

Stewart

SYMBOL OF
SW
EXCELLENCE



Warner

Product Catalog



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Instrument Families



Deluxe™ Instruments

Perhaps the most popular Stewart Warner gauge line ever, Deluxe™ established the industry standard more than 40 years ago. Easy-to-read graphics on a black face with a white pointer, low-profile stainless steel bezel and patented light ring for night time illumination make this gauge one of the most recognizable in the business! Ideal for street rods, hot rods, muscle cars and even race cars.



Panel not available. For display purposes only.



Heavy Duty™ & Heavy Duty Plus™ Instruments

An authentic look for yesterday's or today's cars or trucks, these gauges feature our patented light ring for superior night-time lighting plus a unique black bezel with a brushed bright ring. Bold white-on-black graphics and a classic white pointer with a black hub. The rugged gauges movements are ideal for trucks too.



Panel not available. For display purposes only.



Instrument Families

Wings™ Instruments

Classic, retro styled Wings gauges are IDEAL for street rods and collector cars. Available with black, white, cream coloured dials; chrome or gold-plate bezels; a distinctive, authentic teardrop pointer with crescent moon dial; and domed lens. If you're aim is originality, put Stewart Warner Wings™ in your car or truck, there is NO substitute!



Panel not available. For display purposes only.



Standard™ & Standard Plus™ Instruments

Stewart Warner's Standard gauge line features classic white graphics on a black face with a bright, flat stainless steel bezel, and white pointers. Mechanical gauges use a proven diaphragm mechanism. Dating to the 1940's, Standard gauges are ideal for under-dash mounting.



Mechanical Pressure



Part # Figure Family Dial Graphics Characteristics

1-10 PSI PRESSURE

2 1/16"

82319 DLX FUEL PRESSURE

2-30 PSI MANIFOLD, FUEL & WATER PRESSURE

2 1/16"

82320 1 DLX FUEL PRESSURE
82321 1 DLX MANIFOLD PRESSURE



FIGURE 1

0-50 PSI PRESSURE

2 1/32"

82207 1 STD psi PRESSURE Non-illuminated/sealed case



FIGURE 1

5-80 PSI OIL PRESSURE

2 1/16"

82208 2 STD psi PRESSURE Non illuminated/sealed case
82322 1 DLX OIL PRESSURE
82363 1 HD+ OIL psi
82475 1 WINGS OIL PRESSURE White Face Dial
82476 1 WINGS OIL PRESSURE Black Face Dial



FIGURE 1



FIGURE 2

2-100 PSI AIR PRESSURE

2 1/16"

82396 1 DLX AIR SUSPENSION PSI Waterproof case/Black bezel
Non-illuminated
82483 1 WINGS AIR SUSPENSION White Face dial
82484 1 WINGS AIR SUSPENSION Black Face dial



FIGURE 1

1-15 PSI PRESSURE

2 5/8"

82405 1 DLX FUEL PRESSURE

5-100 PSI OIL PRESSURE

2 1/16"

284D 1 HD OIL PSI
82209 2 STD psi PRESSURE Non illuminated/sealed case
82323 1 DLX OIL PRESSURE
82372 1 HD+ OIL psi
82392 4 DLX kPa Metric Deluxe
82741 3 HD+ psi kPa OIL Dual Scale/English Dominant



FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4

5-100 PSI OIL PRESSURE

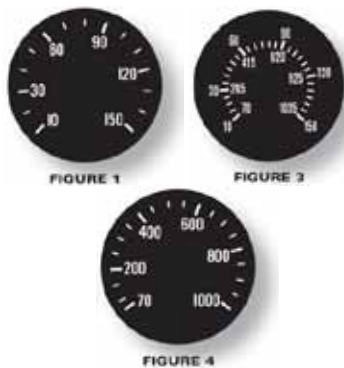
2 5/8"

82406 1 DLX OIL PRESSURE

Mechanical Pressure

Part # Figure Family Dial Graphics Characteristics

10-150 PSI AIR PRESSURE 2 1/16"



Part #	Figure	Family	Dial Graphics	Characteristics
284N	1	HD	AIR PSI	
82329	1	DLX	AIR PRESSURE	
82350	1	DLX	AIR PRESSURE	7/16" Thread
82373	1	HD+	AIR psi	
82393	4	DLX	kPa	Metric Deluxe
82742	3	HD+	psi AIR kPa	Dual Scale/English Dominant
82487	1	WINGS	AIR PRESS	White Face dial
82488	1	WINGS	AIR PRESS	Black Face dial

10-150 PSI PRESSURE 2 5/8"

82408		DLX	AIR PRESSURE	
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10-150 PSI DUAL AIR PRESSURE 2 1/16"



Part #	Figure	Family	Dial Graphics	Characteristics
82746	2	HD+	kPa AIR P S psi	Dual Scale/English Dominant
82331	1	HD	AIR PSI	
82363	1	DLX	AIR PRESSURE	

10-200 PSI OIL & FUEL PRESSURE 2 1/16"



82324	1	DLX	OIL PRESSURE	
82325	1	DLX	FUEL PRESSURE	

20-300 PSI TRANSMISSION OIL & DRIVE OIL PRESSURE 2 1/16"



Part #	Figure	Family	Dial Graphics	Characteristics
284R	1	HD	TRANS PSI	
82120	1	DLX	DRIVE OIL	Marine Deluxe
82365	1	HD+	TRANS psi	
82743	2	HD+	psi kPa	Dual Scale/English Dominant

25-400 PSI TRANSMISSION OIL & DRIVE OIL PRESSURE 2 1/16"



284S	1	HD	TRANS psi	
82121	1	DLX	DRIVE OIL	Marine Deluxe

TUBE KITS

82553-F				6 FT. Tubing
366HM-F				16 FT. Tubing

Mechanical Pressure, vacuum/turbo & air restriction



Part #	Figure	Family	Dial Graphics	Characteristics
100-250°F WATER TEMPERATURE 2 1/32"				
82210*	5	STD	TEMPERATURE	Sealed case/ Non-illuminated Tube Length inches: 36, 48, 60, 72, 144

100-265°F WATER TEMPERATURE 2 1/16"				
284B*	1	HD	WATER °F	Tube Length inches: 36, 72, 144
491CT*	1	DLX	WATER TEMP	Tube Length inches: 600
82326*	1	DLX	WATER TEMP	Tube Length inches: 48, 60, 72, 96, 120, 144, 216, 288, 360
82479*	1	WINGS	WATER TEMP	White face dial Tube Length inches: 72, 96, 144
82480*	1	WINGS	WATER TEMP	Black face dial Tube Length inches: 72, 96, 144

100-265°F WATER TEMPERATURE 2 5/8"				
82409*	1	DLX	WATER TEMP	Tube Length inches: 60, 72, 144

140-320°F OIL TEMPERATURE 2 1/16"				
82749*	6	HD+	OIL °F °C	Dual scale/English dominant Tube length: 96
82395*	7	DLX	°C	Metric deluxe/ Tube length: 72, 96

140-325°F OIL TEMPERATURE 2 1/16"				
284C*	8	HD	OIL °F	Tube length: 72, 144
82327*	8	DLX	OIL TEMP	Tube length: 60, 72, 96, 144, 216

140-325°F OIL TEMPERATURE 2 5/8"				
82410*	8	DLX	OIL TEMP	Tube length: 72

*** Must indicate tube length when ordering mechanical water & oil temperature gauges**
WARNING: The tubing on mechanical temperature gauges is gas-filled and cannot be shortened without damaging the gauge.

0-30 HG MECHANICAL VACUUM GAUGE 2 1/16"				
284AH	1	HD	VACUUM IN. Hg.	
82328	1	DLX	VACUUM IN. Hg.	

0-30 HG MECHANICAL VACUUM GAUGE 2 5/8"				
82411	1	DLX	VACUUM INCHES	

0-30 HG / 0-15 PSI MECHANICAL TURBO BOOST 2 1/16"				
82340	5	DLX	Turbo in. Hg PSI	Red pointer

0-30 HG / 0-40 PSI MECHANICAL TURBO BOOST 2 1/16"				
82491	6	WINGS	BOOST	White face dial
82492	6	WINGS	BOOST	Black face dial

5-40 AIR RESTRICTION GAUGE 2 1/16"				
82384	1	HD+	AIR in H ₂ O vac	



FIGURE 1



FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 8



FIGURE 1



FIGURE 5



FIGURE 6



FIGURE 1

Mechanical Speedometers & Tachometer

Part # Figure Family Dial Graphics Characteristics



FIGURE 2

0-80 MPH MECHANICAL SPEEDOMETER 3 3/8"

550HF-D2	HD	MPH HIGH BEAM	Odometer/High Beam Indicator
82666	2	WINGS MILES PER HOUR	Odometer/Black Face dial



FIGURE 1



FIGURE 3

5-85 MPH/1-130 km/h MECHANICAL SPEEDOMETER 3 3/8"

82677	1	DLX km/h MPH	Odometer/Dual scale/ English dominant
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0-140 km/h MECHANICAL SPEEDOMETER 3 3/8"

82697	3	DLX km/h	Metric Odometer/Metric Deluxe
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FIGURE 1



FIGURE 2

0-160 MPH MECHANICAL SPEEDOMETER 3 3/8"

550BP-D	1	DLX MPH	Odometer
550HH-D	1	HD MPH	Odometer
82663	1	WINGS MILES PER HOUR	White Face dial
82664	1	WINGS MILES PER HOUR	Black Face dial

0-180 MPH MECHANICAL SPEEDOMETER 3 3/8"

550ABE	2	DLX MPH	Odometer/Counter Clockwise Reading/ Use 411335-D counter clockwise adapter
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FIGURE 1

0-3000 RPM TACHOMETER 3 3/8"

82696	1	HD+	ENGINE REVS X 1000000 REV x 100	0.5:1 Ratio/ Hourmeter
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FIGURE 1



FIGURE 2

0-3500 RPM TACHOMETER 3 3/8"

82688	1	DLX	ENGINE HOURS RPM X 100	0.5:1 Ratio/Hourmeter
82689	1	DLX	RPM X100	0.5:1 Ratio
82690	1	DLX	ENGINE HOURS RPM X 100	1:1 Ratio/Hourmeter
82691	1	DLX	RPM X100	1:1 Ratio
555AHK-D	1	HD	RPM X100	0.5:1 Ratio
555AHL-D	1	HD	RPM X100 ENGINE REVS X 100000	0.5:1 Ratio/Hourmeter



FIGURE 1



FIGURE 2

0-5000 RPM TACHOMETER 3 3/8"

551AKM-D	1	DLX	RPM HUNDREDS	0.5:1 Ratio/Hourmeter
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0-9000 RPM TACHOMETER 3 3/8"

535AK-D	1	HD	RPM x 1000	0.5:1 Ratio
535AH-D	1	DLX	RPM x 1000	0.5:1 Ratio

Electric Tachometers



Part #	Figure	Family	Dial Graphics	Characteristics
0-3500 RPM DIESEL TACH (Sender 82623B) HALL EFFECT 3 3/8"				
82619	1	HD	RPM x 100	Selectable Ratio - 0.5, 1, 1.5, 2
82620	1	DLX	RPM x 100	Selectable Ratio - 0.5, 1, 1.5, 2
82622	1	DLX	RPM x 100, HOURS 1/10	Selectable Ratio - 0.5, 1, 1.5, 2/ Hourmeter
82635	1	DLX	r/min x 100	Selectable Ratio - 0.5, 1, 1.5, 2/ Alternator Application
82640	1	HD	RPM x 100	Selectable Ratio - 0.5, 1, 1.5, 2/ Alternator Application
82643	1	HD+	RPM x 100	Selectable Ratio - 0.5, 1, 1.5, 2/ Alternator Application
82647	1	HD+	RPM x 100, HOURS 1/10	Selectable Ratio - 0.5, 1, 1.5, 2/ Hourmeter
82671	1	WINGS	RPM HUNDREDS	Selectable Ratio - 0.5, 1, 1.5, 2/ Alternator Application/White face dial
82672	1	WINGS	RPM HUNDREDS	Selectable Ratio - 0.5, 1, 1.5, 2/ Alternator Application/Black face dial



FIGURE 1

0-3500 RPM DIESEL TACH (Sender 82646) MAG. PICKUP 3 3/8"				
82636	1	DLX	r/min x 100	Selectable Ratio - 0.5, 1, 1.5, 2/ Flywheel Application
82641	1	HD	RPM x 100	Selectable Ratio - 0.5, 1, 1.5, 2/ Flywheel Application
82644	1	HD+	RPM x 100	Selectable Ratio - 0.5, 1, 1.5, 2/ Flywheel Application
82673	1	WINGS	RPM HUNDREDS	Selectable Ratio - 0.5, 1, 1.5, 2/ Flywheel Application/White face dial
82674	1	WINGS	RPM HUNDREDS	Selectable Ratio - 0.5, 1, 1.5, 2/ Flywheel Application/Black face dial

0-3500 RPM DIESEL TACH (Alternator Application) 3 3/8"				
82621	1	HD	RPM x 100	Alternator Application/Hourmeter

Sender see page 29/ Wiring information see page 33

When power to an electric gauge is turned off, pointer may come to rest at any point on the dial.

0-6000 RPM GAS/IGNITION TACHOMETER 3 3/8"				
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82162B*	1	DLX	RPM x 1000	4, 6 and 8 Cylinder
82164B*	1	HD	RPM x 1000	4, 6 and 8 Cylinder

**Improved signal filtering*



FIGURE 1



FIGURE 2

0-6000 RPM GAS/IGNITION TACHOMETER 2 1/16"				
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82560	2	HD+	RPM x 100	4 Cylinder Only
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0-8000 RPM GAS/IGNITION TACHOMETER 3 3/8"				
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82163	1	DLX	RPM x 1000	4, 8 and 12 Cylinder
82170	1	DLX	RPM x 1000	4, 6 and 8 Cylinder
82171	1	HD	RPM x 1000	4, 6 and 8 Cylinder
82659	1	WINGS	RPM HUNDREDS	4, 6 and 8 Cylinder/White Face dial
82660	1	WINGS	RPM HUNDREDS	4, 6 and 8 Cylinder/Black Face dial



FIGURE 1

Wiring information see page 33

Electric Speedometers & Pyrometers

Part # Figure Family Dial Graphics Characteristics



FIGURE 1

0-30 MPH ELECTRIC SPEEDOMETER (Sender 82623B) 3 3/8"

82603	1	HD+	km/h MPH HIGH	Programmable/Odometer/Dual Scale English Dominant
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FIGURE 1



FIGURE 2

5-85 MPH ELECTRIC SPEEDOMETER (Sender 82623B/82646) 3 3/8"

82637	1	DLX	km/h MPH	Programmable/Odometer/Dual Scale English Dominant
82642	2	HD	MPH	Programmable/Odometer
82645	1	HD+	km/h MPH MILES	Programmable/Odometer/Dual Scale English Dominant
82656	3	DLX	MPH km/h km	Metric Deluxe/Programmable/Metric Odometer/Dual Scale/Metric Dominant
82658	3	HD+	MPH km/h km	Programmable/Metric Odometer/ Dual Scale/Metric Dominant



FIGURE 3

5-85 MPH ELECTRIC SPEEDOMETER (Sender 82623B/82646) 5"

82600	2	HD	MPH	Programmable/Odometer
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FIGURE 1

0-120 MPH ELECTRIC SPEEDOMETER (Sender 82527/82646) 3 3/8"

82669	1	WINGS	MILES PER HOUR	Programmable/Odometer/ White face dial
82670	1	WINGS	MILES PER HOUR	Programmable/Odometer/ Black face dial
82896	1	DLX	MPH	Programmable/Odometer



FIGURE 1

0-160 MPH ELECTRIC SPEEDOMETER (Sender 82623B/82646) 3 3/8"

82661	1	WINGS	MILES PER HOUR	Programmable/Odometer/ White face dial
82662	1	WINGS	MILES PER HOUR	Programmable/Odometer/ Black face dial

0-160 MPH ELECTRIC SPEEDOMETER (Sender 82623B/82646) 5"

82698	1	DLX	MPH	Programmable/Odometer
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Sender see page 29 / Wiring information see page 33



FIGURE 1



FIGURE 2

300-1500°F PYROMETER (Sender 82505) 2 1/16"

82334	1	HD	°F x 100 TEMP	
82335	1	DLX	°F x 100 TEMPERATURE	
82357	2	HD+	°F EXHAUST	
82485	1	WINGS	°F x 100 PYROMETER	White Face dial
82486	1	WINGS	°F x 100 PYROMETER	Black Face dial

SENDER 82505 (Thermocouple 17" Long)

82556-1	3		5 Foot Extension
82556-2	3		10 Foot Extension
82556-3	3		20 Foot Extension



FIGURE 3

Pyrometer, sender and extensions must be ordered separately.

Electric Temperature



Part # Figure Family Dial Graphics Characteristics

100-230°F WATER TEMPERATURE (Sender 280EC) 2 1/16"

284AF 2 HD WATER °F

100-240°F WATER TEMPERATURE (Sender 280EA) 2 1/16"

82114 3 DLX WATER TEMPERATURE Marine Deluxe
 82306 3 DLX WATER TEMPERATURE
 82345 3 DLX HYD. OIL TEMPERATURE

100-240°F WATER TEMPERATURE (Sender 280EC) 2 1/16"

82374 3 HD+ WATER °F
 82389 4 DLX °C Metric Deluxe
 82477 3 WINGS WATER TEMP White Face dial
 82478 3 WINGS WATER TEMP Black Face dial
 82730 5 HD+ °F °C COOLANT Dual Scale/English Dominant
 82740 5 HD+ °F °C HYD. Dual Scale/English Dominant

100-260°F WATER TEMPERATURE (Sender 280ED-F) 2 1/16"

82355 6 HD+ COOLANT °F

100-280°F WATER TEMPERATURE (Sender 280ED-F) 2 1/16"

284J 7 HD WATER °F
 82115 7 DLX OIL TEMPERATURE Marine Deluxe
 82307 7 DLX WATER TEMPERATURE

100-280°F WATER TEMPERATURE (Sender 280EA) 2 1/16"

82351 7 DLX WATER TEMPERATURE Positive Ground

140-320°F OIL TEMPERATURE (Sender 280EE-F) 2 1/16"

284K 9 HD OIL TEMPERATURE
 82308 9 DLX OIL TEMPERATURE
 82375 9 HD+ TRANS °F
 82390 10 DLX °C Metric Deluxe
 82489 9 WINGS OIL TEMP White Face dial
 82490 9 WINGS OIL TEMP Black Face dial
 82739 11 HD+ °F °C TRANS Dual Scale/English Dominant

150-350°F OIL TEMPERATURE (Sender 280EE-F) 2 1/16"

82344 13 DLX TRANS OIL TEMPERATURE
 82731 12 HD+ °F °C OIL Dual Scale/English Dominant
 82732 12 HD+ °F °C CONV. Dual Scale/English Dominant

Temperature senders see page 17

When power to an electrical gauge is turned off, pointer may come to rest at any point on the dial.



FIGURE 2



FIGURE 3



FIGURE 4



FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 9



FIGURE 10



FIGURE 11



FIGURE 12



FIGURE 13

Electric Pressure & Voltmeters

Part #	Figure	Family	Dial Graphics	Characteristics
0-16 PSI FUEL PRESSURE (Sender 82504-F) 2 1/16"				
82333	1	DLX	FUEL PRESSURE	
0-80 PSI OIL PRESSURE (Sender 279A or 82892) 2 1/16"				
284AE	1	HD	OIL PRESSURE	
82113*	1	DLX	OIL PRESSURE	Marine Deluxe
82304	1	DLX	OIL PRESSURE	
82354	1	HD+	OIL psi	
82473	1	WINGS	OIL PRESS	White Face dial
82474	1	WINGS	OIL PRESS	Black Face dial
0-100 PSI OIL & FUEL PRESSURE (Sender 279B-F or 82893*) 2 1/16"				
284L	1	HD	OIL PSI	
82116*	1	DLX	OIL PRESSURE	Marine Deluxe
82305	1	DLX	OIL PRESSURE	
82358	1	HD+	OIL psi	
82387	3	DLX	kPa	Metric Deluxe
82728	2	HD+	OIL psi kPa	Dual Scale/English Dominant
<i>*For 100 psi fuel pressure gauges for marine applications use the following sender: Part #82113 - sender #82892 Part #82116 - sender #82893</i>				
0-150 PSI AIR PRESSURE (Sender 279C or 82894) 2 1/16"				
82346	1	DLX	AIR PRESSURE	
0-400 PSI DRIVE OIL PRESSURE (360406 VDO Sender) 2 1/16"				
82136	1	DLX	DRIVE OIL PRESSURE psi kPa	Marine Deluxe/Dual Scale/ English Dominant
Pressure senders see page 16				
10-16V VOLTMETER 2 1/16"				
284H	2	HD	VOLTS	
82309	1	DLX	BATT CHG VOLTS	
82376	2	HD+	BATT. V	
82391	1	DLX	BATT CHG V	
82481	2	WINGS	BATT CHG VOLTS	White Face dial
82482	2	WINGS	BATT CHG VOLTS	Black Face dial
82738	2	HD+	BATT. V	
20-32V VOLTMETER 2 1/16"				
284AJ	2	HD	VOLTS	
82347	1	DLX	BATT CHG VOLTS	
82377	2	HD+	BATT V	

Ammeters & Fuel Level Gauges



Part # Figure Family Dial Graphics Characteristics

20-0-20 AMMETER 2 1/32"

82201 1 STD AMPERES Internally Shunted/Non-illuminated Sealed Case

30-0-30 AMMETER 2 1/16"

82200 3 STD AMPERES Internally Shunted/Non-illuminated Sealed Case

82310 2 DLX AMPERES Internally Shunted

82736 2 HD+ BATTERY A Internally Shunted

60-0-60 AMMETER 2 1/16"

284A 5 HD AMPERES Internally Shunted

82108 5 DLX AMPS Marine Deluxe/Internally Shunted

82109 5 DLX AMPS Marine Deluxe/Requires External Shunt #813489

82202 6 STD AMPERES Internally Shunted/Non-illuminated Sealed Case

82311 5 DLX AMPERES Internally Shunted

82737 5 HD+ BATTERY A Requires External Shunt #813489

60-0-60 AMMETER 2 5/8"

82404 5 DLX AMPERES Internally Shunted

100-0-100 AMMETER 2 1/16"

284AA 8 HD AMPERES Requires External Shunt #407616

82313 8 DLX AMPERES Internally Shunted

82343 8 DLX AMPERES Requires External Shunt #407616

150-0-150 AMMETER 2 1/16"

284AD 10 HD AMPERES Requires External Shunt #413717

300-0-300 AMMETER 2 1/16"

82398 11 HD+ BATTERY A Requires External Shunt #413717

240 OHM FUEL LEVEL GAUGE (SW) 2 1/16"

284M 1 HD FUEL 240 OHM

82111 1 DLX FUEL 240 OHM/Marine Deluxe

82211 2 STD FUEL 240 OHM/2 1/32" Case

82303 1 DLX FUEL 240 OHM

82378 3 HD+ FUEL 240 OHM

82386 5 DLX 240 OHM

82471 1 WINGS FUEL 240 OHM/White Face dial

82472 1 WINGS FUEL 240 OHM/Black Face dial

82733 3 HD+ FUEL 240 OHM

90 OHM FUEL LEVEL GAUGE (SW) 2 1/16"

284BS 1 HD FUEL 90 OHM

82341 1 DLX FUEL 90 OHM

82379 3 HD+ FUEL 90 OHM

82493 1 WINGS FUEL 90 OHM/White Face dial

82494 1 WINGS FUEL 90 OHM/Black Face dial

73 OHM FUEL LEVEL GAUGE (SW) 2 1/16"

82342 1 DLX FUEL 73 OHM

82495 1 WINGS FUEL 73 OHM/White Face dial

82496 1 WINGS FUEL 73 OHM/Black Face dial

82735 1 HD+ FUEL 73 OHM

240 OHM FUEL LEVEL GAUGE (SW) 2 5/8"

82413 1 DLX FUEL 240 OHM



Fuel senders see page 15

Thick Film Fuel Senders

THICK FILM FUEL SENDERS



- Thick-film resistors deliver greater accuracy and will perform reliably for more than **twenty million cycles**
- Phosphor bronze wiper with nickel silver contact provides **extended life under fuel sloshing, vibration and dither conditions**.
- Resistors are trimmed by computer-guided lasers to exact specifications for **greater accuracy**.
- Extended float arm support is impervious to side play from fuel sloshing in the tank.
- **Solid Lifecell™** float will not sink
- Zinc dichromate finish and copper allow hardware

90 Ohm	
Float Position	Resistance Range
Full	88.0 - 92.0 ohms
Empty	0.0 - 2.0 ohms

240 Ohm	
Float Position	Resistance Range
Full	29.0 - 33.5 ohms
Empty	240 - 250 ohms

Thick Film Fuel Sender (Adjustable)		
Tank Depth	Stud Termination	Stud Termination
	Kit # 240 Ohm	Kit # 90 Ohm
4 1/2 - 24" depth, RH	385AB-P*	
6 - 12" depth, LH	385B-F	
6 - 12" depth, RH	385C-F	
10 - 15" depth, LH	391A-F	439361-F
10 - 15" depth, RH	391B-F	439362-F
15 1/2 - 24" depth, LH	391C-D	439363-D
15 1/2 - 24" depth, RH	391D-D	439364-D
27 - 36" depth, RH	391PX-D	

Male packard connector assembly - 82891
* Spade terminal ground
** Isolated ground sender

Fuel senders comply with NMMA requirements for fire resistance. Tested to USCG requirement #33 CFR 183.590.

Materials and Finishes on External Parts

Flange: steel, zinc dichromate finish

Screw: brass

Lockwasher: phosphor bronze

Flat Washer: brass

Application Specifications:

Fuel level sender plate and termination will withstand an internal pressure of 6 psi (41.4 kPa) when properly installed in tank.

Fuel senders dimensions see page 30



NOTE: Order fuel level sender (tank unit) installation kit # **366L-P** separately, if needed. Flange should be welded or soldered to tank.

The kit contains:

1 x flange

1 x #72030 rubber gasket

5 x washers and screws

(Can be ordered separately)

Thick Film Pressure Senders



THICK FILM PRESSURE SENDERS

- Preferred for the most rigorous applications, thick film pressure senders will last up to **five times longer** than senders with wire-wound resistors.
- Trimmed by computer-guided lasers for greater accuracy.
- Krapton® high-temperature plastic diaphragms sealed with Viton® gaskets for **tighter seals and greater protection against oil leaks**.
- Available with sealed integrated Packard™ connectors. The connector assures a weather tight fit for a reliable electric connection and easy installation.



Type: diaphragm, thick film rheostat
Voltage: 12 volts is normal operating voltage. Can be used in circuits up to 36 V with voltage adapter (see page 36)

Materials and Finishes

Cover: steel, zinc dichromate finish
Flange and stud assembly: steel, bright zinc
Terminal stud: brass, white nickel
Hex nut: brass
Lock washer: phosphor bronze
Flat Washer: brass

Application Specifications

Mounting position: any orientation permissible
Ambient temperature range:
Operating:
 -40°F through 300°F
 -40°C through 149°C
Storage:
 -40°F through 300°F
 -40°C through 149°C

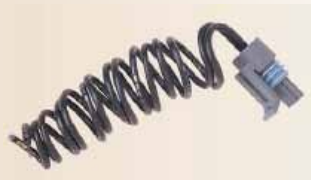
Thick Pressure Fuel Senders			
Stud Termination		Packard Connector	
Kit Number	Pressure	Kit Number	Resistance
279A	80 psi	82892	240 ohms
279B-F	100 psi	82893	240 ohms
279D	60 psi	82895	240 ohms
279C	150 psi	82894	240 ohms
82514*	80 psi		120 ohms
82501*	100 psi		120 ohms
82504-F	15 psi		240 ohms

*Standard pipe thread is 1/8". Sales kits include adaptor for 1/4" pipe thread.
 * Sender operates two gauges simultaneously, cannot be used with single gauge.*

Pressure	Resistance (Nominal)	Limits
0 psi (0 Kps)	240 ohm	229 - 242.5
Full Rating	33.5 ohm	27.0 - 43.0

Fuel senders dimensions see page 30

FUEL SENDERS ACCESSORIES



Accessories	Kit Number	Description
Brass Float	429354	With sheperd's crook
Lifecell Float	836092	With sheperd's crook
Replacement gasket	72030	Neoprene gasket
Male Packard Connector Assembly	836092	20" leads

Pressure and Vacuum Switches



**Pressure and Vacuum Switch
Standard Specifications**

Type: Direct action blade contact
Contacts: Silver alloy, gold plated

Pressure

Set Point: Factory set from 0.5 to 150 psi

Operating Pressure:

150 PSI for 0.5-24 PSI set point range
250 PSI for 25-150 PSI set point range

Proof Pressure: 500 PSI

Burst Pressure:

750 PSI for 0.5-24 PSI set point range
1250 PSI for 25-150 PSI set point range

Vacuum

Set Point: Factory set

Vacuum: 1.1 to 22" Hg

Operating Pressure: 30" Hg Vacuum Max.

Burst Pressure: 150 PSI

Ratings

Resistive: 15 AMP - 6 VDC

8 AMP - 12 VDC

4 AMP - 24 VDC

Inductive: 1 AMP - 120 VAC

0.5 AMP - 240 VAC

Pressure Diaphragm: Polyimide film

Vacuum Diaphragm: Fluorosilicone

Temperature Range: -40°F to +250°F

Connector: 1/8-27 NPT male thread

Terminals: #8-32 screws

Vacuum Circuitry: -SPST-N.O., N.C.

Pressure Circuitry: -SPST-N.O., N.C.

1 circuit adjustable dual circuit, or

2 circuits adjustable dual circuit. Also,

available are N.O./N.O. dual circuit and

N.C./N.C. dual circuit

Base: Brass

Cover: Glass reinforced polyester

5000 SERIES PRESSURE AND VACUUM SWITCHES

- 5000 Series switch specifically designed to stand up to extended duty applications.
- Outstanding design benefits are its durable construction, compact size, and enhanced set point integrity.
- Pressure switches feature Kapton diaphragms and the vacuum switches feature fluorosilicone rubber for compatibility with a wide variety of fluids.

Pressure Switches / 5000 Series with Standard Terminal							
		Single Circuit 1 Terminal		Single Circuit 2 Terminal		Dual Circuit 3 Terminal	
Factory Set Point	Circuitry	Screw	Blade	Screw	Blade	Screw	Blade
1 psi	N.O.	78630	78631	78628	78629	78711	78712
	N.C.	78634	78635	78632	78633		
2 psi	N.O.	78142	78399	76051	76056	76071	76076
	N.C.	78149	78406	76061	76066		
4 psi	N.O.	78143	78400	76575	76583	76579	76587
	N.C.	78150	78407	76577	76585		
10 psi	N.O.	78144	78401	76576	76584	76580	76588
	N.C.	78151	78408	76578	76586		
15 psi	N.O.	78145	78402	76052	76057	76072	76077
	N.C.	78152	78409	76062	76067		
35 psi	N.O.	78146	78403	76053	76058	76073	76078
	N.C.	78153	78410	76063	76068		
60 psi	N.O.	78147	78404	76054	76059	76074	76079
	N.C.	78154	78411	76064	76069		
100 psi	N.O.	78148	78405	76055	76060	76075	76080
	N.C.	78155	78412	76065	76070		

Vacuum Switches / 5000 Series			
		Single Circuit 2 Terminal	Dual Circuit
Factory Set Point	Circuitry	Part #	Part #
4" Hg	N.O.	77342-4	
	N.C.	77343-4	
9" Hg	N.O.	77342-9	
	N.C.	77343-9	
17" Hg	N.O.	77342-17	
	N.C.	77343-17	
28 H2O	N.O.	77342-28	26503
	N.C.	77343-28	26502

Boot for 500 series: 79380

Note:

Grey box indicates part is not a stock part #.
Minimum 25 piece order.

Note: Operating Media (Pressure Switch) The pressure switch is designed to operate with air, motor oils, transmission oils, jet fuels and other similar hydrocarbon media.

Pressure Switches / 5000 Series with Metri-Pack Terminal			
		Single Circuit (Mates with Packard #15300027)	Dual Circuit One circuit adjustable (Mates with Packard #12034147)
Factory Set Point	Circuitry	Screw	Screw
2 psi	N.O.	77029	77038
	N.C.	77020	
5 psi	N.O.	77030	77039
	N.C.	77021	
10 psi	N.O.	77031	77040
	N.C.	77022	
20 psi	N.O.	77032	77041
	N.C.	77023	
35 psi	N.O.	77033	77042
	N.C.	77024	
60 psi	N.O.	77034	77043
	N.C.	77025	
85 psi	N.O.	77035	77044
	N.C.	77026	
115 psi	N.O.	77036	77045
	N.C.	77027	
135 psi	N.O.	77037	77046
	N.C.	77028	

Senders and Switches



TEMPERATURE SENDERS

Temperature Senders				
Universal Sales Kit #	Sales Kit #	Thread Size	Hex Size	Temperature Range
280EC	-	1/8" NPTF	5/8"	100-230°F
-	334N-D	1/4" NPTF	5/8"	100-230°F
-	334K-D*	1/4" NPTF	5/8"	100-230°F
-	334P-D	3/8" NPTF	3/4"	100-230°F
-	334L-D*	3/8" NPTF	3/4"	100-230°F
-	334R-D	1/2" NPTF	7/8"	100-230°F
-	334M-D*	1/2" NPTF	7/8"	100-230°F
280EA	362CZ-D	1/8" NPTF	5/8"	100-240°F
82503*	-	-	5/8"	100-240°F
-	362AN-D	1/4" NPTF	5/8"	100-240°F
-	362BD-D	1/4" NPTF	3/4"	100-240°F
-	362AJ-D	3/8" NPTF	3/4"	100-240°F
-	362BC-D	3/8" NPTF	3/4"	100-240°F
-	362AH-D	1/2" NPTF	7/8"	100-240°F
-	362BB-D	1/2" NPTF	7/8"	100-240°F
280ED-F	334H-D	1/8" NPTF	5/8"	100-280°F
-	334AA-D	1/4" NPTF	5/8"	100-280°F
-	334AB-D	3/8" NPTF	3/4"	100-280°F
-	334AD-D	1/2" NPTF	7/8"	100-280°F
280EE-F	-	1/8" NPTF	5/8"	140-320°F
82505	-	-	-	300-1500°F
82510-F	Universal metric Adapters 14, 16, 18 mm thread			100-280°F

*Standard pipe thread is 1/8". Sales kits include adaptor for 1/4" pipe thread.
* Sender operates two gauges simultaneously, cannot be used with single gauge.*

Stock items **Non-Stock items: must be ordered, allow up to 8 weeks for delivery**

- Constructed of high-quality, **corrosion-resistant brass** for maximum durability and outstanding electrical and thermal conductivity.
- Phosphor bronze contact spring provides **resistance to shock and vibration**.



TEMPERATURE SWITCHES

Temperature Senders				
Sales Kit #	Thread Size	Temperature	Terminal	Replaces
83300	1/4" NPTF	200°	Spade	363D-D
83301	1/4" NPTF	225°	Spade	363AM-D
83303	1/4" NPTF	240°	Screw	363CP
83304	3/8" NPTF	200°	Spade	363E-D
83305	3/8" NPTF	220°	Screw	363AY
83306	3/8" NPTF	235°	Spade	363BR
83307	1/2" NPTF	200°	Spade	363F-D
83308	1/2" NPTF	200°	Screw	363P
83309	1/2" NPTF	215°	Screw	363AX
83310	1/2" NPTF	225°	Spade	363G-F
83311	1/2" NPTF	250°	Screw	363W-F
83312	1/2" NPTF	270°	Screw	363AB
83313	M16 x 1.5	225°	Spade	363CL
83314	M16 x 1.5	250°	Spade	363CM

- **Solid brass** body.
- Gold-plated contacts
- Excellent **accuracy** and repeatability.
- Normally open contact.
- Switches are voltage independent.



PRESSURE SWITCHES

- Robust construction for **maximum strength**
- Diaphragm assembly is normally closed
- Switches are voltage independent
- **1/8" NPTF** **364L-F** 6 psi **364K-F** 15 psi



See page 30 for temperature senders, switches and pressure switches dimensions

Stewart Warner DC Hourmeters

2 SCREW BLACK 10,000 HOURS



Operating Voltage		Operating Voltage	
10-80 VDC	83500	12-24 VDC	83506

- Quartz Plus movement features reliable drive mechanism
- Compact design to fit any application
- Totally sealed case impervious to acids and solvents

3 SCREW BLACK 10,000 HOURS



Operating Voltage		Operating Voltage	
10-80 VDC	83501	12-24 VDC	83508

- Excellent vibration and shock resistance
- 3 screw hole flange for flexible mounting
- Quartz accuracy +/- 0.2%

CHROME FLUSH CUP 10,000 HOURS

DLX GRAPHICS



Operating Voltage		
10-80 VDC	83502	2.27"
12-24 VDC	83505	2.50"

- Matches classic SW Deluxe black and white graphics
- Available in 2.27" and 2.50" diameters with chrome bezel
- Excellent vibration and shock resistance

BLACK FLUSH CUP 10,000 HOURS

HD GRAPHICS



Operating Voltage		
10-80 VDC	83503	2.27"

- Matches traditional SW Heavy Duty styling
- Features raised black bezel with distinctive brushed bright rim
- Indicates operating time in hours and tenths, plus running indicator

BLACK FLUSH CUP 10,000 HOURS

HD+ GRAPHICS



Operating Voltage		
10-80 VDC	83504	2.27"
12-24 VDC	83507	

White graphics only

- Green and white graphics to match the SW Heavy Duty Plus line
- Low profile attractive black bezel
- Quartz movement accuracy within +/- .02%

DC HOURMETERS

SYMBOL OF
SW
EXCELLENCE

85000 FEATURES AND SPECIFICATIONS

- Custom CMOS integrated circuit
- Indicates operating time in hours and tenths, plus has running indicator
- 10,000 hour version standard, with automatic recycle to zero
- Totally- sealed
- *Temperature range:* -40°F to +185°F, 40°C to +85°C
- *Quartz accuracy:* ±200 ppm, ±0.02% (entire voltage and temperature range)
- *Operating voltage range:* 5-110 VDC (Voltage range covered by 85000 series line)
- *Battery system voltages:* 6, 12, 24, 36, 48, 60, 72 and 80 VDC
- Precision built relay driven odometer
- *Excellent vibration & shock resistance:*
 - Vibration: 20g's @ 10-80 Hz (SAE J1378) 10g's (per MIL-M-3971)
 - Shock: 55g's @9-13 msec (SAE J1378) 75g's (per MIL-M-3971)
- *Transient voltage protection alternator load pump:*
 - 150C EMI (electromagnetic interference)
 - +400V @ 500Hz inductive switching and reverse polarity
- *Standard terminals:* 1/4" male blade
- *Lens material:* Glass
- *Case material:* Polyester
- *Number Size:* 0.12" (3mm)
- UL Recognized (File #AU1744)
- CSA Certified (File #LR42455-12)
- Conforms to MIL-M-3971

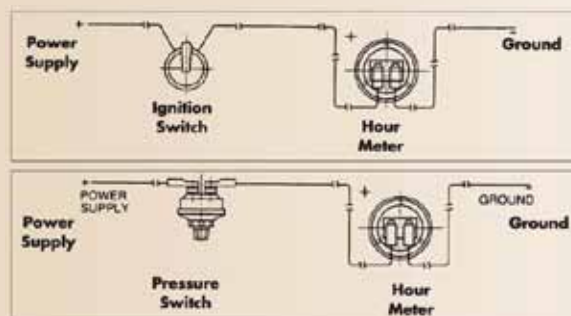


Operating Voltage	2-Screw Black
10-80 VDC	85094
30-110 VDC	85013
100,000 Hour 10-80 VDC	85127



Operating Voltage	3-Screw Black
10-80 VDC	85097
30-110 VDC	85014
100,000 Hour 10-80 VDC	85134

85000 SERIES WIRING DIAGRAMS (POLARITY SENSITIVE)



Operating Voltage	Rectangular Stirrup
10-80 VDC	85010
30-110 VDC	85023

HOUR METER ACCESSORIES



329-M
(2 13/16") mounting bracket for meter only.
558-M
(4" x 5 1/8") meter and dampener together. DC only.



3888-M
(3 7/8" dia.) dampener for three-screw type DC meters. Use on panel or with 558-M



486-M
Covers panel area 2 13/16" x 5 1/4". Three-screw type. DC meter only.



23944
angle bracket for all two-screw rectangular meters when panel mounting not practical.



Operating Voltage	Chrome Flush Cup 2.27"	Chrome Flush Cup 2.50"	Chrome Stirrup 2.27"	Chrome Stirrup 2.50"	Black Flush 2.27"
10-32 VDC			85004	85008	
10-80 VDC	85342	85098			85093
30-110 VDC	85013	85019	85017	85021	
100,000 Hour 10-80 VDC	85135	85133			85126
100,000 Hour 10-32 VDC				85104	

Grey box indicates a non-stock item, must be ordered in. (Minimum 24 piece order)

See page 32 for dimensions

AC Hourmeters



Rectangular 2 Screw			
Operating Voltage	Hertz	Termination	Part #
22 to 26 VAC	60	Screw*	20085
108 to 132 VAC	50	Screw*	20028
108 to 132 VAC	50	7" Leads**	20034
108 to 132 VAC	60	Screw*	20001
108 to 132 VAC	60	7" Leads**	20035
216 to 264 VAC	50	Screw*	20029
216 to 264 VAC	50	7" Leads**	20036
216 to 264 VAC	60	Screw*	20007
216 to 264 VAC	61	7" Leads**	20037

* UL listed & CSA certified
** UL recognized & CSA certified



Round 3 Screw			
Operating Voltage	Hertz	Termination	Part #
108 to 132 VAC	50	Screw*	20016
108 to 132 VAC	50	7" Leads**	20042
108 to 132 VAC	60	Screw*	20017
108 to 132 VAC	50	Screw*	20018
216 to 264 VAC	60	Screw*	20019

* UL listed & CSA certified
** UL recognized & CSA certified



Rectangular Retainer Mount			
Operating Voltage	Hertz	Termination	Part #
108 to 132 VAC	60	Screw*	20116

* UL listed & CSA certified

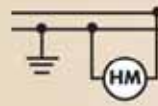
Grey box indicates a non-stock item, must be ordered in. (Minimum 24 piece order)

2000 FEATURES AND SPECIFICATIONS

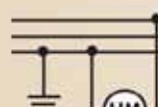
- Polycarbonate, shock resistant, tamper proof case
- Records up to 99,999 hours and automatic recycle to zero
- Totally sealed
- Single phase, synchronous, permanently lubricated motor
- 24, 120 and 240 VAC models available (Range $\pm 10\%$)
- 50 and 60 Hertz version
- 3.0 watts power rating
- Operating temperature: -65°F to $+154^{\circ}\text{F}$ (-54°C to $+68^{\circ}\text{C}$)
- Accuracy: $\pm 0.2\%$
- Weight: 3 oz
- Screw termination or 7" lead wires
- Lens material: 3-screw mount: Glass All Others: Polycarbonate
- Case material: Polycarbonate
- Number Size: 0.13" (3mm)
- UL Listed (File #E47098): Screw terminal
- CSA Certified (File #LR42455)
- Conforms to MIL-M-3971 (Applicable on "screw terminal" meters)

2000 SERIES WIRING

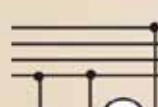
120VAC Meter Applications



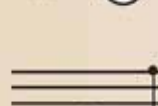
Single phase, 2 wire, 120V system: Connect power wire to one terminal and neutral wire to opposite terminal.



Single phase, 3 wire, 120/240V system: Connect any one power wire to one terminal and the neutral wire to the opposite terminal.

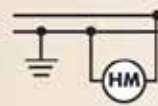


Three phase, 4 wire system, 120/208V system: Connect any one power wire to one terminal and the neutral wire to the opposite terminal.

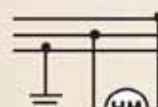


Three phase, 4 wire delta with a high leg, 120/240V system: Connect any one of the two available 120V power wires to one terminal of the meter and the neutral wire to the opposite terminal. Do not connect the high leg (208V) to the meter.

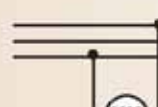
240VAC Meter Applications



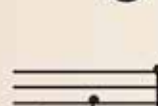
Single Phase, 2 wire, 240V system: Connect power wire to one terminal and neutral wire to opposite terminal.



Single phase, 3 wire, 120/240V system: Connect meter across two high sides of the line. Do not connect the neutral wire to the meter.



Three phase, 3 wire delta, 240V system: Connect any meter across any two power lines.



Three phase, 4 wire delta with a high leg, 120/240V system: Connect any one power wire to one terminal of the meter. Connect one of the remaining two power lines to the opposite terminal. Do not connect the neutral wire to the meter.

2000 SERIES WIRING



329-M
(2 13/16") mounting bracket for meter only.



23944
angle bracket for all two-screw rectangular meters when panel mounting not practical.

See page 32 for dimensions

LCD HOURMETERS



98000 SERIES LCD HOURMETERS

Description:

- Rugged, reliable units are ideal for O.E.M. and fleet applications
- Proven LCD hourmeter module with superior accuracy
- Standard ranges 9-64 VDC
- Fully sealed & dust-proof
- Fits in existing panel openings for easy installation
- Large easy-to-read displays with six digits registering up to 99,999.9 hours
- Protected from potentially damaging transient voltage and EMI
- Low power consumption
- Run indicator (pixel format) to verify timing function
- Compact design simplifies packaging
- No battery back-up required (10-year memory without power)
- Resettable four-terminal versions available
- U.L., CE & CSA approvals pending

Specifications:

- Dimensions:** ~2.27" outside for round hourmeter
~2.13" x 1.25" for mini-hourmeter (overall: hexagonal shape); case depth .75" (round and mini), overall depth 1.35" from behind bezel, with terminals).
- Panel Opening:** ~2.0" mounting hole for round; ~1.45" x .95" for mini (*Note: Holes for mini-hourmeter are 0.150" in diameter and spaced 1.750" apart.*)
- Lens:** Glass lens for round hourmeter; polycarbonate lens for mini-hourmeter.
- Bezel:** Chrome-plated (round); black, matte finish polycarbonate housing/bezel assembly for mini-hourmeter.
- Display/digits:** Six digit (99,999.9 hours); 6mm digit height
- Run Indicator:** Pixel flashes on timing sequence of three seconds on & on second off; gray/black color; universal hourglass symbol.
- Accuracy:** +/- 0.2% over operating temperature range.
- Voltage range:** 9-64 VDC (consult with factory for applications requiring more than 64VDC).
- Power draw:** < 1mA at 12 VDC (power terminal).
- Input protection:** Reverse polarity, load dump & EMI.
- Connections:** Integral 1/4" blade terminals (3/16" blade terminals are optional); two (2) or four (4) terminal configurations
(*Note: Four-terminal configurations are resettable via terminal #4 to zero.*)
- Sealing:** Fully sealed to IP 67 (moisture & dust).
- Operating Temp:** -40°C to +85°C
- Vibration/shock:** Tested to 20 g's vibration & 55 g's shock per SAE J1378
Tested to 10 g's vibration & 55 g's shock per MIL-M-3971D
- Memory storage:** Minimum 10 years (without being powered).
- Options:** Other Hobbs bezels and dial artwork (consult with factory).

Applications:

Suitability of application is the responsibility of the user. Standard products should work in most applications. Consult with factory for use in machines that generate vibration and shock profiles that exceed rated specifications.

For: agricultural vehicles, boats, construction equipment, garden tractors, generators, recreation vehicles, material handling equipment, and utility vehicles.



2 Screw Standard Bezel		
Operating Voltage	Terminals	Part #
9 to 64 VDC	2 terminal	98310
9 to 64 VDC	3 terminal with enable	98320
9 to 64 VDC	4 terminal resettable	98300

2 Screw Deluxe Bezel		
Operating Voltage	Terminals	Part #
9 to 64 VDC	2 terminal	98313
9 to 64 VDC	3 terminal with enable	98323
9 to 64 VDC	4 terminal resettable	98303



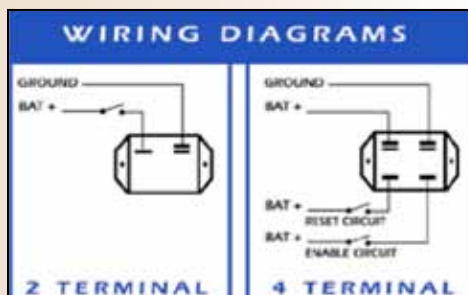
Round Chrome Bezel		
Operating Voltage	Terminals	Part #
9 to 64 VDC	2 terminal	98314
9 to 64 VDC	3 terminal with enable	98324
9 to 64 VDC	4 terminal resettable	98304

Round Black Bezel		
Operating Voltage	Terminals	Part #
9 to 64 VDC	2 terminal	98312
9 to 64 VDC	3 terminal with enable	98322
9 to 64 VDC	4 terminal resettable	98302



Retainer Mount		
Operating Voltage	Terminals	Part #
9 to 64 VDC	2 terminal	98311
9 to 64 VDC	3 terminal with enable	98321
9 to 64 VDC	4 terminal resettable	98301

* Model shown without LCD screen. Same style and mount.





HALOGEN LAMPS

- Portable work lamp operates from a cigarette lighter receptacle and features a magnetic base with 80 lbs. of pull-off force, 15 feet of cable and built-in switch
- Perfect for farmers, contractors, utilities, truckers, sportsmen or emergency uses
- Sealed beam construction

80413 3" x 5" Flood lamp with handle

80510 3" x 5" Spot lamp with handle



FLUSH MOUNT

- Flush mounted design is ideal where clearance might be a problem
- Well suited for installation in grilles, panels, and other such locations

Part #	Rated Voltage	Wattage	Beam Pattern	Termination
70744	12V	50W	Trap 35° x 35°	2-1/4" Male Blades
72769*	24V	60W	Flood 80° x 30°	2-1/4" Male Blades

* Part #72769 is a non-stock item. Minimum 20 piece order.

EMERGENCY LIGHTING PRODUCT

The magnetic trouble light consists of lamp assembly with an 18 foot power cord. It features a smooth-running reel enclosed in a tough, reinforced nylon housing with built-in ON-OFF switch.



79550

Features and Benefits:

- Two lights in one - a compartment lamp and emergency or trouble lamp.
- Eliminates the distress you feel when you discover your flash-light doesn't work
- Designed to withstand shock, vibration, dust, corrosion and extreme temperatures
- Wires easily to a 12 VDC power source
- Includes mounting hardware and installation instructions.

Specifications:

Electrical: 12 VDC

Bulb: Bayonet-base 9.9 candlepower

Cable: 18 feet, 20 gauge

79550 Package lamp

Halogen Lamps

SYMBOL OF
SW
EXCELLENCE



4" x 5" Halogen

Complete Lamp Assembly			
Part #	Beam Pattern	Voltage	Current
71898-11	Wide Flood	12V 50W	4 amp
74001-11	Narrow Flood	12V 50W	4 amp
71902-11	Spot	12V 50W	4 amp
71915-11	Trap	12V 50W	4 amp
75237-11	Hi-Lo Driving	12V 35/60W	3/5 amp
72540-11	Wide Flood	24V 60W	2.5 amp
75109-11	Narrow Flood	24V 60W	2.5 amp
72542-11	Trap	24V 60W	2.5 amp
72544-11	Spot	24V 60W	2.5 amp

Replacement Sealed Beams			
Part #	Beam Pattern	Voltage	Current
71017-11	Wide Flood	12V 50W	4 amp
71791-11	Narrow Flood	12V 50W	4 amp
71792-11	Spot	12V 50W	4 amp
71794-11	Trap	12V 50W	4 amp
75251-11	Hi-Lo Driving	12V 35/60W	3/5 amp
72541-11	Wide Flood	24V 60W	2.5 amp
78856-11	Narrow Flood	24V 60W	2.5 amp
72543-11	Trap	24V 60W	2.5 amp
72545-11	Spot	24V 60W	2.5 amp

Marine Complete Lamp Assembly**				
Part #	Mounting	Beam Pattern	Voltage	Current
72656-25	Flush	80°x 30° Flood	12V 50W	4 amp
72715-25	Flush	Spot	12V 50W	4 amp
71723-23	Stud	80°x 30° Flood	12V 50W	4 amp
72716-23	Stud	Spot	12V 50W	4 amp
72666-23	Flush	80°x 30° Flood	24V 60W	2.5 amp
72717-25	Flush	Spot	24V 60W	2.5 amp
72530-23	Stud	80°x 30° Flood	24V 60W	2.5 amp
72718-25	Stud	Spot	24V 60W	2.5 amp

**Marine Assembly - White body

Marine Replacement Sealed Beams				
Part #	Mounting	Beam Pattern	Voltage	Current
72108-15	Flush	80°x 30° Flood	12V 50W	4 amp
72719-15	Flush	Spot	12V 50W	4 amp
72728-11	Stud	80°x 30° Flood	12V 50W	4 amp
72720-11	Stud	Spot	12V 50W	4 amp



3" x 5" Halogen

Complete Lamp Assembly			
Part #	Beam Pattern	Voltage	Current
73761-40	Wide Flood	12V 50W	4 amp
77861-49	Wide Flood	12V 50W	4 amp
73762-11	Narrow Flood	12V 50W	4 amp
73763-40	Trap	12V 50W	4 amp
76764-40	Spot	12V 50W	4 amp

Lamp with built-in toggle switch

Replacement Sealed Beams			
Part #	Beam Pattern	Voltage	Current
72408-11	Wide Flood	12V 50W	4 amp
72573-11	Narrow Flood	12V 50W	4 amp
72801-11	Trap	12V 50W	4 amp
73804-40	Spot	12V 50W	4 amp

Marine Complete Lamp Assembly**			
Part #	Beam Pattern	Voltage	Current
74041-01	80° x 30° Flood	12V 50W	4 amp



5" Round Halogen

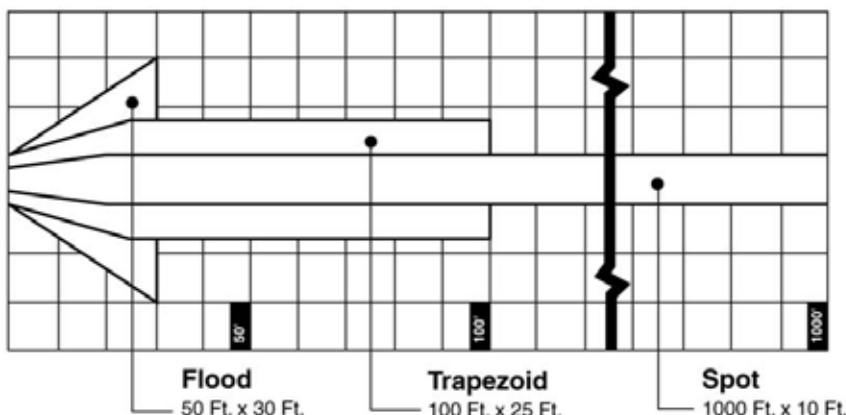
Complete Lamp Assembly			
Part #	Beam Pattern	Voltage	Current
73468-01	Wide Flood	12V 50W	4 amp
73469-01	Trap	12V 50W	4 amp

Replacement Sealed Beams*			
Part #	Beam Pattern	Voltage	Current
70510-11	Wide Flood	12V 50W	4 amp
70729-11	Trap	12V 50W	4 amp
72774	Spot	12V 50W	4 amp

*Will replace any 4-1/2" (par 36) incandescent or halogen sealed beam 3322-M grommet 5"round

Dimensions				
	Height	Length	Width	Thread
4 x 6	4.49"	6.90"	3.78"	1/2-13 NC-2
3 x 5	3.53"	5.89"	3.54"	1/2-13 NC-2
5" Round	5.25" (diameter)		3.72"	1/2-20 N.F.

STANDARD BEAM PATTERN



Grey box indicates a non-stock item, must be ordered in. (Minimum 20 piece order)
Black box indicates a non-stock item, must be ordered in. (Minimum 25 piece order)



HAND HELD TACHOMETER

- 82682** 0-4000 rpm clockwise and counterclockwise. 3" diameter and 4" long used for direct measure on rotating shaft
- 412850** 12" extension shaft
- 412850-1** 3" extension shaft
- 96798** Cone rubber tip
- 96799** Cup rubber tip



RECORDING BITUMETER

- 82681** For accurate, economical road resurfacing and oiling. Measures vehicle speed in FEET per minute. Face dial is black, 4" diameter, with white numerals and adjustable, static orange pointer.



PRESSURE TEMPERATURE

- 82336-96** Heavy duty gauge with 2-1/16" diameter case. 0-150 lbs pressure scale and 110°-260° temperature range. 96" of temperature tubing. Tubing kit must be ordered separately. See page 37.



AIR PRESSURE WITH WARNING LIGHT

- 368P-D** Mechanical gauge is equipped with warning light. 3-3/8" diameter dust proof steel case. Chrome bezel. Chimney lighting. Positive or negative ground.



PANELS

CHROME 2-1/16"

- 817825-F** 1 Hole
- 814143-F** 2 Hole
- 811653-F** 3 Hole

4 GC Panels



4 GC PANEL

Standard panel includes a voltmeter, fuel level, water temperature and oil pressure gauges.

- One-piece, water and dust resistant, front-servicable, snap-on bezels and lenses.
- Front mounted instruments and lenses with internal back lighting.
- Patented housing and molded-in circuit plate.
- Single interlocking harness connector for all 4 GC functions.
- Rugged plug-in Bi-Torque® gauges.
- Illuminated lights serviceable from front and back
- Easy-to-read green and white graphics
- Available in 12V and 24V applications

Part #	12V	Sender	12V Replacement Gauges
873128	Vertical		(V) 876042 10-16V Volt (H) 876043
873129	Horizontal		(V) 876042 10-16V Volt (H) 876043
		391/392 Series	(V) 878089 240 ohm Fuel (H) 878090
		280EC	(V) 880123 100-240°F Temp (H) 880124
		279A	(V) 883106 0-80 psi Pressure (H) 883107

Part #	24V	Sender	12V Replacement Gauges
873158	Vertical		(V) 876052 20-32V Volt
		391/392 Series	(V) 878096 240 ohm Fuel
		280EC	(V) 880137 100-240°F Temp
		279A	(V) 883116 0-100 psi Pressure

Optional Accessories

- 366ACM** For 3-3/8" diameter tachometer or speedometer
 - 366ACN** Module housing for flashers
 - 830540 Series** Component flashers for 366ACN module
- (Assortment of component flashers available for various functions) Use 366SX light kit (366SX24 for 24V)

Senders

- Receiver Unit** Press. intended for use with S.W. standard 240 ohm rheostat. See page 23
- Receiver Unit** Temp. intended for use with 280EC sender
- Receiver Unit** Fuel intended for use with S.W. standard 240 ohm rheostat. See page 22.



873128



873129



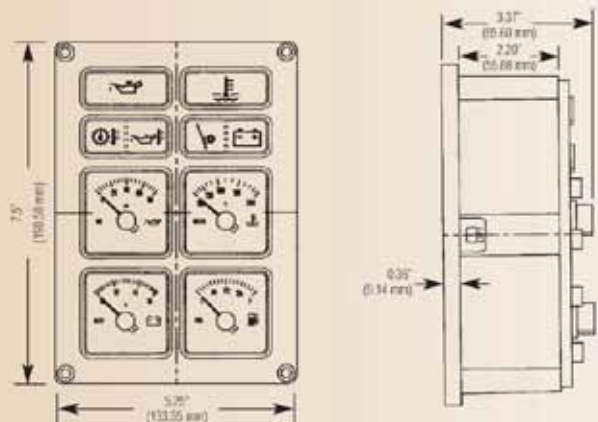
366ACM - BEZEL ONLY



366ACN HOUSING ONLY



830540 SERIES



GENUINE WINGS ELECTRIC SIX-GAUGE KIT



Kit #82222

White Face dial

82473
82477
82471
82481
82656
82661

Kit #82223

Black Face dial

82474
82478
82472
82482
82660
82662

Description

Electric Oil Press
Electric Water Temp
Electric Fuel
Electric Volt
Electric Tach
Electric Speed

Case Size

2-1/16"
2-1/16"
2-1/16"
2-1/16"
3-3/8"
3-3/8"

Kits feature all necessary senders, lighting, instructions & installation hardware

GENUINE WINGS MECHANICAL SIX-GAUGE KIT



Kit #82224

White Face dial

82475
82479-72
82471
82481
82659
82663

Kit #82225-A

Black Face dial

82476
82480-72
82472
82482
82660
82664

Description

Mechanical Oil Press
Mechanical Water Temp
Electric Fuel
Electric Volt
Electric Tach
Mechanical Speed

Case Size

2-1/16"
2-1/16"
2-1/16"
2-1/16"
3-3/8"
3-3/8"

Kits feature all necessary senders, lighting, instructions & installation hardware

GENUINE WINGS FIVE-GAUGE KIT WITH MECHANICAL SPEED



Kit #82226-A

White Face dial

82473
82477
82471
82481
82663

Kit #82227

Black Face dial

82474
82478
82472
82482
82664

Description

Electric Oil Press
Electric Water Temp
Electric Fuel
Electric Volt
Mechanical Speed

Case Size

2-1/16"
2-1/16"
2-1/16"
2-1/16"
3-3/8"

Kits feature all necessary senders, lighting, instructions & installation hardware

GENUINE WINGS FIVE-GAUGE KIT WITH ELECTRIC SPEED

Kit #82228

White Face dial

82473
82477
82471
82481
82661

Kit #82229

Black Face dial

82474
82478
82472
82482
82662

Description

Electric Oil Press
Electric Water Temp
Electric Fuel
Electric Volt
Electric Speed

Case Size

2-1/16"
2-1/16"
2-1/16"
2-1/16"
3-3/8"

Kits feature all necessary senders, lighting, instructions & installation hardware

Box Kits and Panels



DIESEL WINGS - WHITE SIX GAUGE KIT #82233-A

- 82669 Speedometer
- 82671 Tachometer
- 82473 Electrical Oil Pressure
- 82477 Electrical Water Temperature
- 82481 Voltmeter
- 82471 Fuel



DIESEL WINGS - BLACK SIX GAUGE KIT #82232-A

- 82670 Speedometer
- 82672 Tachometer
- 82474 Electrical Oil Pressure
- 82478 Electrical Water Temperature
- 82482 Voltmeter
- 82472 Fuel



DIESEL WINGS - BEIGE FIVE GAUGE KIT #82243

- 82612-A Speedometer
- 82530 Electrical Oil Pressure
- 82531 Electrical Water Temperature
- 82533 Voltmeter
- 82532 Fuel



DIESEL WINGS - SILVER FIVE GAUGE KIT #82244

- 82611 Speedometer
- 82497-A Electrical Oil Pressure
- 82498 Electrical Water Temperature
- 82610 Voltmeter
- 82499 Fuel



DIESEL WINGS - GOLD SERIES

- 82520 Oil Pressure
- 82521 Water Temperature
- 82522 Fuel
- 82499 Volt



**Kit is discontinued. Parts must be ordered separately.*

Standard Plus / Light Kits



82215B



82216B



82217B

STANDARD PLUS PANELS WITH EXTERNAL LIGHTING

GAUGE TYPE	DIAL	SALES KIT #
Single		
Mechanical Oil Pressure ¹	0-100 psi	82213B
Double		
Ammeter/Oil ²	60-0-60/0-100psi	82215B
Oil/Temperature ³	10-100 psi/100-250°F	82216B
Triple		
Ammeter/Oil/Temperature ⁴	60-0-60/0-100 psi/100-250°F	82217B

All panel kits include mounting panels, instructions and the following:

1. 6' tubing kit with fittings and 12V lighting
2. 6' tubing kit with fittings and 12V lighting
3. 72" capillary. Includes 6' tubing kit with fittings and 12V lighting.
4. 12V lighting, for electrical system charging up to 60 amps, and 6' tubing kit with fittings.

WARNING:

- The tubing on mechanical temperature gauges is gas filled and cannot be shortened without damaging the gauge.
- When power is turned off, pointer may rest at random on electric gauges.

VOLTAGE ADAPTER

Used to adapt 12 VDC Bi-Torque® gauges to higher voltage electrical systems.



829525-2D

	24VDC
12V Gauge	829525-2-D
Pyrometers	829525-9-D

REPLACEMENT LIGHT KITS

- 5/8" light hole (metal socket 1" long)
 - One Wire** **366FK-F**
 - One Wire** **366CH** (With mounting bracket)
- 5/8" light hole (plastic socket 1" long)
 - Two Wire** **366SX**
 - Two Wire** **366SX24** (24 Volt)
- 1/2" light hole (metal socket 1" long)
 - One Wire** **82551**
 - One Wire** **82550**



366CH



366SX

TUBING KITS

Pressure Kits

- Contains: 1/8" female PT nut
1/8" male PT nut
1/4" adapter nut

	Part #
6 Ft. Tubing	82553-F
16 Ft. Tubing	366HM-F

ADAPTER NUT KITS

Mechanical Temperature

- Includes:
8 x 72446-F
2 x 90567
4 x 428819-F

Metric Mechanical Temp. (Kit #82512)

- Includes:
3 x 82572
4 x 82573
3 x 82574

ADAPTER NUTS		
Standard	Metric	Empirical Metric
Pressure Senders		
835251D 1/8 ID to 1/4" OD	832354D 1/8" ID NPTF to M16x1.5 OD	825612D PT 1/8"-28 JIS Male
	832602D 1/8" ID NPTF to M18x1.5 OD	832855D PT 1/8"-28 JIS Female
Mechanical Water Temp		
428819-F Steel 5/8"-18 ID to 1/4" NPTF OD	82572 5/8"-18 ID to M14x1.5 OD	
72446-F Steel 5/8"-18 ID to 3/8" NPTF OD		
408550-D Steel 5/8"-18 ID to 3/8" NPTF OD		
90567 Steel 5/8"-18 ID to 1/2" NPTF OD		

Tach and Speedometer Accessories Flashers/Warning Devices

SYMBOL OF
SW
EXCELLENCE

82623B SENDER (HALL EFFECT)

7/8"-18 thread. 8 pulses per rev (square wave). Connects to mechanical shaft takeoff. **Requires 12VDC input.** Comes with .178 Tang tip. Maximum rpm 3,500. One sender will operate two tachometers or two speedometers.

Available tips:

.187 Tang (82625) .152 Tang (82626) .104 Sq (82629)

366ADB FORD QUICK DISCONNECT ADAPTER

Must order 82623B sender separately.

82646 SENDER (MAGNETIC)

Flywheel ring application for tachometer. Tone wheel application for speed. Thread size 3/4"-16 UNF. One sender will operate two tachometers or two speedometers.

82565-F SENDER

Use with gasoline tachometers that connect to mechanical shaft take-off on distributors or magnetos. *No voltage input required.* Easy two-wire hook-up. Comes with .104 tip.

Available tips (order separately):

.187 Tang (82625) .152 Tang (82626) .104 Sq (82629)

82565-F SENDER

For use on ammeters requiring external shunt.
60 AMP (813489), 100 AMP (407616), 150 AMP (413717), 300AMP (413717)

HEAVY DUTY FLASHERS

Equipped with a spring mass drive motor, the flashers provide up to 10 times the service life of conventional thermal flashers and continue to operate even when the voltage in a 12V system drops as low as 9 VDC.

Features and Benefits:

- Electromechanical (spring mass) motor
 - Silver alloy contacts
 - 1/4-inch blade, brass terminals
 - Polypropylene housing
 - Conforms to Federal Motor Vehicle Safety Standards (FMVSS), 108.
 - Exceeds SAE J-590B and SAE J-945 specs.
 - Adapter and extension terminals to convert from a square to round mounting base.
- Voltage Range:** 9-16 VDC (12 VDC rated)
18-32 VDC (24 VDC rated)
- Temperature Range:** -40 to +180°F
- Terminals:** X= Battery / P=Pilot / L=Load
- Flash Rate:** 60-120 cpm

Order Data				
Voltage	Terminals	Type	Part #	Compatible Part #
12V	2	ears	15570-01	13600-01
12V	3	ears	15571-01	
24V	2	ears	13610-01	15513-01
24V	3	ears	15550-01	

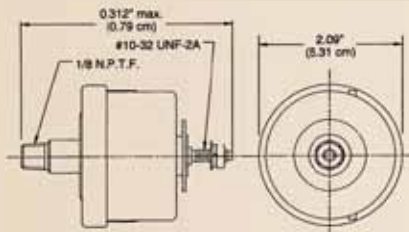
WARNING DEVICES

- 825104-D** Audio-visual/Light and Buzzer
366TJ Includes 825104-D with 364L-F and 83307 switches
(See page 17)

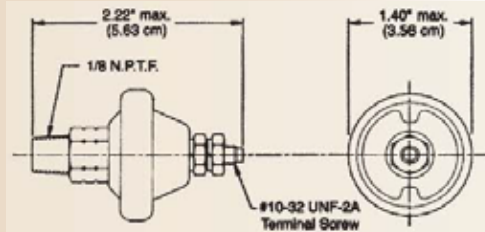


Dimensions

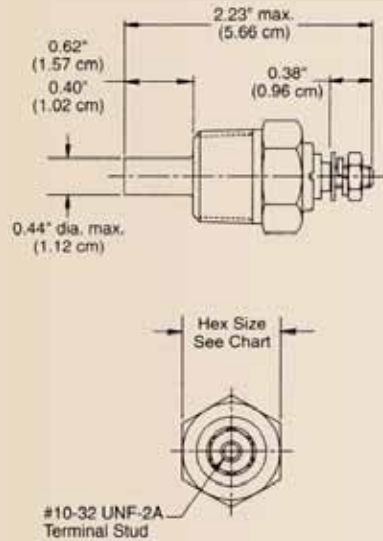
THICK FILM PRESSURE SENDER



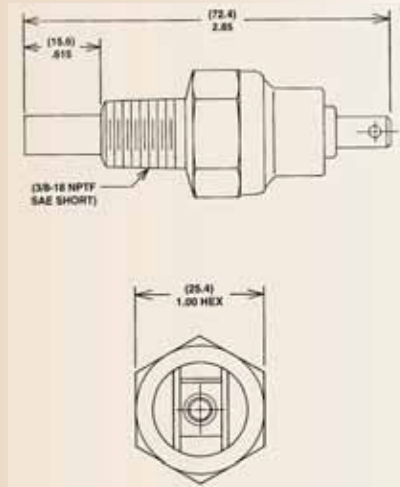
PRESSURE SWITCH



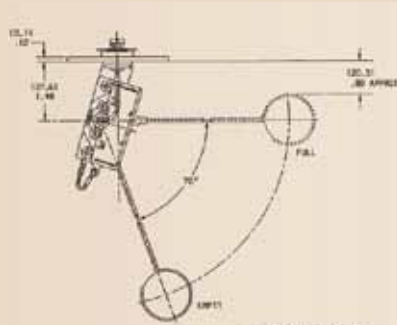
TEMPERATURE SENDER



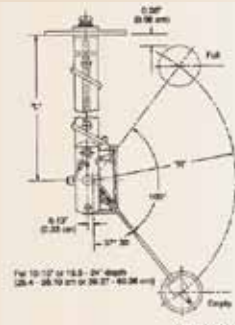
TEMPERATURE SWITCH



TEMPERATURE SENDER



385/386 SERIES



391/392/439 SERIES

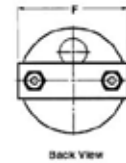
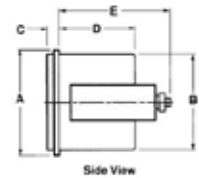


Gas Tank Flange

ELECTRIC SPEEDOMETERS/TACHOMETERS

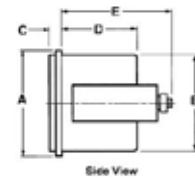
Dimensions	2 1/16" Tachometer	3 3/8" Speedometer & Tachometer	
	in. (cm.)	Mech. in. (cm.)	Elec. in. (cm.)
A	2.28 (5.79)	3.81 (9.66)	3.69 (9.37)
B	2.06 (5.23)	3.34 (8.46)	3.34 (8.46)
C	.43 (1.09)	.49 (1.24)	.49 (1.24)
D	1.68 (4.26)	2.31 (5.87)	2.51 (6.63)
E	2.55 (6.48)	3.56 (9.04)	4.12 (10.45)
F	2.31 (5.87)	3.59 (9.12)	3.59 (9.12)

*Mechanical marine speedometers have a depth (E) dimension of 2.30'.



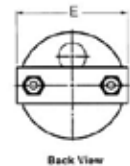
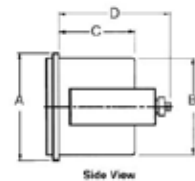
STANDARD/STANDARD PLUS GAUGES

Dimensions	2 1/32" Gauges	
	in.	(cm.)
A	2.19	(5.55)
B	2.00	(5.08)
C	.25	(0.64)
D	.75	(1.91)
E	1.33	(3.38)
F	2.06	(5.23)



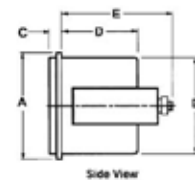
ELECTRIC/MECHANICAL GAUGES

Dimensions	2 1/16" Gauges		2 5/8" Gauges	
	in.	(cm.)	in.	(cm.)
A	2.28	(5.79)	2.80	(7.11)
B	2.06	(5.23)	2.60	(6.60)
C	1.38	(3.51)	1.76	(4.47)
D	2.26	(5.74)	2.46	(6.25)
E	2.25	(5.72)	2.88	(7.32)



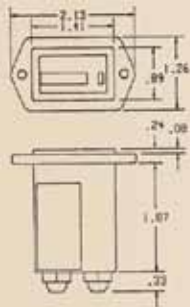
5" SPEEDOMETER/TACHOMETER

Dimensions	5" Gauges	
	in.	(cm.)
A	5.35	(13.59)
B	5.04	(12.80)
C	.7	(1.78)
D	2.61	(6.63)
E	3.46	(8.79)
F	5.04	(12.80)

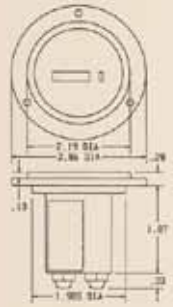


Dimensions

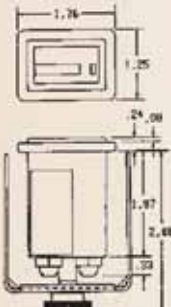
85000 HOURMETERS / SW 83500 HOURMETERS



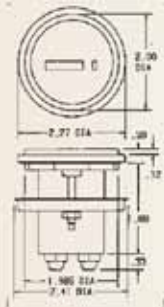
Two-Screw Mount: Panel cutout 1.45 x .95 rectangular opening. Two .150 holes spaced 1.750. *



Three-Screw Mount: Panel cutout 2.00 diameter opening. Three .150 holes equally spaced on 2.53 bolt circle diameter. *



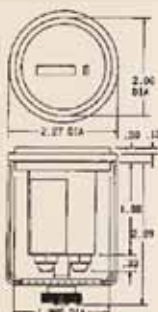
Rectangular Stirrup: Panel cutout 1.45 x .95 rectangular opening. *



Flush Mount (Cup) 2.27": Panel cutout 2.00 diameter opening. *



Flush Mount (Cup) 2.5": Panel cutout 2.00 diameter opening. *

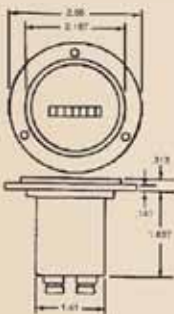


Flush Mount (Stirrup) 2.27": Panel cutout 2.00 diameter opening. *

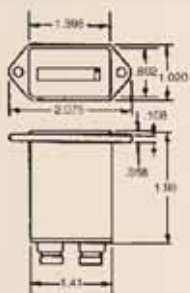


Flush Mount (Stirrup) 2.5": Panel cutout 2.00 diameter opening. *

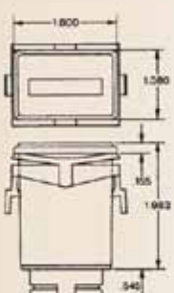
20000 HOURMETERS



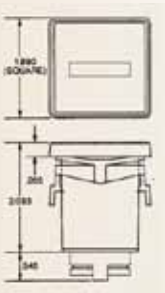
Three-Screw Mount: Panel cut out 2.00 diameter opening. Three .125 holes equally spaced on 2.42 bolt circle diameter.



Two-Screw Mount: Panel cut out 1.45 x .95 rectangular opening. Two .150 holes spaced 1.750.

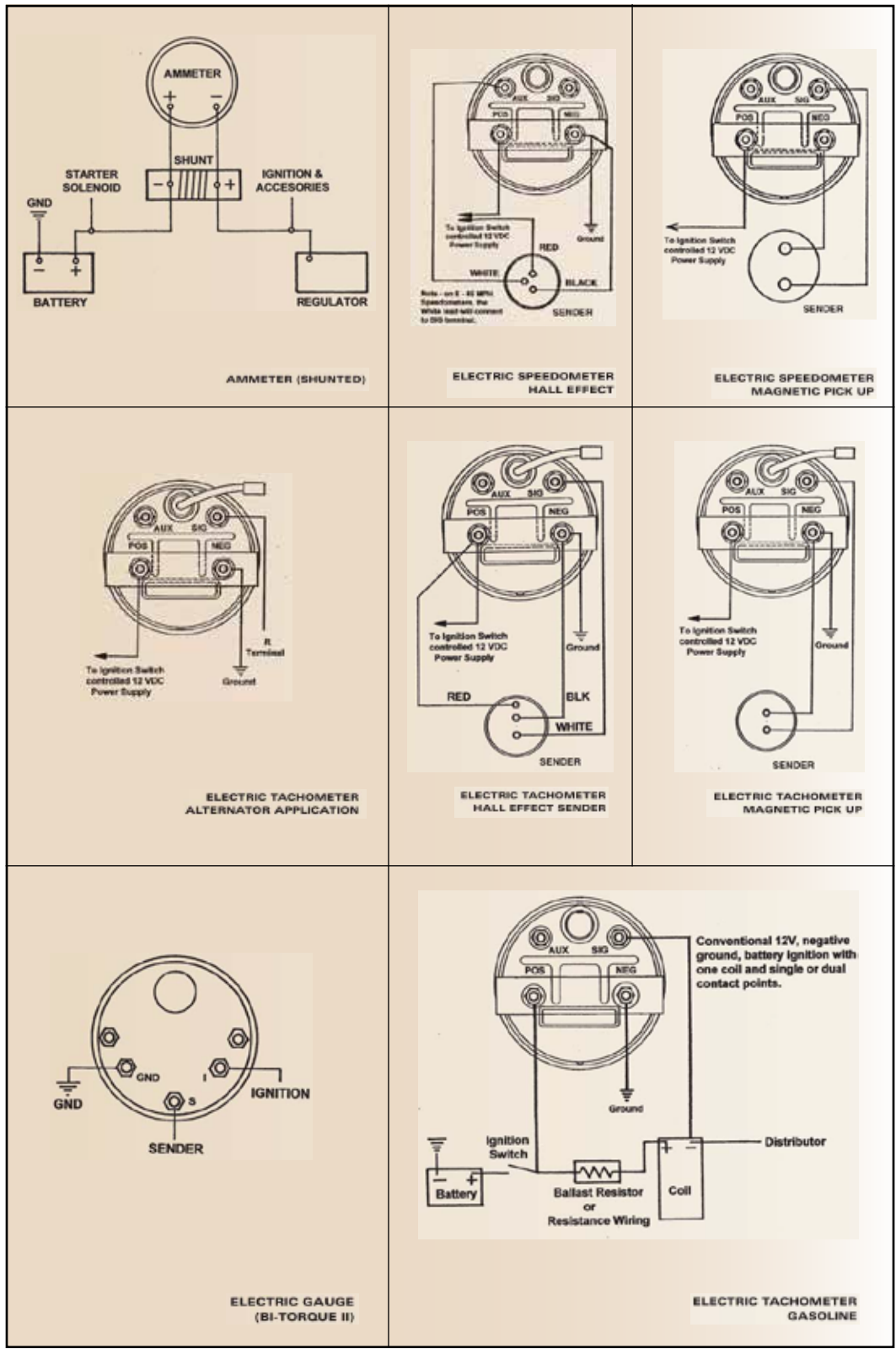


Rectangular Retainer: Panel cutout 1.45 x .95 rectangular opening.



Square Retainer: Panel cutout 1.45 x .95 rectangular opening.

Wiring Diagrams



FUEL PUMPS

The new upgraded models will provide overall improved versatility and durability. Additionally, the new models will be compatible with today's commercially available pump grade gasoline, gasohol, diesel or bio-diesel.

- Current requirement: <2 amps average
- Reverse polarity protected up to 60 minutes
- Self priming (dry lift) of more than 120 cm (48")
- Dry run to four (4) hours
- Compatible with all commercially available pump grade gasoline, gasohol, diesel or bio-diesel
- Operation temperature: -40 ~ +70C (-40 ~ +155 F)
- Transient voltage protected to 100 volts
- U.S. Coast Guard 16623-1 and 16623-2 approved
- Inlet and outlet thread sizes: 1/8-27 NPSF
- European CE standards EN 61000-6-2 and EN 6-3-2100 approved



82091-A, 82092-A, 82093-A and 82094-A

For applications where battery life, low noise and best durability are important and fuel quality is questionable.

- Flow: to 60 gph (225 lph)
- Ampere hours: up to 70% less than 82089, 82090 and 82095
- Continuous duty life (diesel fuel): > 18,000 hrs
- Weight: 1.83 lbs (0.83 kg)
- Pump cycles only when fuel is demanded
- Replaceable filter



82095-A

For applications where low cost and better durability are important and fuel quality is questionable.

- Flow: to 55 gph (210 lph)
- Continuous duty life (diesel fuel): > 10,000 hrs
- Weight: 1.83 lbs (0.83 kg)
- Pump cycles continuously when power is on
- Replaceable filter

82089-A

For applications where low cost and good durability are required

- Flow: to 52 gph (190 lph)
- Continuous duty life (diesel fuel): > 5,000 hrs
- Weight: 1.63 lbs (0.74 kg)
- Pump cycles continuously when power is on

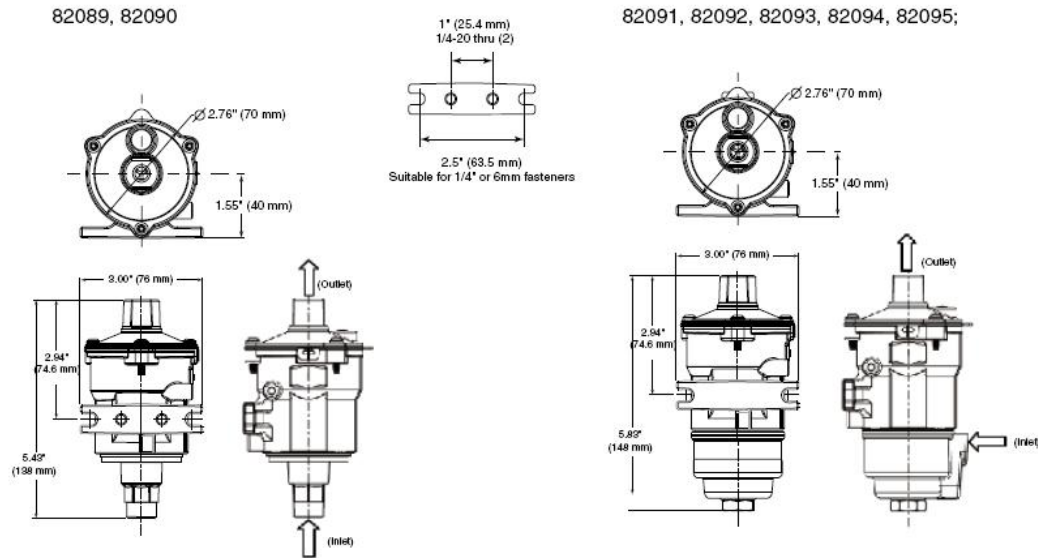
OLD Part #	NEW Part #	DESCRIPTION
82050	82091-A	*12V, 8psi, flow to 60 gph, neutral ground
82051	82095-A	* 12V, 8psi, flow to 55 gph
82052	82091-A	* 12V, 8psi, flow to 60 gph, neutral ground
82054	82093-A	* 24V, 8psi, flow to 60 gph
82055	82092-A	12V, 7.5 psi, flow to 60gph, corrosion resistant coating for marine use
82057	82094-A	12V, 4.5 psi, flow to 60gph, corrosion resistant coating for marine use
235AD-D	82098-A	* 12V, 4.5 psi, flow to 52 gph, one-piece aluminum fuel bowl, clear dichromate finish
235AB-D	N/A	No Replacement
N/A	82960	Service kit for all fuel pumps listed above
82053	82053	Filter/Gasket kit still available for service of old PN: 235A-D
82058	82058	Filter/Gasket kit still available for service of old PN: 82055

* Pumps notated with * include a tie-off kit. Two-wire pump may be converted to a one-wire pump.
Note: New PN 82091-A replaces both old PN's 82050 and 82052

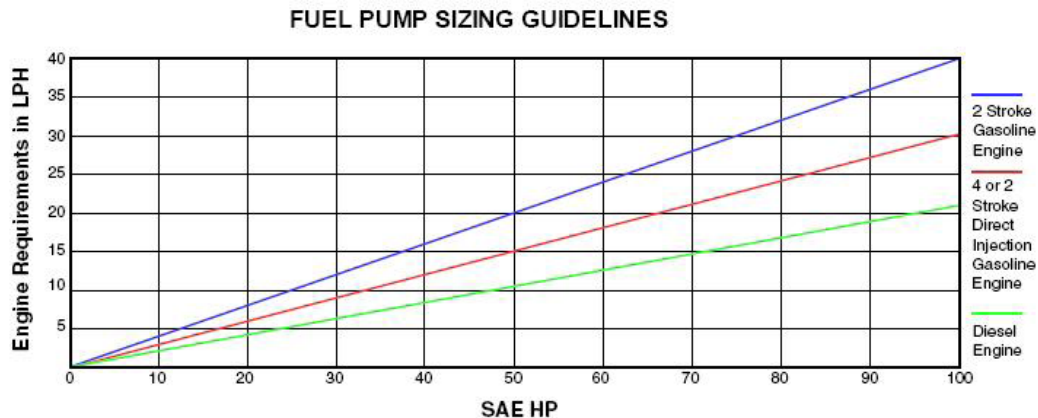
Fuel Pumps



OVERALL DIMENSIONS, MOUNTING DETAILS AND FITTING LOCATIONS



FUEL PUMP SIZING GUIDELINES



To calculate pump size requirements:

- 1) Engine fuel requirements (in lph) shown in the above chart is an approximation based on the following calculation:
 - a. Two Stroke engines = (HP)(.40) (based on BSFC of .67#/HP/HR)
 - b. Four stroke or direct injected two stroke engines = (HP)(.30) (based on BSFC of .50#/HP/HR)
 - c. Diesel engines = (HP)(.25) (based on BSFC of .42#/HP/HR)
- 2) Consider an additional hot fuel (for gasoline applications) allowance of up to 30% (application specific)
- 3) Consider an additional fuel allowance for injector pump cooling (diesel applications only)
- 4) Consider an additional safety allowance for certain applications where fuel lines, filters, etc create abnormal pressure losses (confirmation by testing recommended)

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