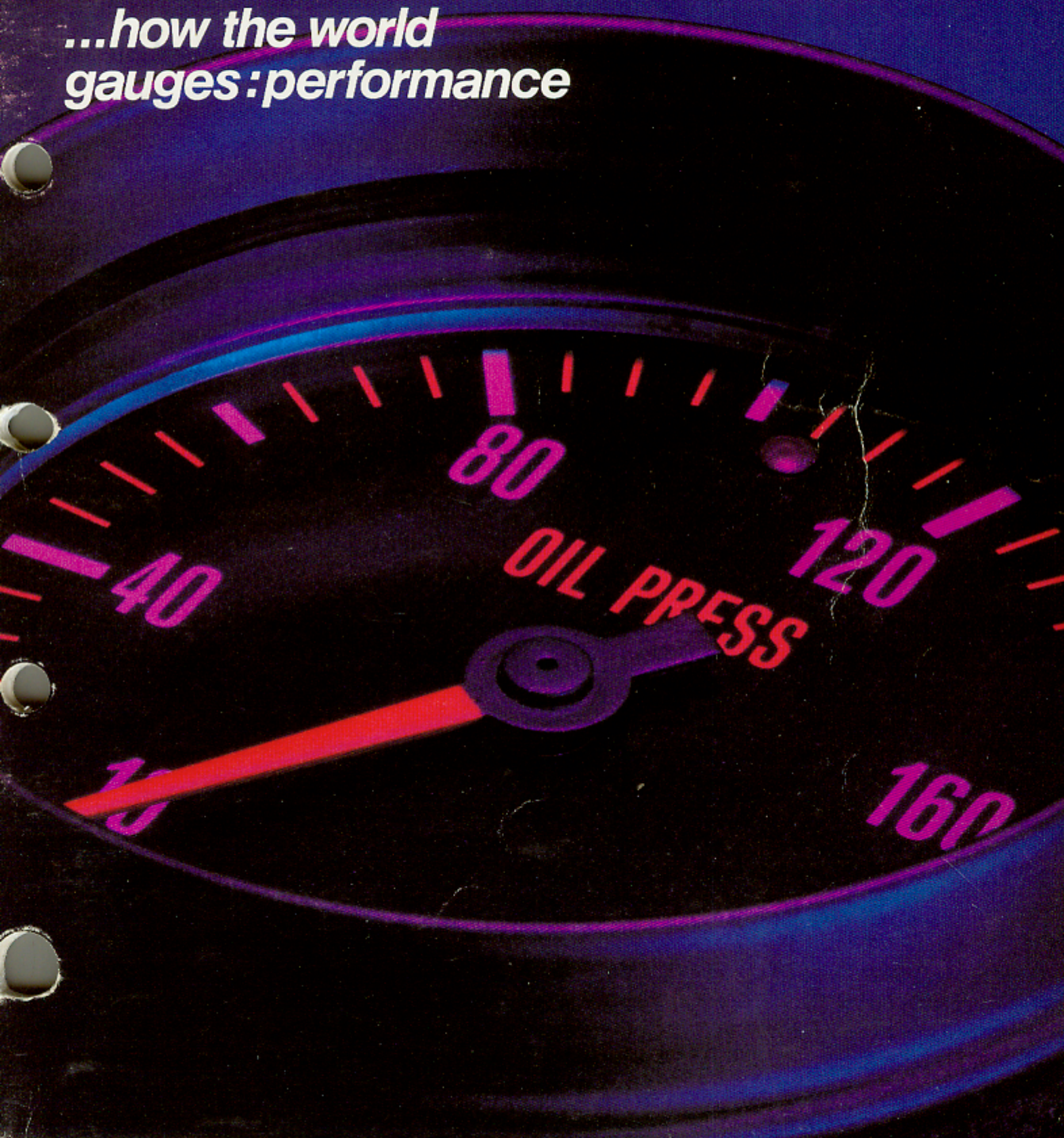


Catalog 700
Effective Jan. 1989
Instruments

STEWART-WARNER INSTRUMENTS

*...how the world
gauges: performance*



SYMBOL OF



EXCELLENCE

THE BENCHMARK OF EXCELLENCE

Since the turn of the century, Stewart-Warner has been the prime maker of precision speedometers, gauges and tachometers for the automotive industry.

This leadership role has virtually created the instrument replacement market as it exists today.

DELUXE GAUGES

- The industry's standard for quality and reliability.
- The choice of more Original Equipment vehicle makers than any other line... creating the instrument aftermarket.
- Constantly updated. The latest improvement being the addition of Trans Optic III lighting.
- The most complete instrument line! Over 50 different models covering all applications.

TRACK FORCE GAUGES

- A line designed specifically for the high performance market.
- Matching 5" racing tachometers and 0-160 range speedometers.

HEAVY DUTY GAUGES

- The latest graphics for the heavy duty market.
- Rugged and dependable for all classes of fleet vehicles.

WORLD-WIDE GAUGES

- The "international" look. Features standard world-wide graphic symbols with metric and English scales on each instrument.

STANDARD & STANDARD PLUS GAUGES

- Economical, dependable, no-frills instrumentation. The Standard Plus Gauges feature illumination.

**YOUR SYMBOL OF EXCELLENCE,
YOUR GAUGE OF QUALITY!**

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The benchmark of excellence world-wide. The industry standard for over 35 years. It may be imitated in looks but no other gauge made can come close to its durability and quality.

Face Dial Black with white graduations and pointers.
Bezel Flat, bright stainless steel.

Case 2 1/16" or 2 5/8" diameter.

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

Electric Gauges Bi-Torque® mechanisms (90° conventional sweep) on 82300 series gauges. Provide long life under heavy vibration. Not affected by changes in ambient temperatures.

Electric pressure, temperature, and fuel level gauges require senders.

Order separately. Pointer on 82300 series resets at random position.

OEM	SALES KIT
338-DC	82311
338-DF	82313
338-JP	82310
455-BK	82303
457-BA	82353
460-BF	82304
460-BH	82305
462-AZ	82346
462-BR	82349
462-C	82333
465-ER	82306
465-ES	82307
465-ET	82308
467-DB	82344
467-DC	82345
467-DE	82351
467-DF	82352
472-CA	82343
474-N	82309
475-M	82347
497-J	82335
690-S	82404
833087	82339
878048	82413
878069	82341
878070	82342

PRESSURE

2 1/16" Case

0-16 psi Fuel	82333	SENDER F-82504
0-80 psi Oil	82304	279-A
0-100 psi Oil	82305, 82349 ^①	F-279-B
0-150 psi Air	82346	279-C



Part No. 82304

TEMPERATURE

2 1/16" Case

100-220°F Hyd. Oil	82345	SENDER 280-EC
100-240°F Water	82306	280-EA
100-280°F Water	82307, 82351 ^①	280-ED
140-320°F Oil Temp.	82308, 82352 ^②	280-EE ^③
0-350°F Trans Oil	82344	280-EE ^④
300°F-1,500°F Pyrometer	82335	82505 ^④



Part No. 82306

FUEL LEVEL

2 1/16" Case

E-1/2-F (SW 240Ω)	82303, 82353 ^①	SENDER see acces. page
E-1/2-F (GM 90Ω)	82341	in-car
E-1/2-F (Ford, Chrysler 70Ω)	82342	in-car



Part No. 82303

2 5/8" Case

E-1/2-F (SW 240Ω)	82413	see acces. page
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AMMETER

2 1/16" Case

30-0-30	82310
60-0-60	82311
100-0-100	82313, 82343 ^②

2 5/8" Case

60-0-60	82404
---------	-------



Part No. 82404

VOLTMETER

2 1/16" Case

10-16 Volt	82309
20-32 Volt	82347



Part No. 82309

CLOCK

2 1/16" Case

12 Hr. Analog	82339
---------------	-------



Part No. 82339

① Positive grd.
② Requires Shunt 407615
③ Extensions available, see accessory page
④ Drain plug sender available F-280-EH 1/4-20 thread



Part No. 82406

1-10 psi Fuel	82319
2-30 psi Fuel	82320
2-30 psi Manifold	82321
5-80 psi Oil	82322
5-100 psi Oil	82323, 82348 [ⓐ]
10-150 psi Air	82329, 82350 [ⓐ]
10-150 psi Dual Air	82332
10-200 psi Oil	82324
10-200 psi Fuel	82325
20-300 psi Trans.	82120
25-400 psi Trans.	82121
1-15 psi Fuel	82405
5-100 psi Oil	82406
10-150 psi Oil	82407
10-150 psi Air	82408 D-368-P [ⓑ]

PRESSURE
2 1/16" Case

2 5/8" Case



Part No. 82410

100-265°F Water	491-CT -600
100-265°F Water	82326 -48, -60, -72, -96, -120, -144, -216, -288, -360
140-325°F Oil	82327 -60" -72", -96", -144", -216"
100-265°F Water	82409
140-325°F Oil	82410

TEMPERATURE
2 1/16" Case

2 5/8" Case



Part No. 82411

0-30 hg.	Vacuum	82328
0-30 Hg/0-15psi	TURBO	82340
0-30 Hg.	Vacuum	82411

VACUUM
2 1/16" Case

2 5/8" Case

Face Dial Black with white graduations and pointers. Bezel Flat, bright stainless steel.

Case 2 1/16" or 2 5/8" in diameter.

Lighting Internal and self-contained on 82300 series gauges. All gauge models include lighting kits.

Mechanical Gauges

Bourdon tube center gear mechanisms. Withstand vibration, unaffected by ambient temperature changes.

Mechanical pressure, vacuum gauges require tubing kits. Order separately.

Pointer rests below first graduation.

Mounting Brackets, instructions included. Install S-W mounting accessory panels as well as existing panels.

OEM	SALES KIT
355-B	82411
360-BX	82120
360-DE	82329
360-EK	82121
360-HY1	82319
360-HZ	82320
360-JA	82321
360-JB	82322
360-JC	82323
360-JD	82324
360-JE	82325
361-CB	82326
361-CC	82327
368-P	D-368-P
490-WA	82340
490-YJ	82348
490-YK	82350
491-CT	491-CT
492-CL	82328
493-AS	82332
691-AJ	82405
691-CB	82406
691-DB	82407
691-FB	82408
692-E	82409
442057	82410

ⓐ 1/4-20 Thread
ⓑ 3/8" case w/warning light

MECHANICAL SPEEDOMETER

3³/₈" Case
5/8"-18
.105 sq. Hole

0-80 mph
Million Mile Odom.
0-85 mph/0-130 kmh
0-160 mph

82692

82677
D-550-BP



Part No. 82677

ELECTRIC SPEEDOMETER

3³/₈" Case

0-100 mph
Million Mile Odom.
12v neg/pos Grd.

D-105-H

SENDER
(106-AW)



Part No. D-105-H

MECHANICAL TACHOMETER

3³/₈" Case
5/8"-18
.105 sq. Hole

0-3500 .5:1 w/Odom.
0-3500 .5:1
0-3500 .1:1 w/Odom.
0-3500 1:1
0-5000 .5:1
0-9000 .5:1

82688
82689
82690
82691
551-AKM
D-535-AH



Part No. 551-AKM

ELECTRIC TACHOMETER

3³/₈" Case

0-3500 Var. Ratio
Any Volt or Grd.
0-3500 Var. Ratio 12V
Neg Grd. See access.
for 24 or 32V.
0-3500 Var. Ratio 12V
Neg. Grd. w/odometer
0-6000 4, 6, 8 cyl.,
12 Pole Marine alt. —
outboard
0-8000 4, 6, 8 cyl.
12 Pole Marine alt. —
outboard

82157

82620

82622

82162

82170

SENDER
(106-AW)

(82623)

(82623)



Part No. 82620
Use Sender 82623



Part No. 82622
Hourmeter Use Sender 82623

OEM	SALES KIT
481-CB	82620
481-CD	82622
481-HH	82162
481-JW	82170
535-AH	D-535-AH
550-BP	D-550-BP
550-SZ	82677
550-ZT	82692
551-AKM	D-551-AKM
551-AZY	82688
551-AZZ	82689
551-BAA	82690
551-BAB	82691
994-A	82157
821134	D-105-H

HEAVY DUTY ELECTRIC GAUGES

Accessories on pages 20-23



Part No. 284-L

PRESSURE 2 1/16" Case

0-16 psi Fuel	284-AM
0-80 psi Oil	284-AE
0-100 psi Oil	284-L
0-150 psi Air	284-T

SENDER
F-82504
279-A
F-279-B
279-C



Part No. 284-J

TEMPERATURE 2 1/16" Case

100-230°F Water	284-AF
100-280°F Water	284-J
140-320°F Oil	284-K
100-600°F Cyl. Head	284-AK
300-1,500°F Pyrometer	82334

SENDER
280-EC
F-280-ED
F-280-EE ^③
280-EK
82505 ^④

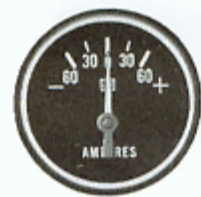


Part No. 284-M

FUEL LEVEL 2 1/16" Case

E-1/2-F (SW240Ω)	284-M
E-1/2-F (GM90Ω)	284-BS
E-1/2-F (Ford, Chrysler 73Ω)	284-BR

SENDER
See
Accessory
Page
In Car
In Car



Part No. 284-A

AMMETER 2 1/16" Case

60-0-60	284-AB ^①
	284-A
100-0-100	284-AA ^②
150-0-150	284-AD ^③



Part No. 284-H

VOLTMETER 2 1/16" Case

10-16 Volt	284-H
20-32 Volt	284-AJ



Part No. 82338

CLOCK 2 1/16" Case

12 Volt Analog w/Sweep Second Hand	82338
---------------------------------------	-------

- O.E. replacement gauge
- Rugged heavy-duty mechanism
- Superior lighting
- Unquestioned reliability for every heavy-duty situation.

Face Dial Black with white graduations and pointers.
Bezel Raised, painted satin black. Steel or stainless steel.
Case 2 1/16" (steel).
 Dichromate coating resists corrosion.
Lighting Internal and self-contained. Lighting kits are included.
Electric Gauges Bi-Torque[®] mechanisms. Can be mounted at any angle. Not affected by car voltage or changes in ambient temperature. **Electric pressure, temperature, and fuel level gauges require senders.** Order separately. Pointer rests at random position.

OEM	SALES KIT
338-AE	284-A
455-L	284-M
460-F	284-L
460-H	284-T
460-R	284-AE
462-D	284-AM
465-AJ	284-AF
465-R	284-J
465-S	284-K
471-C	284-AJ
472-E	284-AA
472-F	284-AB
472-H	284-AD
474-AB	284-H
497-H	82334
499-D	284-AK
833086	82338
878065	284-BS
878066	284-BR

① Requires Shunt 813489
 ② Requires Shunt 407616
 ③ Requires Shunt 413717
 ④ Extensions Available See p. 24
 ⑤ Drain Plug Sender Available. F-280-EH 1/2-20 Thread

Face Dial Black with white graduations and pointers.

Bezel Raised, painted satin black. Steel or stainless steel.

Case 2 1/16" (steel).

Dichromate coating resists corrosion.

Lighting Internal and self-contained. Lighting kits are included.

Mechanical Gauges

Bourdon tube, Accustat® mechanisms. Silicone damped pointer assures steady readings. Withstands heavy vibration. **Mechanical pressure and vacuum gauges require tubing kits.** Order separately. Pointer rests below first graduation.

Mounting Brackets, instructions included. Install in S-W mounting accessory panels as well as existing panels.

OEM	SALES KIT
490-BS	284-E
490-BW	284-N
490-BX	284-P
490-BY	284-R
490-BZ	284-S
490-EX1	284-D
490-PP	284-BF
491-AM	284-B
491-AN	284-C
492-AP	284-AH
492-CM	82301
493-AR	82331
493-BA	82336

PRESSURE

2 1/16" Case

1-15 psi Fuel	284-E
5-100 psi Oil	284-D
10-150 psi Air	284-N
10-150 psi Dual Air	82331
10-200 psi Oil	284-P
20-300 psi Trans.	284-R
25-400 psi Trans.	284-S



Part No. 284-D

TEMPERATURE

2 1/16" Case

110-260°F/150 psi Dual	82336	-96"
100-265°F Water	284-B	-36"
		-72"
		-144"
140-325°F Oil	284-C	-72"
		-144"



Part No. 284-B

VACUUM

2 1/16" Case

0-30 Hg Vacuum	284-AH
0-30 Hb/15 psi Turbo	284-BF
0-30 Hg Fuel Economy	82301*



Part No. 284-AH

*Includes T-Fitting & Hose

SPEEDOMETERS & TACHOMETERS

Accessories on pages 20-25



Part No. 550-HF

MECHANICAL SPEEDOMETERS

3 3/8" Case

5/8"-18

.105 sq. Hole

0-80 mph

Million Mile Odom. D-550-HF

0-85 mph/0-130 kmh

82678

0-160 mph

D-550-HH



Part No. 82678



Part No. 551-AHK

MECHANICAL TACHOMETERS

3 3/8" Case

5/8"-18

.105 sq. Hole

0-3500 .5:1

D-551-AHK

0-3500 .5:1

w/Odom.

D-551-AHL

0-9000 .5:1

D-535-AK

ELECTRIC TACHOMETERS

3 3/8" Case



Part No. 82619
Use Sender 82623

0-3500 Var. Ratio
Any Volt or Grd.

D-994-C

SENDER
(106-AW)

0-3500 Var. Ratio 12V
Neg. Grd. See Access.
for 24 or 32V

82619

(82623)

0-3500 Var. Ratio 12V
Neg. Grd. w/odometer

82621

(82623)



Part No. 82621
With Hourmeter

0-6000 4, 6, 8 Cyl.
12 Pole Marine alt.
outboard

82164

0-8000 4, 6, 8 Cyl.
12 Pole Marine alt.
outboard

82171

OEM	SALES KIT
481-CA	82619
481-CC	82621
481-HJ	82164
481-JX	82171
535-AK	D-535-AK
550-HF	D-550-HF
550-HH	D-550-HH
550-TA	82678
551-AHK	D-551-AHK
551-AHL	D-551-AHL
994-C	D-994-C

TRACK FORCE ELECTRIC GAUGES

Accessories on pages 20-23

This new addition offers more high technology for the nineties and beyond. Transoptic lighting for superior visibility. 2 case sizes and choice of bezel finishes for the ultimate in custom designing your dash.

Face Dial Bold high-visibility graphics. Black with yellow and white graduations. Bright red sweep hand indicator.

Bezel Raised, flat black finish, or stainless steel.

Case Gauges are 2 5/8" or 2 1/16" in diameter, steel. Speeds and tachs are 5" or 3 3/8" steel.

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

Electric Gauges Bi-Torque® mechanisms. Can be mounted on 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 rests at random position.

OEM	SALES KIT
338-JE	P-82855
338-JL	P-82875
455-DP	P-82863
455-ED	P-82883
460-EP	P-82868
460-ER	P-82865
460-EZ	P-82885
460-FA	P-82888
465-NX	P-82866
465-NY	P-82867
465-PW	P-82886
465-PX	P-82887
470-EF	P-82862
470-EM	P-82882
690-W	P-82805
690-X	P-82825
695-D	P-82812
695-E	P-82832
878057	P-82813
878063	P-82869
878064	P-82870
878073	P-82833
878074	P-82889
878075	P-82890

PRESSURE

2 1/16" Case

	BLACK	STAINLESS	SENDER
0-16 psi Fuel	P-82868	P-82888	F-82504
0-100 psi Oil	P-82865	P-82885	F-279-B



Part No. P-82865

TEMPERATURE

2 1/16" Case

	BLACK	STAINLESS	SENDER
100-280°F Water	P-82866	P-82886	F-280-ED
140-320°F Oil	P-82867	P-82887	F-280-EE



Part No. P-82867

FUEL LEVEL

2 1/16" Case

	BLACK	STAINLESS	SENDER
E-1/2-F (SW 240Ω)	P-82863	P-82883	see acces. page
E-1/2-F (GM 90Ω)	P-82869	P-82889	in car
E-1/2-F (Ford, Chrysler 73Ω)	P-82870	P-82890	in car
E-1/2-F (SW 240Ω)	P-82813	P-82833	see acces. page



Part No. P-82813

AMMETER

2 1/16" Case

	BLACK	STAINLESS
60-0-60	P-82855	P-82875
60-0-60	P-82805	P-82825



Part No. P-82805

VOLTMETER

2 1/16" Case

	BLACK	STAINLESS
10-16 Volt	P-82862	P-82882
10-16 Volt	P-82812	P-82832



Part No. 82812

TRACK FORCE MECHANICAL GAUGES

Accessories on pages 20-23



Part No. P-82807

PRESSURE

2 1/16" Case

	BLACK	STAINLESS
1-16 psi Fuel	P-82856	P-82876
5-100 psi Oil	P-82857	P-82877
10-200 psi Oil	P-82858	P-82878

2 5/8" Case

	BLACK	STAINLESS
1-15 psi Fuel	P-82806	P-82826
5-100 psi Oil	P-82807	P-82827
10-200 psi Oil	P-82808	P-82828

TEMPERATURE

2 1/16" Case

	BLACK	STAINLESS	LENGTH
100-265°F Water	P-82859	P-82879	- 36, - 72, - 144
140-325°F Oil	P-82860	P-82880	- 36, - 72, - 144

2 5/8" Case

	BLACK	STAINLESS	LENGTH
100-265°F Water	P-82809	P-82829	- 72, - 144
140-325°F Oil	P-82810	P-82830	- 72, - 144



Part No. 82809

VACUUM

2 1/16" Case

		BLACK	STAINLESS
0-30 hg	Vacuum	P-82861	P-82881
0-30 Hg/ 0-15 psi	Turbo	P-82864	P-82884

2 5/8" Case

		BLACK	STAINLESS
0-30 Hg	Vacuum	P-82811	P-82831
0-30 Hg/ 0-40 psi	Turbo	P-82814	P-82834



Part No. 82811

Face Dial Bold high-visibility graphics. Black with yellow and white graduations. Bright red sweep hand indicator.

Bezel Raised, flat black finish, or stainless steel.

Case Gauges are 2 5/8" or 2 1/16" in diameter, steel. Speeds and tachs are 5" or 3 3/8" steel.

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

Mechanical Gauges Bourdon tube Accustat® mechanisms. Withstands heavy vibration. Silicone damped pointer assures steady readings. **Mechanical pressure, vacuum gauges require tubing kits.** Pointer rests below first graduation.

Mounting Gauges come with mounting brackets and instructions. Install in S-W mounting panels as well as existing panels.

OEM	SALES KIT
490-TT	P-82856
490-TW	P-82857
490-TX	P-82858
490-TY	P-82864
490-XS	P-82876
490-XT	P-82877
490-XW	P-82878
490-XX	P-82884
491-DX	P-82860
491-DW	P-82859
491-EL	P-82879
491-EM	P-82880
492-CZ	P-82811
492-DA	P-82861
492-DH	P-82831
492-DJ	P-82881
691-AW	P-82806
691-AX	P-82807
691-AY	P-82808
691-AZ	P-82814
691-BH	P-82826
691-BJ	P-82827
691-BK	P-82828
691-BL	P-82834
692-AE	P-82809
692-AF	P-82810
692-AM	P-82829
692-AN	P-82830

For matching Tachometers see page 12.

MECHANICAL SPEEDOMETERS

3 3/8" Case

5/8"-18

.105 sq. Hole

0-160 mph

BLACK
P-82852

STAINLESS
P-82872



Part No. P-82852

MECHANICAL TACHOMETERS

5/8"-18

.105 sq. Hole

0-10,000 3 3/8" Panel .5:1

Adj. Redline

0-10,000 5" Panel .5:1

BLACK
P-82851

STAINLESS
P-82871



Part No. P-82851

ELECTRIC TACHOMETERS

0-8,000 2 1/2" Mini-Tach.
4, 6, 8 Cyl. Adj. Redline

0-10,000 3 3/8" Pedestal
4, 6, 8 Cyl. Adj. Redline

0-10,000 3 3/8" Panel
4, 6, 8 Cyl. Adj. Redline

0-10,000 5"
Ign. Tach. 4, 6, 8 Cyl.

0-10,000 5"
Telltale 4, 6, 8 Cyl.

0-12,000 5"
Telltale Memory
4, 6, 8 Cyl.

BLACK
P-82854

STAINLESS
—

P-82853

—

P-82850

P-82873

P-82803

P-82823

P-82800

P-82820

P-82802

P-82822



Part No. P-82850



Part No. P-82800

OEM	SALES KIT
481-FX	P-82850
481-FW	P-82800
481-HA	P-82853
481-HZ	P-82820
481-JA	P-82873
481-JL	P-82802
481-JM	P-82822
481-JN	P-82803
481-JP	P-82823
550-ZR	P-82872
550-ZJ	P-82852
551-AYT	P-82801
551-AYW	P-82851
551-AZN	P-82821
551-AZP	P-82871
833929	P-82854

WORLD WIDE ELECTRIC GAUGES

Accessories on pages 20-23

SYMBOL OF
SW
EXCELLENCE



Part No. 82705

PRESSURE 2 1/16" Case

0-100 psi Oil 82705
0-100 psi Converter 82714

SENDER
F-279-B
F-279-B



Part No. 82702

TEMPERATURE 2 1/16" Case

100-280°F Water 82702
150-350°F Oil 82706
150-350°F Converter 82715

SENDER
F-280-ED
F-280-EE®
F-280-EE®



Part No. 82712

FUEL LEVEL 2 1/16" Case

0-1/2-3/4 (SW240Ω) 82712
0-1/2-3/4 (GM90Ω) 82726
0-1/2-3/4 (Ford, Chrysler 73Ω) 82727

SENDER
See
Accessory
Page
In Car
In Car



Part No. 82700

AMMETER 2 1/16" Case

30-0-30 82713
60-0-60 82700



Part No. 82709

VOLTMETER 2 1/16" Case

10-16 Volt 82709

Offering metric and english scales on one instrument. The "international" look features colorful graphics and a fluorescent pointer.

Face Dial Black with red pointer. Numerals are white for the English system, yellow for Metric. International symbols indicate function being monitored.

Bezel Raised and made of bright stainless steel. **Case** 2 1/16" (steel) diameter. Dichromate coating resists corrosion.

Lighting Internal and self-contained. Lighting kits are included.

Electric Gauges Bi-Torque mechanisms. Can be mounted at any angle. Not affected by car voltage or changes in ambient temperature. **Electric pressure, temperature, and fuel level gauges require senders.** Order separately. Pointer rests at random position.

OEM	SALES KIT
338-CX	82700
338-FS	82713
455-BF	82712
460-BD	82705
460-DE	82714
465-DZ	82702
465-DY	82706
465-LP	82715
470-DY	82709
878067	82726
878068	82727

©Drain Plug Sender F280-EH 1/2"-20 Thread

Face Dial Black with red pointer. Numerals are white for the English system, yellow for Metric. International symbols indicate function being monitored.

Bezel Raised and made of bright stainless steel.

Case 2 1/16" (steel) diameter. Dichromate coating resists corrosion.

Lighting Internal and self-contained. Light kit included.

Mechanical Gauges

Bourdon tube, Accustat® mechanisms. Silicone damped pointer assures steady readings. Withstands heavy vibration. **Mechanical pressure and vacuum gauges require tubing kits.**

Order separately. Pointer rests below first graduation.

Mounting Mounting brackets, instructions included. Install in S-W mounting accessory panels as well as existing panels.

OEM	SALES KIT
490-HC	82710
490-HD	82704
490-JF	82717
490-SP	82725
491-CH	82703
492-CR	82718

PRESSURE

2 1/16" Case

5-100 psi Oil	82704,
	82725 [Ⓟ]
10-150 psi Air	82710
20-300 psi Trans.	82717



Part No. 82704

TEMPERATURE

2 1/16" Case

100-265°F Water	82703	-72
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Part No. 82703

VACUUM

2 1/16" Case

0-30 Hg.	82718
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Part No. 82718

© 90° Pointer Sweep

WORLD WIDE SPEEDOMETERS & TACHOMETERS

SYMBOL OF
SW
EXCELLENCE

Accessories on pages 20-25



Part No. 82680

MECHANICAL SPEEDOMETERS

3 3/8" Case

5/8"-18

.105 sq. Hole

0-80 mph/0-130 kph 82680
0-140 kmh/0-90 mph 82676



Part No. 82676

ELECTRIC TACHOMETERS

3 3/8" Case



Part No. 82617

0-3500 Var. Ratio 82617
Any Volt or Grd.

0-3500 Vac. Ratio 12V 82633
Neg. Grd. See Acces.
for 24 or 32V

0-6000 4, 6, 8 Cyl.
Ignition Tach. 82616

SENDER
(106-AW)

(82623)



Part No. 82633

OEM	SALES KIT
481-DJ	82633
550-PD	82676
550-SN	82680
994-L	82617
997-AH	82616



Accessories on pages 20-23

Our economy line offers dependable, no-frills instrumentation. Non-illuminated Standard Gauges for industrial uses or illuminated Standard Plus Gauges prove that lower price doesn't mean lower quality.

Face Dial Black with white pointers, graduations, numerals.

Bezel Flat and bright stainless steel.

Case 2 1/32" in diameter steel.

Lighting Non-illuminated. Standard Plus Illuminated.

Electric Gauges Thermo mechanisms. Withstand vibration and changes in ambient temperature.

Electric fuel level gauges require senders. Order separately. Pointer rests below first graduation.

Mechanical Gauges

Diaphragm mechanisms. Withstand vibration and changes in ambient temperature. **Mechanical pressure gauges require tubing kits.** Order separately. Pointer rests below first graduation.

Mounting Gauges come with mounting brackets and instructions.

OEM	SALES KIT
316-AD	82211
337-BF	82200
337-BH	82201
337-BJ	82202
356-AJ	82210
352-AT	82207
352-AW	82208
352-AY	82209

MECHANICAL

PRESSURE

2 1/32" Case

0-50 psi	82207
0-80 psi	82208
0-100 psi	82209

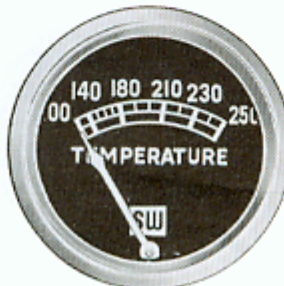


Part No. 82209

TEMPERATURE

2 1/32" Case

100-250° F	82210-36", -48", -60", -72", -144"
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Part No. 82210

ELECTRIC

AMMETER

2 1/32" Case

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



Part No. 82200

FUEL LEVEL

2 1/32" Case

E-1/2"-F (SW 240Ω) See accessory page for Sender	82211
--	-------



Part No. 82211

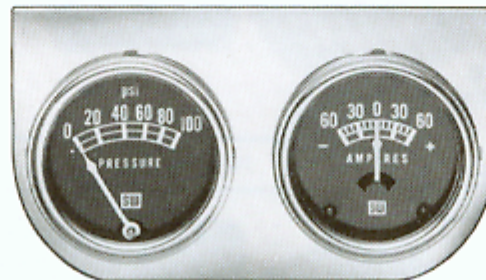


SINGLE PANEL KIT

Ammeter (60-0-60) 82212
Includes mounting panel, 12 volt lighting, and instructions for electrical systems charging up to 60 amps.

Mech. Oil Pressure (0-100 psi) 82213
Includes mounting panel, 6' tubing kit with fittings, 12 volt lighting, and instructions.

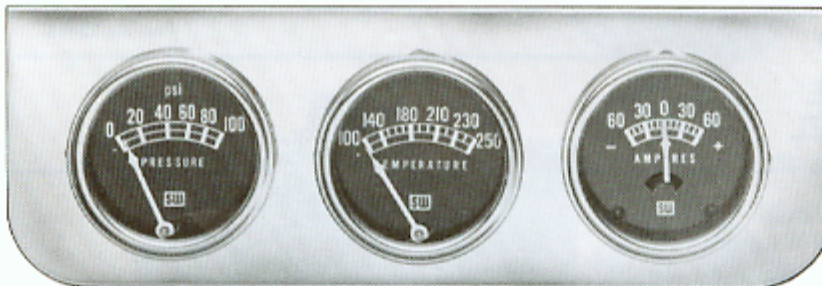
Mech. Temperature (100-250° F) 82214-72"
Includes mounting panel, 12 volt lighting, and instructions.



DOUBLE PANEL KIT

Mech. Oil & Ammeter (0-100 psi/ 60-0-60) 82215
Includes mounting panel, 6' tubing kit with fittings, 12 volt lighting, and instructions. Ammeter for electrical systems charging up to 60 amps.

Mech. Oil & Temp. (0-100 psi/ 100-250° F) 72 inch capillary 82216
Includes mounting panel, 6' tubing kit with fittings, 12 volt lighting, and instructions.

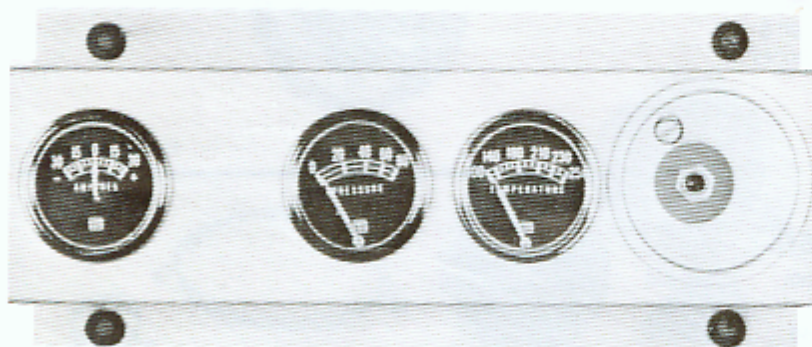


TRIPLE PANEL KIT

Mech. Oil & Temp., Ammeter (0-100 psi/100-250° F/60-0-60) 82217
72 inch capillary
Includes mounting panel, 6' tubing kit with fittings, 12 volt lighting, and instructions. Ammeter for electrical systems charging up to 60 amps.

The Stewart-Warner Safety Panel is designed to monitor the operation of unattended or remotely controlled gasoline or diesel engines. Typical applications are irrigation pump stations, generators, air compressors and refrigeration systems. Gauges can be preset to selected limits and will shut down the engine if those limits are exceeded.

The Safety Panel includes an ammeter, pressure gauge and water temperature gauge, mounted in a rugged, weatherproof housing together with manual stop switch and reset button. Complete with 48" wire leads, wiring diagram and operating instructions.



D-524-DF-48

ENGINE SAFETY PANEL WITH AUTOMATIC SHUT-OFF

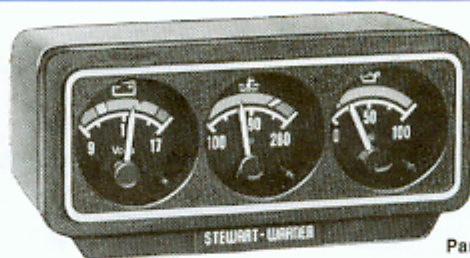
Ammeter 82200
Pressure 444701
Temperature 742412
Switch 366-SP

D-524-DF-48

MINI PANEL

Includes voltmeter, water temperature, and oil pressure gauge in panel 4 1/4" w by 2" h by 2" d. For water temperature there is 1/8" sender, two adapters: 1/2" and 3/8". For oil pressure 1/8" sending unit, 1/4" adapter, 10mm male female adapters, and 2 3/4" extension.

82459



Part No. 82459

WORLD WIDE SINGLE PANELS

60-0-60 Ammeter 82465

10-16V Voltmeter 82466

100-280°F Electric Water 82467

with 1/8", 3/8", 1/2" adapters/
sender.

0-100 Mechanical Oil Press. 82468

with 1/8"-27, 1/4"-18, 10 mm
fittings. Includes tubing.

0-30" Vacuum w/T-Fitting
& Hose 82469



Part No. 82467



Part No. 82465

WORLD WIDE DOUBLE PANEL

0-100 psi Mechanical Oil, 82463

60-0-60 Ammeter & Senders
with 1/8"-27, 1/4"-18, 10 mm
fittings.

100-280 Electric Water, 0-100 82464

Oil & Senders with 1/8", 3/8",
1/2" pt adapters/sender.



Part No. 82464

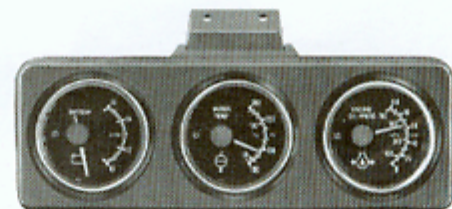
WORLD WIDE TRIPLE PANEL

100-280 Electric Water with 82462

1/8", 3/8", 1/2" adapters/
sender, 0-100 Mechanical Oil

with 1/8"-27, 1/4"-18, 10 mm
fittings, & 10-16 Voltmeter.

Senders & tubing incl.



Part No. 82462

HAND TACH

0-4000 Clockwise, 82682

Counterclockwise 3" diam., 4"
long. Used for direct measure
on rotating shaft. Ext. shaft &
tips available. See accessories
page 25. Packed in
styrofoam.



Part No. 82682

LOW SPEED SPEEDOMETER

0-10 mph 2.95" case diam. 550-KM

internal lighting.

Speedo kit includes above 366-WL

plus 108" flexshaft, mounting
and tire takeoff.



Part No. 550-KM



Part No. 82460

MOTOR MINDER

0-30" Hg Fuel Economy Gauge with pedestal mount. Includes tubing & fittings.

82460



Part No. 82461

TURBO GAUGE

0-30" Hg/0-15 psi Vacuum-Boost Gauge with pedestal mount. Includes tubing.

82461



Part No. 82628

MINI TACHOMETER

0-8000 rpm 2½" diam. 3½" high pedestal mount. 12 V neg. grd. for 4, 5, 6, 8 cyl. adj. redline.

82628



Part No. 82618

ELECTRIC TACHOMETER

0-8000 rpm 3½" diam. pedestal mount. 12 V neg. grd. for 4, 6, 8 cyl. adj. redline.

82618



Part No. 82638

ELECTRIC TACHOMETER

0-9000 rpm 3¾" diam. pedestal mount. 12 V neg. grd. for 4, 6, 8 cyl. adj. redline.

82638



TEMPERATURE SENDERS 12 VDC

Gauge #	Range	Univ.	1/8" PT	1/4" PT	3/8" PT	1/2" PT	Drain Plug	Univ. Metric.
264-AF; 82345	100°-230° F Water	280-EC*		D-334-N	D-334-P	D-334-R		
82306	100°-240° F Water	280-EA*	D-362-CZ	D-362-AN	D-362-AJ	D-362-AH		
264-J; 82307; 82351; 82702; P82866; P-82886	100°-280° F Water	F-280-ED*	D-334-H	D-334-AA	D-334-AB	D-334-AD		F-82510*
264-K; 82308; 82344; 82352; 82706; 82715; P-82867; P-82867	140°-320° F Oil	F-280-EE*					F-280-EH*	
264-AK	100°-600° F Cyl.	280-EK						
82334; 82335	300°-1,500° F Pyro	82505*						

- 1/2-20 UNF Thread
- * Includes Adapters for 1/4", 1/2", 3/8", 1/2", PT
- Includes Adapters for 10, 14, 16, 18 mm Threads
- ▲ Extensions available 5 ft. 82556-1; 10 ft. 82556-2; 20 ft. 82556-3



TEMPERATURE SWITCHES 12 VDC

Range	1/4" PT	3/8" PT	1/2" PT
200° F ± 5°	D-363-D	D-363-E	D-363-F
225° F ± 5°	F-363-AM		F-363-G
250° F ± 5°			F-363-W



Part No. 363-F

PRESSURE SENDERS 12 VDC

Gauge #	Range	Univ.
284-AM; 82333; P-82868; P-82888	0-16 psi	F-82504*
284-AE; 82304	5-80 psi	279-A*
284-L; 82305; 82349; 82705; 82714; P-82865; P-82885	5-100 psi	F-279-B*
284-T; 82346	5-150 psi	279-C*

*Includes Adapter for 1/8", 1/4" PT



Part No. 279-A,B

PRESSURE SWITCHES 12 VDC

Range	1/8" PT
6 psi	F-364-L
15 psi	F-364-K



Part No. 364-L

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. Used with S-W 240Ω Fuel Gauges.

Description	12-Volt
6"-12" depth; LH arm	F-385-B
6"-12" depth; RH arm	F-385-C
10"-15" depth; LH arm	F-391-A
10"-15" depth; RH arm	F-391-B
15½"-24" depth; LH arm	D-391-C
15½"-24" depth; RH arm	D-391-D



For 10"-15" or 15½"-24" Depth

REPLACEMENT FLOATS:

411290 Brass (for 391 Series)

427410 Plastic (for 385 Series)

NOTE: Order Fuel Level Sender (Tank Unit) Installation Kit No. F-366-LP separately, if needed. Flange should be welded/soldered to tank. Kit contains:

1—No. 93310 Flange

5—No. 79295 Screws

1—No. 72030 Gasket*

5—No. 61463 Washers

*Also available individually.



For 6"-12" Depth

VOLTAGE ADAPTERS FOR GAUGES

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

	24 VDC	32 VDC
12 Volt Bi-Torque Gauges	829525-2	829525-8
Pyrometers 82344, 82335	829525-9	—



Part No. 829525-2

WARNING DEVICES

AUDIO-VISUAL SYSTEM

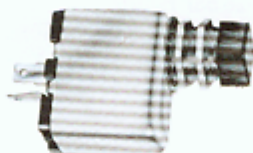
Light & Buzzer D-825104

Above with

364-L & 363-F

Switches

366-TJ



Part No. D-825104

WARNING LIGHT



Part No. F-420125

IGNITION SWITCH

Mounts in ¾" hole

12 VDC



Part D-370-T



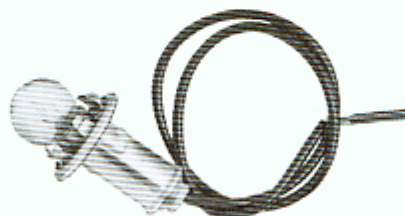
REPLACEMENT LIGHT KITS

Use 2-wire for non-grounded panels.

	1-Wire	2-Wire
3/8" Light Hole (Metal Socket 1 Inch Long)	F-366-FK	—
3/8" Light Hole (Metal Socket 1 Inch Long)	366-CH*	—
3/8" Light Hole (Plastic Socket 1 Inch Long)	366-SZ	366-SX
1/2" Light Hole (Metal Socket 1 Inch Long)	—	82550, 82551

*Same as F366-FK but includes Mtg. Bracket

Part No. F-366-FK



ADAPTER NUTS & KITS INDIVIDUAL MECHANICAL TEMPERATURE

	Steel	Brass
1/4" PT*	428819 (3/16" I.D.)	—
3/8" PT	72446 (7/16" I.D.)	408550 (7/16" I.D.)
1/2" PT	—	90567 (7/16" I.D.) 412208 (1/2" I.D.)
3/8"-18	—	95527 (7/16" I.D.)

*For tubing less than 120" long.



Part No. 72446

366-NK KIT MECHANICAL TEMPERATURE

Includes following Quantities
and Parts

- 8 — 72446
- 2 — 90567
- 2 — 95527
- 4 — 428819

82512 KIT METRIC MECHANICAL TEMPERATURE

- 3 — M14 x 1.5 w/Gaskets (3/8" I.D.)
- 4 — M16 x 1.5 w/Gaskets (7/16" I.D.)
- 3 — M18 x 1.5 w/Gaskets (1/2" I.D.)

366-ST METRIC PSI NUT KIT

- 1 — M10 x 1
- 1 — M12 x 1.5
- 1 — M14 x 1.5

82561 JAPANESE PSI NUT KIT

- 1 — 1/8"-28 BSP Male
- 1 — 1/8"-28 BSP Female



Part No. 366-ST



Part No. 82561

G

TUBING KITS PRESSURE KITS

Contains 1/8" Female PT Nut, 1/8" Male PT Nut, 1/4" Adapter Nut.

6 ft. Tubing

F-82553

16 ft. Tubing

F-366-HM

VACUUM

Contains Gauge to Hose Adapter Nut, "T" Fitting and 6 ft. of Hose.

F-82562



Part No. 82553
Part No. 366-HM

GAUGE MOUNTING PANELS (DASH MOUNT)

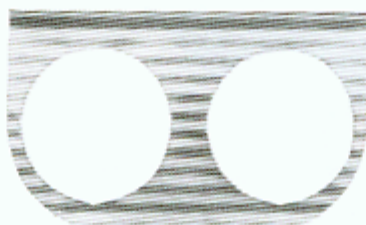
Die cast is black w/optional wood grain overlay.

Plastic is Noryl Black Plastic.

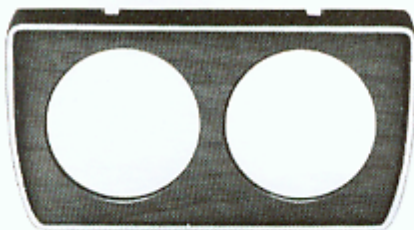
	Chrome	Chrome	Die Cast	Plastic
	2 1/16	2 3/16	2 1/16	2 1/16
1-Hole	F-817825	F-811659	289-B	288-A
2-Hole	F-814143	F-813877	289-C	287-A
3-Hole	F-811653	F-813642	289-D	286-A



Part No. F-817825



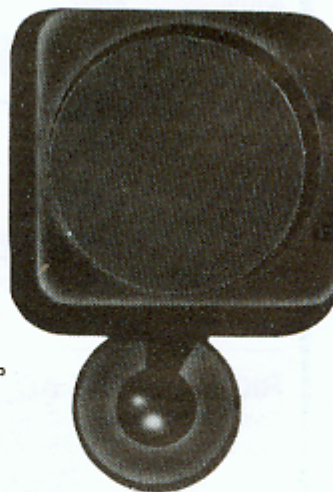
Part F-814143



Part No. 289-C



Part No. 288-A



F-366-MP

D-106-AW

Connects to mechanical take-off. No voltage input required. Max. rpm 3,000.

USED ON FOLLOWING:

D-105-H
D-994-C
82157
82617
Tachs. can be used on any grd.
or electrical system.
Sender will operate 2 tachs.

AVAILABLE TIPS:

.104 Sq.	821870
.150 Sq.	821871
.183 Sq.	821872
.193 Sq.	821873
.152 Tang	821874
.187 Tang	821875
.203 Tang	821876



Part No. 106-AW

F-82565 Tachometer Sender Kit

Connects to mechanical take-off on distributors or magnetos. No voltage input required. Will operate most S-W bi-torque tachs. Easy two-wire hook-up. Comes with .104 tip.

AVAILABLE TIPS:

.203 Tang	82624
.187 Tang	82625
.152 Tang	82626
.104 Sq.	82629



Part No. F-82565

82623 7/8"-18 Thread

Connects to mechanical take-off. Requires 12VDC input. Comes with .187 tang tip. One sender will operate two tachs. Max rpm 3,500.

USED WITH:

82619	82622
82620	82633
82621	

SENDER EXTENSION

Extension	103402
2 3/8" Long	
.152 Clutch	814011
.187 Clutch	814012

AVAILABLE TIPS:

.203 Tang	82624
.187 Tang	82625
.152 Tang	82626
.104 Sq.	82629
.150 Sq.	82630
.184 Sq.	82631
.193 Sq.	82632

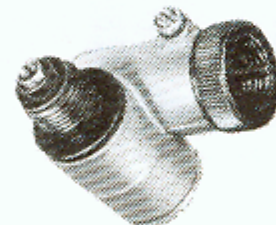


24V & 32V CONVERTER

For use with non-hourmeter Tachs.	24V DC	82563
	32V DC	82564

RIGHT ANGLE ADAPTERS FOR FLEXSHAFTS

Clockwise	1:1	5/8-18	F-407010	.104 Sq.
Counterclockwise	1:1	5/8-18	D-411335	.104 Sq.



Part No. F-407010

PRE-ASSEMBLED FLEXSHAFTS

5/8"-18 Upper End
7/8"-18 Lower End

42" Length
72" Length

D-446900-1X-42
D-446900-1X-72



TIPS

.104 Sq.
.152 Tang
.187 Tang

Arcel, Delco, Mallory
Mopar, Mallory
Mallory, Vertex

F-818749
F-818750
F-817769

HAND TACH ACCESSORIES

12 Inch Extension Shaft
Cone Rubber Tip
Cup Rubber Tip

412850
96798
96799



Part No. 96798



Part No. 96799

Part No. 412850



MOUNTING CUP

Black ABS plastic cup, stainless steel strap, black anodized aluminum base.

5" Tachometer

F-289-H



MOUNTING BRACKETS "L" TYPE

Heavy gauge steel painted flat black to reduce glare.

3 3/8" Tachometer

F-289-F

5" Tachometer

F-289-E

Part No. F-289-E



Part No. F-289-F



Pumps assure quick starts, eliminate surging, flooding, and starving. All pumps assure battery-saving quick starts by delivering gas the instant the ignition switch is turned on.

ELECTRIC FUEL PUMPS

82050 SERIES Powerful piston-type pump brings solid state reliability to fuel pumps. One moving part. Built-in filters eliminate need for other filters in line: microbon filter dissipates water; magnetic filter traps metallic particles. Gas line connection: 1/4" internal PT.

Part No. 82050 12V, neg grd. 7psi.

Part No. 82051 12V, neg grd. 5psi.

Part No. 82052 12V, pos/neg grd. Double insulated. 7psi

Part No. 82054 24V, pos/neg grd. 7psi.

Part No. 82053 Filter element for 82050 series pumps for gasoline.

Part No. 82058 Filter element for Diesel Fuel.

235 SERIES Built-in screen. Gas line connection: 1/8" internal PT. NOT TO BE USED WITH ALCOHOL BASED FUELS.

Part No. 235-A 12V, pos/neg grd. 5psi.

Part No. 235-B 6V, pos/neg grd. 5psi.



Part No. 82050



Part No. D-235-B

APPLICATION CHART

Part No.	Engine HP	Delivery*	
		1psi	3psi
235-A	up to 225	26	11
235-B	up to 150	18	9
82050	up to 350	34	29
82051	up to 350	31	24
82052	up to 350	31	24

*Gals per hour per S-W lab test procedure.

SAFETY SWITCH

Single pole, double throw pressure switch can be wired into electrical system to shut off the fuel pump when engine oil pressure drops below 4psi. Pump would be shut off if the engine stopped running for any reason, even though the ignition switch remained on.



Part No. M-4012

SERVICE CHECK CHART

SYMPTOM	CAUSE	REMEDY
Insufficient fuel delivery.	Clogged pump filter screen or filter.	Clean or replace filter.
	A break or restriction in fuel lines.	Repair fuel line or remove restriction.
	An incorrect float level, malfunctioning inlet needle valve or clogged inlet screen in the carburetor.	Repair or replace as needed.
Pump not operating.	Damaged, loose ground or improper wiring.	Inspect mounting and all wiring as outlined in instruction sheet.
Carburetor flooding.	Worn needle and seat assembly in carburetor.	Replace worn needle and seat assembly in carburetor.
Fuel pump leaks.	Fuel line fitting connections at pump are loose or dirty.	Tighten and clean all connections at pump.

SERVICE CHECK & TROUBLESHOOTING

**For Fuel,
Pressure,
Temperature,
Ammeter and
Voltmeter
Gauges.**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No gauge indication	1. Empty fuel tank. (F)	1. Fill tank.
	2. No power to gauge. (F,P,T,A,V)	2. Loose or broken wire from power source. Replace or tighten.
	3. Broken wire between gauge and sending unit. (F,P,T)	3. Replace wire.
	4. Sending unit not grounded. (T,P,F)	4. Check for rust on mounting screws.
	5. Defective pump. (P)	5. Repair or replace.
	6. Insufficient amount of fluid in reservoir. (F,P)	6. Add fluid to reservoir.
	7. Clogged fluid gallery. (F,P)	7. Remove foreign material from gallery.
	8. Engine not sufficiently warm. (T)	8. Let engine idle for a few minutes.
	9. Defective sending unit. (F,P,T)	9. Replace the sending unit.
	10. Defective gauge. (F,P,T,A,V)	10. Replace gauge.
	11. Dead battery. (A,V)	11. Recharge or replace battery.
	12. Blown fuse. (F,P,T,A,V)	12. Replace fuse.
	13. Loose or broken fan belt. (V,A)	13. Tighten or replace fan belt.
	14. Defective regulator. (A,V)	14. Replace regulator.
	15. Defective alternator (diodes burned out). (A,V)	15. Replace or repair alternator.
	16. Defective resistor or shunt. (F,P,T,A)	16. Replace resistor or shunt.
Excessive pointer fluctuation	1. Loose wire connections. (F,P,T,A,V)	1. Check and tighten all wiring.
	2. Defective pump. (F,P)	2. Replace or repair.
	3. Restricted fluid gallery. (F,P)	3. Remove restriction.
	4. Clogged filter. (F,P)	4. Replace filter.
	5. Defective regulator. (A,V)	5. Replace regulator.
	6. Loose fan belt. (A,V)	6. Tighten fan belt.
	7. Defective sending unit. (F,P,T)	7. Replace sending unit.
	8. Defective gauge. (F,P,T,A,V)	8. Replace gauge.
Full scale indication at all time	1. Wire to sending unit grounded. (F,P,T)	1. Check and tighten all wiring connections.
	2. Improper connections at posts on rear of gauge. (F,P,T)	2. Refer to Wiring Instructions for proper connections.
	3. Gauges not properly grounded. (F,P,T)	3. Refer to Wiring Instructions for proper connections.
	4. Defective regulator. (A,V)	4. Replace regulator.
	5. Defective sending unit. (F,P,T)	5. Replace sending unit.
	6. Defective gauge. (F,P,T,A,V)	6. Replace gauge.
Indicating inaccurate	1. Loose connections. (F,P,T,A,V)	1. Tighten all wiring connections.
	2. Improper resistor. (F,P,T)	2. Check part number and replace.
	3. Improper shunt. (A)	3. Check part number and replace.
	4. Improper sending unit. (F,P,T)	4. Replace with proper sending unit.
	5. Defective sending unit. (F,P,T)	5. Replace sending unit.
	6. Defective gauge. (F,P,T,A,V)	6. Replace gauge.

LETTERING CODE:
T = Temperature Gauge
F = Fuel Gauge
P = Pressure Gauge
A = Ammeter
V = Voltmeter

J

15000 SERIES

FEATURES & SPECIFICATIONS

- All new simplified design — only 55 pieces
- Space saving case (2.25 cu. in.)
- Low mass weight — only 2.5 ounces
- Shock-resistant case
- Dirt and moisture sealed
- Tamperproof
- Shockproof odometer
- Permanently lubricated
- Quickly installed
- Cannot be damaged by any system voltage
- Positive winding action
- Unique "in-line" mechanism
- Interchangeable models available for all makes of direct current hour meters
- Records up to 9,999 hours
- Automatic recycle at zero
- Accuracy within $\pm 1\%$
- Operating temperature range — 65°F to +160°F
- Models for 4 to 40 vdc and 40 to 130 vdc
- Conforms to MIL-M-3971

ELECTRO-MECHANICAL HOUR METERS

Part No.	Range	Bezel	Mount
15000-05	4-40 VDC	Black	Flange (2 screw)
15001-02	4-40 VDC	Black (2.87" Dia.)	Flange (3 screw)
15002-03	4-40 VDC	Chrome (2.50" Dia.)	Bracket
15003-05	40-130 VDC	Black	Flange (2 screw)
15004-02	40-130 VDC	Black (2.87" Dia.)	Flange (3 screw)
15005-03	40-130 VDC	Chrome (2.50" Dia.)	Bracket
†15006-15	4-40 VDC	Black (2.50" Dia.)	Aircraft (4 screw)
‡15007-15	4-40 VDC	Black (2.50" Dia.)	Aircraft (4 screw)
*15017-03	4-40 VDC	Chrome (2.25" Dia.)	Bracket
*15031-03	4-40 VDC	Black (2.25" Dia.)	Bracket
*15066-03	4-40 VDC	Matches SW heavy duty gauges	Bracket

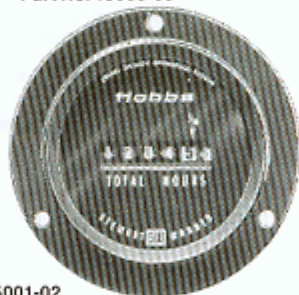
†Total Hours (Aircraft)

‡Flight Hours (Aircraft)

*Long stud model — fits any panel up to 1" thick



Part No. 15000-05



Part No. 15001-02



Part No. 15002-03

20000 SERIES

FEATURES & SPECIFICATIONS

- Weight is only 3 oz.
- Polycarbonate, shock resistant, tamper proof case
- Records up to 99,999 hours
- Automatic recycle at zero
- White numerals indicate hours. Black numerals indicate 10ths of hours.
- Single phase, synchronous, permanently lubricated motor
- Models for 120 and 240 vac (Range $\pm 10\%$)
- 50 and 60 hertz models
- Power rating 3.0 watts
- Operating temperature range — 65°F to 154°F
- Accuracy within $\pm 1\%$
- Termination — Screw type or 7" leads

ALTERNATING CURRENT HOUR METERS

SCREW TERMINATION

UL LISTED & CSA CERTIFIED

DELUXE		
Part No.	Vac	Hertz
20016-14	120	50
20017-14	120	60
20018-14	240	50
20019-14	240	60
MINIMETER		
Part No.	Vac	Hertz
20028-17	120	50
20001-17	120	60
20029-17	240	50
20007-17	240	60

MINIMETER



Part No. 20001-17

DELUXE



Part No. 20017-14

QUARTZ HOUR METERS



Part No. 80000-12



Part No. 80001-02



Part No. 80002-03

Part No.	Range	Bezel	Mount
80000-12	12-24 VDC	Black	Flange (2 screw)
80002-02	12-24 VDC	Black (2.87" Dia.)	Flange (3 screw)
80002-03	12-24 VDC	Chrome (2.25" Dia.)	Bracket
80003-03	12024 VDC	Chrome (2.25" Dia.)	Bracket
*80004-13	12-24 VDC	Black (2.50" Dia.)	Aircraft (4 screw)
†80005-13	12024 VDC	Black (2.50" Dia.)	Aircraft (4 screw)
80006-12	36-72 VDC	Black	Flange (2 screw)
80007-02	36-72 VDC	Black	Flange (3 screw)
80009-03	36-72 VDC	Chrome (2.50" Dia.)	Bracket

12-24V Models: Range 10-32 VDC,
36-72V Models: Range 30-96 VDC

*Total hours (Aircraft) †Flight hours (Aircraft)

80000 SERIES

The 80000 Series meter combines quartz accuracy with a rugged solenoid drive to provide reliable elapsed time measurement. At the heart of the meter is a custom-designed integrated timing circuit with a quartz crystal oscillator. This provides the control for the solenoid-driven odometer.

FEATURES & SPECIFICATIONS

- Custom CMOS integrated circuit
- Indicates operating time in hours and tenths — plus running indicator
- Records up to 9,999 hours
- Automatic recycle at zero
- Sealed against moisture and dirt
- High impact, durable plastic case
- Tamper proof
- Easily installed
- Stable within $\pm 1\%$ between 0°F and 140°F
- Unaffected by:
 - Temperature from -40°F to 185°F
 - Typical short duration, high voltage transients
 - Alternator load dump ... 125 volts for 100 milliseconds
 - Reverse polarity
 - Quartz accuracy to within ± 200 ppm (.02%) over entire voltage and temperature range

PANEL MOUNTING BRACKET



Part No. 486

Part No. 23944

Part No. 486 Covers panel area $2\frac{1}{16}'' \times 5\frac{1}{4}''$. For DC meter only.

Part No. 23944 Mounting bracket for all 2-screw mount meters.

DAMPENERS



Part No. 2165

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

Part No. 3888 $3\frac{7}{8}''$ diameter. For screw type DC meters.

Part No. 2165 $3\frac{7}{8}''$ diameter. AC meters.

SPITFIRE HAND HELD HALOGEN SPOT LIGHTS



Part No. 73870

New 12V, 55W, hand held halogen spot beam. Comfortable pistol grip with 10' coiled cord, cigarette lighter plug. Uses H3 replacement burners.

Part No. 73866 consists of black plastic case.

Part No. 73870 consists of chrome plated case.

Combination turn signal and hazard warning flasher.

For on-highway vehicles requiring heavy lamp load capability.

Long life design — Spring mass motor provides up to 10 times the life of conventional thermal flashers.

Low voltage operation — Parked or disabled vehicles can operate flashers from battery power with voltage as low as 7.5V (12V rated) and 18V (24V rated).

Consistent extreme temperature range performance — Provides 80 to 100 CPM flashing rate from -40°F to +180°F.

Two and three terminal versions — Third terminal activates dash indicator.

Available in twelve piece display package for retail display.

PRODUCT SPECIFICATIONS

TYPE: Electro-mechanical (spring mass motor)

VOLTAGE RANGE: 9-16 VDC (12V rated)
18-32 VDC (24V rated)

CONTACTS: Silver alloy

TERMINALS: ¼" blade-brass

HOUSING: Polypropylene

TEMPERATURE RANGE: -40°F to +180°F

FLASH RATE: 80 to 100 CPM






Part No. 13600-01

BASIC MODELS		
Terminals	Volts	Part No.
2	12	13600-01
	24	13610-01
3	12	15513-01
	24	15550-01

Conforms to FMVSS 108 requirements and exceeds SAE J-590B and SAE J-945 specifications.

4000 SERIES

**PRESSURE
VACUUM**

Circuitry	Single Circuit 1 Terminal Grounded Internally	Single Circuit 2 Terminals Insulated	Dual Circuit 3 Terminals 1-NC 1-NO 1 Common
			
Contact Setting	Model Number	Model Number	Model Number
Pressure Switches (Contact Settings 1 to 150 psi)			
1 to 7 psi Factory set at 4 psi unless specified. 150 psi operating max.	NO	M-4000	M-4006
	NC	M-4001	M-4007
7 to 30 psi Factory set at 15 psi unless specified. 150 psi operating max.	NO	M-4002	M-4008
	NC	M-4003	M-4009
30 to 70 psi Factory set at 60 psi unless specified. 200 psi operating max.	NO	M-4004	M-4010
	NC	M-4005	M-4011
70 to 150 psi Factory set at 100 psi unless specified. 200 psi operating max.	NO	14731	14732
	NC	14729	14728
Vacuum Switches mercury settings (Contact Settings 2 to 22" Hg)			
2 to 6" Hg. Factory set at 4" Hg. unless specified. 30" Hg. operating max.	NO	M-4070	M-4076
	NC	M-4071	M-4077
6 to 12" Hg. Factory set at 9" Hg. unless specified. 30" Hg. operating max.	NO	M-4072	M-4078
	NC	M-4073	M-4079
12 to 22" Hg. Factory set at 17" Hg. unless specified. 30" Hg. operating max.	NO	M-4074	M-4080
	NC		M-4081

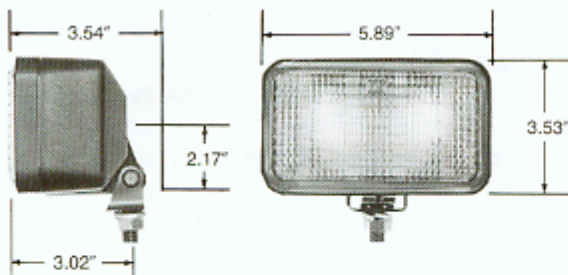
**SWITCH BOOT
M-3321**

Neoprene boot for all 4000 series switches. Helps protect switch body & connector from dirt, oil, & moisture.



HOBBS HALOGEN LAMPS

SYMBOL OF
SW
EXCELLENCE



HALOGEN LAMPS 3 x 5

HOBBS HALOGEN LAMPS

Part No.	Beam Pattern	Voltage
73761-40	80° x 30° Flood	12V 50W
73763-40	Trapezoid	12V 50W
73764-40	Spot	12V 50W

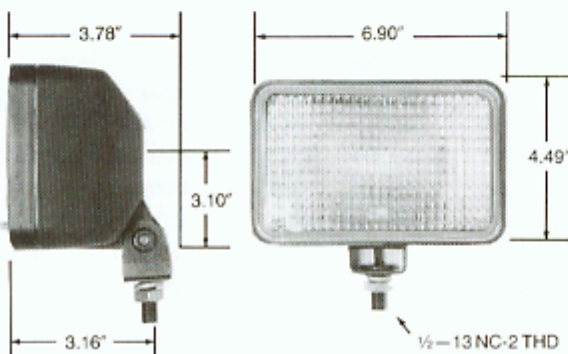
REPLACEMENT BEAMS

Part No.	Beam Pattern	Voltage
72408-40	80° x 30° Flood	12V 50W
72801-40	Trapezoid	12V 50W
73804-40	Spot	12V 50W

FEATURES:

- Higher bulb life, 400 hr. average
- Easily replaceable beam
- Field tested under extreme conditions
- 80° x 30° flood
- Trapezoid -
- Spot
- 12 volt
- 50 watt
- Draws 4 amps
- Higher light output (up to 200,000 candle power)
- Easy swivel mount

STANDARD SIZE 4 x 6



HOBBS 4X6 HALOGEN LAMPS

Part No.	Beam Pattern	Voltage	Amps
71898-11	80° x 30° Flood	12V 50W	4
71902-11	Spot	12V 50W	4
71915-11	Trapezoid	12V 50W	4
72540-11	80° x 30° Flood	24V 50W	3
72544-11	Spot	24V 50W	3
72542-11	Trapezoid	24V 50W	3

REPLACEMENT BEAMS

Part No.	Beam Pattern	Voltage	Amps
71017-11	80° x 30° Flood	12V 50W	4
71794-11	Spot	12V 50W	4
71792-11	Trapezoid	12V 50W	4
72541-11	80° x 30° Flood	24V 50W	3
72545-11	Spot	24V 50W	3
72543-11	Trapezoid	24V 50W	3

ROW BRITE ROUND HALOGEN LAMPS



Part No.	Beam Pattern	Voltage	Trade No.
73468-01	80° x 30° Flood	12V 50W	H7606
73469-01	Trapezoid	12V 50W	H7610
73470-01	Spot	12V 50W	H7604

REPLACEMENT BEAMS

Part No.	Beam Pattern	Voltage	Trade No.
70510-01	80° x 30° Flood	12V 50W	H7606
70729-01	Trapezoid	12V 50W	H7610
72774-01	Spot	12V 50W	H7604

Fits all Par 36 12V applications

Will replace any par 36 12V incandescent or halogen beam.

WIRING KIT

Kit will service two lamps. Includes toggle switch, wire, fuse, fuse-holder, bracket and connectors. Packaged for pegboard display.

Part No. 72489



LAMP COVER

Heavy duty foam backed vinyl cover to protect Spitfire lamps. Packaged for pegboard display.



Part No. 72690

OEM to Sales Kit Number Reference

OEM.#	SALES KIT#	OEM.#	SALES KIT#	OEM.#	SALES KIT#	OEM.#	SALES KIT#	OEM.#	SALES KIT#	OEM.#	SALES KIT#
316-AD	82211	362-AH	D-362-AH	462-C	82333	481-FW	P-82800	492-CR	82718	691-BK	P82828
323-C	82505	362-AJ	D-362-AJ	462-D	284-AM	481-FX	P-82850	492-CZ	P-82811	691-BL	P-82834
334-F	280-EC	362-AN	D-362-AN	462-AP	82126*	481-HA	P-82853	492-DA	P-82861	691-CB	82406
334-H	F-280-ED	362-BB	D-362-BB*	462-AZ	82346	481-HH	82162	492-DH	P-82831	691-DB	82407
334-H	D-334-H	362-BC	D-362-BC*	462-BR	82349	481-HJ	82164	492-DJ	P-82881	691-FB	82408
334-J	F-280-EE	362-BD	D-362-BD*	465-R	284-J	481-HK	82163*	493-AR	82331	692-E	82409
334-K	D-334-K*	362-CZ	D-362-CZ	465-S	284-K	481-HL	82165*	493-AS	82332	692-AE	P-82809
334-L	D-334-L*	362-DA	D-362-DA	465-AJ	284-F	481-HZ	P-82820	493-BA	82336	692-AF	P-82810
334-M	D-334-M*	362-ES	280-EA	465-DH	82114*	481-JA	P-82873	497-H	82334	692-AM	P-82829
334-N	D-334-N	362-ET	280-EB	465-DJ	82115*	481-JL	P-82802	497-J	82335	692-AN	P-82830
334-P	D-334-P	363-D	D-363-D	465-DY	82706	481-JM	P-82822	499-D	284-AK	695-D	P-82812
334-R	D-334-R	363-E	D-363-E	465-DZ	82702	481-JN	P-82803	535-AH	D-535-AH	695-E	P-82832
334-T	F-280-EH	363-F	D-363-F	465-ER	82306	481-JP	P-82823	535-AK	D-535-AK	994-A	82157
334-AA	D-334-AA	363-G	F-363-G	465-ES	82307	481-JW	82170	550-BP	D-550-BP	994-C	D-994-C
334-AB	D-334-AB	363-W	F-363-W	465-ET	82308	481-JX	82171	550-HF	D-550-HF	994-Z	82617
334-AD	D-334-AD	363-AM	F-363-AM	465-LP	82715	490-BS	284-E	550-HH	D-550-HH	995-D	82623
334-AZ	82503*	364-K	F-364-K	465-NX	P-82866	490-BW	284-N	550-KM	550-KM	996-H	82154*
334-DA	F-82510	364-L	F-364-L	465-NY	P-82867	490-BX	284-P	550-KM	366-WL	997-AH	82616
335-B	280-EK	368-P	D-368-P	465-PX	P-82887	490-BY	284-R	550-PD	82676	407010	F-407010
337-BF	82200	370-T	D-370-T	465-PW	P-82886	490-BZ	284-S	550-SN	82680	442057	82410
337-BH	82201	385-B	F-385-B	467-CK	82127*	490-EX1	284-D	550-SZ	82677	821134	D-105-4
337-BJ	82202	385-C	F-385-C	467-DB	82344	490-HC	82710	550-TA	82678	821135	D-106-AW
338-AE	284-A	391-A	F-391-A	467-DC	82345	490-HD	82704	550-ZJ	P-82852	825951-1	438106
338-CM	82108*	391-B	F-391-B	467-DE	82351	490-JF	82717	550-ZR	P-82872	829569	366-TJ
338-CX	82700	391-C	D-391-C	467-DF	82352	490-PP	284-BF	550-ZT	82692	829569	825104
338-DC	82311	391-D	D-391-D	470-DY	82709	490-SP	82725	551-AHK	D-551-AHK	828160-3	82556-1
338-DF	82313	411-J	82511*	470-EF	P-82862	490-TS	82130*	551-AHL	D-551-AHL	828160-4	82556-2
338-FS	82713	411-K	F-279-B	470-EM	P-82882	490-TT	P-82856	551-AKM	D-551-AKM	828160-5	82556-3
352-AT	82207	411-M	279-C	471-C	284-AJ	490-TW	P-82857	551-AYT	P-82801	832091	82628
352-AW	82208	411-X	D-353-AM*	472-E	284-AA	490-TX	P-82858	551-AYW	P-82851	832932-1	82563
352-AY	82209	411-Y	82501*	472-F	284-AB	490-TY	P-82864	551-AZN	P-82821	832932-2	82564
353-AH	279-A	455-L	284-M	472-H	284-AD	490-NA	82340	551-AZP	P-82871	833086	82338
353-AM	D-353-AM*	455-AW	82111*	472-Z	82109*	490-XS	P-82876	551-AZY	82688	833087	82339
353-AZ	279-C	455-BF	82712	472-AA	82110*	490-XT	P-82877	551-AZZ	82689	833929	P-82854
353-BC	82511*	455-BK	82303	472-CA	82343	490-XW	P-82878	551-BAA	82690	834763	F-82565
353-BE	F-279-B	455-DP	P-82863	474-N	82309	490-XX	P-82884	551-BAB	82691	834764	F-82565
353-CJ	82501*	455-ED	P-82883	474-AA	82112*	490-YJ	82348	598-AP	82152*	878048	82413
353-DA	F-82504	457-AS	82125*	474-AB	284-H	490-YK	82350	598-AR	82153*	878057	P-82813
355-B	82411	457-BA	82353	474-AM	82128*	491-AM	284-B	598-BT	82168*	878063	P-82869
356-AJ	82210	460-F	284-L	475-M	82347	491-AN	284-C	598-BW	82169*	878064	P-82870
360-BX	82120	460-H	284-T	479-BC	82129*	491-CH	82703	599-AD	82155*	878065	284-BS
360-DE	82329	460-R	284-AE	479-BF	82124*	491-CT	491-CT	599-AE	82156*	878066	284-BR
360-EK	82121	460-AR	82113*	479-BH	284-BP*	491-DW	P-82859	690-S	82404	878067	82726
360-HY1	82319	460-AS	82116*	481-BN	82618	491-DX	P-82860	690-W	P-82805	878068	82727
360-HZ	82320	460-BD	82705	481-CA	82619	491-EL	P-82879	690-X	P-82825	878069	82341
360-JA	82321	460-BE	82714	481-CB	82620	491-EM	P-82880	691-AJ	82405	878070	82342
360-JB	82322	460-BF	82304	481-CC	82621*	492-AP	284-AH	691-AW	P-82806	878073	P-82833
360-JC	82323	460-BH	82305	481-CD	82622	492-AZ	82117*	691-AX	P-82807	878074	P-82889
360-JD	82324	460-BI	P-82868	481-DJ	82633	492-CL	82328	691-AY	P-82808	878075	P-82890
360-JE	82325	460-EP	P-82865	481-DM	82638	492-CM	82301	691-AZ	P-82814		
361-CB	82326	460-ER	P-82885	481-EX	82166*	492-CN	82460	691-BH	P-82826		
361-CC	82327	460-EZ	P-82888	481-FD	82167*	492-CP	82461	691-BJ	P-82827		
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* See Marine Catalog

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284-AA	7	360-DE	5	460-FA	10	490-HC	14
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284-AJ	7	360-JC	5	462-D	7	490-TW	11
284-AK	7,20	360-JD	5	465-AJ	7	490-TX	11
284-AM	7,20	360-JE	5	465-DY	13	490-TY	11
284-B	8	361-CB	5	465-DZ	13	490-WA	5
284-BF	8	361-CC	5	465-ER	4	490-XS	11
284-BR	7	D-362-AH	20	465-ES	4	490-XT	11
284-BS	7	D-362-AJ	20	465-ET	4	490-XW	11
284-C	8	D-362-AN	20	465-LP	13	490-XX	11
284-D	8	D-362-CZ	20	465-NX	10	490-YJ	5
284-E	8	363-F	20	465-NY	10	490-YK	5
284-H	7	D-363-D	20	465-PW	10	491-AM	8
284-J	7,20	D-363-E	20	465-PX	10	491-AN	8
284-K	7,20	D-363-F	20	465-R	7	491-CH	14
284-L	7,20	F-363-AM	20	465-S	7	491-CT	5
284-M	7	F-363-G	20	467-DB	4	491-DW	11
284-N	8	F-363-W	20	467-DC	4	491-DX	11
284-P	8	364-L	20	467-DE	4	491-EL	11
284-R	8	F-364-K	20	467-DF	4	491-EM	11
284-S	8	F-364-L	20	470-DY	13	492-AP	8
284-T	7,20	366-CH	22	470-EF	10	492-CL	5
286-A	23	366-HM	23	470-EM	10	492-CM	8
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289-D	23	366-SZ	22	472-H	7	492-DJ	11
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F-289-F	25	366-WL	18	474-N	4	493-AS	5
F-289-H	25	F-366-FK	22	475-M	4	493-BA	8
316-AD	16	F-366-HM	23	481-CA	9	497-H	7
D-334-AA	20	F-366-MP	23	481-CB	6	497-J	4
D-334-AB	20	368-P	5	481-CC	9	499-D	7
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550-TA	9	M-4009	30	72541-11	31	82307	4,20
550-ZJ	12	M-4010	30	72542-11	31	82308	4,20
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D-550-BP	6	M-4013	30	72545-11	31	82311	4
D-550-HF	9	M-4014	30	72690	31	82313	4
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551-AHL	9	M-4072	30	73468-01	31	82321	5
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551-AYT	12	M-4074	30	73470-01	31	82323	5
551-AYW	12	M-4076	30	73761-40	31	82324	5
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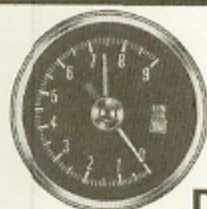
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		 TRACK FORCE				 WORLD WIDE			
GAUGE TYPE	DIAL SCALE	*BLACK/STAINLESS BEZEL 2 1/16" DIA.		2 5/8" DIA.		DIAL SCALE	AVAILABLE 2 1/16" DIA.		DI SC
		MECH.	ELEC.	MECH.	ELEC.		MECH.	ELEC.	
AMMETERS	60-0-60 60-0-60		*P-82855 P-82875		*P-82805 P-82825	30-0-30 60-0-60		82713 82700	30- 60- 100- 100-
VOLTMETERS	10-16V 10-16V		*P-82862 P-82882		*P-82812 P-82832	10-16V		82709	10- 20-
PRESSURE	0-15 psi 0-15 psi 0-16 psi 0-16 psi 5-100 psi 5-100 psi 10-200 psi 10-200 psi	*P-82856 P-82876 *P-82857 P-82877 *P-82858 P-82878	 *P-82868 P-82888 *P-82865 P-82885	*P-82806 P-82826 *P-82807 P-82827 *P-82808 P-82828		0-100 psi 0-100 psi 10-150 psi 20-300 psi	82704 82725 82710 82717	82705 82714	1-1- 2-1- 2-3- 2-3- 5-6- 5-1- 5-1- 10-1- 10-1- 10-2- 10-2- 20-3- 25-4-
DUAL AIR PRESSURE									10-1-
TEMPERATURE	100-265°F 100-265°F 100-280°F 100-280°F 140-320°F 140-320°F 140-325°F 140-325°F	*P-82859 P-82879 *P-82860 P-82880	 *P-82866 P-82886 *P-82867 P-82887	*P-82809 P-82829 *P-82810 P-82830		100-265°F 100-280°F 150-350°F 150-350°F	82703	82702 82706 82715	100- 100- 100- 100- 100- 100- 100- 100- 100- 100-
PYROMETERS									300-
CYLINDER HEAD									
TURBO BOOST	0-30" Hg/0-15 psi 0-30" Hg/0-15 psi 0-30" Hg/0-40 psi 0-30" Hg/0-40 psi	*P-82864 P-82884		P-82814 P-82834					0-30" H
PRESSURE/TEMPERATURE									
VACUUM	0-30" Hg 0-30" Hg	*P-82861 P-82881		P-82811 P-82831		0-30" Hg	82718		0-3-
FUEL LEVEL	E-1/2-F E-1/2-F E-1/2-F E-1/2-F E-1/2-F E-1/2-F		*P-82863 P-82869 P-82870 P-82883 P-82889 P-82890		P-82813 P-82833	E-1/2-F E-1/2-F E-1/2-F		82712 82726 82727	E- E- E- E-
CLOCKS									12 hr
SPEEDOMETERS	0-160 mph 0-160 mph		3 3/8" *P-82852 P-82872			0-80 mph/ 0-130 kph/ 0-140 kph/ 0-90 mph	82680 82676		0-3- 0-8- 0-1- 0-10- 0-16-
TACHOMETERS	0-8000		2 1/2" P-82854						
	0-10,000 0-10,000 0-10,000 0-10,000 w/mem. 0-10,000 w/mem. 0-12,000 w/mem. 0-12,000 w/mem.	*P-82851 P-82871	*P-82853 P-82850 P-82873	P-82801 P-82821	P-82803 P-82823 P-82800 P-82820 P-82802 P-82822	0-3500 rpm 0-3500 rpm 0-6000 rpm		82617 82633 82616	0-35- 0-35- 0-35- 0-35- 0-50- 0-60- 0-80- 0-90-

GUIDE

ORLD
IDE



DELUXE



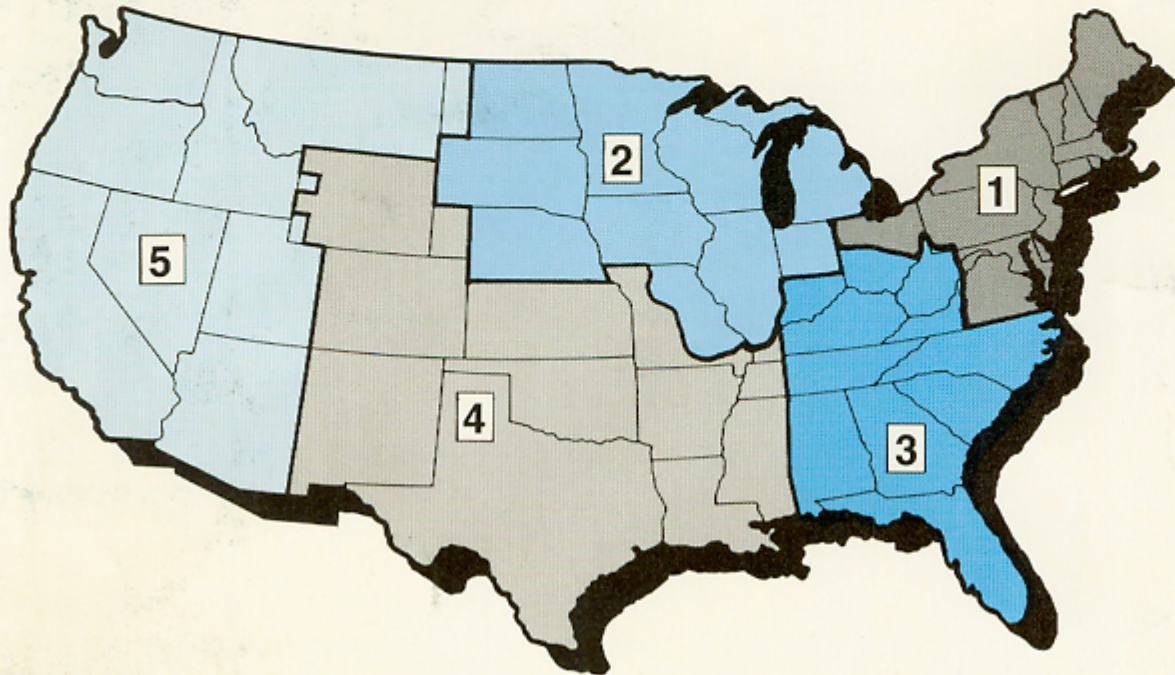
**HEAVY
DUTY**



STANDARD

TABLE DIA. ELEC.	DIAL SCALE	AVAILABLE 2 1/16" DIA. 2 5/8" DIA.				DIAL SCALE	AVAILABLE 2 1/16" DIA.		DIAL SCALE	AVAILABLE 2 1/16" DIA.	
		MECH.	ELEC.	MECH.	ELEC.		MECH.	ELEC.		MECH.	ELEC.
82713 82700	30-0-30 60-0-60 100-0-100 100-0-100		82310 82311 82313 82343		82404	60-0-60 60-0-60 100-0-100 150-0-150		284-A 284-AB 284-AA 284-AD	20-0-20 30-0-30 60-0-60	82201 82200 82202	
82709	10-16V 20-32V		82309 82347			10-16V 20-32V		284-H 284-AJ			
82705 82714	1-10 psi 2-16 psi 2-30 psi 2-30 psi 5-80 psi 5-100 psi 5-100 psi 10-150 psi 10-150 psi 10-150 psi 10-200 psi 10-200 psi 20-300 psi 25-400 psi	82319 82320 82321 82322 82323 82348 82329 82350 82324 82325 82120 82121	82333 82304 82305 82349 82346	82405 82406 D-368-P 82407 82408		0-15 psi 0-16 psi 0-80 psi 0-100 psi 0-150 psi 10-200 psi 20-300 psi 25-400 psi	284-E 284-D 284-N 284-P 284-R 284-S	0-50 psi 0-80 psi 0-100 psi	82207 82208 82209		
	10-150 psi	82332				0-150 psi	82331				
82702 82706 82715	100-220°F 100-240°F 100-265°F 100-265°F 100-280°F 100-280°F 100-320°F 100-320°F 100-325°F 100-350°F	491-CT 82326 82327	82345 82306 82307 82351 82308 82352 82344	82409 82410		100-230°F 100-265°F 100-280°F 140-320°F 140-325°F	284-B 284-C	284-AF 284-J 284-K	100-250°F	82210	
	300-1500°F		82335			300-1500°F		82334			
						100-600°F		284-AK			
	0-30" Hg/0-15 psi	82340				0-30" Hg/0-15 psi	284-BF				
						0-150 psi/ 110-260°F	82336				
	0-30" Hg	82328		82411		0-30" Hg 0-30" Hg	284-AH 82301				
82712 82726 82727	E-1/2-F E-1/2-F E-1/2-F E-1/2-F		82303 82353 82341 82342		82413	E-1/2-F E-1/2-F E-1/2-F		284-M 284-BS 284-BR	E-1/2-F	82211	
	12 hr. analog		82339			12 hr. analog		82338			
		3 3/8"					3 3/8"				
	0-80 mph 0-95 mph/ 0-130 kph 0-100 mph 0-160 mph	82692 82677 D-550-BP	D-105-H			0-80 mph 0-85 mph/ 0-130 kph 0-160 mph	D-550-HF 82678 D-550-HH				
		3 3/8"					3 3/8"				
82617 82633 82616	0-3500 rpm 0-3500 rpm 0-3500 rpm 0-3500 rpm 0-5000 rpm 0-6000 rpm 0-8000 rpm 0-9000 rpm	82688 82689 82690 82691 551-AKM D-535-AH	82157 82620 82622 82162 82170			0-3500 rpm 0-3500 rpm 0-3500 rpm 0-6000 rpm 0-8000 rpm 0-9000 rpm	D-551-AHK D-551-AHL D-535-AK	D-994-C 82619 82621 82164 82171			

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