

STEWART-WARNER

Instruments



Six Styles Available...



**WORLD WIDE
GAUGES**



**DELUXE
GAUGES**



**HEAVY DUTY
GAUGES**



**STAGE III
GAUGES**



**STANDARD
GAUGES**



**MARINE
GAUGES**

How to Order Gauges

1. Select the style desired from the style guide on this page and on pages 4 to 13.
2. Pick an available gauge in the style and range desired.
3. Turn to the product pages to find the part numbers of other items you may need (senders, tubing kits, etc.) and any special information.

STEWART-WARNER CORPORATION

ALEMITE AND INSTRUMENT DIVISION
1826 DIVERSEY PARKWAY CHICAGO, ILLINOIS 60614



SAFETY FIRST

Users and installers of the products and equipment offered in this catalog are cautioned to use all standard and reasonable precaution in the use of tools and the handling of electrical material required in conjunction with these products. Safety equipment such as gloves, safety glasses and proper shoes necessary for professional performance are emphatically urged. When product is received carefully read any label or enclosed instructions before use and/or installing.

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Mini-Panels

Now it is easier than ever to equip cars with instruments. Stewart-Warner's designers have solved the problems of mounting and installation by creating a pre-wired three-gauge cluster in a compact new size.



82459 Mini-Panel
Actual size

GAUGES

82459 Mini-Panel. The world's first mini instrument panel. Voltmeter, water temperature, and oil pressure gauge panel measure only 4 1/8" wide by 2" high, by 2" deep. This mini size allows it to be mounted on top of the dash without obstructing the view of the road. Or, since it mounts with double face tape, it can be mounted anywhere.

The three gauges are completely encased by high impact Noryl so the Mini-Panel has no exposed parts to detract from the appearance of the car. The handsome design and rich textured finish will complement the interior of any vehicle.

Bi-Torque mechanisms are temperature and voltage compensated to provide reliable reading under all conditions. Transoptic lighting provides excellent night time illumination without glare or shadows.

Note: These gauges have "floating pointers" and indicate a proper reading only when ignition is "ON". It is not an indication of a defective unit if pointers do not return to zero when ignition is "OFF".

INSTALLATION

Everything needed to install the Mini-Panel on AMC, Chrysler, Ford and GM domestic manufactured cars comes in the box. Metric adapters are available for imports.

The Mini-Panel is solid state, fully electronic and is completely prewired to make installations simple. One cord of ample length contains the five wires needed to connect the Mini-Panel to the car. Just install two senders and make easy wire connections. Complete instructions are included.

ACCESSORIES

- 82508** Oil Temperature Sender Kit. (Replaces 1/2"-20 Drain Plug for most U.S. cars).
- 82510** Metric Temperature Sender (For cars with 10, 14, 16 or 18 mm threads).
- 82554** Oil Pressure Adapter Nut. (1/8"-28 to fit Japanese vehicles).

SERVICE PARTS

- 279-B** Replacement Oil Pressure Sender Kit.
- 280-ED** Replacement Temperature Sender Kit.
- 830051** Three Gauge Replacement Assembly.



82470 Mini-Panel II
Actual Size

GAUGES

82470 Mini-Panel II's voltmeter and oil pressure gauge are encased in a panel that measures $4\frac{1}{8}$ " wide by 2" high, by 2" deep. It mounts anywhere, even on top of the dash, without obstructing the view of the road.

The two gauges are completely encased by high impact Noryl so the Mini-Panel has no exposed parts to detract from the appearance of the car. The handsome design and rich textured finish will complement the interior of any vehicle.

Bi-Torque mechanisms are temperature and voltage compensated to provide reliable reading under all conditions. Transoptic lighting provides excellent night time illumination without glare or shadows.

Note: These gauges have "floating pointers" and indicate a proper reading only when ignition is "ON". It is not an indication of a defective unit if pointers do not return to zero when ignition is "OFF".

INSTALLATION

Everything needed to install the Mini-Panel II on AMC, Chrysler, Ford, GM and all import manufactured cars.

The Mini-Panel II is solid-state, fully electronic and is completely prewired to make installations simple. One cord of ample length contains the four wires needed to connect the Mini-Panel II to the car. Just install one sender and make easy wire connections. Complete instructions are included.

SERVICE PARTS

279-B Replacement Oil Pressure Sender.
832863 Two Gauge Replacement Assembly.

Gauges & Instruments

World Wide



FACE DIAL is black with red pointer. Numerals are white and yellow. All gauges feature international symbols to indicate the function being monitored.

BEZEL is raised and made of bright stainless steel.

CASE is 2 $\frac{1}{16}$ " (steel) in diameter and has dichromate coating to resist corrosion.

LIGHTING is internal and self-contained. Light kit is included.

ELECTRIC GAUGES feature Bi-Torque mechanisms and can be mounted at any angle. Not affected by car voltage or by changes in ambient temperature. Electric pressure, temperature and fuel level gauges require senders—order separately. Pointer will rest at random position.

MECHANICAL GAUGES have Bourdon tube, Accustat mechanisms. Silicone damped pointer assures steady readings. Withstands heavy vibration. Mechanical pressure and vacuum gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

Deluxe



FACE DIAL is black with white graduations and pointers.

BEZEL is flat, bright stainless steel.

CASE is 2 $\frac{1}{16}$ " (steel or brass) or 2 $\frac{3}{16}$ " (steel) in diameter. Steel cases have dichromate coating to resist corrosion.

LIGHTING is internal and self-contained on 82000 series gauges. All gauge models include lighting kits.

ELECTRIC GAUGES feature Bi-Torque® mechanisms (90° conventional sweep) on 82000 series gauges. Provide long life under heavy vibration and are not affected by changes in ambient temperatures. Electric pressure, temperature and fuel level gauges require senders—order separately. Pointer on 82000 series gauges will rest at random position.

MECHANICAL GAUGES have Bourdon tube center gear mechanisms. They withstand vibration and are not affected by changes in ambient temperatures. Mechanical pressure and vacuum gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

Heavy Duty



FACE DIAL is black with white graduations and pointers.

BEZEL is raised, painted satin black and made of steel or stainless steel.

CASE is 2 $\frac{1}{16}$ " (steel) in diameter and has dichromate coating to resist corrosion.

LIGHTING is internal and self-contained. Lighting kits are included.

ELECTRIC GAUGES feature Bi-Torque® mechanisms and can be mounted at any angle. Not affected by car voltage or by changes in ambient temperature. Electric pressure, temperature and fuel level gauges require senders—order separately. Pointer will rest at random position.

MECHANICAL GAUGES have Bourdon tube, Accustat® mechanisms. Silicone damped pointer assures steady readings. Withstands heavy vibration. Mechanical pressure and vacuum gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Ammeter (Page 20)	30-0-30 60-0-60 100-0-100		82713 82700 82701
Voltmeter	10-16 V. 12 V. 10-32 V. 24 V.		82709 82716
Pressure (Page 14)	0-100 psi Conv. Oil 0-100 Eng. Oil 5-100 Eng. Oil 5-100 Eng. Oil 0-150 Air 10-150 Air 10-150 Air 20-300 Conv. Oil	82704 82719	82714 82720 82705 82720 82711
Dual Air Pressure (Page 22)			
Temperature (Page 16)	100-220° Hyral. Oil 100-265 Water Temp. 100-280 Water Temp.	82703	82708 82702

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Temperature (Page 16)	100-280 Water Temp. 150-350 Eng. Oil 150-350 Trans. Oil 150-350 Conv. Oil 150-350 Eng. Oil		82722 82706 82707 82715 82723
Press/Temp.			
Cylinder Head (Page 22)			
Press-Vacuum (Page 22)			
Vacuum (Page 18)	2-30"	82718	
Fuel Level (Page 19)	0-1/4-4		82712 82734
Motor Minder (Pages 18 & 21)			
Turbo Gauge (Page 21)			
Pyrometer (Page 21)			
Clock (Page 22)			

Gauge Type	Dial Scale	Model No.			
		2 1/2"		2"	
		Mech.	Elec.	Mech.	Elec.
Ammeter (Page 20)	30-0-30 60-0-60 100-0-100		82310 82311 82313		82404
Voltmeter (Page 20)	10-16 V. 12 V.		82309		
Pressure (Page 14)	1-10 psi Fuel 1-16 Fuel 0-16 Fuel 2-30 Fuel 2-30 Manifold 5-80 Oil 5-100 Oil 10-150 Oil 10-150 Air 10-200 Oil 10-200 Fuel 20-300 Drive Oil 25-400 Drive Oil	82319 82333 82320 82321 82322 82323	82304 82305	82405 82406 82407 82408	
Dual Air Pressure	10-150/ 10-150	82332			

Gauge Type	Dial Scale	Model No.			
		2 1/2"		2"	
		Mech.	Elec.	Mech.	Elec.
Temperature (Page 16)	100-240° Water 100-265 Water 100-280 Water 140-320 Oil 140-325 Oil	82326	82308 82307 82308	82409	
Press/Temp. (Page 22)					
Cylinder Head (Page 22)					
Press-Vacuum (Page 22)					
Vacuum (Page 18)	2-30"	82328		82411	
Fuel Level (Page 19)			82303		82413
Motor Minder (Page 18 & 21)					
Turbo Gauge (Page 21)					
Pyrometer (Page 21)	300-1500°		82336		
Clock (Page 22)					

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Ammeter (Page 20)	60-0-60 60-0-60 100-0-100 150-0-150		284-A 284-AB 284-AA 284-AD
Voltmeter (Page 20)	10-16 V. 12 V. 20-32 V. 24 V.		284-H 284-AJ
Pressure (Page 14)	1-16 psi Fuel 0-16 Fuel 0-80 Oil 0-100 Oil 5-100 Oil 0-150 Air 10-160 Air 10-200 Oil 20-300 Trans. 30-400 Trans.	284-E 284-D	284-AM 284-AE 284-L 284-T
Dual Air Pressure (Page 22)	10-150/ 10-150	82331	

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Temperature (Page 16)	100-230° Water 100-265 Water 100-280 Water 140-320 Oil 140-325 Oil	284-B	284-AF 284-J 284-K
Press/Temp. (Page 22)	0-150 psi/ 110-260°F	82336	
Cylinder Head (Page 22)	100-600"		284-AK
Press-Vacuum (Page 22)	40 psi/0-30"	284-F	
Vacuum (Page 18)	2-30"	284-AH	
Fuel Level (Page 19)	E-1/2-F		284-M
Motor Minder (Pages 18 & 21)		82300 82301	
Turbo Gauge (Page 21)	0-30"Hg/ 0-16 psi	284-BF	
Pyrometer (Page 21)	300-1500°		82334
Clock (Page 22)			284-AL

Gauges & Instruments

Stage 3



FACE DIAL is black with white pointer and numerals and with yellow and white accents.

BEZEL is raised, painted satin black and made of stainless steel.

CASE is 2 $\frac{1}{4}$ " (steel) in diameter. Steel cases have dichromate coating to resist corrosion.

LIGHTING features patented Transoptic[®] lighting which combines front and back lighting features for improved night time readability. Lighting kits are included with all gauge models.

ELECTRIC GAUGES have Bi-Torque[®] mechanisms and can be mounted at any angle. Not affected by car voltage or by changes in ambient temperature. Senders are required for electric temperature, pressure and fuel level gauges. Pointer will rest at random position.

MECHANICAL GAUGES have Bourdon tube Accustat[®] mechanisms. Withstands heavy vibration. Silicone damped pointer assures steady readings. Installation material included. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

Standard



FACE DIAL is black with white pointers, graduations, and numerals.

BEZEL is flat and bright chrome plated.

CASE is 2 $\frac{1}{2}$ " in diameter (steel) with dichromate protective coating.

LIGHTING—non-illuminated.

ELECTRIC GAUGES have thermo mechanisms. They withstand vibration and changes in ambient temperature. Electric fuel level gauges require senders—order separately. Pointer will rest below first graduation.

MECHANICAL GAUGES have diaphragm mechanisms. They withstand vibration and changes in ambient temperature. Mechanical pressure gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions.

Marine



FACE DIAL is black with white graduations and pointers.

BEZEL is raised, painted satin black and made of brass, steel or stainless steel.

CASE is 2 $\frac{1}{16}$ " (steel or brass) or 2 $\frac{1}{2}$ " (steel) in diameter. Steel cases have dichromate coating to resist corrosion.

LIGHTING is internal and self-contained on 82000 series gauges. All gauge models include lighting kits.

ELECTRIC GAUGES feature Bi-Torque[®] mechanisms (90° conventional sweep) on 82000 series gauges. Provide long life under heavy vibration and are not affected by changes in ambient temperature. Electric pressure, temperature and fuel level gauges require senders—order separately. Pointer on 82000 series gauges will rest at random position.

MECHANICAL GAUGES have Bourdon tube center gear mechanism. They withstand vibration and are not affected by changes in ambient temperatures. Mechanical pressure and vacuum gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Ammeter (Page 20)	60-0-60		283-A
Voltmeter (Page 20)	10-18 V. 12 V.		283-H
Pressure (Page 14)	1-15 psi Fuel 0-100 Oil 5-100 Oil	283-E	283-L
		283-D	
Dual Air Pressure (Page 22)			
Temperature (Page 16)	100-280° Water 140-325 Oil	283-B	283-J
		283-C	283-K

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Press/Temp. (Page 22)			
Cylinder Head (Page 22)			
Press Vacuum (Page 22)			
Vacuum (Page 18)	2-30"	283-F	
Fuel Level (Page 19)	E-1/2-F		283-M
Motor Minder (Page 18 & 21)		82300 82301	
Turbo Gauge (Page 21)			
Pyrometer (Page 21)			
Clock (Page 22)			284-AL

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Ammeter (Page 20)	20-0-20	82201	
	30-0-30	82200	
	60-0-60	82202	
Voltmeter (Page 20)			
Pressure (Page 14)	0-50 psi	82207	
	0-80	82208	
	0-100	82209	
Dual Air Pressure (Page 22)			
Temperature (Page 16)	100-250°	82210	
	100-250	365-C	

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Press/Temp.			
Cylinder Head (Page 22)			
Press Vacuum (Page 22)			
Vacuum (Page 18)			
Fuel Level (Page 19)	E-1/2-F		82211
Motor Minder (Page 18 & 21)			
Turbo Gauge (Page 21)			
Pyrometer (Page 21)			
Clock (Page 22)			

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Ammeter (Page 20)	60-0-60		82108
	60-0-60		82109
	100-0-100		82110
Voltmeter (Page 20)	10-18 V. 12 V.		82112
Pressure (Page 15)	0-80 psi Oil		82113
	0-100 Oil		82116
	20-300 Drive Oil		82120
	25-400 Drive Oil		82121
Dual Air Pressure (Page 22)			
Temperature (Page 16)	100-230° Water		82114
	100-280 Oil		82115

Gauge Type	Dial Scale	Model No.	
		Mech.	Elec.
Press/Temp. (Page 22)			
Cylinder Head (Page 22)			
Press Vacuum (Page 22)			
Vacuum (Page 18)	2-30"	82117	
Fuel Level (Page 19)	E-1/2-F		82111
Motor Minder (Page 18 & 21)			
Turbo Gauge (Page 21)			
Pyrometer (Page 21)			
Clock (Page 22)			

World Wide Instruments

FACE DIAL is black with red pointer. Numerals are white and yellow. All gauges feature international symbols to indicate the function being monitored.

BEZEL is raised and made of bright stainless steel.

CASE is 2 $\frac{1}{16}$ " (steel) diameter and has dichromate coating to resist corrosion.

LIGHTING is internal and self-contained. Light kit is included.

ELECTRIC GAUGES feature Bi-Torque mechanisms and can be mounted at any angle. Not affected by car voltage or by changes in ambient temperature. Electric pressure, temperature and fuel level gauges require senders-order separately. Pointer will rest at random position.

MECHANICAL GAUGES have Bourdon tube, Accustat mechanisms. Silicone damped pointer assures steady readings. Withstands heavy vibration. Mechanical pressure and vacuum gauges require tubing kits-order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

TACHOMETERS

82616 (12v., neg. grd.)
0-6000 RPM

Diesel

82617 (Elec.-any volt. or grd.) 0-3500 RPM

82633 (Elec.-12 volt, neg. grd.) 0-3500 RPM

82683 (Mechanical) 0-4000
with Odometer for .5:1 take-off.

82684 (Mechanical) 0-4000 for
.5:1 take-off.

82685 (Mechanical) 0-4000
with Odometer for 1:1
take-off.

82686 (Mechanical) 0-4000 for
1:1 take-off.

82683

82616

82684

82617

82685

82633

82686

SPEEDOMETERS

82676 (Mechanical) 0-90 mph/
0-140 km/h Odometer records
in kilometers only.

82680 (Mechanical) 0-80 mph/
0-130 km/h Odometer records
in miles only. Meets FMVSS
#127.

82687 (Mechanical) 0-80 mph/
0-130 km/h. Million mile
Odometer. Meets FMVSS
#127.

82680

82676

82687

OIL PRESSURE

82704 (Mechanical) 5-100 psi

82705 (12v., neg. grd.) 0-100 psi

82719 (Mechanical) 5-100 psi $\frac{7}{16}$ "-20 Pt.

82720 (12v., pos. grd.) 0-100 psi.

82704

82705

AMMETERS

82700 60-0-60

82701 100-0-100

82713 30-0-30

82700

82701

WATER TEMPERATURE

82702 (12v. neg. grd.) 100-280°F
82703 (Mechanical) 100-265°F
82722 (12v. pos. grd.) 100-260°F



82702



82703

TRANSMISSION OIL

TEMPERATURE

82707 (12v. neg. grd.)
150°-350°F



82707

PRESSURE

82717 (Mechanical)
20-300 psi



82717

AIR PRESSURE

82710 (Mechanical) 10-150 psi
82721 (Mechanical) 10-150 psi, 1/16"-20 Pt.
82711 (12 v. neg. grd.) 0-150 psi



82710



82711

CONVERTER OIL

TEMPERATURE

82715 (12v. neg. grd.)
150-350°F



82715

PRESSURE

82714 (12v. neg. grd.)
0-100 psi



82714

VOLTMETER

82709 (12v. neg. grd.
or pos. grd.) 10-16v.
82716 (24v. neg. grd.)
20-32v.



82709

VACUUM

82718 2-30" Hg



82718

FUEL LEVEL

82712 (12v. neg. grd.) 0-1/2-4/4
82724 (12v. pos. grd.) 0-1/2-4/4



82712

HYDRAULIC OIL TEMPERATURE

82708 (12v. neg. grd.)
100-220°F



82708

ENGINE OIL TEMPERATURE

82706 (12v. neg. grd.)
150-350°F
82723 (12v. pos. grd.)
150-350°F



82706

Deluxe Instruments

FACE DIAL is black with white graduations and pointers.
BEZEL is flat, bright stainless steel.
CASE is 2 1/8" (steel or brass) or 2 3/8" (steel) in diameter.
 Steel cases have dichromate coating to resist corrosion.
LIGHTING is internal and self-contained on 82000 series gauges. All gauge models include lighting kits.

ELECTRIC GAUGES feature Bi-Torque® mechanisms (90° conventional sweep) on 82000 series gauges. Provide long life under heavy vibration and are not affected by changes in ambient temperatures. Electric pressure, temperature and fuel level gauges require senders—order separately. Pointer on 82000 series gauges will rest at random position.

MECHANICAL GAUGES have Bourdon tube center gear mechanisms. They withstand vibration and are not affected by changes in ambient temperatures. Mechanical pressure and vacuum gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

TACHOMETERS

535-AH (Mechanical) 0-9000 RPM
 82150 (12V., Neg. Grd.) 0-6000 RPM
 997-R (12V., Neg. Grd.) 0-8000 RPM



82150



997-R



535-AH

Diesel

82157 (Any Volt. or Grd.) 0-3500 RPM
 82620 (12V., Neg. Grd.) 0-3500 RPM
 82622 (12V., Neg. Grd.) 0-3500 RPM. With Hourmeter.
 551-AKM (Mechanical) 0-5000 RPM



82620



551-AKM

MANIFOLD AIR PRESSURE

82321 (Mechanical) 2-30 psi.



SPEEDOMETERS

550-BP (Mechanical) 0-160 mph. Odometer records in miles only.

82677 (Mechanical) 5-85 mph., 15-130 kmh. Odometer records in miles only. Meets FMVSS #127.



550-BP



82677

FUEL PRESSURE

82319 (Mechanical) 1-10 psi 82325 (Mechanical) 10-200 psi
 82320 (Mechanical) 2-30 psi 82333 (12V., Neg. Grd.) 0-16 psi



82319



82333

WATER TEMPERATURE

82326 (Mechanical) 100-265°F.
 82306 (12V., Neg. Grd.) 100-240°F.
 82307 (12V., Neg. Grd.) 100-280°F.



82326



82306

OIL PRESSURE

82322 (Mechanical) 5-80 psi
 82323 (Mechanical) 5-100 psi
 92324 (Mechanical) 10-200 psi
 82304 (12V., Neg. Grd.) 5-80 psi
 82305 (12V., Neg. Grd.) 5-100 psi



82323



82304

OIL TEMPERATURE

82327 (Mechanical) 140-325°F
82308 (12V., Neg. Grd.) 140-320°F



82327



82308

PYROMETER

82335 (12V., Neg. Grd.)
300-1500°F



82335

DUAL AIR

82332 (Mechanical)
10-150/10-150 psi



82332

AIR PRESSURE

82329 (Mechanical)
10-150 psi



82329

DRIVE OIL PRESSURE

82120 (Mechanical)
20-300 psi
82121 (Mechanical)
25-400 psi



82121

Deluxe Racing—2 5/8" Diameter

FUEL PRESSURE

82405 (Mechanical) 1-15 psi



82405

OIL PRESSURE

82406 (Mechanical)
5-100 psi
82407 (Mechanical)
10-150 psi



82406

AIR PRESSURE

82408 (Mechanical)
10-150 psi



82408

WATER TEMPERATURE

82409 (Mechanical)
100-265°F



82409

VACUUM

82328 (Mechanical)
2-30" Hg



82328

FUEL LEVEL

82303 (12V., Neg. Grd.)



82303

OIL TEMPERATURE

82410 (Mechanical)
140-325°F



82410

VACUUM

82411 (Mechanical) 2-30 psi



82411

AMMETERS

82310 30-0-30
82311 60-0-60
82313 100-0-100



82310

VOLTMETER

82309 (12V., Neg. Grd./Pos.
Grd.) 10-16 V.



82309

FUEL LEVEL

82413 (12V., Neg. Grd.)
(Formerly
616-B)



82413

AMMETER

82404 60-0-60



82404

Heavy-Duty Instruments

FACE DIAL is black with white graduations and pointers.
BEZEL is raised, painted satin black and made of steel or stainless steel.
CASE is 2 1/16" (steel) and has dichromate coating to resist corrosion.

LIGHTING is internal and self-contained. Lighting kits are included.

ELECTRIC GAUGES feature Bi-Torque® mechanisms and can be mounted at any angle. Not affected by car voltage or by changes in ambient temperature. Electric pressure, temperature and fuel level gauges require senders—order separately. Pointer will rest at random position.

MECHANICAL GAUGES have Bourdon tube, Accustat® mechanisms. Silicone damped pointer assures steady readings. Withstands heavy vibration. Mechanical pressure and vacuum gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc. as well as in existing panels.

TACHOMETERS

424-EX (Mechanical) 0-10,000 RPM
 424-EY (Mechanical) 0-12,000 RPM
 535-AK (Mechanical) 0-9000 RPM
 997-J (12V., Neg. Grd.) 0-8000 RPM
 997-K (12V., Neg. Grd.) 0-6000 RPM



424-EX



535-AK



997-J

Diesel

994-C (Any Volt. or Grd.) 0-3500 RPM
 82619 (12V., Neg. Grd.) 0-3500 RPM
 82621 (12V., Neg. Grd.) 0-3500 RPM, with Hourmeter
 551-AHK (Mechanical) 0-3500 RPM
 551-AHL (Mechanical) 0-3500, includes Odometer



82619



82621



551-AHK



551-AHL

SPEEDOMETERS

550-HH (Mechanical) 0-160 mph. Odometer reads in miles
 550-HF (Mechanical) 0-80 mph. Million mile Odometer
 82678 (Mechanical) 5-85 mph., 15-130 kmh, Odometer reads in miles. Meets FMVSS #127.



550-HH



550-HF



82678

WATER TEMPERATURE

284-B (Mechanical) 100-265°F
 284-J (12V., Neg. Grd.) 100-280°F
 284-AF (12V., Neg. Grd.) 100-230°F



284-B



284-J

OIL TEMPERATURE

284-C (Mechanical) 140-325°F
 284-K (12V., Neg. Grd.) 140-320°F



284-C



284-K

OIL PRESSURE

284-D (Mechanical)
5-100 psi
284-P (Mechanical)
10-200 psi



284-D

284-L (12V., Neg. Grd.)
0-100 psi
284-AE (12V., Neg. Grd.)
0-80 psi



284-L

CYLINDER HEAD TEMP. CLOCK

284-AK (12V., Neg. Grd.)
100-600°F.



284-AK

284-AL (12V., Neg. Grd.)



284-AL

FUEL PRESSURE

284-E (Mechanical) 1-15 psi
284-AM (12V., Neg. Grd.) 0-16 psi



284-E



284-AM

FUEL LEVEL

284-M (12V., Neg. Grd.)



284-M

DUAL PRESSURE/TEMP.

82336 0-150 psi, 110-260°F.



82336

PRESSURE/VACUUM

284-F 40 psi/0-30" Hg



284-F

TURBO GAUGE

284-BF 10-30" Hg/0-15 psi



284-BF

VOLTMETER

284-H (12V., Neg. Grd. Pos. Grd.) 10-16V.
284-AJ (12V., Neg. Grd.)
20-32 V.



284-H

DUAL AIR PRESSURE

82331 (Mechanical)
10-150/10-150 psi



82331

AMMETER



284-A

AMMETER

284-A 60-0-60
284-AA 100-0-100*
284-AB 60-0-60*
284-AD 150-0-150*

*Requires remote shunt

AIR PRESSURE

284-N (Mechanical) 10-150 psi
284-T (12V., Neg. Grd.)
0-150 psi



284-N



284-T

TRANSMISSION PRESSURE

284-R (Mechanical) 20-300 psi
284-S (Mechanical) 30-400 psi



284-S

PYROMETER

82334 (12V., Neg. Grd.)
300-1500°F.



82334

VACUUM

284-AH (Mechanical) 2-30" Hg.



284-AH

MOTOR MINDER

82300
82301



82301

Stage 3 & Standard Instruments

Stage 3 Instruments

FACE DIAL is black with white pointer and numerals and with yellow and white accents

BEZEL is raised, painted satin black and made of stainless steel.

CASE is 2 1/8" (steel) in diameter. Steel cases have dichromate coating to resist corrosion.

LIGHTING features patented Transoptic® lighting which combines front and back lighting features for improved night time readability. Lighting kits are included with all gauge models.

ELECTRIC GAUGES have Bi-Torque® mechanisms and can be mounted at any angle. Not affected by car voltage or by changes in ambient temperature. Senders are required for electric temperature, pressure and fuel level gauges. Pointer will rest at random position.

MECHANICAL GAUGES have Bourdon tube Accustal® mechanisms. Withstands heavy vibration. Silicone damped pointer assures steady readings. Installation material included. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

TACHOMETERS

997-A (12V, Neg. Grd.) 0-9000 RPM

997-B (12V, Neg. Grd.) 0-7000 RPM



997-A



997-B

SPEEDOMETERS

82879 (Mechanical) 5-85 mph., 15-125 kmh. Odometer reads in miles. Meets FMVSS #127.

550-EZ (Mechanical) 0-160 mph., Odometer reads in miles.



82879



550-EZ

OIL PRESSURE

283-D (Mechanical) 5-100 psi

283-L (12V, Neg. Grd.) 0-100 psi



283-D



283-L

WATER TEMPERATURE

283-B (Mechanical) 100-280°F

283-J (12V, Neg. Grd.) 100-280°F



283-B



283-J

OIL TEMPERATURE

283-C (Mechanical) 140-325°F

283-K (12V, Neg. Grd.) 140-325°F



283-C



283-K

FUEL LEVEL

283-M (12V, Neg. Grd.)

FUEL PRESSURE

283-E (Mechanical) 1-15 ps



283-M



283-E

AMMETER

283-A 60-0-60



283-A

VACUUM

283-F (Mechanical) 2-30" Hg



283-F

VOLTMETER

283-H (12V., Neg. Grd.) 10-16V.



283-H

Standard Instruments

FACE DIAL is black with white pointers, graduations, and numerals.

BEZEL is flat and bright chrome plated.

CASE is 2 1/2" in diameter (steel) with dichromate protective coating.

LIGHTING—non-illuminated.

ELECTRIC GAUGES have thermo mechanisms. They withstand vibration and changes in ambient temperature. Electric fuel level gauges require senders—order separately. Pointer will rest below first graduation.

MECHANICAL GAUGES have diaphragm mechanisms. They withstand vibration and changes in ambient temperature. Mechanical pressure gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions.

OIL PRESSURE

- 82207 (Mechanical) 0-50 psi
- 82208 (Mechanical) 0-80 psi
- 82209 (Mechanical) 0-100 psi



82209

TEMPERATURE

- 82210 (Mechanical) 100-250°F
- 366-C-48 (Mechanical) 100-250°F



82210

FUEL LEVEL

82211 (12V., Neg. Grd./Pos. Grd.)



82211

AMMETERS

- 82201 20-0-20
- 82202 60-0-60
- 82200 30-0-30



82200

INSTRUMENTS

Marine Instruments

FACE DIAL is black with white graduations and pointers.

BEZEL is raised, painted satin black and made of brass, steel or stainless steel.

CASE is 2 $\frac{1}{8}$ " (steel or brass) or 2 $\frac{3}{4}$ " (steel) in diameter. Steel cases have dichromate coating to resist corrosion.

LIGHTING is internal and self-contained on 82000 series gauges. All gauge models include lighting kits.

ELECTRIC GAUGES feature Bi-Torque[®] mechanisms (90° conventional sweep) on 82000 series gauges. Provide long life under heavy vibration and are not affected by changes in ambient temperature. Electric pressure, temperature and fuel level gauges require senders—order separately. Pointer on 82000 series gauges will rest at random position.

MECHANICAL GAUGES have Bourdon tube center gear mechanism. They withstand vibration and are not affected by changes in ambient temperatures. Mechanical pressure and vacuum gauges require tubing kits—order separately. Pointer will rest below first graduation.

MOUNTING: Gauges come with mounting brackets and instructions. They may be installed in all S-W mounting accessory panels, etc., as well as in existing panels.

SPEEDOMETERS

82155 10-60 mph., 9-52 knots

82156 10-45 mph., 9-39 knots

82152 10-45 mph.

82153 10-60 mph.



TACHOMETERS

82154 0-6000 RPM

Diesel

82157 (Any Volt or Grd.) 0-3500 RPM

82620 (12V., Neg. Grd.) 0-3500 RPM

82622 (12V., Neg. Grd.) 0-3500 RPM, with Hourmeter



DRIVE OIL PRESSURE

82120 (Mechanical) 20-300 psi

82121 (Mechanical) 25-400 psi



OIL PRESSURE

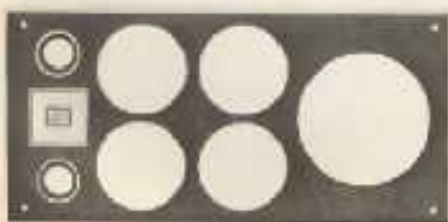
82113 (12V., Neg. Grd.) 0-80 psi

82116 (12V., Neg. Grd.) 0-100 psi



PANELS

271-W Panels are 12 $\frac{1}{2}$ " x 8 $\frac{1}{4}$ " and have a non-reflective surface. Will hold up to four gauges and a Tachometer.



WATER TEMPERATURE

82114 (12V., Neg. Grd.) 100-230 F.

OIL TEMPERATURE

82115 (12V., Neg. Grd.) 100-280°F.



For More Complete Information, See The Individual Gauge Section.

VACUUM

82117 2-30" Hg



82117

FUEL LEVEL

82111 (12V., Neg. Grd.)



82111

AMMETERS

82108 60-0-60
82109 60-0-60*
82110 100-0-100*



82108

*Requires remote shunt.

VOLTMETER

82112 (12V., Neg. Grd./Pos. Grd.) 10-16V.



82112

Pressure Gauges



WORLD WIDE MECHANICAL

Equipped with lighting kit, mounting brackets and instructions. Tubing kits must be ordered separately, see next page.

Type	Dial Scale	2 1/16"
OIL	5-100	82704
	5-100	82719Ⓞ
AIR	10-150	82710
	10-150	82721Ⓞ
TRANS OIL	20-300	82717

Ⓞ 1/16" 20 PT connection

DELUXE MECHANICAL

Includes lighting kit, mounting brackets and instructions. Tubing Kits must be ordered separately, see next page.

Type	Dial Scale	2 1/16"	2 1/8"
OIL	5-80	82322	—
	5-100	82323	82406
	10-150	—	82407
	10-200	82324	—
FUEL	1-10	82319	—
	1-15	—	82405
	2-30	82320	—
	10-200	82325	—
AIR	10-150	82328	82408 388-PⓄ
DRIVE OIL	20-300	82120Ⓞ	—
	25-400	82121Ⓞ	—
MANIFOLD	2-30	82321	—
DUAL AIR	10-150/ 10-150	82332	—

Ⓞ 3/4" Diameter Case Ⓞ Brass Case

HEAVY DUTY MECHANICAL

Equipped with lighting kit, mounting brackets and instructions. Tubing Kits must be ordered separately, see next page.

Type	Dial Scale	2 1/16"
OIL	5-100	284-D
	10-200	284-P
TRANS	20-300	284-R
	30-400	284-S
AIR	10-150	284-N
FUEL	1-15	284-E
DUAL AIR	10-150/10-150	82331

STAGE 3 MECHANICAL

Includes lighting kit, mounting brackets, 72" of tubing with fittings and instructions.

Type	Dial Scale	2 1/16"
OIL	5-100	283-D
FUEL	1-15	283-E



STANDARD MECHANICAL

Includes mounting brackets and instructions. Tubing kits must be ordered separately, see next page.

Type	Dial Scale	2 1/16"
OIL	0-50	82207Ⓞ
OIL	0-80	82208Ⓞ
OIL	0-100	82209Ⓞ

Ⓞ Subject to stock availability



WORLD WIDE ELECTRICAL

Equipped with lighting kit, mounting brackets and instructions. Senders must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/16"
OIL	0-100	12V, NG GD	82705
	0-100	12V, POS GD	82720
AIR	0-150	12V, NG GD	82711
CONV OIL	0-100	12V, NG GD	82714

DELUXE ELECTRIC

Includes lighting kit, mounting brackets and instructions. Senders must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/16"
OIL	0-80	12V, NG GD	82304
	0-80	12V, NG GD	82113Ⓞ
	0-100	12V, NG GD	82305
	0-100	12V, NG GD	82116Ⓞ
FUEL	0-16	12V, NG GD	82333

Ⓞ Brass Case



HEAVY DUTY ELECTRIC

Equipped with lighting kit, mounting brackets and instructions. Senders must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/16"
OIL	0-80	12V, NG GD	284-AE
	0-100	12V, NG GD	284-L
AIR	10-150	12V, NG GD	284-T
FUEL	0-16	12V, NG GD	284-AM



STAGE 3 ELECTRIC

Includes lighting kit, mounting brackets, wire & terminals and instructions. Sender must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/16"
OIL	5-100	12V, NG GD	283-L

Pressure Senders, Tubing Kits, Adapters

MARINE MECHANICAL

Equipped with lighting kit, mounting brackets, brass case and instructions. Tubing kits must be ordered separately.

Type	Dial Scale	2 1/16"
DRIVE	20-300	82120
OIL	25-400	82121



MARINE ELECTRICAL

Equipped with lighting kit, mounting brackets, brass case and instructions. Senders must be ordered separately.

Type	Dial Scale	2 1/16"
OIL	0-80	82113
	0-100	82116



SENDERS FOR ELECTRIC PRESSURE GAUGES

Dial Scale	Voltage	Part Number
5-80	12V	279-A
	12V	353-Z (Brass)
5-100	12V	279-B
5-150	12V	279-C
0-16	12V	82504

IMPORTANT NOTICE: The senders on this page are for use with gauges manufactured by Stewart-Warner. They are not for use with gauges made by any other company.

Stewart-Warner manufactured instruments will provide system accuracy only when used with Stewart-Warner Senders. Do not use Stewart-Warner Instruments with senders of other than Stewart-Warner origin as accuracy will be adversely affected.

PRESSURE SENSITIVE LABELS

Allow you to change the nomenclature of pressure gauges. For use on Heavy Duty and Deluxe models. Cover gauge with appropriate sticker for the application required. Each kit consists of four labels.

MODEL 823705

For 2 5/8" Pressure Gauges. Labels included: Water P.S.I., Oil P.S.I., Trans. P.S.I., Fuel P.S.I.

MODEL 823708

For 2 1/16" Pressure Gauges. Labels included: Water P.S.I., Oil P.S.I., Trans. P.S.I., Fuel P.S.I.

MODEL 824587

For 2 1/16" Pressure Gauges. Labels included: Oil P.S.I., Fuel P.S.I., Clutch P.S.I., Torque Converter P.S.I.

TUBING KITS FOR MECHANICAL PRESSURE GAUGES

No. 82553 (formerly 366-FF)—For installing mechanical oil pressure and vacuum gauges with 1/8" p.t. connection

Contents of Kit

- A. Coupling with 1/8" Int. P.T.
- B. Six feet 1/8" nylon tubing
- C. Coupling with 1/8" Ext. P.T.
- D. Adapter for 1/8" P.T. oil gallery
- E. Instruction sheet

No. 366-HM—Same as No. 82553 above, except with 16' of tubing for rear engine cars.

METRIC PRESSURE ADAPTER NUT—82555

For use with Piping Kits 82553 (formerly 366-FF) or 366-HM or Electric (12V) Pressure Sender Series 279 listed on this page.

Kit includes: Adapter nuts to convert threads on domestic kits or sender to M10 x 1K threads.

Used on Alpha Romeo, Audi, BMW, Porsche, Volkswagen and other cars using 10M x 1K threads

METRIC PRESSURE ADAPTER KIT—366-ST

For use with Piping Kits 82553 (formerly 366-FF) or 366-HM or Electric (12V) Pressure Sender Series 279 listed on this page.

Kit includes: Adapter nuts to convert threads on domestic kits or sender to M10 x 1K, M12 x 1.5 and M14 x 1.5 threads.

Used on: Alfa Romeo, Audi, BMW Fiat, Mercedes-Benz, Opel, Peugeot, Porsche, Renault, Volkswagen, Volvo and all others using M10 x 1K, M12 x 1.5 or M14 x 1.5 threads.

JAPANESE PRESSURE ADAPTER KIT—82561

For use with 82553 tubing kit or electric 12 volt 279 and 353 series pressure senders.

Kit includes adapter nuts to convert threads on standard tubing kits or senders to 1/8"-28 Pt. male threads and also contains a 1/8"-28 Pt. female adapter for use in applications requiring a tee fitting.

Used on: Chevy L.U.V., Datsun, Subaru, Toyota, and all others using 1/8"-28 Pt. threads.

OTHERS

English, German, Ford, Volkswagen Type 4, Porsche 914 and Saab engines have oil pressure and water temperature connections utilizing Dryseal American Standard Taper Pipe Threads (NPTF) the same as Domestic Cars. For these applications, use appropriate Universal Kits to match range, thread size and gauge style.

Temperature Gauges



WORLD WIDE MECHANICAL

Includes lighting kit, mounting brackets, instructions, 1/2" adapter nut and a length of tubing. The number after the base model number equals the length of tubing supplied with the gauge. See next page for adapter nuts.

Type	Dial Scale	2 1/4"
WATER	100-265	82703-72"

DELUXE MECHANICAL

Includes lighting kit, mounting brackets, instructions, 1/2" adapter nut and a length of tubing. The number after the base model number equals the length of tubing supplied with gauge. See next page for adapter nuts.

Type	Dial Scale	Case Dia.	Gauge Nos.
WATER	100-265	2 1/4"	82326-48", -60", -72", -96", -120", -144", -218", -288", -360"
	100-265	2 3/8"	82409-60", -72", or -144"
OIL	140-325	2 1/4"	82327-60", -72", -96", -144" or -216"
	140-325	2 3/8"	82410-60" or -72"

HEAVY DUTY MECHANICAL

Includes lighting kit, mounting brackets, instructions, 1/2" adapter nut and a length of tubing. The number after the base model number equals the length of tubing supplied with the gauge. See next page for adapter nuts.

Type	Dial Scale	Case Dia.	Gauge Nos.
WATER	100-265	2 1/4"	284-B-36", -72" or -144"
OIL	140-325	2 1/4"	284-C-36", -72" or -144"

STAGE 3 MECHANICAL

Includes lighting kit, mounting brackets, instructions, 1/2" adapter nut and 72" of tubing. See next page for adapter nuts.

Type	Dial Scale	2 1/4" Gauge
WATER	100-280	283-B-72
OIL	140-325	283-C-72

STANDARD MECHANICAL

Includes mounting brackets, instructions, 1/2" adapter nut and a length of tubing. The number after the base model number equals the length of tubing supplied with gauge. See next page for adapter nut.

WORLD WIDE ELECTRICAL

Includes lighting kit, mounting brackets and instructions. Senders must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/4"
WATER	100-280	12V, NG GD	82702
	100-280	12V, POS GD	82722
OIL	150-350	12V, NG GD	82708
	150-350	12V, POS GD	82723
TRANS OIL	150-350	12V, NG GD	82707
HYD. OIL	100-220	12V, NG GD	82706
CONV. OIL	150-350	12V, NG GD	82716

DELUXE ELECTRIC

Includes lighting kit, mounting brackets and instructions. Senders must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/4"
WATER	100-240	12V, NG GD	82306
	100-230	12V, NG GD	82114Ⓞ
	100-280	12V, NG GD	82307
OIL	100-280	12V, NG GD	82115Ⓞ
	140-320	12V, NG GD	82308
PYROMETER	300-1500	12V, NG GD	82335

Ⓞ Brass Case

HEAVY DUTY ELECTRIC

Includes lighting kit, mounting brackets and instructions. Sender must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/4"
WATER	100-230	12V, NG GD	284-AF
	100-280	12V, NG GD	284-J
OIL	140-320	12V, NG GD	284-K
PYROMETER	300-1500	12V, NG GD	82334

STAGE 3 ELECTRIC

Includes lighting kit, mounting brackets, wire & terminals and instructions. Senders must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/4"
WATER	100-280	12V, NG GD	283-J
OIL	140-320	12V, NG GD	283-K

MARINE ELECTRIC

Includes lighting kit, mounting brackets and instructions. Senders must be ordered separately, see next page.

Type	Dial Scale	Voltage	2 1/4"
WATER	100-230	12V, NG GD	82114
OIL	100-280	12V, NG GD	82115



Type	Dial Scale	Gauge
TEMP.	100-250	82210Ⓞ -36", -48", -60", -72" or -144"
TEMP.	100-250	366-C-48" --Includes radiator hose connection & fitting

Ⓞ Cannot be lighted


TEMPERATURE SENDERS, ADAPTERS



ELECTRIC TEMPERATURE SENDERS SELECTION CHART

Gauge Number	Style	Range—Type	Unk. (1/4, 1/2, 3/4 or 1/2 PT)	1/4 PT	1/2 PT	3/4 PT	1/2 PT	Drain Plug 1/2-20	Univ. Metric
283-J	Stg 3	100-280 Water	280-ED	334-H	334-AA	334-AB	334-AD	—	82510
283-K	Stg 3	140-320 Oil	280-EE	—	—	—	—	280-EH	—
284-J	HD	100-280 Water	280-ED	334-H	334-AA	334-AB	334-AD	—	82510
284-K	HD	140-320 Oil	280-EE	—	—	—	—	280-EH	—
284-AF	HD	100-230 Water	280-EC	—	334-N	334-P	334-R	—	—
284-AK	HD	100-320 Cyl Hd	280-EK	—	—	—	—	—	—
311 Series	Truck	100-325 Oil	280-EB	—	—	—	362-DA	—	—
311 Series	Truck	100-240 Water	280-EA	362-CZ	362-AN	362-AJ	362-AH	—	—
82114	Deluxe	100-230 Water	280-EA	362-CZ	362-AN	362-AJ	362-AH	—	—
82115	Deluxe	100-280 Oil	280-ED	334-H	334-AA	334-AB	334-AD	82508	82510
82205	Sensor	100-280 Water	280-EA	362-CZ	362-AN	362-AJ	362-AH	—	—
82308	Deluxe	100-240 Water	280-EA	362-CZ	362-AN	362-AJ	362-AH	—	—
82307	Deluxe	100-280 Water	280-ED	334-H	334-AA	334-AB	334-AD	—	82510
82308	Deluxe	140-320 Oil	280-EE	—	—	—	—	280-EH	—
82702	WW	100-280 Water	280-ED	334-H	334-AA	334-AB	334-AD	—	82510
82706	WW	150-350 Oil	280-EE	—	—	—	—	280-EH	—
82707	WW	150-350 Trans.	280-EE	—	—	—	—	280-EH	—
82708	WW	100-220 Hyd. Oil	280-EC	—	334-N	334-P	334-R	—	—
82715	WW	150-350 Conv. Oil	280-EE	—	—	—	—	280-EH	—
82722	WW	100-280 Water	280-ED	334-H	334-AA	334-AB	334-AD	—	82510
82723	WW	150-350 Oil	280-EE	—	—	—	—	280-EH	—

TEMPERATURE GAUGE SENDER ADAPTER NUTS FOR MECHANICAL GAUGES

	Outside Thread	Min. I.D.	Part Number
	1/4" P.T. Ⓢ	.3860"	428819 (Steel) Ⓢ
	3/8" P.T.	.4375"	408550 (Brass)
	1/2" P.T.	.4975"	72446 (Steel) Ⓢ
	5/8" P.T.	.5575"	90567 (Brass) Ⓢ
	1" P.T.	.6175"	412208 (Brass) Ⓢ
	1 1/8" -18	.6775"	95527 (Brass) Ⓢ

Ⓢ For tubing less than 120" in length.
Ⓢ The above nuts are found in 386-NK Kit

IMPORTED CAR ADAPTERS— Metric Electric Sender Kit—82510

For use in conjunction with 284-J (HD) or 283-J (Stage 3) 100°-280°F. Water Temperature Gauges.

Kit includes: 12 volt electric sender with 10 MM threads and adapters for 14MM, 16MM and 18MM threads.

Used on: Alfa-Romeo, Audi, BMW, Datsun, Dodge Colt, Fiat, Mazda, Mercedes-Benz, Opel, Peugeot, Renault, Toyota, Volkswagen, Volvo and all others using 10mm, 14mm, 16mm or 18mm threads and 100°-280°F. range.

OTHERS

English, German Ford, Volkswagen Type 4, Porsche 914 and Saab engines have oil pressure and water temperature connections utilizing Dryseal American Standard Taper Pipe Threads (NPTF) the same as Domestic Cars. For these applications, use appropriate Universal Kits to match range, thread size and gauge style



THERMOCOUPLE FOR PYROMETERS— MODEL 82505

To be used with either model. 1/4" N.P.T.F. connection with 2 1/2" probe tip projection is non-adjustable. Probe wire measures 17" in length. For longer lengths choose from:

82556-1 82556-2 82556-3
5' Extension Wire 10' Extension Wire 20' Extension Wire

PRESSURE SENSITIVE LABELS

Allow you to change the nomenclature of temperature gauges. For use on Heavy Duty and Deluxe models. Cover gauge with appropriate sticker for the application required. Each kit consists of four labels.

MODEL 823706

For 2 3/8" Temperature Gauges. Labels included: Water °F, Oil °F, Trans. °F, Axle °F.

MODEL 823707

For 2 1/16" Temperature Gauges. Labels included: Water °F, Oil °F, Trans. °F, Axle °F.

IMPORTANT NOTE:

The senders in this catalog are for use with gauges manufactured by Stewart-Warner. They are not for use with gauges made by any other company.

Stewart-Warner manufactured instruments will provide system accuracy only when used with Stewart-Warner Senders. Do not use Stewart-Warner Instruments with senders of other than Stewart-Warner origin as accuracy will be adversely affected.

Vacuum Gauges



WORLD WIDE MECHANICAL

Includes lighting kit, mounting brackets and instructions. Measures vacuum in inches of mercury. Tubing kits must be ordered separately. Adapter tee 826956 can be used to splice into vacuum hose—order separately.

Dial Scale	2 1/16"
0-30	82718



MARINE MECHANICAL

Includes lighting kit, mounting brackets and instructions. Measures vacuum in inches of mercury. Tubing kit must be ordered separately, see below. Adapter tee 826956 can be used to splice into vacuum hose—order separately.

Dial Scale	2 1/16"
2-30	82117



DELUXE MECHANICAL

Includes lighting kit, mounting brackets and instructions. Measures vacuum in inches of mercury. Tubing kit must be ordered separately, see below. Adapter tee 826956 can be used to splice into vacuum hose—order separately.

Dial Scale	2 1/16"	2 3/16"
2-30	82328 82117Ⓞ	82411

Ⓞ Brass Case



MOTOR MINDER Model 82300

An accurate and reliable vacuum gauge which helps drivers maximize fuel economy. Color segmented dial tells driver when he is wasting gas and also tells him when he is maximizing fuel economy. Includes 2 1/16" diameter gauge with black bezel, installation kit, light kit and instructions.

NOTE: Also see our other motor minders, Model 82460 and 82301 on page 25.



HEAVY DUTY MECHANICAL

Includes lighting kit, mounting brackets and instructions. Measures vacuum in inches of mercury. Tubing kit must be ordered separately, see below. Adapter tee 826956 can be used to splice into vacuum hose—order separately.

Dial Scale	2 1/16"
2-30	284-AH

TUBING KITS FOR VACUUM GAUGES

No. 82553 (formerly 366-FF)—For installing mechanical vacuum and oil pressure gauges with 1/8" p.t. connection.

Contents of Kit:

- Coupling with 1/8" Int. P.T.
- Six feet 1/8" nylon tubing
- Coupling with 1/8" Ext. P.T.
- Adapter for 1/2" P.T. oil gallery
- Instruction sheet

No. 366-HM—Same as No. 82553, except with 16' of tubing for rear engine cars.

NOTE: Adapter Tee No. 826956 can be used to splice into vacuum hose—order separately

RUBBER TUBING KIT FOR VACUUM GAUGES

No. 82562—For installation of any Stewart-Warner vacuum gauge or motor minder in most applications.

Contents of Kit:

- 6 ft. of rubber vacuum tubing
- "T" fitting connector
- Gauge vacuum hose fitting



STAGE 3 MECHANICAL

Includes light kit, mounting brackets, instructions and 72" of tubing with fittings. Adapter tee 826956 can be used to splice into vacuum hose—order separately.

Dial Scale	2 1/16" Gauge
2-30	283-F

Fuel Level Gauges



WORLD WIDE ELECTRIC

Includes lighting kit, mounting brackets and instructions. Senders must be ordered separately, see below.

Voltage	2 1/16"
12V, NG GD	82712
12V, POS GD	82724



DELUXE ELECTRIC

Includes lighting kit, mounting brackets and instructions. Senders must be ordered separately, see below.

Voltage	2 1/16"	2 1/8"
12V, NG GD	—	82413 (816-B)
12V, NG GD	82303 82111 ⊕	—

⊕ Brass case.



HEAVY DUTY ELECTRIC

Includes lighting kit, mounting brackets and instructions. Order senders separately, see below.

Voltage	2 1/16" Gauge
12V, NG GD	284-M



STAGE 3 ELECTRIC

Includes lighting kit, mounting brackets, instructions and wire & terminals. Senders must be ordered separately, see below.

Voltage	2 1/16" Gauge
12V, NG GD	283-M



STANDARD ELECTRIC

Includes mounting brackets and instructions. Sender must be ordered separately, see below.

Voltage	2 1/16" Gauge
12V	82211 ⊕

⊕ Cannot be lighted.

SENDERS FOR FUEL LEVEL GAUGES

Choosing Fuel Level Senders

The holes in the tank unit bracket plate are not evenly spaced. The distance between two of the holes is greater than between any other two. When viewing the bracket plate, with the widely separated holes nearest you, the float arm will swing left if it is a left hand tank unit or right if it is a right hand tank unit. If there is more room in the tank to the left of the tank unit mounting location, use a tank unit that swings to the left and vice versa.



For 10"-24"
Depth

Description	12-Volt
6"-12" depth; LH arm	385-B
6"-12" depth; RH arm	385-C
10"-15" depth; LH arm	391-A
10"-15" depth; RH arm	391-B
15 1/2"-24" depth; LH arm	391-C
15 1/2"-24" depth; RH arm	391-D

Replacement Floats:

411290 Brass (for 391 Series)
427410 Plastic (for 385 Series)



For 6"-12" Depth

NOTE: Order Fuel Level Sender (Tank Unit) Installation Kit No. 366-LP separately, if needed. Kit contains:

- 1—No. 93310 Flange
- 5—No. 79295 Screws
- 1—No. 72030 Gasket
- 5—No. 61463 Washer

IMPORTANT NOTE:

The senders on this page are for use with gauges manufactured by Stewart-Warner. They are not for use with gauges made by any other company.

Stewart-Warner Manufactured Instruments will provide system accuracy only when used with Stewart-Warner Senders. Do not use Stewart-Warner Instruments with senders of other than Stewart-Warner origin as accuracy will be adversely affected.

Ammeters and Voltmeters



WORLD WIDE AMMETERS

Includes lighting kit, mounting brackets and instructions.

Dial Scale	2 1/16"
30-0-30	82713
60-0-60	82700
100-0-100	82701



STANDARD AMMETERS

Includes mounting bracket and instructions. Light kit must be ordered separately.

Dial Scale	Gauge
20-0-20	82201Ⓞ
30-0-30	82200Ⓞ
60-0-60	82202Ⓞ

Ⓞ Cannot be lighted

DELUXE AMMETERS

Includes lighting kit, mounting brackets and instructions.

Dial Scale	2 1/16" Steel	2 1/8" Steel
30-0-30	82310	—
60-0-60	82311	82404
100-0-100	82313	—



WORLD WIDE VOLTMETERS

Includes lighting kit, mounting bracket and instructions.

Dial Scale	Voltage	2 1/16"
10-16	12V, NG or POS GD	82709
20-32	24V, NG GD	82716

HEAVY DUTY AMMETERS

Includes lighting kit, mounting brackets and instructions.

60-0-60	284-A 284-ABⓄ
100-0-100	284-AAⓄ
150-0-150	284-ADⓄ

Ⓞ Requires Remote Shunt 813489—please order separately
 Ⓞ Requires Remote Shunt 407818—please order separately
 Ⓞ Requires Remote Shunt 413717—please order separately



DELUXE VOLTMETERS

Includes lighting kit, mounting bracket and instructions.

Dial Scale	Voltage	2 1/16"
10-16	12V, NG or POS GD	82309
	12V, NG or POS GD	82112Ⓞ

Ⓞ Brass case

STAGE 3 AMMETERS

Includes lighting kit, mounting brackets and instructions.

Dial Scale	2 1/16" Gauge
60-0-60	283-A



HEAVY DUTY VOLTMETERS

Includes lighting kit, mounting brackets and instructions. Meters Volts D.C.

Dial Scale	Voltage	2 1/16"
10-16	12V, NG or POS GD	284-H
20-32	24V, NG GD	284-AJ

MARINE AMMETERS

Includes lighting kit, mounting brackets, brass case and instructions.

Dial Scale	2 1/16"
60-0-60	82108
60-0-60	82109Ⓞ
100-0-100	82110Ⓞ

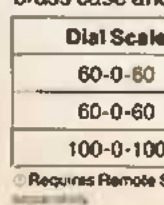
Ⓞ Requires Remote Shunt 813489—please order separately
 Ⓞ Requires Remote Shunt 407818—please order separately



STAGE 3 VOLTMETER

Includes lighting kit, mounting brackets, instructions and wire & terminals.

Dial Scale	Voltage	2 1/16"
10-16	12V, NG GD	283-H



MARINE VOLTMETER

Includes lighting kit, mounting bracket, brass case and instructions.

Dial Scale	Voltage	2 1/16"
10-16	12V, NG or POS GD	82112



MOTOR MINDER

Features an Accustat center gear Bourdon tube mechanism for monitoring vacuum, which can be used to check the mechanical condition of the engine and to obtain maximum fuel economy. Features a color segmented 270° pointer sweep for easy readability and Transoptic lighting for excellent night time illumination. Kit contains everything for easy installation.



Model 82460

Gauge is self-contained in a one-piece housing. Kit includes gauge vacuum tubing and "T" fitting connector.

Model 82301

Includes a 2 1/16" diameter panel mount gauge with black bezel, vacuum tubing and "T" fitting connector.



TURBO GAUGE

Features an Accustat® center gear Bourdon tube mechanism for monitoring both turbo boost pressure and engine vacuum in a single instrument. The gauge provides accurate readings of PSI on right hand orange coded scale and warns of excessive turbo charger boost pressures which may cause damage to the turbo charger and/or engine. Left hand green coded scale provides engine vacuum reading (inches Hg) for securing maximum fuel economy.



Model 82461

Self-contained in a black one-piece housing, with transoptic lighting for excellent night time illumination. Equipped with vacuum tubing and installation hardware.



Model 284-BF

Same as Model 82461, except for it has a 2 1/16" zinc dichromate steel case for panel mounting. Transoptic lighting; light kit included. Tubing kit 82553 must be ordered separately.

PYROMETERS

Both pyrometers feature the Bi-Torque mechanism that assures accurate monitoring of exhaust gas temperatures and efficient operation of any type gasoline or diesel engines. Warns of improper fuel mixture, clogged air filter, etc. Each unit is subjected to 48 hours continuous test for maximum durability, 12 volt negative ground. Internal lighting (12 volt light kit included) 2 1/16" dia. case. Comes complete with mounting hardware.

Deluxe—Model 82335

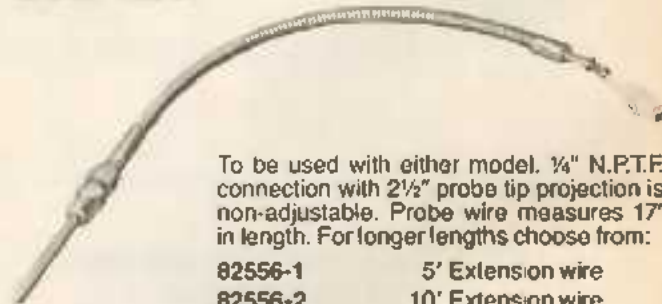
300°-1500°F. Includes 2 1/16" diameter deluxe case, lighting kits, mounting hardware and instructions. For 24v. system, order resistor number 829525-9.



Heavy-Duty—Model 82334

300°-1500°F. Includes 2 1/16" diameter heavy-duty case, lighting kit, mounting hardware and instructions. For 24v. system, order resistor number 829525-8.

THERMOCOUPLE Model 82505



To be used with either model. 1/4" N.P.T.F. connection with 2 1/2" probe tip projection is non-adjustable. Probe wire measures 17" in length. For longer lengths choose from:

- | | |
|---------|--------------------|
| 82556-1 | 5' Extension wire |
| 82556-2 | 10' Extension wire |
| 82556-3 | 20' Extension wire |

Special Gauges



PRESSURE/TEMPERATURE MODEL 82336-96"

Heavy Duty gauge with 2 1/8" diameter case. 0-150 lbs. pressure scale and 110°-260° temperature range. Mounting bracket, 96" of temperature tubing with 1/2" adapter nut, and instructions included. Light kit included, pressure tubing kit must be ordered separately.



PRESSURE/VACUUM Model 284-F

40 psi, 0-30" Hg, internal lighting, mounting clamp. 2 1/8" dia.



CLOCK MODEL 284-AL

12 v. DC Clock. Light kit included. 2 1/8" dia



CYLINDER HEAD TEMP. Model 284-AK

100°-600°. Internal lighting, mounting clamp. 2 1/8" dia. Requires Sender 280-EK. (For use only with 14mm spark plug)



DUAL AIR PRESSURE

These mechanical gauges are equipped with center gear Bourdon type mechanisms (1/8" NPTF). For use with positive or negative ground systems. 2 1/8" diameter, dustproof, steel cases with chimney lighting.

Dial Scale	Part No.
0-150/0-150 lbs. air	82331 (Heavy duty style)
0-150/0-150 lbs. air	82332 (Deluxe style)



7/16"-20 Pt. Gauge AIR PRESSURE

This World Wide style mechanical gauge features a Bourdon tube, Accustat mechanism. 2 1/8" diameter steel case with internal lighting (light kit included) and a raised, bright stainless steel bezel. Face dial is black with white and yellow numerals, and a red pointer. 7/16"-20 Pt. connection. Includes mounting brackets and instructions.

Dial Scale	Model Number
10-150	82721



AIR PRESSURE WITH WARNING LIGHT

This heavy-duty mechanical gauge is equipped with a warning light and center-gear Bourdon type mechanism (1/8" NPTF). 2 1/8" diameter dustproof steel case with a non-reflecting satin chrome bezel and chimney lighting. For use with positive or negative ground systems.

Dial Scale	Model Number
5-150	D-368-P



7/16"-20 Pt. Gauge OIL PRESSURE

This World Wide style mechanical gauge features a raised, bright stainless steel bezel with internal lighting (light kit included). It has a Bourdon tube, Accustat mechanism for accurate steady readings. Face dial is black with white and yellow numerals, and a red pointer. 7/16"-20 Pt. connection. Includes mounting brackets and instructions.

Dial Scale	Model Number
5-100 psi	82719

PANELS Mounting Accessories



NORYL® PANELS

High impact Noryl® black plastic. Minimum flat area required for mounting

Module Mounting Kit

Used with Stage 3, Heavy Duty, 2 1/16" Dia. Deluxe gauges. Includes mounting foot 288-A
Module as above less mounting foot 288-F

rotated 360° and modules mounted in any direction 286-A
No. 824425: Replacement brace bracket for two- and three-hole panels.



2 Hole Housing

Used with all gauge lines except Standard/Custom 2 1/32" dia gauges. Gauges can be rotated 360° and modules mounted in any direction. (Stage 1 gauges requires lamp/socket kit 366-SW) .. 287-A



287-A



286-A

3 Hole Housing

Used with all gauge lines except Standard/Custom 2 1/32" and 2 3/8" diameter gauges. Gauges can be

DIE CAST PANELS

Black or Wood Grain

Suede black finish, die-cast panel used with all gauge lines except 2 3/8" diameter gauges. Wood-grain adhesive panel overlay is provided.

1-Hole Panel and Overlay 289-B
2-Hole Panel and Overlay 289-C
3-Hole Panel and Overlay 289-D



289-B

289-C



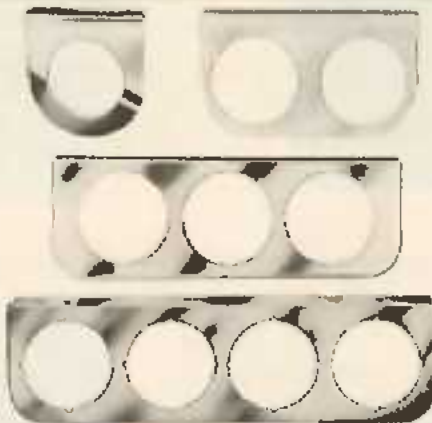
289-D

BRIGHT CHROME & STRIPED CHROME STEEL PANELS

No. of Gauges	Panel Finish	Lighting Bracket	Catalog No.
For 2 1/16" & 2 1/32" Dia. Gauges			
1	bright	no	817825
2	bright	yes	814143
3	bright	yes	811653
4	bright	yes	813878

For 2 3/8" Dia. Gauges

No. of Gauges	Panel Finish	Lighting Bracket	Catalog No.
1	striped	no	811868
2	bright	no	813877
3	bright	no	813842



Cup Mounting Kit

Black crinkle finish, includes Cup, Base, Clamp, Strap and Hardware. For 2 3/8" dia. gauges 366-MP

REPLACEMENT LIGHTING KITS

Gauge Series	Size	Individual Mount		Non-Metallic Panels			Metal Panels	
		Metal Panel	Non-Metallic Panel	286-AⓈ 2 1/32" 2 3/8"	287-A 2 1/32" 2 1/16"	Module 288 A 288 F	289-B, C, D 814143 811653Ⓢ 813878Ⓢ 2 1/32" 2 3/8"	813877 813842 2 3/8"
Stage 1	2 1/32"	366-CH	82550	82551	82551	N/A	366-CH	N/A
Stage 2	2 1/16"	366-FK	368-FK	366-FK	368-FK	368-SYⓈ	366-FK	N/A
Stage 3	2 1/16"	366-SY	368-SY	366-SY	368-SY	368-SYⓈ	366-SY	N/A
Heavy Duty	2 1/16"	368-FK	368-FK	366-FK	366-FK	368-FK	366-FK	N/A
Deluxe								
Amps	2 1/16"	366-FK	368-SX	366-SX	366-SX	368-SX	366-FK	N/A
Other Gauges	2 1/16"	366-FK	366-FK	366-FK	366-FK	366-FKⓈ	366-FK	N/A
Deluxe Racing	2 3/8"	366-FK	368-FK	366-FK	N/A	N/A	N/A	N/A
Sensor	2 1/32"	366-CH	82550	82551	82551	368-CH	366-CH	N/A
World Wide	2 1/16"	366-FK	368-FK	366-FK	366-FK	368-FK	366-FK	N/A

For in-race usage, Kit 368-SZ is recommended instead of 366-FK. Ⓢ 368-FK may be used, however, the light socket will protrude from the rear. Ⓢ Requires one lighting kit for two gauges

Assembled Gauge Panels

MINI-PANELS



MODEL 82459

The Mini-Panel includes a voltmeter, water temperature and oil pressure gauge in a panel that measures 4 1/8" wide by 2" high by 2" deep. For water temperature there is one 1/8" sender and two adapters, 1/2" and 3/8". For oil pressure there is a 1/8" sending unit, 1/4" adapter, 10mm male adapter, 10mm female adapter and a 2 3/4" extension.

Includes everything needed to install the Mini-Panel on AMC, Chrysler, Ford and GM domestic manufactured cars. Metric adapters are available for imports.



MODEL 82470

Mini-Panel II's voltmeter and oil pressure gauge are encased in a panel that measures 4 1/8" wide by 2" deep. For oil pressure there is a 1/8" sending unit, 1/4" adapter, 10mm male adapter, 10mm female adapter, 12mm male adapter, 14mm male adapter, 1/8"-2B Pt. Japanese metric adapter and a 2 3/4" extension.

Includes everything needed to install the Mini-Panel II on AMC, Chrysler, Ford, GM and all import manufactured cars.

3-GAUGE WORLD WIDE PANEL



MODEL 82462

3 Gauge Housing Kit consisting of 100°-280° electric water temp gauge, 10-100 PSI mechanical oil pressure gauge and a 10-16V voltmeter in a 3 hole housing with sockets and lamps. Includes 1/2" and 3/8" adapters for water temperature along with a 1/8" temperature sender. For oil pressure there are 4 adapters 1/8"-27, 1/4"-18, 10MM male, and 10MM female. Along with six feet of nylon pressure tubing and the required hardware for mechanical oil pressure gauge installation. Kit includes all parts for complete mounting.

2-GAUGE WORLD WIDE PANEL



MODEL 82464

2 Gauge Housing Kit consisting of 100°-280° electric water temperature gauge and a 10-100 PSI mechanical oil pressure gauge in a 2 hole housing with sockets and lamps. Includes 1/2" and 3/8" adapters along with a 1/8" water temperature sender. Includes 4 adapters for oil pressure—1/8"-27, 1/4"-18, 10MM male and 10MM female along with six feet of nylon pressure tubing and the required hardware for mechanical oil pressure gauge installation. Kit includes all parts for complete mounting.



MODEL 82463

2 Gauge Housing Kit consisting of 10-100 PSI mechanical oil pressure gauge and a 60-0-60 ammeter in a 2 hole housing with sockets and lamps. Includes 4 adapters for oil pressure—1/8"-27, 1/4"-18, 10MM male, and 10MM female along with six feet of nylon pressure tubing and the required hardware for mechanical oil pressure gauge installation. Kit includes all parts for complete mounting.

**WORLD WIDE
 SINGLE-GAUGE
 PANELS**

82465



MODEL 82465

Single Gauge Housing Kit consisting of 60-0-60 ammeter in a single hole die cast housing with socket and lamp. Kit includes all parts for complete mounting.

82466



MODEL 82466

Single Gauge Housing Kit consisting of a 10-16v voltmeter in a single hole die cast housing with socket and lamp. Kit includes all parts for complete mounting.

82467



MODEL 82467

Single Gauge Housing Kit consisting of a 100°-280° electric water temperature gauge in a single hole die cast housing with socket and lamp. Includes 1/2" and 3/8" adapter along with 1/8" water temperature sender. Kit includes all parts for complete mounting.

82468



MODEL 82468

Single Gauge Housing Kit consisting of a 10-100 PSI mechanical oil pressure gauge in a single hole die cast housing with socket and lamp. Includes 4 adapters for oil pressure 1/8"-27, 1/4"-18, 10MM male and 10MM female along with six feet of nylon pressure tubing and the required hardware for mechanical oil pressure gauge installation. Kits include all parts for complete mounting.

82469



MODEL 82469

Single Gauge Housing Kit consisting of a 2-30" Hg mechanical vacuum gauge in a single hole die cast housing with socket and lamp. Includes T fitting and six feet of rubber tubing. Kit includes all parts for complete mounting.

Gauge Sender Application Chart

Engine Mfg	Engine	Normal Oil PSI @ 2000	Oil Sender/Adapter			Temp. Sender/Adapter			Drain Plug	
			0-80 (12V)	0-180 (12V)	Mechanical	100-280 (12V)	140-320 (12V)	Mechanical	140-320 (12V)	100-280 (12V)
DOMESTIC 1967-1982										
AMC	All	46	279-A	279-B	82553	280-ED	280-EE	N/A	280-EH	82508
	Exc. 121-4	28	82555 & 279-A	82555 & 279-B	82555 & 82553	82510	N/A	N/A	—	—
	Exc. 151-4		See Pontiac Div. General Motors							
Chrysler	105-4	60-90	N/A	82555 & 279-B	82555 & 82553	280-ED	280-EE	N/A	N/A	82510
	135-4	50	279-A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
	150-4	56	279-A	279-B	82553	280-ED	280-EE	72446	N/A	82510
	225-8 318-8 360-8	35-65	279-A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
	400-8 440-8	30-80	N/A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
Ford	96-4	40	279-A	279-B	82553	280-ED	280-EE	72446	N/A	82510
	140-4	40-60	279-A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
	171-8	40-80	279-A	279-B	82553	280-ED	280-EE	72446	—	82510
	200-8	30-50	279-A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
	238-8	—	279-A	279-B	82553	280-ED	280-EE	72446	—	82510
	250-8 265-8 302-8	40-80	279-A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
	351-8 400-8	40-75	279-A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
	460-8	35-65	279-A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
Buick Div.	196-8 231-8 252-8 350-8	37 @ 2400	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
Cadillac Div.	250-8 368-8 425-8	35	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
Chevy Div.	1.4L-4 97.6-4	34-36	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
	97.8-4 (78-82)	55	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
	111-4-D	—	82654 & 279-A	82554 & 279-B	82554 & 82553	280-ED	280-EE	72446	—	82510
	112-4	—	279-A	279-B	82553	280-ED	280-EE	72446	280-EH	82508
	140-4	27-41	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
	173-8	30-45	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
	229-8 250-8 267-8 305-8 390-8 400-8	40-45	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
Olds Div.	260-8 263-8	40	279-A	279-B	82553	280-ED	280-EE	Not Req. 72446	280-EH 280-EH	82508 82508
	307-8 350-8 350-8-D 403-8	40 40 37 @ 1500 40	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
Pontiac Div.	151-4 265-8 301-8 400-8	36 @ 2400 40 37-40 @ 2600 55-60 @ 2800	279-A	279-B	82553	280-ED	280-EE	Not Req.	280-EH	82508
IMPORTS 1975-1982										
Chevy Luv	1800 cc	—	82554 & 279-A	82554 & 279-B	82554 & 82553	82510	—	N/A	N/A	N/A
Datsun	All	—	82554 & 279-A	82554 & 279-B	82554 & 82553	82610	—	N/A	N/A	N/A
Fiat	All	—	368-ST & 279-A	368-ST & 279-B	368-ST & 82553	82510	—	N/A	N/A	N/A
Ford Courier	1800 cc	—	82554 & 279-A	82554 & 279-B	82554 & 82553	82610	—	N/A	N/A	N/A
Ford Fiesta	1800 cc	—	279-A	279-B	82553	N/A	N/A	N/A	N/A	N/A
Honda	All	—	82654 & 279-A	82554 & 279-B	82554 & 82553	82510	—	N/A	N/A	N/A
Mazda	All Except RX-7	—	82554 & 279-A	82554 & 279-B	82554 & 82553	280-ED	—	72446	N/A	82510
Subaru	All	—	82554 & 279-A	82554 & 279-B	82554 & 82553	82510	—	N/A	N/A	N/A
Toyota	All	—	82554 & 279-A	82554 & 279-B	82554 & 82553	82510	—	N/A	N/A	82510
Volvo	4 cyl.	—	N/A	82554 & 279-B	82555 & 82553	N/A	N/A	N/A	N/A	N/A
	6 cyl.	—	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VW	All	—	N/A	82555 & 279-B	82555 & 82553	82510	—	N/A	N/A	82510
Mitsubishi	All	—	82554 & 279-A	82554 & 279-B	82554 & 82553	82510	—	N/A	N/A	82510

PRESSURE SENDERS CROSS REFERENCE
 For Replacement of Stewart-Warner O.E.M.

O.E.M. No.	S-W No.	O.E.M. No.	S-W No.
353-D	353-K	353-AW	279-A
353-R	279-A	353-BE	279-B
353-S	279-B	353-BY	279-A
353-AG	353-K	353-CE	279-C

RESISTORS FOR SPECIAL VOLTAGES

Description	To adapt 12V gauge for use with 24VDC power source.	To adapt 12V gauge for use with 32VDC power source.
For 12V Gauge with Bi-Torque mechanisms (including Stg 3, HD and 82000 series Deluxe).	829525-2	829525-8
For 12V Gauge in 281, 301, 306 or 311 Series (including Stg 1 and Truck).	829525-6	829525-3
For Pyrometers 82334 and 82335	829525-9	—

TEMPERATURE SWITCHES
 For warning lights—Series 363

Temp	Thread ¼"	⅜"	½"
200°	363-D	363-E	363-F
225°	363-AM	—	363-G
250°	—	—	363-W

PRESSURE SWITCHES
 For Warning Lights Series 364

	6 LB.	15 LB.
¼"	364-L	364-K
½"	364-M	—

AUDIO-VISUAL ENGINE WARNING SYSTEMS

High intensity cold cathode diode light and buzzer warn you of impending high engine water temperature and/or low oil pressure. This unit sounds and lights each time the engine is started until oil pressure builds up, and at any time water temperature is excessive. Shock and vibration resistant. Mounts in panel to ½" thick.

Complete Kit 366-TJ includes 364-L oil pressure sender switch, 363-F water temperature sender switch, 825104 warning device, nameplate and four ¼" speed grip electrical connectors.

Warning Device only, 825104 for use separately with any switch to detect low pressure, low fluid, brake failure, etc. Can react to multiple or individual switches. Also order extra warning device when oil pressure and water temperature warnings are desired to be separately signalled.

SIGNAL LIGHT

For use with any Pressure or Temperature Switch No. 420125 for 12-volt systems.


TEMPERATURE SENDER CROSS REFERENCE
 For Replacement of Stewart-Warner O.E.M.

O.E.M. No.	S-W No.	O.E.M. No.	S-W No.	O.E.M. No.	S-W No.
334-F	280-EC	362-X	362-AH	362-DD	362-AN
334-J	280-EE	362-AA	362-DA	362-DK	362-AH
334-S	280-EE	362-AE	362-AJ	362-DL	362-AJ
334-T	280-EH	362-AK	362-AJ	362-DX	362-BD
334-W	280-EC	362-AL	362-DA	362-EH	362-DA
334-Z	280-ED	362-AU	362-AH	362-EJ	280-EB
334-AE	280-ED	362-BE	362-DA	362-ER	280-EA
334-AH	334-R	362-BL	362-AN	362-ES	280-EA
334-AM	334-L	362-BX	362-AH	362-ET	280-EB
334-AR	280-ED	362-CT	362-AH	362-FB	280-EB
362-P	362-AH	362-CW	362-CZ	362-FH	280-ED

CROSS REFERENCE FOR REPLACEMENT OF STEWART-WARNER O.E.M.

O.E.M. No.	S-W No.	O.E.M. No.	S-W No.
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Temperature Switches

363-H	363-F	363-AP	363-F
363-J	363-F	438031	363-E
363-N	363-E	438054	363-F
363-P	363-F	438070	363-F
363-T	363-F	438086	363-E
363-AL	363-D	—	—

Pressure Switches

364-H	364-L	364-AR	364-K
364-N	364-L	364-AM	364-K
364-P	364-L	—	—
364-X	364-L	364-AN	364-L
364-Y	364-K	364-AR	364-L
364-AA	364-M	—	—



Safety and $\frac{7}{16}$ "-20 Pt Gauges

Safety Gauges

ENGINE SAFETY PANEL, Model 524-DF



524-DF

The Stewart-Warner Safety Panel provides automatic operation for the continuous protection of unattended or remotely controlled internal combustion engines. You can preset it so if the pressure drops too low or the temperature goes too high, it shuts the system down.

It can be exposed to rain or snow and is built to withstand vibration and changes in ambient temperature for long, dependable operation.

Equipped with a 82200 ammeter, 444701 pressure gauge, 442412 water temperature gauge and a 366-SP stop switch and re-set button.

Replacement Gauges and Switch



82200



444701

82200 Ammeter (30-0-30). Silicone-damped pointer. Terneplate case, $2\frac{1}{32}$ " dia. Bright stainless steel bezel.

444701 Safety Pressure Gauges. (0-100 lbs.) Terneplate case, $2\frac{1}{32}$ " diameter. Bright stainless steel bezel, $\frac{1}{8}$ " P.t. connection.



442412



366-SP

442412 Safety Water Temperature Gauge has 48" tubing and $\frac{1}{2}$ " P.T. connection, 72" and 144" tubing also available. $2\frac{1}{32}$ " dia. case with bright stainless steel bezel.

366-SP Stop Switch and Re-Set.



82681

RECORDING BITUMETER— Model 82681

For accurate, economical road resurfacing and oiling. Measures vehicle speed in FEET per minute. Enables operator to coordinate vehicle speed with flow of oil or bitumen to get exact coverage required. Face dial is black, 4" dia., with white numerals and adjustable, static orange pointer. Installation requires Fifth Wheel Drive. Right Angle shaft connection with $\frac{9}{16}$ "-18 external thread with .105" square hole. Drive consists of the following:

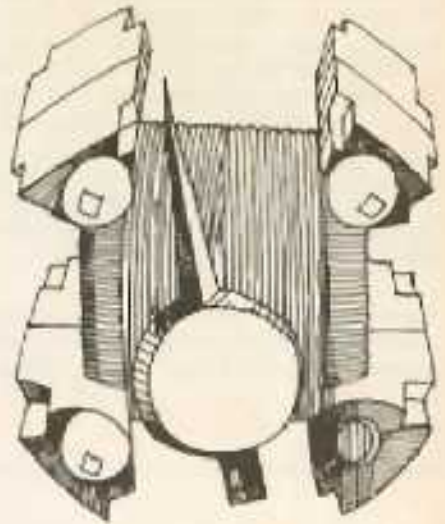
1-Fifth Wheel Drive Assembly with 16" dia. wheel (Purchase from E. D. Etnyre, Oregon, Illinois)

1-No. 660-A1 Drive Joint. Use 4.125 ratio for Recording Bitumeter.

an explanation:

For electrical gauges, the Bi-Torque® mechanism is probably the most accurate, most rugged meter movement available. This advanced design provides the durability and accuracy that are to be expected from a precision monitoring instrument. It reflects the highest state-of-the-art employed in activating the tachometers and pyrometers presented in this catalog.

The Bi-Torque® mechanism uses a permanent magnet that turns within a stationary coil *instead* of a coil-wound armature that turns with a stationary magnetic field. The design develops a Bi-Torque® force in both directions by means of three coil windings for activating the pointer. Two of these windings act together to create one directional torque and the third winding creates a second opposite torque. These dual forces provide a useable pointer sweep ranging from 90° to 280°—quite large compared with less sophisticated instruments. The fact that the pointer comes to rest in a random position is of no consequence other than identifying the presence of an electric Bi-Torque® mechanism.



Mini-Tach



MODEL 82628, 0-8000 RPM, 2½" Diameter

Small enough (3½" high) to mount on the dash without obstructing driver's view. Easy-to-read face dial with adjustable shift indicator.

Rugged Bi-Torque mechanism is combined with solid-state circuitry to assure utmost durability. Operates on 4, 5, 6, 8 cylinder engines with OEM conventional and electronic ignition systems. 12 volt negative ground.

Complete instructions included for easy installation. Complete kit includes tachometer, exclusive power module, wires, connectors and terminal ends, and mounting hardware.

TACHS

Electric Tachometers

dash or column mounted

MODEL 82638, 0-9000 RPM, 3¼" Diameter

Rugged Bi-Torque mechanism provides utmost accuracy and instant needle response—rising and falling as fast as the engine's RPM. Movable red line to indicate favorable torque and monitoring over- and under-revving. Transoptic lighting for excellent night time illumination. Each unit is subjected to 48 hour continuous test.

Wide 280° needle sweep over expanded scale with big bold numerals and hash marks for easy readability. White pointer and black face dial with white and yellow markings. In addition, it comes in a gleaming chrome case.

Operates on all 4, 6, 8 cylinder vehicles with OEM conventional and electronic ignition systems. 12 Volt negative ground. (NOTE: Pointer comes to rest in random position when not energized).



MODEL 82618, 0-8000 RPM, 3¼" Diameter

State-of-the-art Bi-Torque mechanism provides accuracy and instant needle response. Shock resistant, designed for heavy-duty applications. Each unit is subjected to 48 hours continuous test.

Transoptic lighting illuminates dial and pointer without glare or shadow. Wide 280° needle sweep over expanded scale with big, bold numerals and hash marks for easy reading. Movable red line for monitoring over- and under-revving. Chrome front case, with black back.

Operates on all 4, 6, 8 cylinder vehicles with OEM conventional and electronic ignition systems. 12 Volt negative ground. (NOTE: Pointer comes to rest in random position when not energized).



MODEL 82608, 0-8000 RPM, 3¼" Case Dia.

MODEL 82609, 0-10000 RPM, 3¼" Case Dia.

Sensitive D'Arsonval jeweled meter movements are powered by zener regulated solid-state circuitry. Can be used on 4, 6 or 8 cylinder engines. And they're compatible with all domestic factory-installed electronic ignition systems.

Each tach has a universal hinge and can be mounted in any position since the face dials can be rotated 360°. Internal lighting kits are included that give excellent nighttime visibility.

European face-style has green numerals and markings on a black background. Gauge scales and pointers read across the bottom.



Gasoline. Electric tachometers will operate with all OEM conventional and electronic ignition systems. For information on High-Performance and other special ignition systems contact Stewart-Warner Corporation, Chicago, Illinois 60614.



4 CYLINDER TACH

MODEL 999-K, 0-8000 RPM, 3" Diameter

12V, negative ground. Works on 4 cylinder engines only. 3" diameter. 90° face dial in black suede Nextel housing. Pedestal mount easily adjusts up and down for viewing convenience. Can be mounted on steering column or dashboard. Satin chrome finished Lexan bezel. Face dial background is black. Numerals are white, pointer is orange, accents are yellow.



MODEL 997-A,

STAGE 3

MODEL 997-A 0-9000 RPM, 3" Case Dia.

Stage 3 tachs combine solid state amplified computing circuits with accurate, jeweled D'Arsonval meter movements for quick, steady readings.

Their black face dials have white pointers with white and yellow graduations. They feature adjustable red lines and the exclusive Trans-optic® lighting for maximum nighttime visibility.

These tachs may be used on all 4, 6 or 8 cylinder (12V, negative ground) engines with OEM ignitions as well with most "high performance" ignition systems.

NOTE: The 997-A Tach shown is housed in the optional Stage 3 Tach Housing 289-A which must be ordered separately.

MODEL 997-B Same as above, except 0-7000 RPM.



TACHS

Electric Tachometers *panel mounted*



WORLDWIDE—MODEL 82616

0-6000 RPM, 12 V. negative ground. 3 $\frac{3}{8}$ " diameter. Solid state circuit like stage 3 tach model 997-A. Has 250° sweep with black background, with white and yellow markings. Dial has the international symbol for RPM function. Bezel is raised bright stainless steel.



DELUXE

Model 997-R

0-8000 RPM, 12 V. Negative Ground. 3 $\frac{3}{8}$ " diameter. Solid state circuit like Stage 3 tach Model 997-A. Has 250° sweep with black background and white numerals and pointer.

Model 82150, same as above, except 0-6000 RPM



HEAVY-DUTY

Model 997-J

0-8000 RPM. 12 V Negative Ground. 3 $\frac{3}{8}$ " diameter. Solid state amplified circuit similar to Stage 3 Model 997-A tach. Has black background with white numerals and pointer, and chrome bezel.

Model 997-K, same as above, except 0-6000 RPM

DELUXE—MODEL 535-AH

3 $\frac{3}{8}$ " diameter tach features "built-to-last" internal construction for accurate, steady RPM readings. Static pointer. $\frac{3}{8}$ "-18 connection with .105" sq. hole. 0-9000 RPM. Includes light kit for internal illumination. Use Flexible Shaft 446900-1X-42" or -72".



HEAVY-DUTY—Model 535-AK

3 $\frac{3}{8}$ " diameter tach features "built-to-last" internal construction for accurate, steady RPM readings. $\frac{3}{8}$ "-18 connection with .105" sq. hole. 0-9000 RPM. Includes light kit for internal illumination. Use Flexible Shaft 446900-1X-42" or -72".



ACCESSORIES FOR MECHANICAL TACHS Drive Tips

Drive tips for flexible Shafts 446900-1X or 446900-7X. Stewart-Warner compensating type drive tips snap onto the shaft and are self aligning for maximum reliability.

Size	Distributor	Part No.
104 sq.	Accel, Delco Mallory	818749
.152 tang	Mopar, Mallory	818750
187 tang	Mallory, Vertex	817769

Right Angle Adapters

Attach to connection on back of tachometer to change direction of shaft connection. 1:1 ratio. Drive end: .104" sq. tip. Driven end: .105" sq. hole.

- 407010—Direct Rotation
411335—Reverse Rotation

MECHANICAL 4:1 TACH WITH TELLTALE POINTER 424 TACH



The ultimate match to the high-performance car. A blue-printed tach to match your one-of-a-kind engine. 4 to 1 ratio provides greater efficiency, exacting accuracy. "Telltale" pointer locks in your highest RPM for any run. Pointer is released with push-button on side. The finest, most completely integrated tachometer system available today. The 424 tach is calibrated by the factory at 4:1, and requires use of a .500 ratio drive adapter (not included). Light Kit included.

0-10,000 RPM. Model 424-EX
0-12,000 RPM. Model 424-EY

Drive Adapters For 424 Series Tachometers

Adapter	Distributor	Application
777-F .500	Delco, Mallory Accel	Chevrolet Miscellaneous
669-C .500	Delco, Mallory Accel	Chevrolet Miscellaneous (Dual Drive for use with mechanical rpm limiter)
777-D .500	Mopar, Mallory	Chrysler (Dodge-Plymouth)
669-D .500	Mopar, Mallory	Chrysler (Dodge-Plymouth) (Dual Drive for use with mechanical rpm limiter)
777-X .500	Mallory, Vertex	Miscellaneous
669-X .500	Mallory, Vertex	Miscellaneous (Dual Drive for use with mechanical rpm limiter)

Flexible Shafts For 424 Series Tachometers

446900-7X—18", -42", -72" Order Drive Tip Separately

424 TACH SPECIAL APPLICATIONS

Car	Components Needed	
	Model No.	Description
Ford DOHC Indy engines Offenhauser engines English Ford Cortina and Cosworth Formula engines Engines with Smith engine Adapters BF-1507/02 or BF-1507/00.	424-EX	Tachometer 0-10000 RPM
	424-EY	Tachometer 0-12000 RPM
All rear engine cars	446900-7X	Flexible Shaft (18", 42" or 72")
		Metric adapter kit (special order from Performance, Coordinator, Dept. 637, Stewart-Warner, Chicago—\$4.30)
	778-Z	Right angle adapter, permitting turn of flexible shaft.

Mechanical Diesel Tachs



82683

WORLD WIDE

These panel mount (3 1/4" dia.) mechanical tachometers have 250° dials with raised, bright stainless steel bezels. They include a lighting kit for internal lighting. 1/4"-18 connection with .105" square hole.

82683 (Includes odometer) For use with .5:1 Drive Shaft Ratio 0-4000 RPM.

82684 For use with .5:1 Drive Shaft Ratio 0-4000 RPM.

82685 (Includes odometer) For use with 1:1 Drive Shaft Ratio. 0-4000 RPM.

82686 For use with 1:1 Drive Shaft Ratio. 0-4000 RPM.



551-AKM

DELUXE

These panel mount (3 1/4" dia.) mechanical tachometers have 250° dials with chrome plated brass bezels. They include a lighting kit for internal lighting.

They are used in conjunction with .5:1 drive shaft ratio. They have 1/4"-18 connection with .105" square hole.

551-AKM 0-5000 RPM
(Old number 551-SH)



551-AHK

HEAVY DUTY

These panel mount (3 1/4" dia.) mechanical tachometers have 250° dials and satin black bezels. They include a lighting kit for glare free internal transoptic lighting.

They are used in conjunction with .5:1 drive shaft ratio. They have 1/4"-18 connection with .105" square hole.

551-AHK 0-3500 RPM

551-AHL Includes Odometer 0-3500 RPM

Requires Sender
106-AW

WORLD WIDE—MODEL 82617

These Electric Tachometers have 250° dials. They are panel mount units (3 $\frac{3}{8}$ " Dia.) with Internal lighting (12V lighting kit included). These tachs can be used with any voltage and with positive or negative ground systems.

These tachometers are set at the factory for use with a 1:1 Take Off Ratio. To use these tachs with other take off ratios, a simple adjustment must be made on the tach.

Face dial is black with white and yellow markings, and includes international symbol for RPM's. Bezel is raised bright stainless steel. Senders and drive tips must be ordered separately, see page 40.

Requires Sender
82623

WORLD WIDE—MODEL 82633

Bi-Torque and solid-state mechanism withstand shock and vibration for accuracy and long dependable operation. Wide 280° pointer sweep with bold hash marks and large numerals covering an expanded scale for quick reading. Factory set at $\frac{1}{2}$:1. Fully adjustable for $\frac{1}{2}$:1, 1:1, 1 $\frac{1}{2}$:1, and 2:1 take-off ratios. (Rotation of engine take-off has no effect.) Panel mounted with internal lighting (12 volt light kit included). 12 volt negative ground.

Face dial is black with white and yellow markings, and includes international symbol for RPM's. Completely vented and features a 3 $\frac{3}{8}$ " plastic case, brass studs and raised bright stainless steel bezels that resist corrosion in outdoor use.

Subjected to 48 hours of continuous testing.

DELUXE—MODEL 82157

This electric tachometer has a 250° dial with internal lighting (12 volt light kit included) and a deluxe style chrome bezel. It can be used with any voltage and with positive or negative ground systems. It is set at the factory for use with a 1:1 take-off ratio. To use this tach with other take off ratios, a simple adjustment must be made on the tach.

Sender 106-AW is used in conjunction with this tach and must be ordered separately. Accessory drive tips must also be ordered separately, see page 40.

DELUXE—MODELS 82620, 82622

Choose from two new electric tachs designed for use in all marine, truck, and industrial applications. Both models are completely vented and feature 3 $\frac{3}{8}$ " plastic case, brass studs and stainless steel bezels (type 430) that resist corrosion in outdoor use.

Bi-Torque® and solid state mechanism withstand shock and vibration for accuracy and long dependable operation. Wide 280° pointer sweep with bold hash marks and large numerals covering an expanded scale for quick reading. Factory set at $\frac{1}{2}$:1. Fully adjustable for $\frac{1}{2}$:1, 1:1, 1 $\frac{1}{2}$:1, and 2:1 take-off ratios. (Rotation of engine take-off has no effect.) Panel mounted with internal lighting (12 volt light kit included). 12 volt negative ground.

Hourmeter model 82622 provides a true accurate record of engine operation up to 10,000 hours in one tenth hour increments.

Each unit is subjected to 48 hour continuous test.

82157
Requires Sender
106-AW82620
Requires Sender
82623Model 82622 with hourmeter
Requires Sender 82623

Electrical Diesel Tachs



82619
Requires Sender
82623



Model 82621
with Hourmeter



994C
Requires Sender
106-AW

Heavy-Duty

Models 82619, 82621

Choose from two new electric tachs designed for use in all marine, truck, and industrial applications. Both models are completely vented and feature 3 $\frac{3}{8}$ " plastic case, brass studs and satin black bezels (type 430 stainless steel) that resist corrosion in outdoor use.

Bi-Torque[®] and solid state mechanism withstand shock and vibration for accuracy and long dependable operation. Wide 280° pointer sweep with bold hash marks and large numerals covering an expanded scale for quick reading. Factory set at 1/2:1. Fully adjustable for 1/2:1, 1:1, 1 1/2:1, and 2:1 takeoff ratios. (Rotation of engine take-off has no effect). Panel mounted with internal lighting (12 volt light kit included). 12 volt negative ground.

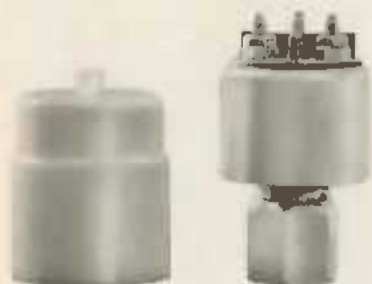
Hourmeter model 82621 provides a true accurate record of engine operation up to 10,000 hours in one tenth hour increments.

Each unit is subjected to 48 hour continuous test.

Model 994-C

This electric tachometer has a 250° dial with internal lighting (12v. light kit included) and a heavy duty style satin black bezel. It can be used with any voltage and with positive or negative ground systems. It is set at the factory for use with a 1:1 take-off ratio. To use this tach with other take-off ratios, a simple adjustment must be made on the tach.

Sender 106-AW is used in conjunction with this tach and must be ordered separately. Accessory drive tips must also be ordered separately. See below.



82623 SENDER KIT

Use for models 82619, 82620, 82621, 82622, and 82633. Includes 187" diameter drive tip. One sender will operate two tachs.

106-AW SENDER KIT

Sender 106-AW connects to the mechanical Take Off to convert the mechanical movement into electrical signals.



Accessory Drive Tips for Sender 106-AW

For Tachometers		For Speedometer 105-H	
Size	Part No.	Size	Part No.
.104"	821870	.104" sq.	821870
.152"	821874	.150" sq.	821871
.187"	821875	.1834" sq.	821872
.203"	821876	.193" sq.	821873
		.152" tang.	821874
		.187" tang.	821875
		.203" tang.	821876








TIPS FOR 82623 SENDER









- #82624— .203" diameter tang
- #82625— .187" diameter tang
- #82626— .152" diameter tang
- #82629— .104" square
- #82630— .150" square
- #82631— .1835" square
- #82632— .193" square

ACCESSORY EXTENSION SLEEVES FOR SENDER 82623

For some GM, Mack and other applications. 2 $\frac{3}{8}$ " long. Requires Sleeve No. 103402 plus appropriate clutch.

Description	Part No.
Sleeve Only	103402
.152" Clutch for GM	814011
.187" Clutch	814012

Mechanical							
Description							
TACHOMETER MODEL	82683	82684	82685	82686	551-AHK	551-AHL	551-AKM
RPM's	0-4000	0-4000	0-4000	0-4000	0-3500	0-3500	0-5000
DIAL SWEEP	250°	250°	250°	250°	250°	250°	250°
FACE DIAL BEZEL	World Wide (Bright Stainless Steel)	World Wide (Bright Stainless Steel)	World Wide (Bright Stainless Steel)	World Wide (Bright Stainless Steel)	Heavy Duty (Stainless Steel)	Heavy Duty (Stainless Steel)	Deluxe (Chrome/Brass)
Used With DRIVE SHAFT RATIO	.5:1	.5:1	1:1	1:1	.5:1	.5:1	.5:1
Includes ODOMETER	Yes	No	Yes	No	No	Yes	No
CONNECTION (Hole)	5/8"-18 (.105" Sq.)	5/8"-18 (.105" Sq.)	5/8"-18 (.105" Sq.)	5/8"-18 (.105" Sq.)	5/8"-18 (.105" Sq.)	5/8"-18 (.105" Sq.)	5/8"-18 (.105" Sq.)

Electric								
Description								
TACHOMETER MODEL	82617	994-C	82157	82619	82620	82621	82622	82633
RPM's	0-3500	0-3500	0-3500	0-3500	0-3500	0-3500	0-3500	0-3500
DIAL SWEEP	250°	250°	250°	280°	280°	280°	280°	280°
FACE DIAL BEZEL	World Wide (Bright Stainless Steel)	Heavy Duty (Stainless Steel)	Deluxe (Chrome/Brass)	Heavy Duty (Stainless Steel)	Deluxe (Bright Stainless Steel)	Heavy Duty (Stainless Steel)	Deluxe (Bright Stainless Steel)	World Wide (Bright Stainless Steel)
Used With TAKE-OFF RATIOS	.5:1 1:1 2:1	.5:1 1:1 2:1	.5:1 1:1 2:1	.5:1 1:1 1.5:1 2:1	.5:1 1:1 1.5:1 2:1	.5:1 1:1 1.5:1 2:1	.5:1 1:1 1.5:1 2:1	.5:1 1:1 1.5:1 2:1
Includes HOURMETER	No	No	No	No	No	Yes	Yes	No
POWER REQUIREMENTS	None	None	None	12 Volt Neg. Grd.	12 Volt Neg. Grd.	12 Volt Neg. Grd.	12 Volt Neg. Grd.	12 Volt Neg. Grd.
Used With SENDER	106-AW	106-AW	106-AW	82623*	82623*	82623*	82623*	82623*
Used with DRIVE TIP Models: (Order Separately)	104" sq. 821870 150" sq. 821871 1834" sq. 821872 193" sq. 821873 152" tang 821874 187" tang 821875 203" tang 821876			203" dia. tang 82624 187" dia. tang 82625* 152" dia. tang 82626 104" sq. 82629			150" sq. 82630 1835" sq. 82631 193" sq. 82632	

* 187" dia. tang. is included with 82623 sender.

Industrial Tachs



82582

HAND HELD PORTABLE TACHOMETER—For Farm or In-Shop Use

Accurate tach is used wherever end of shaft is accessible. Reads from 100 to 4,000 RPM in both clockwise and counter clockwise rotation.

MODEL 82682 TACHOMETER

Includes Cone Tip No. 96798 for shafts with center hole and Cup Tip No. 96799 for shafts with flat or convex ends. (Formerly Model No. 757-WI)

No. 412850 ACCESSORY SHAFT

12" shaft for getting at hard-to-reach points.

412850



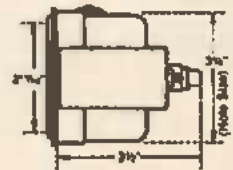
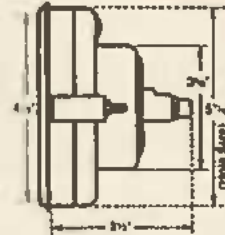
96799



96798

526 & 527 SERIES

Stewart-Warner Model 527 with 4½" face dial and Model 526 with 2½" face dial feature black-enameled steel cases, chrome bezels, silicone-damped pointers with shock-resistant temperature-compensated mechanisms for heavy duty service. These precision instruments are accurate to within ±2% at maximum scale indication. Black and white face dial and pointer. Dial is plain, but a sheet of self-adhesive legends is included. Dials operated in clockwise pattern; for reverse rotation, use drive joint 411335. See chart below for dial range selections. Most units are calibrated 1:1; 1,000 RPM on your machine shaft reads 1,000 RPM on tach. Various installation options are available (see TACHOMETER DRIVES).



527 SERIES—STOCK MODELS (1-50 per order)

Speed Range	Calibration	Figures Printed	Model No.
0-500	1:2	0-100-200 etc.	D-527-A
0-1000	1:1	0-1-2 etc.	D-527-B
0-2500	1:1	0-5-10 etc.	D-527-C

526 SERIES—STOCK MODELS (1-50 per order)

Speed Range	Calibration	Figures Printed	Model No.
0-500	1:2	0-100-200 etc.	D-526-A
0-1000	1:1	0-1-2 etc.	D-526-B
0-1500	1:1	0-3-6 etc.	D-526-C



407010

ACCESSORIES

Face Dial Imprint Sheet

Self-adhesive legends are packed with stock models: standard "RPM" or any of a wide variety of legends, including units per minute, cycles per minute, pieces per min., strokes per min., etc.

Right Angle Drive Joint

Attaches to connection at back of tachometer to change angle of shaft connection or direction of rotation

Model 407010—1:1 ratio, direct drive

Model 411335—1:1 ratio, reverse drive

TYPE "B" DRIVE—For Shafts Rotating at 500-2500 RPM at Maximum Dial Indication

In this installation, the end of the machine shaft must be accessible, and the tachometer should be mounted in a convenient location, on or off the machine. A flexible shaft connects tach to machine shaft. Tach pointer moves in the direction of machine shaft unless angle drive is used to reverse direction.

Drive parts available from Stewart-Warner:

No. 97251—Drive bushing for $\frac{1}{4}$ " hole.

No. 815577—Sleeve with $\frac{3}{8}$ "-18 thread.

No. 446594—Shaft (specify length) with $\frac{3}{8}$ "-18 internal thread at upper end and $\frac{3}{8}$ "-18 internal thread at lower end, with .124" square tip, which fits into no. 97251 drive bushing. (Max. shaft length is 30").

This drive is not recommended for extremely high-vibration applications.



TYPE "E" DRIVE—For Shafts Rotating at 125-4000 RPM at Maximum Dial Indication*

In this installation, the end of the machine shaft must be accessible, and the tachometer should be mounted in a convenient location, on or off the machine. Machine shaft/tachometer connection includes a flexible coupling, an angle drive joint and a flexible shaft—as illustrated. Stewart-Warner parts:

No. 70885—Clamp assembly.

No. 660C-1—Drive joint for direct drive, or

No. 658C-1—Drive joint for reverse drive.

No. 446035—Flexible shaft (specify length)

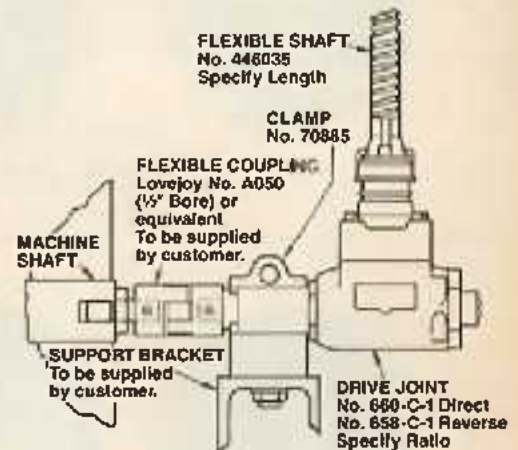
To be supplied by customer: Flexible coupling, Lovejoy A050 or equivalent for use with $\frac{1}{2}$ " dia. shaft; a support bracket to hold No. 70885 clamp.

LOVEJOY FLEXIBLE COUPLING

No.	Bore	Length
A050	$\frac{1}{2}$ "	1 $\frac{3}{8}$ "
AU050	$\frac{1}{2}$ "	2 $\frac{3}{4}$ "

*Use Data Sheet For Ratio Computation 1.000 for Stock Models

This drive is recommended for high-vibration applications.



TYPE "H" DRIVE—For Shafts Rotating at 30-4000 RPM at Maximum Dial Indication

In this installation, the sprocket to be used is split and can be attached at any point where the machine shaft is accessible. Tachometer can be mounted at any convenient location, on or off machine. Machine shaft connects to tach as shown in sketch. It consists of the following:

No. 660C-1—Drive joint for direct drive, or No. 658C-1—Drive joint for reverse drive.

No. 4007—Bar. No. 446035—Flexible shaft (specify length). See charts for sprocket and pinion.

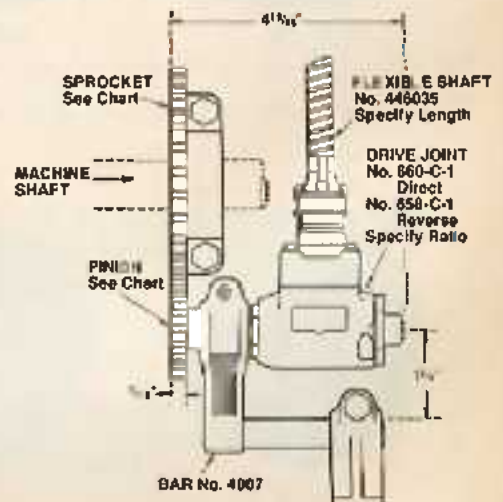
SPROCKETS FOR TYPE "H" DRIVE

Part No.	No. Teeth	Can Be Bored To:	Diam.
12600	30	$\frac{1}{2}$ "-1 $\frac{3}{4}$ " Diam.	4"
12400	50	1"-2 $\frac{3}{4}$ " Diam.	6 $\frac{1}{2}$ "

PINIONS FOR TYPE "H" DRIVE

Part No.	No. Teeth	Diameter
2345	15	2 $\frac{1}{8}$ "
2323	20	2 $\frac{3}{4}$ "
3273	22	3"
3283	25	3 $\frac{1}{2}$ "
3299	30	4"

NOTE: See Data Sheet for Type "H" Drive (Use data sheet for ratio computation). Type "E" and type "H" drives both use flexible shaft 446035, made with .150" core and .445 casing. Tach-end connection is $\frac{3}{8}$ "-18 int. thread nut and 104° square tip. Lower end connection is $\frac{3}{8}$ "-18 int. thread nut with .203" tang.



Passenger Car Speedometers



82680



82676

WORLD WIDE—Models 82680, 82676

Raised bright, stainless steel bezel, panel mount 3 $\frac{3}{8}$ " diameter speedometers with odometer and conventional sweep. Face dial is black with white and yellow gradations. Both have standard $\frac{5}{8}$ "-18 connection with .105" square hole and lighting kits.

Model 82680 features dual range scales of 0-80 mph and 0-130 km/h. Odometer records in miles. This speedometer meets FMVSS #127.

Model 82676 features dual range scales of 0-140 km/h and 0-90 mph. Odometer records in kilometers.



82677



550-BP

DELUXE—Models 82677, 550-BP

Chrome bezeled; panel mount 3 $\frac{3}{8}$ " diameter speedometers with odometer and conventional sweep. Both have standard $\frac{5}{8}$ "-18 connection with .105" square hole and include a lighting kit.

Model 82677 features dual range scales of 5-85 mph and 15-130 km/h. This speedometer meets FMVSS #127.

Model 550-BP has a range of 0-160 mph and is for off-road use only.



82678



550-HH

HEAVY DUTY—Models 82678, 550-HH

Satin black bezeled, panel mount 3 $\frac{3}{8}$ " diameter speedometers with odometer and conventional sweep. Both have standard $\frac{5}{8}$ "-18 connection with .105" square hole and include a lighting kit.

Model 82678 features dual range scales of 5-85 mph and 15-130 km/h. This speedometer meets FMVSS #127.

Model 550-HH has a range of 0-160 mph and is for off-road use only.



82679



550-EZ

STAGE III—Models 82679, 550-EZ

Panel mount 3" diameter speedometers feature vertical odometer and 250° vertical pointer sweep for fast accurate reading. Both include lighting kits for glare-free Transoptic lighting. Both speedometers have standard SAE connections, $\frac{5}{8}$ "-18 with .105" square hole.

Model 82679 has dual range scales of 5-85 mph and 15-125 km/h. This speedometer meets FMVSS #127.

Model 550-EZ has a range of 0-160 mph and is for off-road use only.

Truck, Police & Tractor Speedometers



82687

WORLD WIDE TRUCK—Model 82687

Raised bright, stainless steel bezel, panel mount 3 $\frac{3}{8}$ " diameter speedometer with million mile odometer and conventional sweep. Face dial is black with white and yellow gradations. Has a standard $\frac{5}{8}$ "-18 connection with .105" square hole and lighting kit.

Dual range scales of 0-80 mph and 0-130 km/h. This speedometer meets FMVSS #127.



550-HF

HEAVY DUTY TRUCK—Model 550-HF

Mechanical, 0-80 MPH, $\frac{5}{8}$ "-18 shaft connection with .105" square hole. Non-reflective black with satin trim bezel. Million mile odometer. Transoptic non-glare internal lighting. Has high-beam indicator.



ELECTRIC—Model 105-H

12V, Pos/Neg GD, includes integral indirect lighting kit. Non-reflective satin chrome bezel. Million mile odometer. Requires Sender 106-AW and drive tip (See page 40.)



540-D

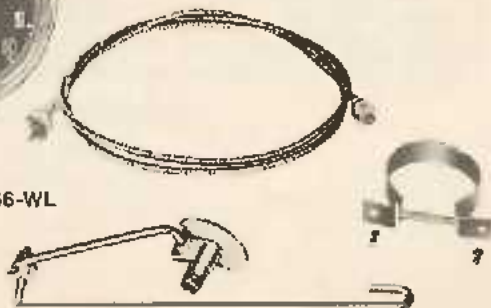
POLICE SPECIAL SPEEDOMETER—Model 540-D, 0-120 MPH

Made especially for police use. Large 4" dia., easy-to-read face dial has exclusive "touch-button" pointer lock. Shows positive proof of speeding. Season and Trip odometers. $\frac{5}{8}$ "-18 external thread and .105" square hole. Non-glare indirect lighting included.



550-KM

366-WL



FARM TRACTOR 0-10 MPH SPEEDOMETER AND KITS—For Low Speed Vehicles

MODEL 550-KM SPEEDOMETER

Driven from center of tire thread for true record of speed and distance traveled—regardless of terrain, condition of soil, engine RPM or transmission ratios. Internal lighting

No. 366-WL KIT

Includes Speedometer (550-KM) Flexible Shaft 108" long (446616-108), Mounting and Drive Equipment, light kit, and Installation Instructions (SER-SW 4057)

Deluxe Line Marine Instruments

Surface Mount

Surface Mount Deluxe Line Tachometers & Speedometers mount on all panels up to 3/4" thick. Matched face dials are black with white graduations and pointers.

Cases are bright chrome coated and extend 2 1/8" from the panel. Case diameters are 3 5/8" at front end and 4" at the base. Mounting hardware and instructions are included.



82154

ELECTRIC TACHOMETER 82154

(Sender Not Required)

For use with any 2 or 4 cycle engine having from 1 to 8 cylinders. May be used with standard, transistor, magneto or 12-pole alternator ignition system. No external sender is required. Units are simply and easily adjusted to match any engine/ignition system. Complete installation and adjustment instructions are included.

82154 Electric Tachometer 0-6000 RPM



82155

SPEEDOMETER KITS

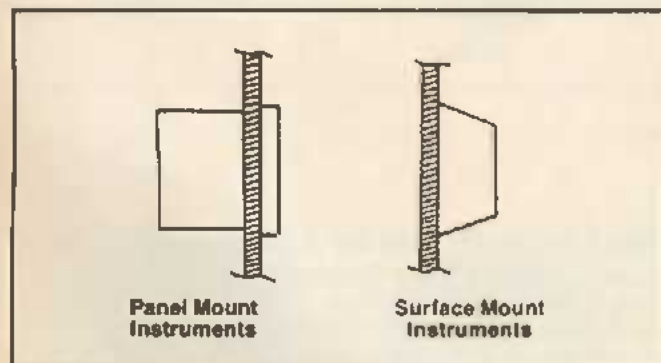
Provide accurate reading of speed in both MPH and Knots. The heavy duty "Accustat" mechanism is designed to withstand extreme vibration and shock, and resist rust and corrosion. Streamlined, non-fouling Pitot Tube folds out of danger upon contact with underwater objects or when boat is transported.

Speedometer kits include: basic Speedometer Head, Deluxe Pitot Tube, 18 feet of tubing and all required installation hardware and instructions.

Dial Ranges		Speedometer Kit No.
MPH	Knots	
10-60	9-52	82155
10-45	9-39	82156

Accessories

Description	Part No.
Deluxe Pitot Tube	433084
Thru Transom Fitting	811159
Connecting Tubing (18 ft.)	171894



Panel Mount Instruments

Surface Mount Instruments

Panel Mount

Panel Mount Deluxe Line Tachometers and Speedometers may be installed in S-W accessory panels, used as replacements in S-W prewired Marine Panels, or mounted in existing panels. They have matched dial faces that are black with white graduations and pointers.

The bezels are bright, chrome-plated brass or stainless steel. The cases are Lexan® and are 3 3/8" in diameter. These instruments have internal illumination and come complete with lighting kit, mounting hardware and installation instructions.

® Registered trademark of General Electric Co.



82150



82620



82622

TACHOMETERS

Sender Not Required for Gas

82150 Electric tachometers (0-6000 RPM) designed for application on any 2 or 4-cycle, 2, 3, 4, 6, or 8 cylinder engine (997-R for 0-8000 RPM). May be used with negative ground, 12 volt systems as well as many other "exotic" ignitions. Units feature jeweled d'Arsonval meter movements coupled with solid state amplified circuitry. These tachometers are completely self-contained and require no separate senders or monitors.

DIESEL TACHOMETERS

Models 82620, 82622

Choose from two electric tachs designed for use in all marine, truck, and industrial applications. Both models are completely vented and feature 3 3/8" plastic case, brass studs and stainless steel bezels (type 430) that resist corrosion in outdoor use.

Bi-Torque® and solid state mechanism withstand shock and vibration for accuracy and long dependable operation. Wide 280° pointer sweep with bold hash marks and large numerals covering an expanded scale for quick reading. Factory set at 1/2:1. Fully adjustable for 1/2:1, 1:1, 1 1/2:1, and 2:1 takeoff ratios. (Rotation of engine take-off has no effect). Panel mounted with internal lighting (12 volt light kit included). 12 volt negative ground.

Hourmeter model 82622 provides a true accurate record of engine operation up to 10,000 hours in one tenth hour increments.

Each unit is subjected to 48 hour continuous test.

82623 SENDER KIT

Use for models 82620, 82622, and includes .187" diameter drive tip. One sender will operate two tachs.

TIPS FOR 82623 SENDER

- #82624—.203" diameter tang
- #82625—.187" diameter tang
- #82626—.152" diameter tang
- #82629—.104" square
- #82630—.150" square
- #82631—.1835" square
- #82632—.193" square



82153

SPEEDOMETER KITS

These SPEEDOMETERS will provide accurate, dependable speed readings under all operating conditions for any boat. The heavy duty "Accustat" mechanisms are designed to withstand extreme vibration and pounding shock as well as resist rust and corrosion. The streamlined, non-fouling Pitot Tube folds out of danger upon meeting an underwater obstruction or when boat is being transported.

KIT consists of: Basic Speedometer Head, 18 feet of tubing, double wire lamp socket with 12V bulb, deluxe Pitot Tube with attaching screws and all mounting hardware.

Speedometer Ordering Information

Dial Range	Speedometer Kit No.
10-45 MPH	82152
10-60 MPH	82153

Accessories

Description	Part No.
Deluxe Pitot Tube	433084
Thru Transom Fitting	811159
Connecting Tubing (18 ft.)	171594

Deluxe Line Marine Instruments

Panel Mount Deluxe Line Gauges feature brass cases and bezels. The cases are 2 $\frac{1}{16}$ " in diameter. The bezels are flat and chrome-plated. The matching dial faces are black with white graduations and pointers.

They may be installed in S-W accessory panels, used as replacements in S-W prewired Marine Panels or mounted in existing panels. They come complete with internal lighting, mounting hardware and installation instructions.

The mechanical gauges have Accustat mechanisms (270° sweep). The electric gauges have Bi-Torque mechanisms (90° sweep), and use 12V negative ground power. To adapt electric temperature and/or pressure gauges to 24V or 32V, see chart on page 31 to find part number of resistor required.



OIL PRESSURE GAUGES

Help avoid costly engine repairs due to incorrect oil pressure, defective oil pump, clogged oil filter, etc. Electric gauges use 12V power source. For use with 24V system, order Resistor No. 829525-2 (408023). For use with 32V system, order Resistor No. 829525-8 (821988).

Type	Dial Scale (Psi)	Part No.
Elec.	5-80	82113Ⓞ
Elec.	5-100	82116Ⓞ
Mech.	20-300	82120
Mech.	25-400	82121

Ⓞ Requires Sender No. 353 Z for single gauge. Requires Sender 353-AM for dual gauges.

Ⓞ Requires Sender No. 279-Ⓞ for single gauge. Requires Sender 82501 for dual gauges.

FUEL LEVEL GAUGES

Model 82111

Monitors information on fuel level. Requires fuel level sender and Installation Kit No. 366-LP. Uses 12V neg. power source. For use with 24V source, order Resistor No. 829525-2. For use with 32V source, order Resistor No. 859528-8.



Fuel Tank Senders

Part No.	Description
385-B	6"-12" depth; LH arm
385-C	6"-12" depth; RH arm
391-A	10"-15" depth; LH arm
391-B	10"-15" depth; RH arm
391-C	15 $\frac{1}{2}$ "-24" depth; LH arm
391-D	15 $\frac{1}{2}$ "-24" depth; RH arm

Choosing Left or Right Hand Fuel Level Senders

The holes in the tank unit bracket plate are not evenly spaced. The distance between two of the holes is greater than between any other two. When viewing the bracket plate, with the widely separated holes nearest you, the float arm will swing left if it is a left hand tank unit or right if it is a right hand tank unit.

If there is more room in the tank to the left of the tank unit mounting location, use a tank unit that swings to the left and vice versa.

AMMETERS

Indicates generator or alternator charging rate, monitors battery condition, and warns of excessive drain by accessories.

Dial Scale (Amps)	Part No.
60-0-60	82108
60-0-60	82109Ⓞ
100-0-100	82110Ⓞ

Ⓞ Requires Shunt No. 813489 Please order separately
Ⓞ Requires Shunt No. 407618 Please order separately



TEMPERATURE GAUGES

Indicates engine operating temperature and warns of clogged intake. Electric gauges use 12V power source. To use with 24V source, order Resistor No. 829525-2 (408023). To use with 32V source, order Resistor No. 829525-8 (821988).

Type	Dial Scale (°F)	Part No.
Water Temp.	100-230	82114Ⓞ
Oil Temp.	100-280	82115

Ⓞ Requires Electric Temperature Sender (see below). Please order separately.

Electric Temperature Senders

Thread Size	Single Gauge Senders		Dual Gauge Senders 82114
	82114	82115	
$\frac{1}{8}$ "	362-CZ	334-H	—
$\frac{1}{4}$ "	362-AN	334-AA	—
$\frac{3}{8}$ "	362-AJ	334-AB	—
$\frac{1}{2}$ "	362-AH	334-AD	—
Univ.Ⓞ	280-EA	280-ED	82503

Ⓞ Universal sender fits $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " thread sizes.



VOLTMETER—Model 82112

Checks condition of battery, voltage regulator and generator or alternator of 12-volt systems. Warns of faulty belts, loose battery connections, etc.



VACUUM GAUGE—Model 82117

This "Accustat" gauge helps maintain peak engine efficiency and increase mileage. Shows if timing is correct or if a tune-up is needed. Dial reads 0-30".

2 POSITION DIMMER SWITCH NO. 370-C

For all lighted instruments.



LIGHT DIMMER SWITCH NO. 366-SB

Rheostat control for all lighted instruments.



IGNITION SWITCH NO. 370-T

Mounts in 3/4" hole in Stewart-Warner panels or existing instrument panels.



ENGINE WARNING SYSTEM

This audio/visual system provides warning of extreme engine operating conditions. A light and a buzzer in the unit are triggered by sender switches to warn of low oil pressure, high water temperature, etc. The system can be mounted in panels up to 1/2" thick and it operates on 12V power. It can be used with or without other instrumentation.

Model D-825104 consists of a warning device, a nameplate and four speed grip connectors. The sender switches must be ordered separately (see charts below)

Model 366-TJ consists of Model D-825104, plus Pressure Sender Switch 364-L and Temperature Sender Switch 363-F.

Temperature Sender Switches For Warning System

Temperature Setting	1/4" Thread	3/8" Thread	1/2" Thread
200°F	363-D	363-E	363-F
225°F	363-AM	—	363-G
250°F	—	—	363-W

Pressure Sender Switches For Warning System

Thread Size	Pressure Setting	
	6 Psi	15 Psi
1/4"	364-L	364-K
1/2"	364-M	—

HOBBS HOUR METER

Model 15017

Provides an accurate record of the total time an engine is operated. This information is vital for proper maintenance. Time is recorded in hours and tenths of hours. Meter may be used with any electrical system having 4-40 volts DC.



Model 15000

Provides an accurate record of the total time an engine has been operated. This information is vital for proper engine maintenance. Time is recorded in hours and tenths of hours. Meter may be used with any electrical system having 4-40 volts DC. This space-saving, rectangular unit fits S-W Prewired Marine Panels Accessory Panels or existing instrument panels.



SOLID-STATE MARINE FUEL PUMPS

U.L. Listed

Pass all critical tests of the marine division of Underwriter's Laboratories! Corrosion-resistant to prevent leakage. No possibility of accidental grounding. Conform to U.S. Coast Guard regulations effective August 1, 1978 (Hobbs Switch 4012 required).

82055—12-volt, positive or negative ground, 7 psi

82056—24-volt, positive or negative ground, 7 psi

82057—12-volt, positive or negative ground, 4 psi



See page 66 for technical details

MARINE PANEL—Model 271-W (Replaces 271-A)

This panel is die-cast aluminum covered with a tough, moisture and corrosion resistant, clear epoxy coating. Panel is 12 1/2" x 6 1/4" and has a non-reflective black finish. Will hold up to four Stewart-Warner Gauges and a Tachometer. All instruments are front mounted. It will also accept Hobbs Hour Meter 15000, ignition switch 370-T and Light Switch 370-C or 366-SB. All panel mounting hardware is included.



Handheld Tune-up Equipment

TUNE-UP AND TESTING KIT

MODEL 82021

15½" x 12½" x 6" convenient, high impact carrying case contains everything needed for a complete tune-up—Compression Tester, DC Powered Timing Light with Inductive Pickup, Tach/Dwell/Volts Tester, and Vacuum/Fuel Pump Tester. Molded compartments for each instrument keep everything in its place. Instructions for each instrument included.



82021



82022

AUTO ENGINE ANALYZER WITH INDUCTIVE PICK-UP

MODEL 82022

Perform all electrical and tune-up tests with one instrument. For use on all 4-6-8 cylinder engines with 12-volt systems. The overload protected, Zener regulated, solid state circuitry is housed in a high impact plastic case. Unit includes long leads, heavy duty clips, universal battery post adapter, test leads, accessories and instruction manual. Scales include:

High Tachometer (0-6000)	Dwell (0-90)
Low Tachometer (0-1200)	Ohms (0-100K)
Ignition (Go-No go)	Amps (0-300)
Points Resistance (Good-Bad)	Low Volts (0-1.8)
	High Volts (0-18)

Stewart-Warner Hand Held Tune Up Equipment can be used on all current O.E.M. and aftermarket ignition systems. This includes the General Motors HEI systems, the Ford Solid State systems, the Chrysler Electronic systems and the American Motors BID systems.

In addition, this equipment can be used on very nearly all of the ignition systems now being developed.

**DC POWERED TIMING LIGHTS
 WITH INDUCTIVE PICKUP**

MODEL 82019

For all 12 volt ignition systems. Inductive pickups clamp over spark plug wires for fast and easy hookups. Features a sturdy die-cast case and heavy chrome finish, burnout-proof solid state circuitry with automatic reverse polarity, long leads, and brilliant pre-focused xenon flash. Complete instructions included.



82019

**DC POWERED TIMING LIGHT
 WITH INDUCTIVE PICKUP**

MODEL 82013

For use on all 12-volt systems. Inductive pickup clips over spark plug wire for quick and simple hookup. Brilliant blue-white xenon flash and pre-focused optical glass lens provide ample light for use under any conditions. Solid state circuitry with automatic reverse polarity and overload protection provide years of trouble free use. Lightweight, high impact plastic case has comfortable grip and easy triggering. Complete instructions are included.



82013

**DC POWERED TIMING LIGHTS
 MODEL 82020**

For all 12 volt systems. This unit has long grease resistant leads and xenon flash which allow use in broad daylight. Rugged high impact plastic case, burnout-proof circuitry with automatic reverse polarity and overload protection. Instruction and adapters are included.



82020

Handheld Tune-up Equipment

TACH/DWELL TESTER

MODEL 82014

Tests nine major engine functions on any 4-6-8 cylinder, 6 or 12 volt ignition system. When used with Model 82015, the two testers will perform 35 separate tests, and provide the same functions of a large sequential auto analyzer. Side reading scales and large numbers make reading the test results easy and accurate. Burnout proof solid state circuitry is housed in a durable high impact case. Grease resistant leads features positive slide function switches. Complete easy-to-follow instructions included.

Scales read: High Tach 0-6000 RPM
 Low Tach 0-1200 RPM
 Dwell 0-60°



VOLTS/OHMS/AMPS TESTER

MODEL 82015

Performs 26 major electrical functions of the vehicle. When used with Model 82014, the two testers will perform 35 separate tests and provide the same functions of a large sequential auto analyzer. Side reading scales and large numbers make reading the test results easy and accurate. Burnout proof solid state circuitry is housed in a durable high impact case. Grease resistant leads. Complete easy to follow instructions included.

Scales read: High Volts 0-18V.
 Low Volts 0-1.8 V.
 OHMS 1-500 K.
 High AMPS 0-100
 Low AMPS 0-35



TACH/DWELL/VOLTS TESTER

MODEL 82016

This one piece of equipment performs the 31 most often used tune-up and testing functions. It features a durable high impact plastic case and long grease resistant leads. Burnout proof solid state circuits protect the tester from accidents. The tester works with 4-6-8 cylinder, 6 or 12 volt systems. Complete instructions are included.

Scales read: Tach 0-1800 rpm
 Dwell 0-60°
 Volts 0-16V.



CHARGING SYSTEM ANALYZER

MODEL 82017

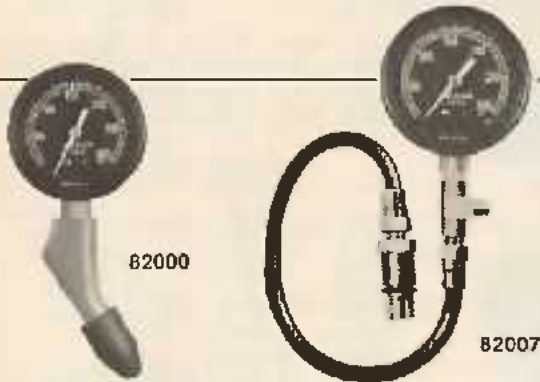
Light emitting diodes provide easy electronic trouble shooting. Tester isolates problems in the battery, alternator, alternator diodes, and voltage regulator for all 12 volt systems. Complete instructions are included.



ELECTRONIC IGNITION ANALYZER

MODEL 82018

For all vehicles with 12 volt electronic ignition systems. Check the electronic ignition module, coil pick-up for HEI systems, primary ignition coil where standard coil is used and the battery condition. Light emitting diodes detect and isolate problems at a glance. Complete instructions included.



COMPRESSION TESTER

MODEL 82000

Large 2 3/4" dial has 0-300 psi and 0-21 Kg/cm² pressure scales. Includes removable stem and universal rubber tapered cone to fit all spark plug holes.

COMPRESSION TESTER

MODEL 82007

Large 2 3/4" dial has 0-300 psi and 0-21 Kg/cm² pressure scales. Includes flexible hose with spark plug hole adapter.



VACUUM/FUEL PUMP TESTER

MODEL 82001

Large 2 3/4" dial has dual scales: 0-25" Hg and 0-60 cm Hg on vacuum scale and 0-7 psi and 0-5 Kg/cm² on pressure scale. Includes 3 1/2 foot neoprene tubing.

Hobbs Hour Meters

HOBBBS SOLID-STATE DIOCHRON III HOUR METERS



80001



80000



80003

The new Hobbs Diochron III Hour Meter is the ultimate in reliable measurement of elapsed time. A visible record of total running time right on the equipment is vital for scheduled maintenance and helps reduce down-time.

Diochron III features the latest in electronics with a custom integrated circuit and a proven, ruggedized, read out mechanism. Diochron III records up to 9,999.9 hours and automatically recycles at zero. This series was specifically designed for use on construction, material handling and farm equipment and has broad acceptance on aircraft and marine applications as well as electronic applications where direct current is available.

Diochron III Hour Meters are unaffected by typical short-duration, high-voltage transient currents. They are accurate within $\pm 1\%$ of entire voltage range and stable within $\pm 1\%$, between 0°F and 140°F, temperature range: 26°F to 185°F. Withstands vibrations from 7 to 500 Hz at 5 g's.

Voltage	Mounting	Part Number
12-24 V DC	2—Screw "Mini"	80000
12-24 V DC	3—Screw (Black) 2.87" dia.	80001
12-24 V DC	Bracket (Chrome) 2.25" dia.	80002
12-24 V DC	Bracket (Chrome) 2.50" dia.	80003
12-24 V DC	4—Screw (Aircraft) 2.50" dia.	80004*
12-24 V DC	4—Screw (Aircraft) 2.50" dia.	80005**
36-72 V DC	2—Screw "Mini"	80006
36-72 V DC	3—Screw (Black)	80007
36-72 V DC	Bracket (Chrome) 2.25" dia.	80008
36-72 V DC	Bracket (Chrome) 2.25" dia.	80009

*Total Hours (Aircraft)

**Flight Hours (Aircraft)

HOBBBS ALTERNATING CURRENT METERS



20018



20028

A highly reliable instrument for recording operating time for leasing, maintenance, testing and warranty programs. Polycarbonate, shock resistant, tamper proof case. Records up to 100,000 hours and automatically recycles to zero. Accuracy: $\pm 1\%$. Temperature: -65°F to +154°F. UL recognized component. Power rating: 3 watts. Screw Termination. Available in Minimeter and Deluxe styles.

Voltage	Hertz (Cycles)	Mini-meter 2"x1" Part No.	3 Screw 2.7" Dia. Part No.
120	50	20028	20018
120	60	20001	20017
240	50	20029	20018
240	60	20007	20019

HOBBBS SOLID-STATE DIOCHRON II HOUR METERS



24963



23651

Discreet individual components record operating hours of gas, diesel, or battery-powered equipment. Key components are potted for shock protection.

Diochron II Hour Meters are unaffected by typical, short-duration high voltage transient currents. They are accurate within $\pm 1\%$ of entire voltage range. Temperature range: -25°F to +185°F (155° maximum above 60 volts). Withstands vibrations from 7 to 500 Hz at 10 g's.

Easy-to-read face dials with automatic recycling odometers record up to 10,000 hours in one-tenth hour increments.

Voltage	Mounting	Part No.
12V DC	3-screw	24963 (18000)
12V DC	Stirrup	24957 (18001)
24-72V DC	3-screw	24962 (18002)
24-72V DC	Stirrup	24958 (18003)
12V DC	Flange	24569
12V DC	Stirrup	23651
24-72V DC	Flange	24570
24-72V DC	Stirrup	23653

HOBBBS MINIMETERS SERIES



15001



15000



15002



15006

Dirt and moisture sealed, escapement controlled DC hour meters include jewelled movement, shockproof odometer, and permanently lubricated parts. Easy to read black face dials. Records hours in tenths. Accuracy: $\pm 1\%$. Rundown: 5 seconds. Oper temp. range: -65° to +160° Meets Military Spec MIL-L-3971B.

"Long Stud" Model. Similar to above models, except for 2" case size and longer studs for easy replacement of any Hobbs meter. Fits any panel up to 1" thick.

Part No.	Range (VDC)	Mount	Replaces Part No.
15000	4-40	2 screw	
15001	4-40	3 screw	5800
15002	4-40	Bracket	5801
15003	40-130	2 screw	
15004	40-130	3 screw	
15005	40-130	Bracket	
15006Ⓞ	4-40	Aircraft	5811 & 5812
15007Ⓢ	4-40	Aircraft	
15017Ⓢ	4-40	Bracket	5801
15031Ⓢ	4-40	Bracket	5801
15068Ⓢ	4-40	Bracket	5801

Ⓞ Reads Total Hours

Ⓢ Reads Flight Hours

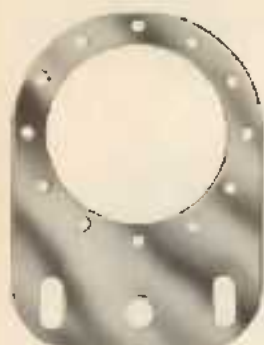
Ⓢ Long Studs

Ⓢ Black Bezel

Ⓢ Bezel Matches S-W Heavy-Duty Gauges

Accessories

HOBBS HOURMETER MOUNTING BRACKETS



558

329 (2 $\frac{3}{16}$ "") for meter only.
558 (4" x 5 $\frac{3}{8}$ "") use when meter and dampener are used together.



329

HOBBS PANEL MOUNTING BRACKET

486 Covers panel area 2 $\frac{1}{16}$ " x 5 $\frac{1}{4}$ ".
(For type D.C. meter only).

23944 Mounting Bracket for all 2-Screw Mount Meters.



486



23944

HOBBS DAMPENERS

To protect meter from severe vibration. Can be used on panel or with 558 bracket.

3888 (3 $\frac{7}{8}$ " dia.) for screw type D.C. meters.

2165 (3 $\frac{1}{2}$ " dia.) for 2 $\frac{1}{2}$ " A.C. meters.



3888

Switches

HOBBS PRESSURE AND VACUUM SWITCHES



Single circuit
1 terminal
Grounded Internally



Single circuit
2 terminals
Insulated



Dual circuit
3 terminals
1-NC, 1-NO,
1 common

Switches to actuate an Hour Meter, warning light, buzzer or engine cutoff when oil or air pressure drop below or exceed safe levels. Three models: Single-circuit, one terminal grounded internally; Single-circuit, two terminals, both insulated; Dual circuit, three terminals, one normally open (NO)₁, one normally closed (NC)₂, one common. Weather-proofed cases with $\frac{1}{8}$ " external P.T. connections. Actuating pressure is set and sealed at the factory.

Nominal ratings are 6V-DC, 15 amps, 12V-DC, 8 amps; 24V-DC, 4 amps, 120 V-AC inductive, 1 amp. Switches with other than standard contact settings or for special purposes are available on special order, in quantity, with settings from 1 to 150 psi. Switches are also available with $\frac{1}{2}$ " P.T. connections by special order. $\frac{1}{4}$ " spade terminals available by special order.

Specifications and Part Numbers

Standard Pressure Setting	Single Circuit 1 Terminal		Single Circuit 2 Terminals		Dual Circuit 3 Terminals NO & NC
	Normally Open [Ⓢ]	Normally Closed [Ⓣ]	Normally Open [Ⓢ]	Normally Closed [Ⓣ]	

Low Pressure Switches

4 PSI	4000	4001	4006	4007	4012
15 PSI	4002	4003	4008	4009	4013
60 PSI	4004	4005	4010	4011	4014
100 PSI	14731	14729	14732	14728	14727

Vacuum Switches

4" HG	4070	4071	4076	4077	
9" HG	4072	4073	4078	4079	
17" HG	4074	—	4080	4081	
28" H ₂ O	26501	26500	26503	26502	

[Ⓢ] Normally open means that the contacts in the switch are open (not in contact) until pressure or vacuum is applied.

[Ⓣ] Normally closed means that the contacts in the switch are closed (in contact) until pressure or vacuum is applied.

Drive Joints

DESCRIPTION

Stewart-Warner offers a complete selection of box, straight and angle type Drive Joints designed to correct the rotation of speedometer or tachometer flexible shaft assemblies. During the life of a vehicle, if a change in tire size or rear axle ratio is desired, a corrective Drive Joint should be added to compensate for this change in order for the speedometer to read correctly. It is necessary to specify the ratio required when ordering a Drive Joint. The following charts will indicate the variety of Drive Joints available, and other general applications. For model and ratio information, please consult your local Stewart-Warner sales office.



**DRIVE ADAPTER
KIT NO. 366-NE**

APPLICATION

- Mounting a flexible shaft on an instrument having limited rear access.
- Changing direction of flexible shaft rotation.
- Preventing acute angle bends in the flexible shaft.
- Mounting dual instruments off one engine—as in the case of Marine Flying Bridge tachometer installations.
- Connecting accessory instruments, such as taxi meters, to the flexible shaft assembly.

For Model 666 and 777 series drive adapter. Parts in this assortment will make up any model in any gear ratio. Tools and instructions are provided. Handy for quick repairs or ratio change.

DRIVE JOINT INTERCHANGE FOR SERIES 651, 652, 666, 669 & 777

Stewart-Warner has three types of Drive Joints that have much in common and, therefore, in many cases are interchangeable with each other. Such a change is often desirable when a specific installation requires a heavier duty

drive joint to withstand rugged use, such as unusual vibration conditions. The chart provides a reference for substituting one model for the other, when drive and driven connections are the same.

651 & 652 Heavy Duty	666 Light Duty	669 Light Duty	777 [⊕] Light Duty	Rotation	Drive End 3/8-18 Internal	Driven End 3/8-18 External
651-A	—	—	—	Direct	.203 BAR	.191 HOLE
651-B	—	—	—	Direct	.203 BAR	.213 HOLE
651-D	—	-B	-M	Direct	152 BAR	161 HOLE
651-F	-D	-E	-D, -R	Direct	152 BAR	.213 HOLE
651-R	—	-E	—	Direct	187 BAR	.191 HOLE
651-W [⊕]	-X,	-U, -X,	-X, -L,	Direct	187 BAR	191 HOLE
651-X	—	—	—	Direct	187 BAR	.191 HOLE
651-BR	-X,	-U, -X,	-L, -X,	Reverse	.203 BAR	.213 HOLE
651-JR	—	—	—	Reverse	187 BAR	.191 HOLE
651-XR	—	—	—	Reverse	187 BAR	191 HOLE
652-B	—	-B	-M	Direct	.203 BAR	.213 HOLE
652-D	-D	-E	-D, -R	Direct	152 BAR	.161 HOLE
652-K	—	—	—	Direct	152 BAR	191 HOLE
652-X	X	-U, -X	-L, -X,	Direct	187 BAR	191 HOLE
652-BR	—	—	—	Reverse	.203 BAR	.213 HOLE
652-NR	—	—	—	Reverse	152 BAR	.213 HOLE
652-XR	—	—	—	Reverse	187 BAR	191 HOLE

[⊕] ORDER COMPLETELY ASSEMBLED FROM FACTORY

HOW TO ORDER

Customer must specify drive joint model number from next page with suffix letter designating tip sizes from table at right and ratio[⊕] required. For example: To order Model 651 with .203 Tang and .213 Slotted Hole-ratio .500, specify (Model 651-B Ratio .500).






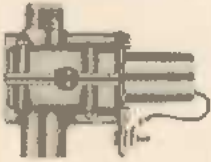
[⊕] To determine correct gear ratio, please request S-W publication No. SCR 4410 from your Stewart-Warner sales office

Models & Ratios Available

Models	Ratios [⊕]
651 & 652	.200, .222, .250, .333, .500, .866, 1.000, 1.077, 1.333, 1.500, 2.000
666 775 777 778 779	166 THRU 2.669

[⊕] Ratios increasing and decreasing.

MOST POPULAR MODEL SERIES

Type	Model	Application	Outstanding Features
	651-652	Truck Marine	Heavy-Duty Construction Needle bearings. Threaded sleeves. All models equipped with lubrication fittings.
	666	Automobile Truck	Light-duty construction. Offset drive. Bearing supported input and output shafts. Die-cast housing
	669	Automobile Truck Marine	Light-duty construction. Dual output. Die-cast housing. Installed at transmission.
	777	Automobile Truck	Light-duty construction. Straight-through drive. Die-cast housing Compact design.
	778	Automobile Truck Taxi	Light-duty construction. Dual output. Die-cast housing. Installed on back of speedometer or tachometer.
	775 & 779	Truck	For 2 or 3 speed rear axles. Electrically operated. Die-cast housing.

Bulk Core and Casing

DUAL PLASTIC CASING

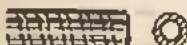


This new type of flexible shaft Casing was specifically designed for OEM replacement, and meets or surpasses Original Equipment Manufacturer specifications. It is particularly suited for marine applications, farm equipment, and all automotive vehicles, including heavy equipment, trucks and busses.

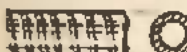
This reinforced plastic Casing (available only in boxed lengths of 100 ft.) consists of a nylon inner liner, reinforced by wire braid, and an extruded Polypropylene cover which protects the core from water, oil, dirt and abrasion.

820905—Dual Plastic Casing—.333"

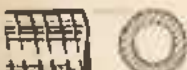
GALVANIZED STEEL CASING



243 Casing



.297 Casing



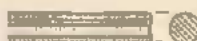
.445 Casing

Stewart-Warner offers the finest, most rugged, flexible shaft Casing available, for dependable, trouble-free operation of Speedometers and Tachometers. This Casing is constructed of high grade, heat resistant, galvanized steel wire to afford maximum flexibility and strength while providing greatest protection of the core from damage by dirt, grit, water and abrasion. Stewart-Warner Casing also helps prevent installation problems by reducing the possibility of acute angle bending at the time of installation. This Casing is available with or without an extruded vinyl covering for installations where moisture is a factor. All Casing is packaged in boxed lengths of 100 ft. For vinyl cover, see next column.

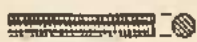
Bulk Outer Casing

Size	With Vinyl Cover	Without Vinyl Cover
243	813783	98578
297	-0-	63323
445	816647	20468

MULTI-STRAND STEEL CORE



187 Core



150 Core



130 Core

This multi-strand Core Stock provides a steady, high driving torque for consistent, reliable instrument performance; assures quiet, dependable flexible shaft operation.

This smooth-surfaced, non-raveling, highly flexible Core is composed of multiple-strand, highest grade carbon steel wire for exceptionally long life and dependability. Three core diameters, when used with the proper fittings, cover every application.

Bulk Inner Core

Diameter	Part Number
130" Left Lay	418614 -100, -500, -1000
150" Left Lay	825128 -115, -550, -1100
187" Right Lay	418615 -115, 550,

UNIVERSAL CORE, .130" DIAMETER



This 21-strand, non-raveling, tempered steel core can be used as replacement stock for any Original Equipment flexible shaft that utilizes standard diameter core. These cores are available in three lengths, left hand wound types, to serve the widest range of normal applications. Each length of Universal Core is furnished with .104 sq. drive tip, .104 sq. swaged lower end, swaging die and easy-to-follow installation instructions.

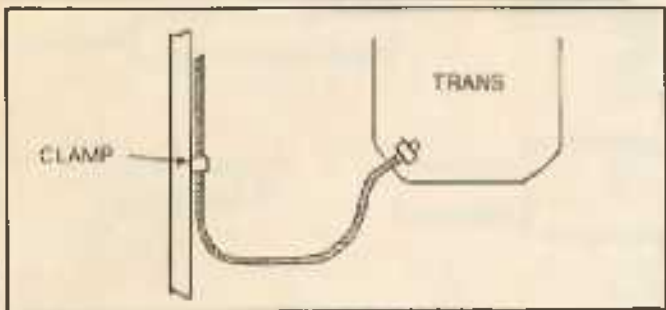
To install, simply cut the core to the length required, attach the drive tip to the upper end, and insert into the flexible shaft assembly.

Part No.	Direction of Wind	Length
130-B91	LH	81"
130-B114	LH	114"
130-B150	LH	150"

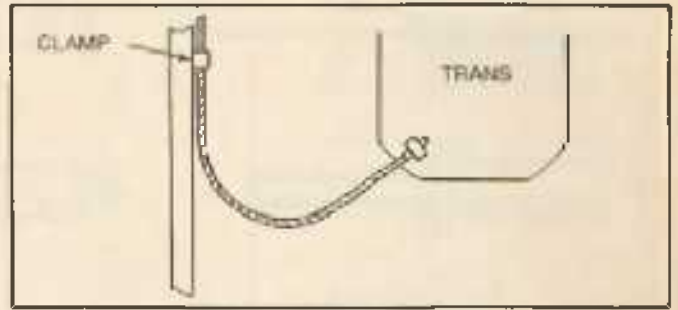
FLEXIBLE SHAFT INSTALLATION

The installation of the flexible shaft should be made with a minimum of sharp bends. Bends should have a 6 inch radius or more and there should be only one 90° bend in each installation. If the bends are tighter than recommended, life and reliability of the system will be reduced.

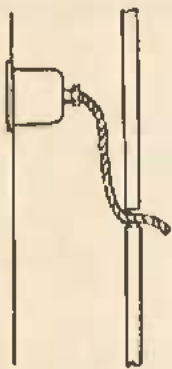
Clamp shafts at natural positions; in other words, do not force the shaft into some odd shape in order to tie it down with a clamp. In particular, avoid "S" turns caused by clamps used to guide the shaft around an obstruction.



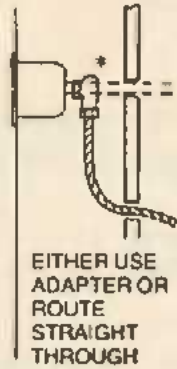
WRONG



RIGHT



WRONG

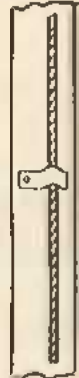


EITHER USE
ADAPTER OR
ROUTE
STRAIGHT
THROUGH

RIGHT



WRONG



RIGHT

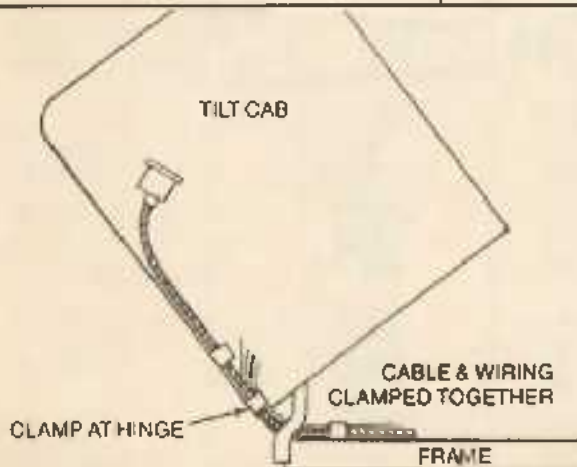


WRONG

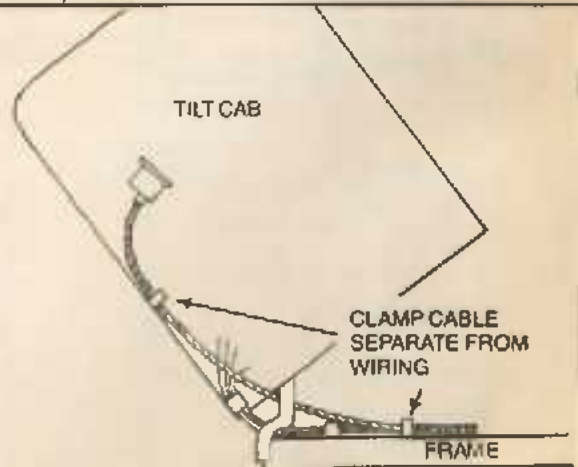


RIGHT

*Use right angle adapter No. 407010.



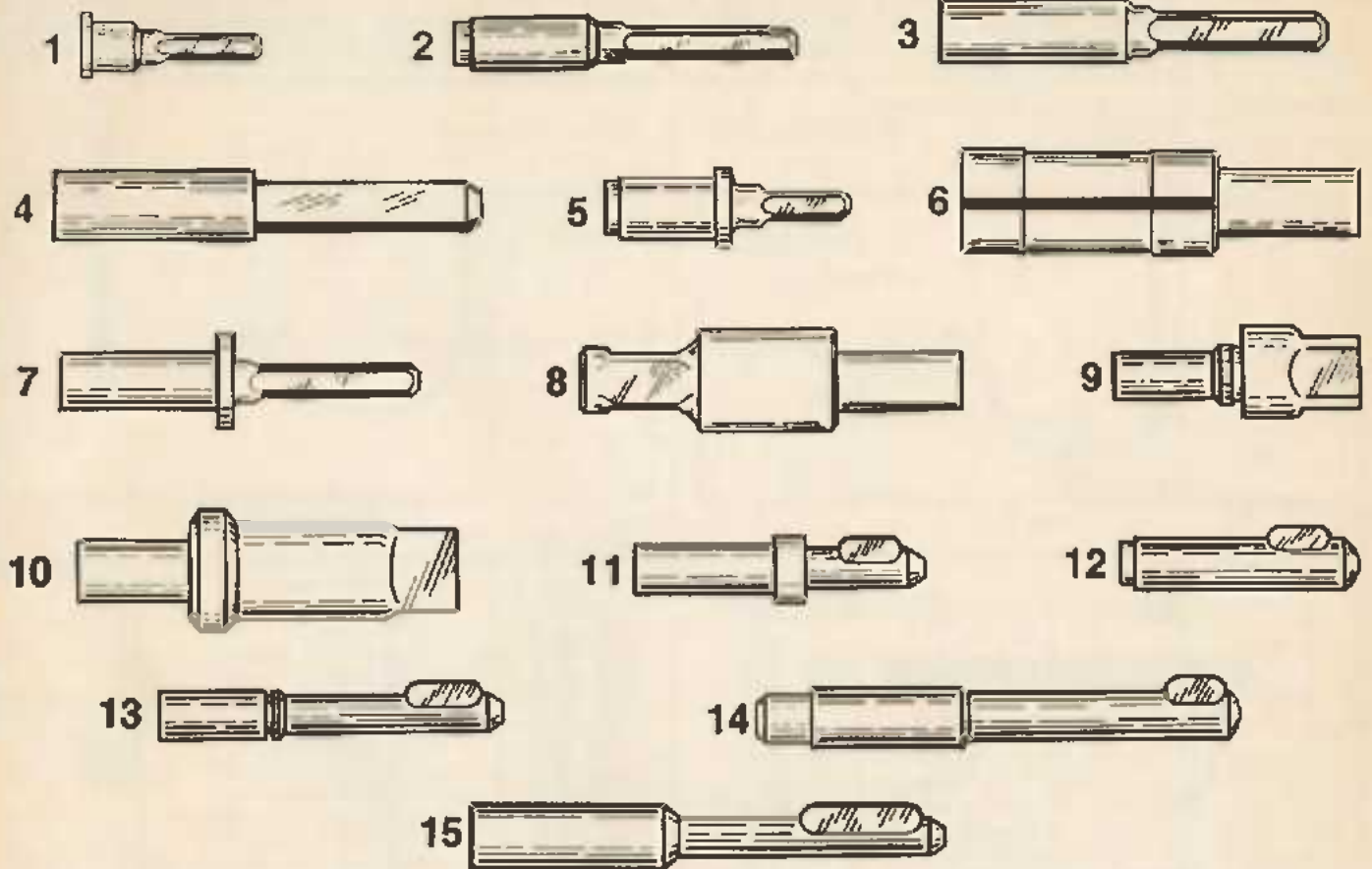
WRONG



RIGHT

Tip Specifications & Miscellaneous Parts

END TIPS



COMPENSATING EXTENSION TIPS—With .128" Square End on Drive End. For .150" Core Only.



End Size	Illustration Number	Length	Part Number	Cutting Deduction
.104 square	18	2 ¹ / ₃₂ "	818749	3 ¹ / ₃₂ "
.104 square	18	2 ³ / ₆₄ "	820152	1 ⁴ / ₆₄ "
.124 square	18	2 ¹ / ₃₂ "	819468	3 ¹ / ₃₂ "
.150 square	16	4 ¹ / ₄ "	820219-2	2 ³ / ₆₄ "
.150 square	18	2 ¹ / ₃₂ "	817767	3 ¹ / ₃₂ "
.150 square	16	4 ¹ / ₄ "	820220-1	3 ¹ / ₃₂ "
.152 tang	19	2 ¹ / ₃₂ "	818750	3 ¹ / ₃₂ "
.187 tang	19	2 ¹ / ₃₂ "	817769	3 ¹ / ₃₂ "
.193 square	18	2 ⁵ / ₆₄ "	820163	1 ⁴ / ₆₄ "
.203 tang	19	2 ¹ / ₃₂ "	817759	3 ¹ / ₃₂ "
.203 tang	17	4 ³ / ₈ "	820219-1	3 ¹ / ₃₂ "

Note: Illustrations shown are approximate representations and are for ordering purposes only. Refer to table on next page for exact dimensions.

END TIPS

End Size	Illustration Number	Length	Part Number	Cutting Deduction
FOR .130" CORE				
.104 square	7	1 $\frac{1}{32}$ "	823114	2 $\frac{1}{32}$ "
.104 square	1	1 $\frac{1}{16}$ "	418035	1 $\frac{1}{16}$ "
.124 square	2	1 $\frac{7}{16}$ "	60457	1"
.152 tang	13	1 $\frac{7}{16}$ "	400211	1 $\frac{3}{64}$ "
.152 tang	14	1 $\frac{5}{8}$ "	423913	1 $\frac{1}{16}$ "
.152 tang	11	1 $\frac{1}{32}$ "	83884	2 $\frac{1}{32}$ "
.187 tang	11	1 $\frac{3}{16}$ "	104461	3 $\frac{1}{4}$ "
.187 sq. hole	9	1 $\frac{1}{32}$ "	400210	—
.203 tang	11	1 $\frac{3}{16}$ "	63317	3 $\frac{1}{8}$ "
.203 tang	12	1"	33710	7 $\frac{1}{16}$ "

FOR .150" CORE

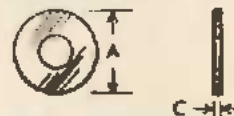
104 square	3	1 $\frac{1}{2}$ "	65002	1 $\frac{1}{16}$ "
104 square	7	1 $\frac{1}{32}$ "	65658	2 $\frac{1}{32}$ "
104 square	7	1 $\frac{21}{64}$ "	95115	6 $\frac{3}{64}$ "
104 square	7	1 $\frac{1}{2}$ "	425451 ①	1 $\frac{1}{16}$ "
.104 sq. hole	8	1 $\frac{1}{2}$ "	65001	—
.124 square	2	1 $\frac{7}{16}$ "	88984	1"
.124 square	7	1 $\frac{1}{32}$ "	37683	2 $\frac{1}{32}$ "
.150 square	3	1 $\frac{3}{8}$ "	421643	1 $\frac{1}{16}$ "
.150 sq. hole	8	1 $\frac{1}{2}$ "	815026	—
.152 tang	15	1 $\frac{7}{8}$ "	408758	1 $\frac{1}{32}$ "
.152 tang	13	1 $\frac{7}{8}$ "	421795	1 $\frac{23}{64}$ "
.1835 square	4	1 $\frac{25}{32}$ "	428827	1 $\frac{3}{32}$ "
.187 tang	14	2"	64339	1 $\frac{9}{16}$ "
.187 tang	11	1 $\frac{17}{32}$ "	427628	1 $\frac{3}{32}$ "
.187 sq. hole	10	1 $\frac{9}{16}$ "	36833	—
.187 sq. hole	9	1 $\frac{1}{32}$ "	409353	—
.187 tang hole	6	1 $\frac{1}{16}$ "	96127	—
.203 tang	13	2"	13909	1 $\frac{9}{16}$ "
.203 tang	12	1"	37684	3 $\frac{1}{8}$ "
.203 tang hole	6	1 $\frac{1}{16}$ "	78869	—

FOR .187" CORE

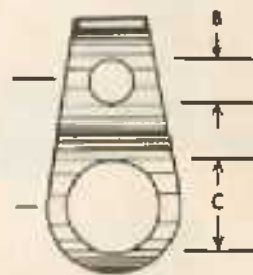
104 square	3	1 $\frac{1}{2}$ "	426106	1 $\frac{1}{16}$ "
104 square	5	1 $\frac{1}{32}$ "	72010	2 $\frac{1}{32}$ "
104 square	7	1 $\frac{33}{64}$ "	405137	1 $\frac{7}{64}$ "
104 sq. hole	8	1 $\frac{1}{2}$ "	426056	—
.124 square	5	1 $\frac{1}{32}$ "	69076	1 $\frac{3}{32}$ "
.150 square	3	1 $\frac{3}{4}$ "	105133	1 $\frac{1}{16}$ "
.152 tang	15	2"	415996	1 $\frac{9}{16}$ "
.152 tang hole	6	1 $\frac{7}{16}$ "	406908	—
.1835 square	4	1 $\frac{25}{32}$ "	414677	1 $\frac{3}{32}$ "
.187 tang	14	2"	101254	1 $\frac{9}{16}$ "
.187 tang	11	2"	426108	1 $\frac{9}{16}$ "
.187 tang	11	2"	811192	1 $\frac{9}{16}$ "
.187 sq. hole	9	1 $\frac{1}{4}$ "	416811	—
.187 sq. hole	10	1 $\frac{9}{16}$ "	99877	—
.187 tang hole	6	1 $\frac{3}{16}$ "	101983	—
.193 square	4	1 $\frac{25}{32}$ "	431487	1 $\frac{1}{32}$ "
.193 sq. hole	10	1 $\frac{9}{16}$ "	414678	—
.203 tang	15	2"	32912	1 $\frac{9}{16}$ "
.203 tang hole	6	1 $\frac{1}{4}$ "	39041	—

① Ford shaft, thin-walled.

MISCELLANEOUS FLEXIBLE SHAFT PARTS



422174 A-.748" B-.161" C-.732"
820140 A-.393" B-.146" C-.732"
431646 A-.234" B-.140" C-.732"



402398 A-.812" B-.281" C-.562"
413982 A-.780" B-1 $\frac{1}{32}$ " x 3 $\frac{1}{32}$ " C-.716"



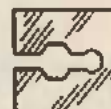
33711 Slot Clutch for .203 dia. Tip



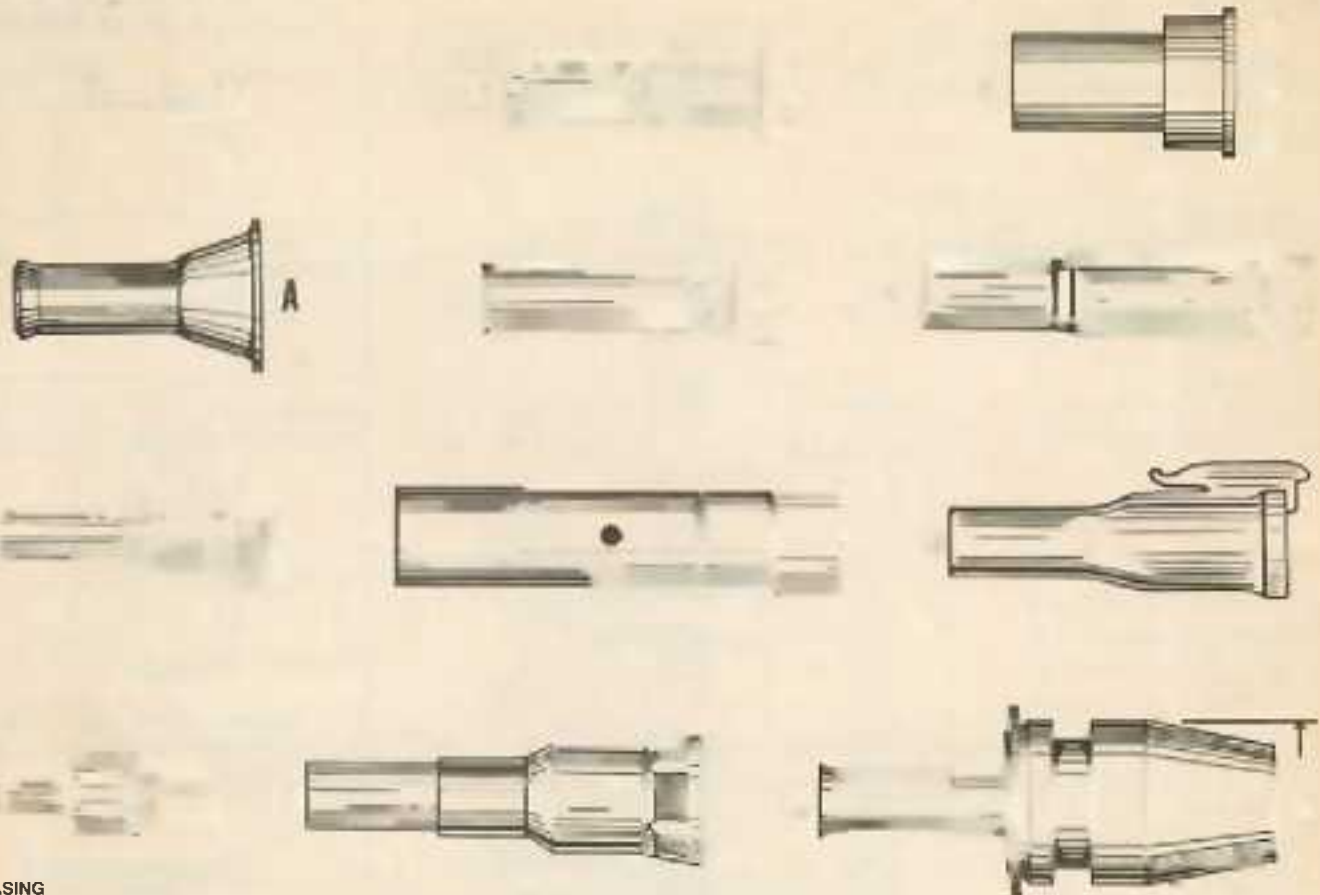
60458 Bushing, Diameter A-.716"



811624 Collar, .130 hole diameter



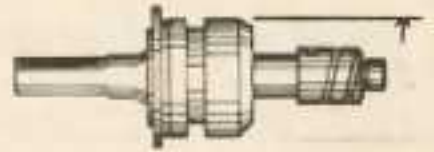
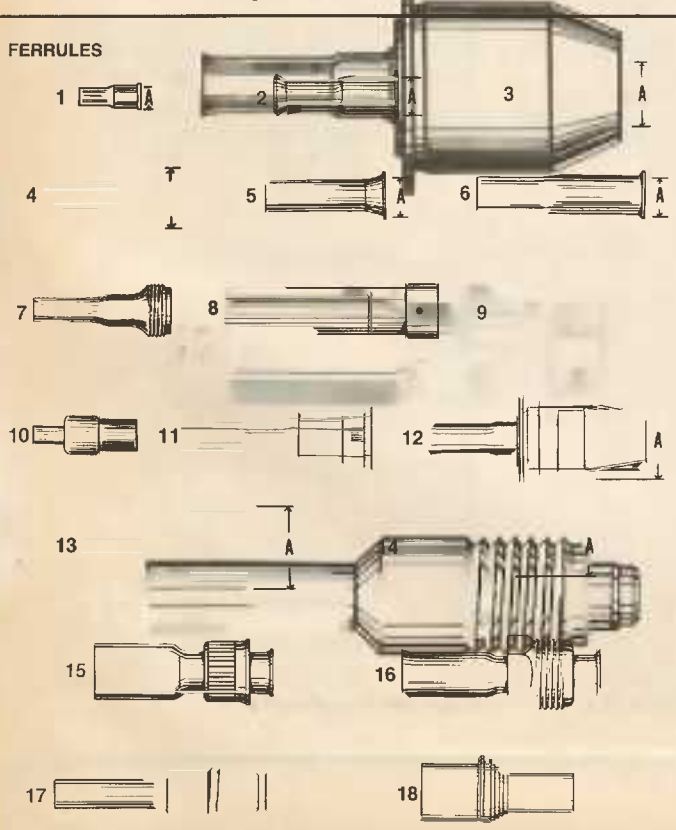
97708 Swag Die for .130 Core, .218 dia. hole



CORE & CASING

Ferrule and Nut Specifications

FERRULES



Note: Illustrations show only approximate representations in detail for ordering purposes only. Refer to table on next page for exact dimensions.

FERRULE SPECIFICATIONS

Illustration Number	Length	Description	Part Number	"A" Dimension
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FOR .243" DIAMETER CASINGS

1	1 ³ / ₁₆ "	Ferrule	95374	1 ³ / ₃₂ "
1	1 ⁵ / ₁₆ "	Ferrule	810809	1 ¹ / ₁₆ "
2	1 ³ / ₈ "	Ferrule	94363	1 ¹ / ₁₆ "
3	1 ⁵ / ₁₆ "	Ferrule	94354	4 ³ / ₆₄ "
12	2 ⁷ / ₁₆ "	Ferrule	417310	7 ¹ / ₈ "
13	2 ⁷ / ₃₂ "	Ferrule	414740	1"

FOR .297" DIAMETER CASINGS

2	1 ³ / ₁₆ "	Ferrule	102547	9 ¹⁶ / ₁₆ "
1	1 ³ / ₈ "	Ferrule	63316	1 ³ / ₃₂ "
3	1 ⁵ / ₁₆ "	Ferrule	63315	4 ³ / ₆₄ "
7	2 ¹ / ₄ "	Ferrule	69930	7 ¹ / ₈ -18 Thd.
17	2 ¹ / ₂ "	Ferrule	423307	3 ¹ / ₁₆ "

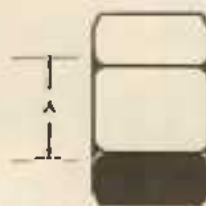
FOR .333" DIAMETER CASINGS

1	1 ³ / ₈ "	Ferrule	820733-3	7 ¹⁶ / ₁₆ "
4	1 ⁵ / ₁₆ "	Ferrule	820733-10	4 ³ / ₆₄ "
1	1 ⁷ / ₈ "	Ferrule	820734-6	7 ¹⁶ / ₁₆ "
6	2 ¹ / ₄ "	Ferrule & Bushing	820734-5	4 ³ / ₆₄ "
7	2 ¹ / ₄ "	Ferrule	820733-33	7 ¹⁶ / ₁₆ -18 Thd.
9	1 ⁷ / ₈ "	Ferrule (Chrys. & A.M.C. Snap-On)	820051	—
11	2 ¹ / ₈ "	(G.M. Snap-On)	823813	—
10	2 ¹ / ₁₆ "	Ferrule (Ford Snap-On)	821146-1	—
14	3 ³ / ₈ "	Ferrule & Shaft	824012	7 ¹⁶ / ₁₆ "
17	2 ¹ / ₂ "	Ferrule & Shaft	820480	5 ¹⁶ / ₁₆ -18 Thd.
18	1 ²³ / ₃₂ "	Ferrule (Chrys. Snap-On)	827746	—

FOR .445" DIAMETER CASINGS

1	2 ¹ / ₁₆ "	Ferrule & Bushing	820211-2	1 ¹ / ₂ "
4	1 ¹ / ₂ "	Ferrule & Bushing	400514	1 ¹ / ₂ "
4	2"	Ferrule	820211-13	1 ¹ / ₂ "
2	2"	Ferrule	820500-4	1 ¹ / ₂ "
5	1 ¹ / ₂ "	Ferrule	820500-3	1 ¹ / ₂ "
5	2"	Ferrule & Bushing	820211-1	1 ¹ / ₂ "
5	2"	Ferrule & Bushing	820211-4	1 ¹ / ₂ "
5	2"	Ferrule	820211-15	1 ¹ / ₂ "
6	2 ¹ / ₁₆ "	Ferrule	820500-7	3 ³ / ₆₄ "
7	2 ¹ / ₈ "	Ferrule	820500-11	7 ¹⁶ / ₁₆ -18 Thd.
8	2 ⁷ / ₁₆ "	Ferrule, Clutch & Collar Assembly	60462	—
12	2 ¹⁹ / ₃₂ "	Ferrule & Extension	820210-2	1 ¹ / ₂ "
12	2 ²¹ / ₃₂ "	Ferrule & Extension	820210-4	7 ¹⁶ / ₁₆ "
15	2"	Ferrule & Nut Assembly	820214-6	7 ¹⁶ / ₁₆ -18 Thd.
15	2"	Ferrule & Nut Assembly	820214-1	5 ¹⁶ / ₁₆ -18 Thd.
15	2"	Ferrule & Nut Assembly	820214-2	5 ¹⁶ / ₁₆ -18 Thd.
15	2"	Ferrule & Nut Assembly	820214-4	5 ¹⁶ / ₁₆ -18 Thd.
16	1 ¹ / ₁₆ "	Ferrule & Nut Assembly	820213-3	5 ¹⁶ / ₁₆ -18 Thd.
16	2 ¹ / ₁₆ "	Ferrule & Nut Assembly	820215-1	5 ¹⁶ / ₁₆ -18 Thd.

NUT SPECIFICATIONS



1



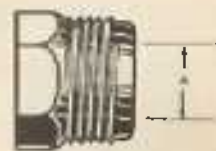
2



3



4

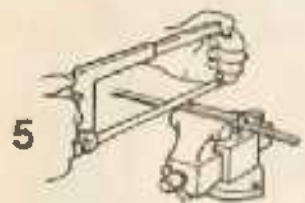
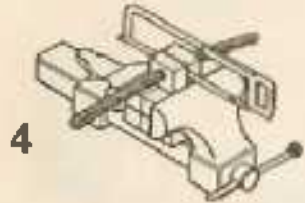
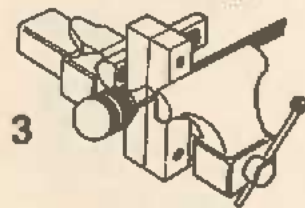
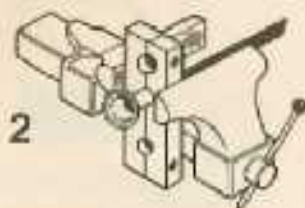


5

"A" Dimension	Thread Size	Illustration Number	Part Number
7 ¹⁶ / ₁₆ "	3 ⁴ / ₁₆ -20	5	820346-18
3 ³ / ₆₄ "	3 ⁴ / ₁₆ -20	3	820346-11
2 ³ / ₆₄ "	3 ⁴ / ₁₆ -20	5	820346-17
1 ⁹ / ₃₂ "	5 ¹⁶ / ₁₆ -18	1	820346-1
1 ⁵ / ₃₂ "	5 ¹⁶ / ₁₆ -18	2	820346-4
3 ³ / ₆₄ "	3 ⁴ / ₁₆ -20	3	820346-12
1 ¹ / ₁₆ "	7 ¹⁶ / ₁₆ -18	1	820346-23
1 ¹ / ₁₆ "	7 ¹⁶ / ₁₆ -18	2	820346-22

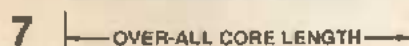
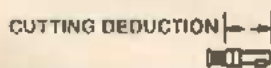
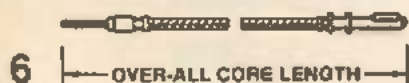
Flexible Shaft Assembly

OUTER CASING ASSEMBLY



1. Refer to the following charts to select the proper casing, nuts, and ferrules needed to complete the outer casing assembly.
2. Determine correct length of casing assembly to be used—length of casing assembly is measured from end of ferrule to end of ferrule (Fig. 1). NOTE: File off the burrs, both inside and outside of the cut ends of the casing, to prevent wear.
3. Slide upper ferrule over casing until casing enters ferrule about 1" or is stopped by bushing in the ferrule. Do not allow casing to enter the bell-shaped part of the ferrule.
4. Crimp upper ferrule to casing using ferrule crimping tool T-429430 (Fig. 2) for .243", .297", and .445" dia. casing, or tool T-320637 (Fig. 3) for .333" dia. casing. For tool T-320637, place mandrel into end of casing to prevent collapse of casing during crimping operation. Crimp until ferrule is securely attached to casing.
5. Measure casing to proper length allowing for the depth that the casing will enter the lower ferrule
6. Cut casing to proper length using tool T-265022 (Fig. 4). Do not cut casing as shown in Fig. 5 for unraveling of casing may result.
7. Be certain that any parts such as nuts, grommets, etc. are put in place on the casing before attaching lower ferrule.
8. Before crimping ferrule on casing, determine how deep the casing end must enter the ferrule to obtain the correct over-all length of the outer casing assembly.
9. Crimp lower ferrule on casing using tool T-429430 or T-320637. Refer to Step 4.

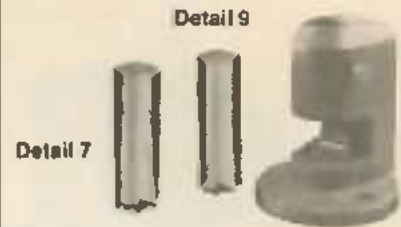
INNER CORE ASSEMBLY



1. Refer to the following charts to select the correct core and tips to be used. NOTE: It is recommended that the core be swaged before cutting. For best results, do not swage core ends before using electric core cutter.
2. Determine over-all length of core assembly—length of core assembly is measured from end of tip to end of tip (Fig. 6).
3. The length to cut the new core is determined by subtracting the "cutting deduction" spec in the tip chart from the over-all length of the core assembly. If two tips are used, both "cutting deduction" specs must be subtracted from the over-all length (Fig. 7).
4. Cut core to proper length. All core sizes may be cut using swaging-cutting fixture T-136374 (Fig. 8).
5. Attach corresponding upper and lower tip or swag tipless cores using cutting and swaging fixture T-136374 (Fig. 8)

SWAGING AND CUTTING FIXTURE COMPONENTS

All swaging and cutting fixture components must be ordered separately. Order base model number T-136374-6. Order detail 7 (T-136374-7) to (1) cut bulk core stock; (2) swage a .104 sq. on bulk core; (3) crimp a tip securely to a core. Order detail 9 (T-136374-9) for swaging a .124 sq. on .150 core, which is used on foreign cars.

**CRIMPING TOOL, NO. T-320637**

This rugged, compact tool has been specifically designed for crimping ferrules on .333" diameter Dual-Plastic Casing. It consists of one pair of crimping jaws, and a support rod which is inserted into the casing, during the crimping operation, to retain proper casing I.D. It creates a positive union without crushing ferrules or damaging casing.

**FERRULE CRIMPING TOOL, NO. 429430**

An extremely handy, compact tool designed for crimping various ferrules to Stewart-Warner bulk casing sizes .243, .297, and .445. It provides a positive means of crimping without a possibility of crushing casing or ferrules.

**FLEXIBLE SHAFT FITTING KIT, NO. 366-JJ**

This assortment consists of the commonly used flexible shaft fitting for automotive installations using .150" or .187" diameter core and .445" dia. casing. Furnished in compact plastic box, with illustrated chart inside hinged cover for fast identification of contents.

**FLEXIBLE SHAFT FITTING KIT, NO. 366-TA**

This assortment consists of the commonly used flexible shaft fittings for heavy duty installations where compensating tips are used on lower end for .150" diameter core and .333" or .445" diameter casing. Furnished in compact plastic box, with illustrated chart inside cover for fast identification of contents.



Electric Fuel Pumps



82050



235



82055

FEATURES

- Assures quick starts
- Eliminates surging
- Eliminates flooding
- Eliminates starving

All electric fuel pumps assure battery saving quick starts by delivering gas the instant the ignition switch is turned on. Built-in filters in 82050 series eliminate the need for other filters in the line.

MODEL 82050 SERIES

Powerful piston-type pump, bringing solid-state reliability to fuel pumps—has one moving part. Two filters. Microbon filter dissipates water, eliminates need for in-line filter, Magnetic filter traps metallic particles. Gas line connection: 1/2" Internal PT.

Model 82050—(12V) negative ground—7 psi

Model 82051—(12V) negative ground—5 psi

Model 82052—(12V) positive or negative ground (Double Insulated)—7 psi

Model 82054—(24V) positive or negative ground—7 psi

Model 82053—Filter element for above pumps

MODEL 235 SERIES

Utilizes built-in screen. Gas line connection: 1/8" Internal PT.

Model 235-A—(12V) positive or negative ground—5 psi

Model 235-B—(6V) positive or negative ground—5 psi

FUEL PUMP APPLICATION CHART

Model No.	Engine Horsepower	Delivery ^①	
		1 psi	3 psi
235-A	Up to 225	26	11
235-B	Up to 150	18	9
82050	Up to 360	34	29
82051	Up to 350	31	24
82052	Up to 350	31	24

^① Gallons per hour as per S-W lab test procedure. Suction lift: 2'. Discharge lift: 0'. Length of suction line: 16'. Length to discharge line: 2'. Diameter of line: 1/4" I.D. Test Fluid: gasoline

SOLID-STATE MARINE FUEL PUMPS—U.L. Listed

Pass all critical tests of the marine division of Underwriter's Laboratories! Corrosion-resistant to prevent leakage. No possibility of accidental grounding. Conform to U.S. Coast Guard regulations effective August 1, 1978 (Hobbs Switch 4012 required).

82055—12-volt, positive or negative ground, 7 psi

82056—24-volt, positive or negative ground, 7 psi

82057—12-volt, positive or negative ground, 4 psi

SAFETY SWITCH RECOMMENDED (Hobbs No. 4012)

This is a single-pole, double-throw pressure switch that can be wired into the electrical system so as to shut off the electric fuel pump when the engine oil pressure drops below 4 P.S.I. In effect, this means that the pump would be shut off if the engine stopped running for any reason, even though the ignition switch remained on.

Engine Starting System

HOBBS ENGINE STARTING SYSTEM— For Fast Starts of Diesel or Gasoline Engines in Extremely Cold or Wet Weather

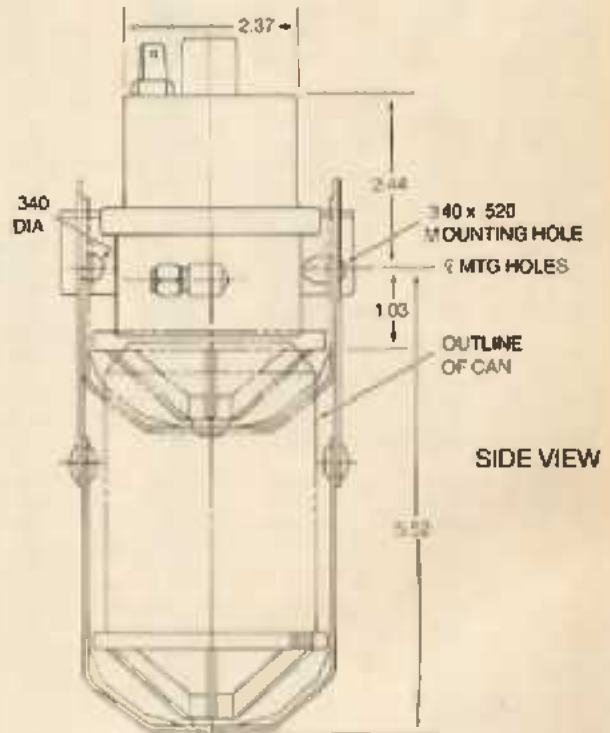
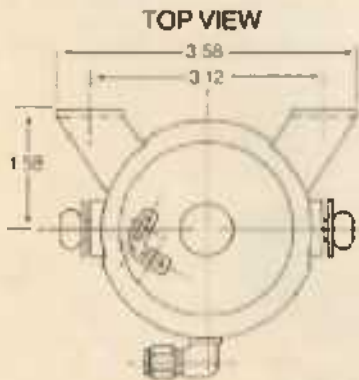
Used by several major original equipment manufacturers, the Hobbs System is reliable, safe and provides fast diesel and gasoline engine starting in cold weather or high moisture conditions. It can be installed to be operated at anytime the dash mounted switch is depressed or can be wired to the starting motor circuit to restrict operation only to the engine cranking cycle. The fluid from a standard 12 ounce starting fluid can is dispensed in a measured 2½ cc shot when the electric solenoid is energized

Kit for 12V 19402
Kit for 24V 19696



19402

BASIC DIMENSIONS



Interchanges

ENGINEERING NUMBER/SALES NUMBER INTERCHANGE

All Stewart-Warner sales models are composed of 1 or more parts. Each of these parts has an engineering part number (usually stamped on the part).

This chart identifies the "parent" Sales Model Number for many Engineering Part Numbers.

To order, the Sales Model Number must be used. Product cannot be ordered using Engineering Part Numbers.

Eng. Number	Sales Number	Eng. Number	Sales Number	Eng. Number	Sales Number	Eng. Number	Sales Number	Eng. Number	Sales Number
323-C	82505	356-BW	82206	465-N	283-J	490-BT	284-F	551-AXL	82685
334-CJ	82508	357-BL	82203	465-P	283-K	490-BW	284-N	551-AXM	82686
334-OA	82510	360-BX	82120	465-R	284-J	490-BX	284-P	598-AP	82152
334-F	280-EC	360-DE	82329	465-S	284-K	490-BY	284-R	598-AR	82153
334-H	280-ED	360-EK	82121	465-AJ	284-AF	490-BZ	284-S	599-AD	82155
334-J	280-EE	360-HYI	82319	465-DH	82114	490 EX-1	284-D	599-AE	82156
334-T	280-EH	360-HZ	82320	465-DZ	82702	490-HC	82710	890-P	285-A
334-AE	280-EJ	360-JA	82321	465-DJ	82115	490-HD	82704	890-S	82404
334-AZ	82503	360-JB	82322	465-DY	82706	490-JF	82717	691-AB	285-D
335-B	280-EK	360-JC	82323	465-EA	82707	490-PP	284-BF	691-AD	285-E
337-AM	281-A	360-JD	82324	465-EB	82708	490-SB	82719	691-AE	285-F
337-BF	82200	360-JE	82325	465-ER	82306	490-SC	82721	691-AF	285-H
337-BH	82201	361-CB	82326	465-ES	82307	491-AK	283-B-72	891-AJ	82405
338-CX	82700	361-CC	82327	465-ET	82308	491-AL	283-C-72	691-CB	82406
338-CM	82108	362-ES	280-EA	465-LP	82715	491-AM	284-B	691-DB	82407
338-DA	82302	362-ET	280-EB	467-CD	82722	491-AN	284-C	691-FB	82408
338-DC	82310	366-FF	82553	467-CE	82723	491-CH	82703-72	692-E	82409
338-DE	82312	378-P	82211	470-H	82716	492	82718	892-W	285-B
337-BJ	82202	378-BW	281-C	470-L	283-H	492-AM	284-B	692-X	285-C
338-AB	282-A	378-BX	281-E	470-M	284-H	492-AN	284-AH	757-AN	82682
338-AD	283-A	455-BF	82712	470-AW	822112	492-AR	284-J	994-A	82157
338-AE	284-A	455-DE	82724	470-BJ	82309	492-AZ	82117	994-B	82158
338-DF	82313	455-J	283-M	470-BF	82709	492-BA	82400	995-D	82623
338-FS	82713	455-L	284-M	470-CH	82337	492-BB	82300	996-H	82154
342-FW	281-D	455-AW	82111	472-E	284-AA	493-AR	82331	997-AA	82150
344-F	281-F	455-BK	82303	472-F	284-AB	493-AS	82332	997-AD	82151
346-FA	281-B-72	460-BD	82705	472-H	284-AD	493-BA	82336	82003	82011
348-R	281-H	460-DE	82714	472-I	82109	497-H	82334	82006	82010
350-X	282-C	469-BT	82711	472-AA	82110	497-J	82335	821135	106-AW
351-H	282-B-72	460-E	283-L	472-AF	82701	499-D	284-AK	825736	284-AL
352-AT	82207	460-F	284-L	481-BN	82618	541-N	82681	878048	82413
352-AW	82208	460-H	284-T	481-CA	82619	550-JS	82675	442057	82410
352-AW	82209	460-R	284-AE	481-CB	82620	550-PD	82676		
353-AH	279-A	460-AR	82113	481-CC	82621	550-SN	82680		
353-BE	279-B	460-AS	82116	481-CD	82622	550-SZ	82677		
353-CJ	82501	460-BF	82304	481-DJ	82633	550-TA	82678		
353-DA	82504	460-BH	82305	481-DM	82638	550-TD	82679		
355-B	82411	462-AL	82720	490-BN	283-D	550-XZ	82687		
355-BM	82328	462-C	82333	490-BP	283-E	551-APP	82683		
356-AJ	82210	462-D	284-AM	490-BS	284-E	551-APS	82684		

SUPERSEDED/DISCONTINUED INTERCHANGE

Superseded/ Discontinued Number	Recommended Substitution	Superseded/ Discontinued Number	Recommended Substitution	Superseded/ Discontinued/ Number	Recommended Substitution	Superseded/ Discontinued/ Number	Recommended Substitution
271-A	271-W	359-M	82311 (82108)	649-X	651-X	82600	82628
281-A	284-A	359-CT	82311 (82108)	649-Z	651-X	82601	82618
281-B	284-B	359-EM	82310	649-AB	—	82602	82618
281-C	284-J	359-EN	82311 (82108)	649-AE	—	82603	82618
281-D	284-D	359-EP	82302	649-AH	—	82604	82638
281-E	284-AE	360-BX	(82120)	649-AY	—	82605	82628
281-F	284-AH	360-DE	82329	649-BF	777-Y	82606	82618
281-H	284-H	360-EK	(82121)	649-BK	651-S	82607	82628
282-A	283-A	360-HL	82721	649-BR	651-BR	82615	82618
282-B	283-B	360-HM	82719	649-BY	—	429370	997-R③
282-C	238-D	360-HY1	82319	649-CD, CE	—	432967	82150②
286-B	82463	360-HZ	82320	649-DF	651-DR	408023	829525-2
286-D	82462	360-JA	82321	649-XR	651-XR	417813	829525-3
287-B	82463	360-JB	82322	667-D	666-H	428989	829525-6
287-C	82464	360-JC	82323	667-T	—	44057-80	82410-60
287-D	82462	360-JD	82324	667-W	—	442057-72	82410-72
301-CL	Neg. 82303 Pos. (82712 Pos. Gnd.)	360-JE	82325	667-AA	777-Y	811198	814143②
301-H	82303 (82111)	360-JW	82323	667-MC	651-B	811658	817825
301-CP	82303 (82111)	360-JY	82325	667-MCA	651-B	811531	82823 & 82620
306-G	82304 (82113)	361-A	82327	667-SC	651-B	811532	82820 & 82623
306-DC	82304 (82113)	361-L	82326	667-SX	651-R	812831	82620 & 82623
306-DB	Neg. 82305 Pos. (82705 Pos. Gnd.)	361-CA-80	82326-60	668-E	652-F	819210	829525-6
306-DD	82305 (82118)	361-CA-95-120	361-CA-144	668-SC	651-B		
311-HC	82305 (82118)	361-CB48	82326-48	668-SN	651-FR		
311-HF	Neg. 82308 Pos. (82706 Pos. Gnd.)	361-CB60	82326-60	668-SX	651-R		
311-W	82308 (82114)	361-CB72	82326-72	690-C	82404		
311-R	82308 (82115)	361-CB86	82326-86	691-CB	82406		
311-HH	82308 (82114)	361-CB120	82326-120	691-DB	82407		
311-HJ	82307 (Water)② (82115)②	361-CB144	82326-144	691-FB	82408		
311-HK	82115 (Oil)② 82308	361-CB216	82326-216	692-E80	82409-60		
352-AT	82207	361-CB288	82326-288	692-E72	82409-72		
352-AT	82207	361-CB380	82326-360	692-E144	82409-144		
352-AW	82208	361-CC60	82327-60	702-D	702-J		
352-AY	82209	361-CC72	82327-72	994-D	82619 & 82623	5601	15002
352-DA	82319	361-CC96	82327-96	994-E	82620 & 82623	5611	15006
353-S	279-B	361-CC144	82327-144	994-F	82620 & 82623	5612	15006
353-AH	279-A	361-CC216	82327-216	997-C	997-B	5613	15007
353-AZ	279-C	362-AA	D-362-DA	998-C	82628	5614	15007
355-A	82328 (82117)	368-AU	368-WL	998-D	82618	5628	15002
355-B	82411	368-FF	82553	998-H	82618	16001	24963
355-F	82400	367-B	82405	998-J	82618	16001	24957
355-BL	82328	369-AW	82312	998-D	82618	16002	24962
355-BM	82328	369-AX	82313	82010	82022		
355-BT	82328	375-AK	82709	82011	82019	16003	24956
356-AJ-36	82210-36	375-AL	82309② (82112)②	82151	82150		
356-AJ-48	82210-48	377-A	82331② (82109)②	82158	82623		
356-AJ-60	82210-60	377-B	82313② (82110)②	82203	82700		
356-AJ-72	82210-72	378-P	82211	82204	82704		
356-AJ-144	82210-144	550-BS	82687	82205	82702		
356-BW-72	82206-72	551-SF	82683	82206	82703		
357-N	82200	551-SE	82684	82302	82311		
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② Uses Series 334 or 280-ED Sender—
Order Separately.

③ Uses Shunt 813849—Order Separately.
④ Uses Shunt 407616—Order Separately.

⑤ 12V. Negative Ground () Marine
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