
Meter Companion Flange (square)	TS10A	Carbon Steel Weld Viton Seals	FK7110-1	
Meter Companion Flange (square)	TS15A	Carbon Steel Weld Viton Seals	FK7160-1	
Meter Companion Flange (square)	TS20A	Carbon Steel Weld Viton Seals	FK7200-1	
Meter Companion Flange (square)	TS30A	Carbon Steel Weld Viton Seals	FK7300-1	
Meter Companion Flange (square)	TS10A	Carbon Steel Weld Teflon Seals	FK7111-1	
Meter Companion Flange (square)	TS15A	Carbon Steel Weld Teflon Seals	FK7161-1	
Meter Companion Flange (square)	TS20A	Carbon Steel Weld Teflon Seals	FK7201-1	
Meter Companion Flange (square)	TS30A	Carbon Steel Weld Teflon Seals	FK7301-1	
Meter Companion Flange (square)	TS10A	Carbon Steel, 150# ANSI Viton Seals	FK5110-1	
Meter Companion Flange (square)	TS15A	Carbon Steel, 150# ANSI Viton Seals	FK5160-1	
Meter Companion Flange (square)	TS20A	Carbon Steel, 150# ANSI - Viton Seals	FK5200-1	
Meter Companion Flange (square)	TS30A	Carbon Steel, 150# ANSI - Viton Seals	FK5300-1	
Meter Companion Flange (square)	TS10A	Carbon Steel, 150# ANSI - Teflon Seals	FK5111-1	
Meter Companion Flange (square)	TS15A	Carbon Steel, 150# ANSI - Teflon Seals	FK5161-1	
Meter Companion Flange (square)	TS20A	Carbon Steel, 150# ANSI - Teflon Seals	FK5201-1	
Meter Companion Flange (square)	TS30A	Carbon Steel, 150# ANSI - Teflon Seals	FK5301-1	
Meter Companion Flange (square)	TS06C	Stainless Steel - NPT - Teflon Seals	FK06C-230	
Meter Companion Flange (square)	TS10C	Stainless Steel - NPT - Teflon Seals	FK9100-1	
Meter Companion Flange (square)	TS15C	Stainless Steel - NPT - Teflon Seals	FK9150-1	
Meter Companion Flange (square)	TS20C	Stainless Steel - NPT - Teflon Seals	FK9200-1	
Meter Companion Flange (square)	TS06C	Stainless Steel - BSPP - Teflon Seals	FK06C-231	
Meter Companion Flange (square)	TS10C	Stainless Steel - BSPP - Teflon Seals	FK9101-1	
Meter Companion Flange (square)	TS15C	Stainless Steel - BSPP - Teflon Seals	FK9151-1	
Meter Companion Flange (square)	TS20C	Stainless Steel - BSPP - Teflon Seals	FK9201-1	
Meter Companion Flange (square)	TS10C	Stainless Steel - Weld - Teflon Seals	FK0101-1	
Meter Companion Flange (square)	TS15C	Stainless Steel - Weld - Teflon Seals	FK0151-1	
Meter Companion Flange (square)	TS20C	Stainless Steel - Weld - Teflon Seals	FK0201-1	
Meter Companion Flange (square)	TS10C	Stainless Steel -150# ANSI - Teflon Seals	FK9104-1	
Meter Companion Flange (square)	TS15C	Stainless Steel -150# ANSI - Teflon Seals	FK9154-1	
Meter Companion Flange (square)	TS20C	Stainless Steel -150# ANSI - Teflon Seals	FK9204-1	

**FLANGES, STRAINERS, AIR ELIMINATORS, VALVES**

Component	Works with	Description	Item Number	LIST PRICE
<b>STRAINER INLET FLANGES</b>				
Strainer Inlet Flange (round)	TS15A	Aluminum - NPT - Viton Seals	FK1154-1	
Strainer Inlet Flange (round)	TS20A	Aluminum - NPT - Viton Seals	FK1204-1	
Strainer Inlet Flange (round)	TS30A	Aluminum - NPT - Viton Seals	FK1304-1	
Strainer Inlet Flange (round)	TS15A	Aluminum - NPT - Teflon Seals	FK2154-1	
Strainer Inlet Flange (round)	TS20A	Aluminum - NPT - Teflon Seals	FK2204-1	
Strainer Inlet Flange (round)	TS30A	Aluminum - NPT - Teflon Seals	FK2304-1	
Strainer Inlet Flange (round)	TS15A	Aluminum - BSPP - Viton Seals	FK1162-1	
Strainer Inlet Flange (round)	TS20A	Aluminum - BSPP - Viton Seals	FK1205-1	
Strainer Inlet Flange (round)	TS30A	Aluminum - BSPP - Viton Seals	FK1305-1	
Strainer Inlet Flange (round)	TS15A	Aluminum - BSPP - Teflon Seals	FK2155-1	
Strainer Inlet Flange (round)	TS20A	Aluminum - BSPP - Teflon Seals	FK2205-1	
Strainer Inlet Flange (round)	TS30A	Aluminum - BSPP - Teflon Seals	FK2305-1	
Strainer Inlet Flange (round)	TS15A	Carbon Steel Weld - Viton Seals	FK7154-1	
Strainer Inlet Flange (round)	TS20A	Carbon Steel Weld - Viton Seals	FK7204-1	
Strainer Inlet Flange (round)	TS30A	Carbon Steel Weld - Viton Seals	FK7304-1	
Strainer Inlet Flange (round)	TS15A	Carbon Steel Weld - Teflon Seals	FK7155-1	
Strainer Inlet Flange (round)	TS20A	Carbon Steel Weld - Teflon Seals	FK7205-1	
Strainer Inlet Flange (round)	TS30A	Carbon Steel Weld - Teflon Seals	FK7305-1	
Strainer Inlet Flange (round)	TS15A	Carbon Steel - Carbon Steel - 150# ANSI - Viton Seals	FK5154-1	
Strainer Inlet Flange (round)	TS20A	Carbon Steel - Carbon Steel - 150# ANSI - Viton Seals	FK5204-1	
Strainer Inlet Flange (round)	TS30A	Carbon Steel - Carbon Steel - 150# ANSI - Viton Seals	FK5304-1	
Strainer Inlet Flange (round)	TS15A	Carbon Steel 150# ANSI - Teflon Seals	FK5155-1	
Strainer Inlet Flange (round)	TS20A	Carbon Steel 150# ANSI - Teflon Seals	FK5205-1	
Strainer Inlet Flange (round)	TS30A	Carbon Steel 150# ANSI - Teflon Seals	FK5305-1	

**VALVE OUTLET FLANGES (for Mechanical and Solenoid Valves)**

Valve Outlet Flange (round)	TS10A	Aluminum - NPT - Viton Seals	FK1106-1	
Valve Outlet Flange (round)	TS15A	Aluminum - NPT - Viton Seals	FK1156-1	
Valve Outlet Flange (round)	TS20A	Aluminum - NPT - Viton Seals	FK1206-1	
Valve Outlet Flange (round)	TS30A	Aluminum - NPT - Viton Seals	FK1306-1	
Valve Outlet Flange (round)	TS10A	Aluminum - NPT - Teflon Seals	FK2106-1	
Valve Outlet Flange (round)	TS15A	Aluminum - NPT - Teflon Seals	FK2156-1	
Valve Outlet Flange (round)	TS20A	Aluminum - NPT - Teflon Seals	FK2206-1	
Valve Outlet Flange (round)	TS30A	Aluminum - NPT - Teflon Seals	FK2306-1	
Valve Outlet Flange (round)	TS10A	Carbon Steel Weld - Viton Seals	FK7106-1	
Valve Outlet Flange (round)	TS15A	Carbon Steel Weld - Viton Seals	FK7156-1	
Valve Outlet Flange (round)	TS20A	Carbon Steel Weld - Viton Seals	FK7206-1	
Valve Outlet Flange (round)	TS30A	Carbon Steel Weld - Viton Seals	FK7306-1	
Valve Outlet Flange (round)	TS10A	Carbon Steel Weld - Teflon Seals	FK7107-1	
Valve Outlet Flange (round)	TS15A	Carbon Steel Weld - Teflon Seals	FK7157-1	
Valve Outlet Flange (round)	TS20A	Carbon Steel Weld - Teflon Seals	FK7207-1	
Valve Outlet Flange (round)	TS30A	Carbon Steel Weld - Teflon Seals	FK7307-1	
Valve Outlet Flange (round)	TS10A	Aluminum - BSPP - Viton Seals	FK1107-1	
Valve Outlet Flange (round)	TS15A	Aluminum - BSPP - Viton Seals	FK1157-1	
Valve Outlet Flange (round)	TS20A	Aluminum - BSPP - Viton Seals	FK1207-1	
Valve Outlet Flange (round)	TS30A	Aluminum - BSPP - Viton Seals	FK1307-1	
Valve Outlet Flange (round)	TS10A	Aluminum - BSPP - Teflon Seals	FK2107-1	
Valve Outlet Flange (round)	TS15A	Aluminum - BSPP - Teflon Seals	FK2157-1	
Valve Outlet Flange (round)	TS20A	Aluminum - BSPP - Teflon Seals	FK2207-1	
Valve Outlet Flange (round)	TS30A	Aluminum - BSPP - Teflon Seals	FK2307-1	
Valve Outlet Flange (round)	TS10A	Carbon Steel - 150# ANSI - Viton Seals	FK5106-1	
Valve Outlet Flange (round)	TS15A	Carbon Steel - 150# ANSI - Viton Seals	FK5156-1	
Valve Outlet Flange (round)	TS20A	Carbon Steel - 150# ANSI - Viton Seals	FK5206-1	
Valve Outlet Flange (round)	TS30A	Carbon Steel - 150# ANSI - Viton Seals	FK5306-1	
Valve Outlet Flange (round)	TS10A	Carbon Steel - 150# ANSI - Teflon Seals	FK5107-1	
Valve Outlet Flange (round)	TS15A	Carbon Steel - 150# ANSI - Teflon Seals	FK5157-1	
Valve Outlet Flange (round)	TS20A	Carbon Steel - 150# ANSI - Teflon Seals	FK5207-1	
Valve Outlet Flange (round)	TS30A	Carbon Steel - 150# ANSI - Teflon Seals	FK5307-1	

**FLANGES, STRAINERS, AIR ELIMINATORS, VALVES**

Component	Works with	Description	Item Number	LIST PRICE
-----------	------------	-------------	-------------	------------

**AIR ELIMINATORS**

AIR ELIMINATOR	TS Meters - AI	Aluminum - Standard Air Eliminator - Viton Seals - NPT	ACXXA11XA	
AIR ELIMINATOR	TS Meters - AI	Aluminum - Standard Air Eliminator - Teflon Seals - NPT	ACXXA11XB	

**STRAINERS**

STRAINER (No Basket)	TS15A	Aluminum - Strainer with plain cover - Viton - NPT	AC16A21XAA	
STRAINER (No Basket)	TS20A	Aluminum - Strainer with plain cover - Viton - NPT	AC20A21XAA	
STRAINER (No Basket)	TS30A	Aluminum - Strainer with plain cover - Viton - NPT	AC30A21XAA	
STRAINER (No Basket)	TS15A	Aluminum - Strainer with plain cover - Viton - BSPP	AC16A21XAB	
STRAINER (No Basket)	TS20A	Aluminum - Strainer with plain cover - Viton - BSPP	AC20A21XAB	
STRAINER (No Basket)	TS30A	Aluminum - Strainer with plain cover - Viton - BSPP	AC30A21XAB	
STRAINER (No Basket)	TS15A	Aluminum - Strainer with plain cover - Teflon - NPT	AC16A21XBA	
STRAINER (No Basket)	TS20A	Aluminum - Strainer with plain cover - Teflon - NPT	AC20A21XBA	
STRAINER (No Basket)	TS30A	Aluminum - Strainer with plain cover - Teflon - NPT	AC30A21XBA	
STRAINER (No Basket)	TS15A	Aluminum - Strainer with plain cover - Teflon - BSPP	AC16A21XBB	
STRAINER (No Basket)	TS20A	Aluminum - Strainer with plain cover - Teflon - BSPP	AC20A21XBB	
STRAINER (No Basket)	TS30A	Aluminum - Strainer with plain cover - Teflon - BSPP	AC30A21XBB	

**STRAINER/AIR ELIMINATOR ASSEMBLY**

STRAINER (No Basket)	TS15A	Aluminum - Strainer with Std. Air Eliminator - Viton - NPT	AC16A22XAA	
STRAINER (No Basket)	TS20A	Aluminum - Strainer with Std. Air Eliminator - Viton - NPT	AC20A22XAA	
STRAINER (No Basket)	TS30A	Aluminum - Strainer with Std. Air Eliminator - Viton - NPT	AC30A22XAA	
STRAINER (No Basket)	TS15A	Aluminum - Strainer with Std. Air Eliminator - Viton - BSPP	AC16A22XAB	
STRAINER (No Basket)	TS20A	Aluminum - Strainer with Std. Air Eliminator - Viton - BSPP	AC20A22XAB	
STRAINER (No Basket)	TS30A	Aluminum - Strainer with Std. Air Eliminator - Viton - BSPP	AC30A22XAB	
STRAINER (No Basket)	TS15A	Aluminum - Strainer with Std. Air Eliminator - Teflon - NPT	AC16A22XBA	
STRAINER (No Basket)	TS20A	Aluminum - Strainer with Std. Air Eliminator - Teflon - NPT	AC20A22XBA	
STRAINER (No Basket)	TS30A	Aluminum - Strainer with Std. Air Eliminator - Teflon - NPT	AC30A22XBA	
STRAINER (No Basket)	TS15A	Aluminum - Strainer with Std. Air Eliminator - Teflon - BSPP	AC16A22XBB	
STRAINER (No Basket)	TS20A	Aluminum - Strainer with Std. Air Eliminator - Teflon - BSPP	AC20A22XBB	
STRAINER (No Basket)	TS30A	Aluminum - Strainer with Std. Air Eliminator - Teflon - BSPP	AC30A22XBB	

**STRAINER BASKET**

STRAINER BASKET	TS15 and TS20	Aluminum - 20 Mesh	SA3008-020	
STRAINER BASKET	TS15 and TS20	Aluminum - 40 Mesh	SA3008-040	
STRAINER BASKET	TS15 and TS20	Aluminum - 100 Mesh	SA3008-100	
STRAINER BASKET	TS30	Aluminum - 20 Mesh	SA3010-020	
STRAINER BASKET	TS30	Aluminum - 40 Mesh	SA3010-040	
STRAINER BASKET	TS30	Aluminum - 80 Mesh	SA3010-080	

## FLANGES, STRAINERS, AIR ELIMINATORS, VALVES

Component	Works with	Description	Item Number	LIST PRICE
-----------	------------	-------------	-------------	------------

### VALVES - BACK PRESSURE

BACK PRESSURE VALVE	TS15A & TS20A	Plated Steel - Spring Loaded	VP1901	
BACK PRESSURE VALVE	TS30A	Plated Steel - Spring Loaded	VP1930	

### VALVES - PRESET - MECHANICAL\*

VALVE - PRESET - Mechanical	TS15A	Aluminum - VITON Seals - NPT - with linkage, (90° inlet/outlet), includes flange	AC16A61XAA	
VALVE - PRESET - Mechanical	TS20A	Aluminum - VITON Seals - NPT - with linkage, (90° inlet/outlet), includes flange	AC20A61XAA	
VALVE - PRESET - Mechanical	TS30A	Aluminum - VITON Seals - NPT -with linkage, (90° inlet/outlet), includes flange	AC30A61XAA	
VALVE - PRESET - Mechanical	TS15A	Aluminum - VITON Seals - BSPP - with linkage, (90° inlet/outlet), includes flange	AC16A61XAB	
VALVE - PRESET - Mechanical	TS20A	Aluminum - VITON Seals - BSPP - with linkage, (90° inlet/outlet), includes flange	AC20A61XAB	
VALVE - PRESET - Mechanical	TS30A	Aluminum - VITON Seals - BSPP -with linkage, (90° inlet/outlet), includes flange	AC30A61XAB	
VALVE - PRESET - Mechanical	TS15A	Aluminum - TEFLON Seals - NPT - with linkage, (90° inlet/outlet), includes flange	AC16A61XBA	
VALVE - PRESET - Mechanical	TS20A	Aluminum - TEFLON Seals - NPT - with linkage, (90° inlet/outlet), includes flange	AC20A61XBA	
VALVE - PRESET - Mechanical	TS30A	Aluminum - TEFLON Seals - NPT -with linkage, (90° inlet/outlet), includes flange	AC30A61XBA	
VALVE - PRESET - Mechanical	TS15A	Aluminum - TEFLON Seals - BSPP - with linkage, (90° inlet/outlet), includes flange	AC16A61XBB	
VALVE - PRESET - Mechanical	TS20A	Aluminum - TEFLON Seals - BSPP - with linkage, (90° inlet/outlet), includes flange	AC20A61XBB	
VALVE - PRESET - Mechanical	TS30A	Aluminum - TEFLON Seals - BSPP -with linkage, (90° inlet/outlet), includes flange	AC30A61XBB	

### VALVES - SYSTEM SECURITY VALVE - ELECTRICAL - 1-STAGE CLOSE

VALVE - SECURITY - Electrical	TS15A	Aluminum - UL - VITON Seals - NPT - 1-Stage (110VAC) - Ex-Prf - UL	AC16A72XAA1	
VALVE - SECURITY - Electrical	TS20A	Aluminum - UL - VITON Seals - NPT - 1-Stage (110VAC) - Ex-Prf - UL	AC20A72XAA1	
VALVE - SECURITY - Electrical	TS30A	Aluminum - UL - VITON Seals - NPT - 1-Stage (110VAC) - Ex-Prf - UL	AC30A72XAA1	
VALVE - SECURITY - Electrical	TS15A	Aluminum - UL - VITON Seals - NPT - 1-Stage (220VAC) - Ex-Prf - UL	AC16A72XAA2	
VALVE - SECURITY - Electrical	TS20A	Aluminum - UL - VITON Seals - NPT - 1-Stage (220VAC) - Ex-Prf - UL	AC20A72XAA2	
VALVE - SECURITY - Electrical	TS30A	Aluminum - UL - VITON Seals - NPT - 1-Stage (220VAC) - Ex-Prf - UL	AC30A72XAA2	

### VALVES - PRESET VALVE - ELECTRICAL - 2-STAGE CLOSE

VALVE - PRESET - Electrical	TS15A	Aluminum - UL - VITON Seals - NPT - 2-Stage (12VDC) - Ex-Prf - UL	AC16A74XAA3	
VALVE - PRESET - Electrical	TS20A	Aluminum - UL - VITON Seals - NPT - 2-Stage (12VDC) - Ex-Prf - UL	AC20A74XAA3	
VALVE - PRESET - Electrical	TS30A	Aluminum - UL - VITON Seals - NPT - 2-Stage (12VDC) - Ex-Prf - UL	AC30A74XAA3	
VALVE - PRESET - Electrical	TS15A	Aluminum - UL - VITON Seals - NPT - 2-Stage (24VDC) - Ex-Prf - UL	AC16A74XAA4	
VALVE - PRESET - Electrical	TS20A	Aluminum - UL - VITON Seals - NPT - 2-Stage (24VDC) - Ex-Prf - UL	AC20A74XAA4	
VALVE - PRESET - Electrical	TS30A	Aluminum - UL - VITON Seals - NPT - 2-Stage (24VDC) - Ex-Prf - UL	AC30A74XAA4	
VALVE - PRESET - Electrical	TS15A	Aluminum - UL - VITON Seals - NPT - 2-Stage (110VAC) - Ex-Prf - UL	AC16A74XAA1	
VALVE - PRESET - Electrical	TS20A	Aluminum - UL - VITON Seals - NPT - 2-Stage (110VAC) - Ex-Prf - UL	AC20A74XAA1	
VALVE - PRESET - Electrical	TS30A	Aluminum - UL - VITON Seals - NPT - 2-Stage (110VAC) - Ex-Prf - UL	AC30A74XAA1	
VALVE - PRESET - Electrical	TS15A	Aluminum - UL - VITON Seals - NPT - 2-Stage (220VAC) - Ex-Prf - UL	AC16A74XAA2	
VALVE - PRESET - Electrical	TS20A	Aluminum - UL - VITON Seals - NPT - 2-Stage (220VAC) - Ex-Prf - UL	AC20A74XAA2	
VALVE - PRESET - Electrical	TS30A	Aluminum - UL - VITON Seals - NPT - 2-Stage (220VAC) - Ex-Prf - UL	AC30A74XAA2	



## REGISTERS, PRINTERS, PRESETS - MECHANICAL

Component	Works with	Description	Item Number	LIST PRICE
<b>MECHANICAL REGISTERS</b>				
REGISTER - Mechanical	TS Meters	VR 7887 - Gallons 1/10 - 5 digit register	RG3005	
REGISTER - Mechanical	TS Meters	VR 7887 - Whole liter -	RG3009	
REGISTER - Mechanical	TS Meters	VR 7886 - Gallons 1/10 - 6 digit register	RG3005-HC	
REGISTER - Mechanical	TS Meters	VR 7886 - Whole liter -	RG3009-HC	

### MECHANICAL REGISTERS - PULSE GENERATOR

PULSE GENERATOR - Mechanical	TS Meters	Pulse generator - UL version, replacement module - 10:1 dry reed	EL1004	
PULSE GENERATOR - Mechanical	TS Meters	Pulse generator - UL version, complete, 10:1 dry reed	VR1000	
PULSE GENERATOR - Mechanical	TS Meters	Pulse generator - ATEX version, replacement module - 10:1 dry reed	EL1004-A	
PULSE GENERATOR - Mechanical	TS Meters	Pulse generator - ATEX version, complete, 10:1 dry reed	VR1000-A	
PULSE GENERATOR - Mechanical	TS Meters	Pulse generator - UL version, replacement module - 100:1 solid state	EL1005	
PULSE GENERATOR - Mechanical	TS Meters	Pulse generator - UL version, complete, 100:1 solid state	VR1001	
PULSE GENERATOR - Mechanical	TS Meters	Pulse generator - ATEX version, replacement module - 100:1 solid state	EL1005-A	
PULSE GENERATOR - Mechanical	TS Meters	Pulse generator - ATEX version, complete, 100:1 solid state	VR1001-A	

### PRESET COUNTER

PRESET COUNTER - Mechanical	TS15, TS20, TS30	VR 7889 - 5 digit preset counter, 2-stage shut-off	RG3006	
PRESET COUNTER - Mechanical	TS15, TS20, TS30	Micro Switch Ass. - In X-Prf case - UL/cUL version	EL1506	
PRESET COUNTER - Mechanical	TS15, TS20, TS30	Micro Switch Ass. - In X-Prf case - ATEX listed micro switches	EL1506-A	

### PRINTERS

TICKET PRINTER - Mechanical	TS15, TS20, TS30	VR 7888 - Zero Start	RG3007	
-----------------------------	------------------	----------------------	--------	--

### RATIO GEAR PLATE

RATIO GEAR PLATE - Mechanical	TS10A	Ratio Gear Plate - Short Shaft - 1/10 gallon	GPTS10T1	
RATIO GEAR PLATE - Mechanical	TS10C	Ratio Gear Plate - Short Shaft - 1/10 gallon	GP560T2-1	
RATIO GEAR PLATE - Mechanical	TS15A	Ratio Gear Plate - Short Shaft - 1/10 gallon	GPTS15-70T2-1	
RATIO GEAR PLATE - Mechanical	TS15C	Ratio Gear Plate - Short Shaft - 1/10 gallon	GP580T2-1	
RATIO GEAR PLATE - Mechanical	TS20A - 150 GPM	Ratio Gear Plate - Short Shaft - 1/10 gallon	GPTS2HT1-1	
RATIO GEAR PLATE - Mechanical	TS30A	Ratio Gear Plate - Short Shaft - whole gallon	GP5201G2-1	
RATIO GEAR PLATE - Mechanical	TS30C	Ratio Gear Plate - Short Shaft - whole gallon	GP5201G2-1	
RATIO GEAR PLATE - Mechanical	TS10A	Ratio Gear Plate - Short Shaft - 1/10 liter	GPTS10Y1	
RATIO GEAR PLATE - Mechanical	TS10C	Ratio Gear Plate - Short Shaft - whole liter	GP560L2-1	
RATIO GEAR PLATE - Mechanical	TS15A	Ratio Gear Plate - Short Shaft - whole liter	GPTS15-70L2-1	
RATIO GEAR PLATE - Mechanical	TS15C	Ratio Gear Plate - Short Shaft - whole liter	GP580L2-1	
RATIO GEAR PLATE - Mechanical	TS20A - 150 GPM	Ratio Gear Plate - Short Shaft - whole liter	GPTS2HL1-1	
RATIO GEAR PLATE - Mechanical	TS30A	Ratio Gear Plate - Short Shaft - whole liter	GP590L2-1	
RATIO GEAR PLATE - Mechanical	TS30C	Ratio Gear Plate - Short Shaft - whole liter	GP590L2-1	
RATIO GEAR PLATE - Mechanical	TS30A & C	Ratio Gear Plate - Whole Gallon - Up/Down	GP5201G-UD	
RATIO GEAR PLATE - Mechanical	TS30A & C	Ratio Gear Plate - Whole Liter - Up/Down	GP5201L-UD	
RATIO GEAR PLATE - Mechanical	TS30A & C	Ratio Gear Plate - 1/10 Gallon	GP5201T1-1	
RATIO GEAR PLATE - Mechanical	TS10C	Ratio Gear Plate - Whole Liter	GP560L	
RATIO GEAR PLATE - Mechanical	TS10C	Ratio Gear Plate - Whole Liter - Up/Down	GP560L-UD	
RATIO GEAR PLATE - Mechanical	TS10C	Ratio Gear Plate - 1/10 Gallon - Up/Down	GP560T-UD	
RATIO GEAR PLATE - Mechanical	TS15C	Ratio Gear Plate - Whole Liter - Up/Down	GP580L2-1-UD	
RATIO GEAR PLATE - Mechanical	TS15C	Ratio Gear Plate - 1/10 Gallon - Up/Down	GP580T2-1-UD	
RATIO GEAR PLATE - Mechanical	TS30A & C	Ratio Gear Plate - Whole Liter	GP590L2-1	
RATIO GEAR PLATE - Mechanical	TS30A & C	Ratio Gear Plate - Whole Liter - Up/Down	GP590L-UD	
RATIO GEAR PLATE - Mechanical	TS15A	Ratio Gear Plate - 1/10 Gallon - Up/Down	GPTS15-70T2-1-UD	
RATIO GEAR PLATE - Mechanical	TS20A & C	Ratio Gear Plate - Whole Liter - Up/Down	GPTS2HL1-1-UD	
RATIO GEAR PLATE - Mechanical	TS20A & C	Ratio Gear Plate - 1/10 Gallon - Up/Down	GPTS2HT1-1-UD	
RATIO GEAR PLATE - Mechanical	TS20A & C	Ratio Gear Plate - Whole Gallon	GPTS2HW1-2	
RATIO GEAR PLATE - Mechanical	TS30A & C	Ratio Gear Plate - Whole Liter - Up/Down	GPTS30L-UD	

## REGISTERS, PRINTERS, PRESETS - ELECTRICAL

Component	Works with	Description	Item Number	LIST PRICE
<b>ELECTRICAL METER REGISTERS - EMR4</b>				
REGISTER - EMR4	TS Meters	Register Head (E) - EMR4 register head, English front panel	EL845593-003	
REGISTER - EMR4	TS Meters	Register Head (S) - EMR4 register head, Spanish front panel	EL845594-003	
REGISTER - EMR4	TS Meters	Register Head (F) - EMR4 register head, French front panel	EL845592-003	
The EMR4 register requires a special cable between the EMR4 head, and the Interconnect Box (IB), which must be located under roof outside of the hazardous zone. Original V-R cable must be used, otherwise neither Tuthill nor Veeder-Root can support the installation/programming/start-up process.				

### EMR4 ACCESSORIES

Remote Kit	TS Meters	Remote EMR4 Kit - Installation kit for remote EMR4 register head	AK4100	
Thermowell Kit	TS Meters	THERMOWELL KIT	EL331373-001	
Printer - Power/Data Cable	TS Meters	PRINTER POWER / DATA CABLE	EL845900-313	
Temperature Prope	TS Meters	TEMP PROBE KIT, VR	EL845900-302	
Key Pad	TS Meters	OPTIONAL KEY PAD KIT, VR, Right	EL845900-014	
Pulser Kit	TS Meters	PULSER KIT, VR, ELEC,W/ MOUNTING BRACKET	EL845900-015	
Emergency Stop	TS Meters	EMERGENCY STOP SWITCH, VR	EL845900-021	
Data Link - Office Kit - 900 MHz	TS Meters	EMR4 DATA LINK, OFFICE KIT- RECEIVER 900 MHZ	EL845900-030	
Data Link - Truck Kit - 900 MHz	TS Meters	DATALINK TRUCKIT W/ KEYPAD 2.4GHZ MODEM, 900MHZ	EL845900-032	
Antenna	TS Meters	KIT - HIGH GAIN ANTENNA	EL845900-033	
Data Link - Office Kit - 2.4 GHz Modem	TS Meters	EMR4 DataLink Office Kit - 2.4 GHZ Modem	EL845900-034	
Data Link Kit, IB to PC	TS Meters	EMR4 DATA LINK KIT, IB TO PC	EL845900-038	
EMR4 Display Module (EN)	TS Meters	EMR4 DISPLAY MODULE, ENG, VOLUME, \$, TC, ENGLISH	EL845900-068	
Interconnect Box (IB) (Board)	TS Meters	IB BOARD WITH SOFTWARE	EL845900-074	
Cable Kit	TS Meters	CABLE KIT,VR,100', 4 WIRE,2 PAIR,18 AWG	EL846000-101	
Cable Kit	TS Meters	CABLE KIT, VR, 200', REG TO IB BOX CONN.	EL846000-102	
Cable Kit	TS Meters	CABLE KIT, VR, 300', REG TO IB BOX CONN.	EL846000-103	
Cable Kit	TS Meters	CABLE KIT, VR, 500', REG TO IB BOX CONN.	EL846000-105	
Cable Kit	TS Meters	CABLE KIT, VR, 35', REG TO IB BOX CONN.	EL846000-106	
EMR4 Install Kit	TS Meters	INSTALL KIT, TC, LC	EL845900-306	
Register - EMR4	TS Meters	REGISTER, ELEC,VR,VOL/ RATE,CURR,C&C,TC	EL845593-003	
Register - EMR4	TS Meters	REGISTER,VR,CUR,VOL/ RATE, TEMP SPAN.	EL845594-003	
Interconnect Box (IB)	TS Meters	IB box, UL/cUL, 12/24V, 4 relays, Time/D	EL845790-001	
Interconnect Box (IB)	TS Meters	IB box, ATEX, 12/24V, 4 relays, Time/Da	EL845760-001	
Mounting - OMM4	TS Meters	MOUNTING BRACKET FOR REMOTE DISPLAY	EL845900-024	
Printer - EPSON - Slip	TS Meters	EPSON table top printer, slip type	TM-U295-071	
Printer - EPSON - Roll	TS Meters	EPSON table top printer, roll type	TM-U220-103	

**ELECTRICAL METER - SIGNAL CONDITIONERS, AMPLIFIERS**

ISOLATOR-AMPLIFIER-SPLITTER	TM and TS	PIA-300 - Pulse Isolator, Amplifier and Splitter - Bare Unit	EL6630	
-----------------------------	-----------	--	--------	--

**ELECTRICAL METER - SIGNAL CONDITIONERS**

SIGNAL CONDITIONERS	TS10A	SCL - Signal conditioner & calibrator , TS Series 10 PPL scaler	EL0300-3-18B	
SIGNAL CONDITIONERS	TS10C	SCL - Signal conditioner & calibrator , TS Series 10 PPL scaler	EL0300-3-18A	
SIGNAL CONDITIONERS	TS15A	SCL - Signal conditioner & calibrator , TS Series 10 PPL scaler	EL0300-3-18C	
SIGNAL CONDITIONERS	TS15C	SCL - Signal conditioner & calibrator , TS Series 10 PPL scaler	EL0300-3-18D	
SIGNAL CONDITIONERS	TS20A, TS20C	SCL - Signal conditioner & calibrator , TS Series 10 PPL scaler	EL0300-3-18E	
SIGNAL CONDITIONERS	TS30A, TS30C	SCL - Signal conditioner & calibrator , TS Series 10 PPL scaler	EL0300-3-18F	
SIGNAL CONDITIONERS	TS10A	SCL - Signal conditioner & calibrator , TS Series 100 PPG scaler	EL0300-3-13B	
SIGNAL CONDITIONERS	TS10C	SCL - Signal conditioner & calibrator , TS Series 100 PPG scaler	EL0300-3-13A	
SIGNAL CONDITIONERS	TS15A	SCL - Signal conditioner & calibrator , TS Series 100 PPG scaler	EL0300-3-13C	
SIGNAL CONDITIONERS	TS15C	SCL - Signal conditioner & calibrator , TS Series 100 PPG scaler	EL0300-3-13D	
SIGNAL CONDITIONERS	TS20A, TS20C	SCL - Signal conditioner & calibrator , TS Series 100 PPG scaler	EL0300-3-13E	
SIGNAL CONDITIONERS	TS30A, TS30C	SCL - Signal conditioner & calibrator , TS Series 100 PPG scaler	EL0300-3-13F	
SIGNAL CONDITIONERS	TS Meters	SCL - Signal conditioner & calibrator , calibrator/Quadrature Filter only	EL0300-3-17U	
SIGNAL CONDITIONERS	TS10A	SCL - Signal conditioner & calibrator 100 PPL, TS10A, 12V, EE0113	EL0300-3-15B	
SIGNAL CONDITIONERS	TS15A	SCL - Signal conditioner & calibrator 100 PPL, TS15A, 12V, EE0115	EL0300-3-15C	
SIGNAL CONDITIONERS	TS10D	SCL - Signal conditioner & calibrator 100 PPG, TS10D, 24V, EE0101	EL0300-5-13A	
SIGNAL CONDITIONERS	TS10A	SCL - Signal conditioner & calibrator 100 PPG, TS10A, 24V, EE0102	EL0300-5-13B	
SIGNAL CONDITIONERS	TS15A	SCL - Signal conditioner & calibrator 100 PPG, TS15A, 24V, EE0103	EL0300-5-13C	
SIGNAL CONDITIONERS	TS15C	SCL - Signal conditioner & calibrator 100 PPG, TS15C, 24V, EE0104	EL0300-5-13D	
SIGNAL CONDITIONERS	TS20A / C	SCL - Signal conditioner & calibrator 100 PPG, TS20A / C, 24 V, EE0105	EL0300-5-13E	
SIGNAL CONDITIONERS	TS30A / C	SCL - Signal conditioner & calibrator 100 PPG, TS30A / C, 24V, EE0106	EL0300-5-13F	
SIGNAL CONDITIONERS	TS10A	SCL - Signal conditioner & calibrator 100 PPL, TS10A, 24V, EE0113	EL0300-5-15B	
SIGNAL CONDITIONERS	24 VDC	SCL - Signal conditioner & calibrator QUAD FILTER, 24 VDC, EE UNIT	EL0300-5-17U	
SIGNAL CONDITIONERS	TS10A	SCL - Signal conditioner & calibrator 10 PPL, TS10A, 24V, EE0117	EL0300-5-18B	
SIGNAL CONDITIONERS	TS15A / C	SCL - Signal conditioner & calibrator 10 PPL, TS15A / C, 24V, EE0118	EL0300-5-18C	
SIGNAL CONDITIONERS	TS15C	SCL - Signal conditioner & calibrator 10 PPL, TS15C, 24VDC, EE0119	EL0300-5-18D	
SIGNAL CONDITIONERS	TS20A/C	SCL - Signal conditioner & calibrator 10 PPL, TS20A/C, 24V, EE0120	EL0300-5-18E	

**REGISTERS, PRINTERS, PRESETS - ELECTRICAL**

Component	Works with	Description	Item Number	LIST PRICE
<b>ELECTRICAL METER ACCESSORIES</b>				
Solenoid protection kits are required (1 per solenoid). These are supplied N/C when a Tuthill solenoid valve is used, but must be purchased separately if the solenoid valve is sourced from other side.				
Solenoid Protection Kits	TS Meters	for DC Solenoids	EL846000-022	NP
Solenoid Protection Kits	TS Meters	for AC Solenoids	EL846000-MOV	
Temperature probe	TS Meters	Temperature probe	EL846000-002	

## **REFERENCE TABLES**

FLUID GROUP	MATERIAL	ROTOR		BEARINGS	SEALS	FLUIDS
1 STANDARD FUELS	AA or SS	LV	PPS	Carbon	Viton™	Aviation Fuel, Bio-Diesel, Diesel Fuel, Light Fuel Oil, Gasoline, Glycols, Kerosene & Water.
2 E85	AA or SS	LV	PPS	Carbon	Teflon™	For E85, ethanol, methanol & solvents. Not for use on halogenated solvents!
3 Automatic Transmission Fluid (ATF) and HIGH TEMP	AA or SS	HV	PPS	Carbon	Viton™	For automatic transmission fluid, hydraulic oils, automotive lube oil & gear oil; fuel oil with viscosity > 300 cSt., Heated oils, 120-180°F (50-80°C)
4 LPG (Liquified Petroleum Gas)	AA	LV	PPS	Carbon	UL listed, Buna N & Viton™	LPG
5 DEF (Diesel Exhaust Fluid)	SS	LV	SS	Proprietary	Viton™	DEF - Dispenser (TS06C)
		LV	PPS	Teflon™	Teflon™	DEF - Bulk Transfer (TS10C-TS20C)
6 HERB/PESTICIDE	AA or SS	HV	PPS	Teflon™	Teflon™	Herbicides & Pesticides
7 FERTILIZER	AA or SS	LV	PPS	Teflon™	Viton™	Fertilizer
8 CAUSTICS	SS	LV	PPS	Carbon	Teflon™	Caustics (1-49% concentration)
		LV	PPS	Teflon™	Teflon™	Caustics (50% & higher conc.)

LV = Low Viscosity, HV = High Viscosity, AA = Anodized Aluminum, SS = Stainless Steel, PPS = Polyphenylene Sulfide resin

# Viscosity Table - TS Meters

## Rotor / Flow / Visc. Key

Category	Rotor Type	% of Rated Meter Flow	Maximum Viscosity
A	HV	11%	100,000
B	HV	19%	50,000
C	HV	41%	10,000
D	HV	65%	3,000
E	HV	100%	3,000
F	LV	54%	3,000
G	LV	100%	300

NOTE:

Preset -

Mechanical Preset Valve Limit = 1,000 cSt

Electronic Preset Valve Limit = 50 cSt

## Viscosity Table

°F		0	10	20	30	40	50	60	70	80	90	100
°C		-18	-12	-7	-1	4	10	16	21	27	32	38
Viscosity (cSt)		Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)	Viscosity (cSt)
Rotor / Flow / Visc.		Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.	Rotor / Flow / Visc.
LUBE OIL	85W140	170,000 A	70,000 A	32,000 B	17,000 B	8,000 C	5,000 C	3,000 D	1,800 D	1,100 D	750 <sup>E</sup> <sub>F</sub>	480 <sup>E</sup> <sub>F</sub>
	SAE50	55,000 A	28,000 B	12,000 B	6,500 C	3,800 C	2,100 D	1,300 D	820 <sup>E</sup> <sub>F</sub>	550 <sup>E</sup> <sub>F</sub>	385 <sup>E</sup> <sub>F</sub>	270 G
	SAE40	30,000 B	14,000 B	6,800 C	3,800 C	2,150 D	1,300 D	800 <sup>E</sup> <sub>F</sub>	500 <sup>E</sup> <sub>F</sub>	335 <sup>E</sup> <sub>F</sub>	245 G	175 G
	15W40	10,000 C	5,500 C	3,000 C	1,850 D	1,150 D	750 <sup>E</sup> <sub>F</sub>	490 <sup>E</sup> <sub>F</sub>	330 <sup>E</sup> <sub>F</sub>	240 G	175 G	135 G
	SAE30	14,000 B	8,000 C	3,800 C	2,150 D	1,300 D	775 <sup>E</sup> <sub>F</sub>	480 <sup>E</sup> <sub>F</sub>	340 <sup>E</sup> <sub>F</sub>	235 G	165 G	120 G
	20W40	7,500 C	4,500 C	2,400 D	1,500 D	950 <sup>E</sup> <sub>F</sub>	650 <sup>E</sup> <sub>F</sub>	400 <sup>E</sup> <sub>F</sub>	300 G	200 G	155 G	120 G
	10W30	2,000 D	1,100 D	800 <sup>E</sup> <sub>F</sub>	500 <sup>E</sup> <sub>F</sub>	355 <sup>E</sup> <sub>F</sub>	240 G	180 G	135 G	100 G	78 G	65 G
	5W20	850 <sup>E</sup> <sub>F</sub>	530 <sup>E</sup> <sub>F</sub>	340 <sup>E</sup> <sub>F</sub>	220 G	155 G	115 G	82 G	64 G	49 G	39 G	31 G
HYDRAULIC OIL	ISO360	175,000 A	70,000 A	35,000 B	16,000 B	7,900 C	4,400 C	2,500 D	1,500 D	850 <sup>E</sup> <sub>F</sub>	600 <sup>E</sup> <sub>F</sub>	360 <sup>E</sup> <sub>F</sub>
	ISO260	80,000 A	38,000 B	17,000 B	8,000 C	4,400 C	2,500 D	1,500 D	840 <sup>E</sup> <sub>F</sub>	550 <sup>E</sup> <sub>F</sub>	360 <sup>E</sup> <sub>F</sub>	260 G
	ISO160	35,000 B	16,000 B	7,500 C	4,000 C	2,300 D	1,300 D	800 <sup>E</sup> <sub>F</sub>	550 <sup>E</sup> <sub>F</sub>	340 <sup>E</sup> <sub>F</sub>	240 G	160 G
	ISO99	15,000 B	7,500 C	3,700 C	1,950 D	1,150 D	750 <sup>E</sup> <sub>F</sub>	430 <sup>E</sup> <sub>F</sub>	290 G	200 G	140 G	99 G
	ISO68	6,000 C	3,000 D	1,500 D	940 <sup>E</sup> <sub>F</sub>	600 <sup>E</sup> <sub>F</sub>	370 <sup>E</sup> <sub>F</sub>	240 G	170 G	120 G	85 G	68 G
	ISO46	3,000 D	1,600 D	900 <sup>E</sup> <sub>F</sub>	550 <sup>E</sup> <sub>F</sub>	350 <sup>E</sup> <sub>F</sub>	235 G	155 G	110 G	78 G	58 G	46 G
	ISO32	1,250 D	780 <sup>E</sup> <sub>F</sub>	460 <sup>E</sup> <sub>F</sub>	300 G	200 G	140 G	95 G	70 G	52 G	39 G	32 G
ATF (Shell Donax TG)	800 <sup>E</sup> <sub>F</sub>	480 <sup>E</sup> <sub>F</sub>	325 <sup>E</sup> <sub>F</sub>	230 G	165 G	125 G	95 G	70 G	55 G	45 G	37 G	
Propylene Glycol	1,400 D	900 D	480 <sup>E</sup> <sub>F</sub>	300 G	180 G	130 G	90 G	60 G	40 G	28 G	23 G	
P66 Transformer Oil	135 G	90 G	65 G	48 G	37 G	29 G	22 G	17 G	15 G	12 G	9.5 G	

## Viscosity Table - TM Meters

### Rotor / Flow / Visc. Key

Category		% of Rated Meter Flow	Maximum Viscosity
A		4%	50,000
B		12%	7,500
C		35%	2,000
D		60%	800
E		100%	200

### Viscosity Table

		0	10	20	30	40	50	60	70	80	90	100
°F												
°C		-18	-12	-7	-1	4	10	16	21	27	32	38
		Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.	Viscosity (cSt) Rotor / Flow / Visc.
LUBE OIL	85W140	170,000 n/a	70,000 n/a	32,000 A	17,000 A	8,000 A	5,000 B	3,000 B	1,800 C	1,100 C	750 D	480 D
	SAE50	55,000 n/a	28,000 A	12,000 A	6,500 B	3,800 B	2,100 B	1,300 C	820 C	550 D	385 D	270 D
	SAE40	30,000 A	14,000 A	6,800 B	3,800 B	2,150 B	1,300 C	800 D	500 D	335 D	245 D	175 E
	15W40	10,000 A	5,500 B	3,000 B	1,850 C	1,150 C	750 D	490 D	330 D	240 D	175 E	135 E
	SAE30	14,000 A	8,000 A	3,800 B	2,150 B	1,300 C	775 D	480 D	340 D	235 D	165 E	120 E
	20W40	7,500 B	4,500 B	2,400 B	1,500 C	950 C	650 D	400 D	300 D	200 E	155 E	120 E
	10W30	2,000 C	1,100 C	800 C	500 D	355 D	240 D	180 E	135 E	100 E	78 E	65 E
	5W20	850 C	530 D	340 C	220 D	155 E	115 E	82 E	64 E	49 E	39 E	31 E
HYDRAULIC OIL	ISO360	175,000 n/a	70,000 n/a	35,000 A	16,000 A	7,900 A	4,400 B	2,500 B	1,500 C	850 C	600 D	360 D
	ISO260	80,000 n/a	38,000 A	17,000 A	8,000 A	4,400 B	2,500 B	1,500 C	840 C	550 D	360 D	260 D
	ISO160	35,000 A	16,000 A	7,500 B	4,000 B	2,300 B	1,300 C	800 C	550 D	340 D	240 D	160 E
	ISO99	15,000 A	7,500 B	3,700 B	1,950 C	1,150 C	750 D	430 D	290 D	200 E	140 E	99 E
	ISO68	6,000 B	3,000 B	1,500 C	940 C	600 D	370 D	240 D	170 E	120 E	85 E	68 E
	ISO46	3,000 B	1,600 C	900 C	550 D	350 D	235 D	155 E	110 E	78 E	58 E	46 E
	ISO32	1,250 C	780 D	460 D	300 D	200 E	140 E	95 E	70 E	52 E	39 E	32 E
ATF (Shell Donax TG)		800 D	480 D	325 D	230 D	165 E	125 E	95 E	70 E	55 E	45 E	37 E
Propylene Glycol		1,400 C	900 C	480 D	300 D	180 E	130 E	90 E	60 E	40 E	28 E	23 E
P66 Transformer Oil		135 E	90 E	65 E	48 E	37 E	29 E	22 E	17 E	15 E	12 E	9.5 E

## W&M Certification

W&M Certification		US	Canada	EU	Australia
EMR4 Electronic Register (Veeder Root)		YES	YES	YES	
TS06	with SCL	YES	Pending		
TS10	Mechanical	YES			
	Electronic, with EMR4	YES			
	Electronic, with SCL	YES			
	Electronic, with Wave Form	YES			
TS15	Mechanical	YES	YES		
	Electronic, with EMR4	YES	YES		
	Electronic, with SCL	YES			
	Electronic, with Wave Form	YES	Pending		
TS20	Mechanical	YES	YES	YES	YES
	Electronic, with EMR4	YES	YES	YES	
	Electronic, with SCL	YES			
	Electronic, with Wave Form	YES	Pending	YES	
TS30	Mechanical	YES	YES	YES	YES
	Electronic, with EMR4	YES	YES	YES	
	Electronic, with SCL	YES			
	Electronic, with Wave Form	YES	Pending	YES	



In high viscosity applications, limits on maximum differential across the flow meter apply.

		AA	SS	Rotor Type	Rotor Material	Rotor Bearing Material	Seals	Meter max rating with this combination
Alcohols	Ethanol, Iso-propanol, Methanol, etc.	●	●	LV	PPS	Carbon	Teflon™	100%
Aldehydes	Benaldehyde, Formaldehyde, etc.	●	●	LV	PPS	Carbon	Teflon™	100%
Automotive fluids	Transmission fluid, hdraulic oil, glycol & water	●	●	LV	PPS	Carbon	Viton™	***
Caustics	Potassium Hydroxide & Sodium Hydroxide (< 50%)		●	LV	PPS	Carbon	Teflon™	100%
Caustics	Potassium Hydroxide & Sodium Hydroxide (> 50%)		●	LV	PPS	Teflon™	Teflon™	80%
Esters & Ethers	Amyl Acetate, Butyl Acetate, Dibutyl Phtalate, etc.	●	●	LV	PPS	Carbon	Teflon™	100%
Fertilizer	Clear nitrogen solutions	●	●	HV*	PPS	Teflon™	Viton™	80%
Glycols	Ethylene, Diethylene, Triethylene & Propylene	●	●	LV	PPS	Carbon	Viton™	100%
Halogenated solvents	Hydrocarbon solvents with Fluorine, Chlorine, Bromine, Iodine & Astatine (Perchlorethylene)		●	LV	PPS	Carbon	Teflon™	100%
Herbicides	Atrazine, Lasso™, Round-Up™, etc.	●	●	HV*	PPS	Teflon™		80%
Ketones	Acetone, Cyclohexanone, MEK, MIBK, etc.	●	●	LV	PPS	Carbon	Teflon™	100%
LPG	Butane, Propane, Pentane & mixtures	●	●	LV	PPS	Carbon		100%
Lube oil	Automotive lubricants, gear oil & grease	●	●	HV	PPS	Carbon	Viton™	***
Organic acids	Acetic acid, Formic acid, Lactic acid, Vinegar	●	●	LV	PPS	Teflon™	Teflon™	80%
Refined Petroleum Products	Aviation fuels (Avgas & Jet Fuel), gasoine, disesl fuel, Gasohol, Kerosene & Light fuel oil	●	●	LV	PPS	Carbon	Viton™	100%
Refined Petroleum Products	Fuel Sentry meters on diesel & fuel oil	●	●	HV*	PPS	Carbon	Viton™	100%
Refined Petroleum Products	Medium & Heavy Fuel Oils, Automotive lubricants	●	●	HV*	PPS	Carbon	Viton™	***
Shear sensitive liquids	Type IV glycol, many resins & polymers, etc.	**	**	HV*	PPS	Teflon™	Teflon™	*** (usually<50%)
Solvents	Benzene, Mineral Spirits, Toluene, Xylene, etc.	●	●	LV	PPS	Carbon	Teflon™	100%
Syrups	Corn Syrup, Sugar Syrup, liquid sugar	●	●	HV*	PPS	Teflon™	Viton™	*** (usually<25%)
Vegetable oils	Corn, Cotton, Olive, Peanut, Soya, etc.	●	●	LV	PPS	Carbon	Viton™	100%
Water	Drinking & Process Water (< 50°C/120°F)	●	●	LV	PPS	Carbon	Viton™	100%
Water	Drinking & Process Water (> 50°C/120°F)	●	●	LV	PPS	Carbon	Viton™	75%
Water	Distilled, Deionized or otherwise treated water (< 50°C/120°F )	●	●	LV	PPS	Teflon™	Viton™	75%
Water	Distilled, deionized or otherwise treated water	●	●	LV	PPS	Teflon™	Viton™	50%

NOTE \*

HV (High Viscosity) rotors are required when viscosity can exceed 300cSt (1,500 SSU) OR if temperatures exceed 120°F (50°C).

NOTE \*\*

Depends upon pH

NOTE \*\*\*

Subject to differential pressure limits!

# SIGNAL RESOLUTION CHART - WAVE FORM DESIGN

## EXAMPLE - Signal Frequency (Hz) and Minimum Signal Width Calculation

GPM	150
PPG	395
Pulses Per Minute	(150 x 395) = 59,250
Pulses Per Second (Hz)	(59,250 / 60) = 988
1 pulse =	(1 / 988) = 0.0010 second
1 pulse =	(.0010 x 1,000) = 1.01 millisecond
Minimum Signal Width ON time (1/2 p	(1.01 / 2) = 0.51 millisecond

Manufacturer	Model	Pulse/Signal Frequency Limit (Hz)
Veeder Root	EMR3	700
Liquid Controls	LCR II	700
MID:COM	Smartlink	700
Actars/Neptune	E4000	
Pegasus	R2000	

## STANDARD (Raw) PULSE RESOLUTION - Hall Effect Pulsar

This chart shows nominal values. Always field calibrate on actual fluid of operation.

Number of Magnets = 1

Pulses Per Revolution = 64

	Nominal				Continuous duty on low viscosity refined petroleum fluids												Intermittent only				
	GPM		LPM		K-factor at		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	110%	120%			
	GPM	LPM	PPG	PPL																	
TS06A	20	75	405	107	Flow (US gpm)	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0				
					Flow (liters per minute)	7.6	15.1	22.7	30.3	37.9	45.4	53.0	60.6	68.1	75.7	83.3	90.8				
					Signal Frequency (Hz)	14	27	41	54	68	81	95	108	122	135	149	162				
					Signal ON time (mS)	37.0	18.5	12.3	9.3	7.4	6.2	5.3	4.6	4.1	3.7	3.4	3.1				
TS10A	40	150	1728	457	Flow (US gpm)	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0				
					Flow (liters per minute)	15.1	30.3	45.4	60.6	75.7	90.8	106.0	121.1	136.3	151.4	166.5	181.7				
					Signal Frequency (Hz)	115	230	346	461	576	691	806	922	1037	1152	1267	1382				
					Signal ON time (mS)	4.3	2.2	1.4	1.1	0.9	0.7	0.6	0.5	0.5	0.4	0.4	0.4				
TS10C	40	150	2176	575	Flow (US gpm)	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0				
					Flow (liters per minute)	15.1	30.3	45.4	60.6	75.7	90.8	106.0	121.1	136.3	151.4	166.5	181.7				
					Signal Frequency (Hz)	145	290	435	580	725	870	1015	1161	1306	1451	1596	1741				
					Signal ON time (mS)	3.4	1.7	1.1	0.9	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3				
TS15A	60	230	1013	268	Flow (US gpm)	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0				
					Flow (liters per minute)	22.7	45.4	68.1	90.8	113.6	136.3	159.0	181.7	204.4	227.1	249.8	272.5				
					Signal Frequency (Hz)	101	203	304	405	507	608	709	810	912	1013	1114	1216				
					Signal ON time (mS)	4.9	2.5	1.6	1.2	1.0	0.8	0.7	0.6	0.5	0.5	0.4	0.4				
TS15C	60	230	1152	304	Flow (US gpm)	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0				
					Flow (liters per minute)	22.7	45.4	68.1	90.8	113.6	136.3	159.0	181.7	204.4	227.1	249.8	272.5				
					Signal Frequency (Hz)	115	230	346	461	576	691	806	922	1037	1152	1267	1382				
					Signal ON time (mS)	4.3	2.2	1.4	1.1	0.9	0.7	0.6	0.5	0.5	0.4	0.4	0.4				
TS20A & C	150	570	395	104	Flow (US gpm)	15.0	30.0	45.0	60.0	75.0	90.0	105.0	120.0	135.0	150.0	165.0	180.0				
					Flow (liters per minute)	56.8	113.6	170.3	227.1	283.9	340.7	397.4	454.2	511.0	567.8	624.5	681.3				
					Signal Frequency (Hz)	99	198	296	395	494	593	691	790	889	988	1086	1185				
					Signal ON time (mS)	5.1	2.5	1.7	1.3	1.0	0.8	0.7	0.6	0.6	0.5	0.5	0.4				
TS30A & C	250	760	275	73	Flow (US gpm)	25.0	50.0	75.0	100.0	125.0	150.0	175.0	200.0	225.0	250.0	275.0	300.0				
					Flow (liters per minute)	94.6	189.3	283.9	378.5	473.1	567.8	662.4	757.0	851.6	946.3	1040.9	1135.5				
					Signal Frequency (Hz)	115	229	344	458	573	688	802	917	1031	1146	1260	1375				
					Signal ON time (mS)	4.4	2.2	1.5	1.1	0.9	0.7	0.6	0.5	0.5	0.4	0.4	0.4				

**SCALED (SCL - 100 Pulses Per Gallon) PULSE RESOLUTION - Hall Effect Pulser**

This chart shows nominal values. Always field calibrate on actual fluid of operation.

Number of Magnets = 1

Pulses Per Revolution = 64

	Nominal				K-factor at				Continuous duty on low viscosity refined petroleum fluids											Intermittent only				
	GPM		LPM		PPG		PPL		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	110%	120%				
	GPM	LPM	PPG	PPL																				
TS06A	20	75	100	26	Flow (US gpm)	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0							
					Flow (liters per minute)	7.6	15.1	22.7	30.3	37.9	45.4	53.0	60.6	68.1	75.7	83.3	90.8							
					Signal Frequency (Hz)	3	7	10	13	17	20	23	27	30	33	37	40							
					Signal ON time (mS)	150.0	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5							
TS10A	40	150	100	26	Flow (US gpm)	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0							
					Flow (liters per minute)	15.1	30.3	45.4	60.6	75.7	90.8	106.0	121.1	136.3	151.4	166.5	181.7							
					Signal Frequency (Hz)	7	13	20	27	33	40	47	53	60	67	73	80							
					Signal ON time (mS)	75.0	37.5	25.0	18.8	15.0	12.5	10.7	9.4	8.3	7.5	6.8	6.3							
TS10C	40	150	100	26	Flow (US gpm)	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0							
					Flow (liters per minute)	15.1	30.3	45.4	60.6	75.7	90.8	106.0	121.1	136.3	151.4	166.5	181.7							
					Signal Frequency (Hz)	7	13	20	27	33	40	47	53	60	67	73	80							
					Signal ON time (mS)	75.0	37.5	25.0	18.8	15.0	12.5	10.7	9.4	8.3	7.5	6.8	6.3							
TS15A	60	230	100	26	Flow (US gpm)	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0							
					Flow (liters per minute)	22.7	45.4	68.1	90.8	113.6	136.3	159.0	181.7	204.4	227.1	249.8	272.5							
					Signal Frequency (Hz)	10	20	30	40	50	60	70	80	90	100	110	120							
					Signal ON time (mS)	50.0	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2							
TS15C	60	230	100	26	Flow (US gpm)	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0							
					Flow (liters per minute)	22.7	45.4	68.1	90.8	113.6	136.3	159.0	181.7	204.4	227.1	249.8	272.5							
					Signal Frequency (Hz)	10	20	30	40	50	60	70	80	90	100	110	120							
					Signal ON time (mS)	50.0	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2							
TS20A & C	150	570	100	26	Flow (US gpm)	15.0	30.0	45.0	60.0	75.0	90.0	105.0	120.0	135.0	150.0	165.0	180.0							
					Flow (liters per minute)	56.8	113.6	170.3	227.1	283.9	340.7	397.4	454.2	511.0	567.8	624.5	681.3							
					Signal Frequency (Hz)	25	50	75	100	125	150	175	200	225	250	275	300							
					Signal ON time (mS)	20.0	10.0	6.7	5.0	4.0	3.3	2.9	2.5	2.2	2.0	1.8	1.7							
TS30A & C	250	760	100	26	Flow (US gpm)	25.0	50.0	75.0	100.0	125.0	150.0	175.0	200.0	225.0	250.0	275.0	300.0							
					Flow (liters per minute)	94.6	189.3	283.9	378.5	473.1	567.8	662.4	757.0	851.6	946.3	1040.9	1135.5							
					Signal Frequency (Hz)	42	83	125	167	208	250	292	333	375	417	458	500							
					Signal ON time (mS)	12.0	6.0	4.0	3.0	2.4	2.0	1.7	1.5	1.3	1.2	1.1	1.0							

**SCALED (SCL - 10 Pulses Per Liter) PULSE RESOLUTION - Hall Effect Pulser**

This chart shows nominal values. Always field calibrate on actual fluid of operation.

Number of Magnets = 1

Pulses Per Revolution = 64

	Nominal				K-factor at				Continuous duty on low viscosity refined petroleum fluids											Intermittent only			
	GPM		LPM		PPG		PPL		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	110%	120%			
	GPM	LPM	PPG	PPL																			
TS06A	20	75	38	10	Flow (US gpm)	2	4	6	8	10	12	14	16	18	20	22	24						
					Flow (liters per minute)	7.6	15.1	22.7	30.3	37.9	45.4	53.0	60.6	68.1	75.7	83.3	90.8						
					Signal Frequency (Hz)	1	3	4	5	6	8	9	10	11	13	14	15						
					Signal ON time (mS)	396.0	198.0	132.0	99.0	79.2	66.0	56.6	49.5	44.0	39.6	36.0	33.0						
TS10A	40	150	38	10	Flow (US gpm)	4	8	12	16	20	24	28	32	36	40	44	48						
					Flow (liters per minute)	15.1	30.3	45.4	60.6	75.7	90.8	106.0	121.1	136.3	151.4	166.5	181.7						
					Signal Frequency (Hz)	3	5	8	10	13	15	18	20	23	25	28	30						
					Signal ON time (mS)	198.0	99.0	66.0	49.5	39.6	33.0	28.3	24.8	22.0	19.8	18.0	16.5						
TS10C	40	150	38	10	Flow (US gpm)	4	8	12	16	20	24	28	32	36	40	44	48						
					Flow (liters per minute)	15.1	30.3	45.4	60.6	75.7	90.8	106.0	121.1	136.3	151.4	166.5	181.7						
					Signal Frequency (Hz)	3	5	8	10	13	15	18	20	23	25	28	30						
					Signal ON time (mS)	198.0	99.0	66.0	49.5	39.6	33.0	28.3	24.8	22.0	19.8	18.0	16.5						
TS15A	60	230	38	10	Flow (US gpm)	6	12	18	24	30	36	42	48	54	60	66	72						
					Flow (liters per minute)	22.7	45.4	68.1	90.8	113.6	136.3	159.0	181.7	204.4	227.1	249.8	272.5						
					Signal Frequency (Hz)	4	8	11	15	19	23	27	30	34	38	42	45						
					Signal ON time (mS)	132.0	66.0	44.0	33.0	26.4	22.0	18.9	16.5	14.7	13.2	12.0	11.0						
TS15C	60	230	38	10	Flow (US gpm)	6	12	18	24	30	36	42	48	54	60	66	72						
					Flow (liters per minute)	22.7	45.4	68.1	90.8	113.6	136.3	159.0	181.7	204.4	227.1	249.8	272.5						
					Signal Frequency (Hz)	4	8	11	15	19	23	27	30	34	38	42	45						
					Signal ON time (mS)	132.0	66.0	44.0	33.0	26.4	22.0	18.9	16.5	14.7	13.2	12.0	11.0						
TS20A & C	150	570	38	10	Flow (US gpm)	15	30	45	60	75	90	105	120	135	150	165	180						
					Flow (liters per minute)	56.8	113.6	170.3	227.1	283.9	340.7	397.4	454.2	511.0	567.8	624.5	681.3						
					Signal Frequency (Hz)	9	19	28	38	47	57	66	76	85	95	104	114						
					Signal ON time (mS)	52.8	26.4	17.6	13.2	10.6	8.8	7.5	6.6	5.9	5.3	4.8	4.4						
TS30A & C	250	760	38	10	Flow (US gpm)	25	50	75	100	125	150	175	200	225	250	275	300						
					Flow (liters per minute)	94.6	189.3	283.9	378.5	473.1	567.8	662.4	757.0	851.6	946.3	1040.9	1135.5						
					Signal Frequency (Hz)	16	32	47	63	79	95	110	126	142	158	174	189						
					Signal ON time (mS)	31.7	15.8	10.6	7.9	6.3	5.3	4.5	4.0	3.5	3.2	2.9	2.6						

## PRESSURE RATING TABLE

Meter pressure rating depends on temperature as well as the pressure rating of the lowest-rated component. The following table shows the maximum operating pressure for a given operating temperature and component configuration (meter only, strainer, air eliminator, etc.)

### ALUMINUM METERS

		PRESSURE													
		Electronic Meters						Mechanical Meters							
°F	°C	Anodized Al	CS ANSI Adapt.	Meter Only		Meter + Carbon Steel ANSI Flanges		Meter with any combination of Strainer, Air Eliminator, or Preset Valve		Meter Only		Meter + Carbon Steel ANSI Flanges		Meter with any combination of Strainer, Air Eliminator, or Preset Valve	
				psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
100	38	100%	100%	400	27.6	290	20.0	150	10.3	150	10.3	150	10.3	150	10.3
150	66	89%	94%	356	24.5	273	18.8	134	9.2	134	9.2	141	9.7	134	9.2
200	93	79%	90%	316	21.8	261	18.0	119	8.2	119	8.2	135	9.3	119	8.2
225	107	75%	88%	300	20.7	255	17.6	113	7.8	113	7.8	132	9.1	113	7.8
250	121	71%	84%	284	19.6	244	16.8	107	7.3	107	7.3	126	8.7	107	7.3
275	135	62%	81%	248	17.1	235	16.2	93	6.4	93	6.4	122	8.4	93	6.4
300	150	43%	43%	172	11.9	125	8.6	65	4.4	65	4.4	65	4.4	65	4.4

### STAINLESS METERS

		PRESSURE													
		Electronic Meters						Mechanical Meters							
°F	°C	Stainless	SS ANSI Adapt.	Meter Only		Meter + Stainless Steel ANSI Flanges		Meter with any combination of Strainer, Air Eliminator, or Preset Valve		Meter Only		Meter + Stainless Steel ANSI Flanges		Meter with any combination of Strainer, Air Eliminator, or Preset Valve	
				psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
100	38	100%	100%	400	27.6	275	19.0	150	10.3	150	10.3	150	10.3	150	10.3
150	66	91%	89%	364	25.1	245	16.9	137	9.4	137	9.4	134	9.2	137	9.4
200	93	83%	82%	332	22.9	226	15.5	125	8.6	125	8.6	123	8.5	125	8.6
225	107	79%	80%	316	21.8	220	15.2	119	8.2	119	8.2	120	8.3	119	8.2
250	121	74%	78%	296	20.4	215	14.8	111	7.7	111	7.7	117	8.1	111	7.7
275	135	70%	76%	280	19.3	209	14.4	105	7.2	105	7.2	114	7.9	105	7.2
300	150	67%	74%	268	18.5	204	14.0	101	6.9	101	6.9	111	7.7	101	6.9

**EXAMPLE 1:**

System Flow Rate	50 gpm			TABLE 3B	Meter Flow Correction Due to Viscosity	Achieves desired flow rate?	System Flow Rate within 50% to 80% of meter's corrected rated flow?	
Fluid	Lube Oil - SAE 30							
Operating Temperature	40° F (4° C)							
Viscosity at Operating Temperature	1,300 cSt							
Recommended Flow factor	D = 65% (HV Rotors)							
	Nom. Flow	x	Flow Factor	=				
Recommended Flow TS10A (40 gpm nominal)	40	x	65%	=	26.0	NO	192%	NO
Recommended Flow TS15A (60 gpm nominal)	60	x	65%	=	39.0	NO	128%	NO
Recommended Flow TS20A (150 gpm nominal)	150	x	65%	=	97.5	YES	51%	YES

USE:

**TS20A with High Viscosity rotors**

Example meter item number for Electronic meter with no register, HV rotors:

**TS20AW04XVTU**

**EXAMPLE 2:**

System Flow Rate	SAME AS ABOVE			TABLE 3B	Meter Flow Correction Due to Viscosity	Achieves desired flow rate?	System Flow Rate within 50% to 80% of meter's corrected rated flow?	
Fluid	SAME AS ABOVE							
Operating Temperature	80° F (21° C)							
Viscosity at Operating Temperature	235 cSt							
Recommended Flow factor	G = 100% (LV Rotors)							
	Nom. Flow	x	Flow Factor	=				
Recommended Flow TS10A (40 gpm nominal)	40	x	100%	=	40.0	NO	125%	NO
Recommended Flow TS15A (60 gpm nominal)	60	x	100%	=	60.0	YES	83%	NO, but OK
Recommended Flow TS20A (150 gpm nominal)	150	x	100%	=	150.0	YES	33%	YES

USE:

**TS20A with Low Viscosity rotors**

Example meter item number for Electronic meter with no register, LV rotors:

**TS15AW04XATU**