

Giving It All We Got . . .



Coming Through for the Customer

VDO designs, engineers and manufactures instruments, instrument clusters, electronic information systems, sensors and control systems for a wide variety of vehicles and equipment.

As a leader in electronic instrumentation, control and sensor technologies, VDO pioneered innovations such as electronic speedometers, multi-function displays, sensors and electronic engine management controls.

VDO provides its customers with a true international resource.

Worldwide, VDO has over 30 manufacturing plants and employs over 120,000 people. Strength afforded by this global position also allows VDO to maintain extensive research and development capabilities around the world. As a vertically integrated company, VDO is able to provide customers with complete, cost effective solutions from concept through production. Around the world, VDO products and systems enjoy a reputation for accuracy and reliability.

VDO is ready. With ISO 9001 and QS 9000 accreditation, four production facilities and a Technical Center in North America, we look forward to helping you meet the challenges of the increasing competitive worldwide markets.

Over 500 employees work in VDO's 210,000 sq.ft. state-of-the-art manufacturing facility in Winchester, VA.

Table of Contents

Cross Reference (Catalog # to Mfr. #) (continued on page 43)	4
Severe Duty	5
Cockpit International	7
Vision	11
Series 1	15
Industrial	18
DC Hourmeters	21
BAI System	22
D'Mac System	23
E-Gas Electronic Actuator System	24
Windshield Washer System	25
230 Series Heavy-Duty Pressure Switch	26
232 Series Temperature Switches	27
Pressure Senders	28
Temperature Senders	30
Fuel Level Senders	32
Speedometer & Tachometer Senders	33
Gauge Accessories	34
Light Bulbs and Sockets	37
Technical Specifications and Dimensions	39

VDO Limited Warranty

VDO North America warrants all merchandise against defect in factory workmanship and materials for a period of 24 months after purchase. This warranty applies to the first retail purchaser and covers only those products exposed to normal use or service. Provisions of this warranty shall not apply to a VDO product used for a purpose for which it was not designed, or which has been altered in any way that would be detrimental to the performance or life of the product, or misapplication, misuse, negligence or accident. On any part or product found to be defective after examination by VDO North America, VDO North America will only repair or replace the merchandise through the original selling dealer or on a direct basis. VDO North America assumes no responsibility for diagnosis, removal and/or installation labor, loss of vehicle use, loss of time, inconvenience or any other consequential expenses. The warranties herein are in lieu of any other expressed or implied warranties, including any implied warranty of merchantability or fitness, and any other obligation on the part of VDO North America, or selling dealer.

Note: This is a "Limited Warranty" as defined by the Magnuson-Moss Warranty Act of 1975.

Cross Reference (Catalog # to Mfr. #)

CAT. #	MFR. #	PAGE	CAT. #	MFR. #	PG.	CAT. #	MFR. #	PAGE	CAT. #	MFR. #	PAGE
02 012 126	02 012 126	5	437 956	1 211 012 530D	7	360 811	1 521 001 734D	29	323 892	1 531 007 177D	8, 12
02 012 150	02 012 150	5	333 515	1 211 015 399D	18	360 023	1 521 002 010D	29	323 425	1 531 009 014D	30
02 012 426	02 012 426	5	333 531	1 211 015 825D	18	360 006	1 521 002 034D	28	323 431	1 531 009 038D	31
02 012 430	02 012 430	5	333 532	1 211 015 832D	18	360 033	1 521 002 106D	29	323 477	1 531 009 045D	30
02 124 126	02 124 126	6	333 533	1 211 015 904D	18	360 007	1 521 002 120D	28	323 478	1 531 009 052D	30
02 124 166	02 124 166	6	333 534	1 211 015 911D	18	360 024	1 521 002 168D	29	323 479	1 531 009 069D	30
02 124 168	02 124 168	6	333 536	1 211 015 942D	18	360 028	1 521 002 182D	28	323 483	1 531 009 076D	30
02 124 526	02 124 526	6	333 535	1 211 015 959D	18	360 019	1 521 002 254D	28	323 485	1 531 009 083D	31
02 124 566	02 124 566	6	437 354	1 211 020 119D	15	360 034	1 521 002 371D	28	325 001	1 535 001 010D	30
02 124 568	02 124 568	6	350 505	1 221 015 035D	19	360 410	1 521 003 011D	28	325 002	1 535 001 027D	30
02 222 106	02 222 106	6	350 506	1 221 015 042D	19	360 430	1 521 003 066D	29	325 003	1 535 001 034D	30
02 222 112	02 222 112	6	350 510B	1 221 015 121C	19	360 441B	1 521 003 097B	28	325 008	1 535 001 065D	30
02 222 306	02 222 306	6	350 511	1 221 015 138D	19	360 043	1 521 003 121D	29	325 007	1 535 001 089D	30
02 222 312	02 222 312	6	350 512	1 221 015 145D	19	360 431	1 521 003 145D	29	224 004	1 551 003 012D	32
02 222 512	02 222 512	6	350 513	1 221 015 152D	19	360 432	1 521 003 152D	29	224 003	1 551 003 029D	32
02 222 712	02 222 712	6	350 515	1 221 015 217D	19	360 442	1 521 003 169D	29	224 051	1 551 003 342D	32
02 230 712	02 230 712	6	350 516	1 221 015 224D	19	230 404	1 521 006 069D	26	224 054	1 551 003 579D	32
02 230 812	02 230 812	6	350 508	1 221 015 255D	19	230 415	1 521 006 083D	26	224 055	1 551 003 586D	32
02 321 628	02 321 628	5	350 507	1 221 015 262D	19	230 460	1 521 006 090D	26	224 058	1 551 003 610D	32
02 321 728	02 321 728	5	350 519	1 221 015 468D	19	230 504	1 521 006 100D	26	224 061	1 551 003 641D	32
02 400 310	02 400 310	6	350 520	1 221 015 475D	19	230 515	1 521 006 117D	26	224 062	1 551 003 658D	32
02 410 806	02 410 806	6	350 111	1 225 001 636D	13	230 560	1 521 006 124D	26	224 063	1 551 003 665D	32
02 410 906	02 410 906	6	350 112	1 225 001 643D	13	230 604	1 521 006 148D	26	224 065	1 551 003 689D	32
02 420 712	02 420 712	6	310 033B	1 231 003 026C	8	230 615	1 521 006 155D	26	224 066	1 551 003 696D	32
03 200 514	03 211 412	6	310 501	1 231 015 104D	19	230 660	1 521 006 162D	26	224 067	1 551 003 706D	32
03 230 702	03 230 702	6	310 502	1 231 015 111D	19	360 009	1 523 001 011D	28	224 069	1 551 003 720D	32
03 270 612	03 270 612	6	310 514	1 231 015 135D	19	360 025	1 523 001 028D	29	224 049	1 551 003 902D	32
05 800 762	05 800 762	6	310 511	1 231 015 142D	19	360 905	1 524 900 094D	29	226 001	1 551 004 082D	32
05 800 764	05 800 764	6	310 512	1 231 015 159D	19	362 001	1 525 001 013D	28	226 007	1 551 004 123D	32
120 302	1 111 020 020D	15	310 303	1 231 020 027D	16	362 002	1 525 001 020D	29	226 008	1 551 004 161D	32
128 501B	1 116 015 023C	19	310 305	1 231 020 319D	16	362 003	1 525 001 037D	29	331 523	1 763 001 149D	21
150 103	1 121 002 094D	13	310 953	1 231 900 312D	8	362 007	1 525 001 044D	29	331 020	1 763 002 016D	21
150 105	1 121 003 222D	13	310 153	1 231 900 329D	12	362 033	1 525 001 068D	28	331 512	1 763 002 126D	21
150 106	1 121 003 246D	13	310 901	1 232 901 022D	8	362 034	1 525 001 075D	29	331 511	1 763 002 133D	21
150 361	1 121 020 027D	16	190 514	1 241 015 156D	20	362 035	1 525 001 082D	29	331 534	1 763 003 213D	21
150 330	1 121 020 278D	16	190 502	1 241 015 280DM	20	362 004	1 525 001 109D	29	331 501	1 763 015 016D	21
150 307	1 121 020 285D	16	190 301	1 241 020 141D	17	323 088	1 531 003 032D	30	331 502	1 763 015 023D	21
150 301	1 121 020 292D	17	190 501	1 241 150 004D	20	323 487	1 531 004 167D	30	331 503	1 763 015 030D	21
150 509	1 121 150 007DM	19	190 953	1 241 900 120D	20	323 098	1 531 004 208D	30	331 504	1 763 015 047D	21
151 002	1 122 001 032D	9	190 966	1 241 900 247D	10	323 100	1 531 004 260D	30	331 514	1 763 015 119D	21
180 505	1 131 015 039D	19	332 501	1 242 015 016D	20	323 028	1 531 004 277D	30	331 517B	1 763 015 126C	21
180 504	1 131 015 053D	19	332 502	1 242 015 023D	20	323 026	1 531 004 284D	30	600 401	1 882 901 159D	36
180 301	1 131 020 385D	16	332 503	1 242 015 030D	20	323 099	1 531 004 291D	30	600 402	1 882 901 166D	36
180 302	1 131 020 392D	16	332 504	1 242 015 047D	20	323 097	1 531 004 363D	30	240 100	1 886 900 066D	35
180 310	1 131 020 402D	16	301 501	1 251 015 012D	19	323 120	1 531 004 370D	31	240 101	1 886 900 080D	35
180 315	1 131 020 419D	16	301 502	1 251 015 029D	19	323 705	1 531 005 010D	8	240 017	1 886 900 183D	34
180 503	1 131 020 426D	19	301 505	1 251 015 050D	19	323 701	1 531 005 034D	8	240 016	1 886 900 190D	34
180 501	1 131 150 004D	19	301 506	1 251 015 067D	19	323 416	1 531 006 028D	30	240 019	1 886 900 224D	34
333 051	1 211 001 927D	7	301 510	1 251 015 108D	19	323 417	1 531 006 035D	30	240 018	1 886 900 231D	34
333 151	1 211 001 965D	12	301 509	1 251 015 115D	19	323 418	1 531 006 042D	30	391 003	1 888 001 024D	20
333 055	1 211 001 972D	7	370 501	1 261 015 019D	20	323 419	1 531 006 059D	30	391 007	1 888 001 079D	14
333 353	1 211 001 996D	15	370 502	1 261 015 026D	20	323 420	1 531 006 066D	30	391 009	1 888 001 093D	10
333 355	1 211 002 234D	15	370 301	1 261 020 011D	17	323 421	1 531 006 073D	30	391 009	1 888 001 093D	20
333 952	1 211 002 241D	8	340 002	1 511 001 043D	33	323 422	1 531 006 080D	30	150 754	1 893 900 022D	34
333 953	1 211 002 258D	8	340 001	1 511 001 108D	33	323 423	1 531 006 097D	31	240 902	1 893 900 039D	34
333 152	1 211 002 306D	12	340 011	1 511 010 056D	33	323 055	1 531 006 114D	31	150 851	1 893 900 060D	34
333 155	1 211 002 337D	12	340 014	1 511 010 063D	33	323 056	1 531 006 121D	31	150 855	1 893 900 077D	34
333 363	1 211 002 368D	15	340 013	1 511 010 070D	33	323 057	1 531 006 138D	31	240 041	1 893 900 163D	34
333 962	1 211 002 382D	7	340 012	1 511 010 087D	33	323 058	1 531 006 145D	31	240 043	1 893 900 170D	34
333 963	1 211 002 399D	7	340 020	1 515 001 047D	33	323 059	1 531 006 152D	31	150 856	1 893 900 280D	34
333 561	1 211 002 416D	18	360 001	1 521 001 019D	28	323 060	1 531 006 169D	31	240 023	1 895 001 035D	34
333 563	1 211 002 423D	18	360 002	1 521 001 026D	28	323 061	1 531 006 176D	31	240 026	1 895 001 107D	36
333 562	1 211 002 447D	18	360 003	1 521 001 033D	28	323 064	1 531 006 183D	31	110 860	1 897 001 013D	35
333 564	1 211 002 454D	18	360 004	1 521 001 040D	29	323 066	1 531 006 190D	31	110 861	1 897 001 020D	35
333 162	1 211 002 478D	11	360 005	1 521 001 057D	28	323 093	1 531 006 248D	30	110 862	1 897 001 037D	35
333 163	1 211 002 485D	11	360 015	1 521 001 064D	29	323 094	1 531 006 262D	30	600 885	1 897 001 123D	35
333 164	1 211 002 492D	11	360 016	1 521 001 071D	29	323 090	1 531 006 499D	31	240 802	1 897 002 014D	34
437 152	1 211 012 341D	11	360 021	1 521 001 088D	29	323 091	1 531 006 509D	31	240 803	1 897 002 021D	34
437 153	1 211 012 358D	11	360 027	1 521 001 095D	28	323 092	1 531 006 516D	31	240 804	1 897 002 038D	34
437 050	1 211 012 365D	7	360 080	1 521 001 181D	28	323 050	1 531 006 657D	31	391 704	1 899 900 011D	36
437 954	1 211 012 406D	7	360 081	1 521 001 198D	29	323 086	1 531 006 695D	31	391 702	1 899 900 028D	36
437 950	1 211 012 413D	7	360 406	1 521 001 576D	29	323 095	1 531 006 860D	30	391 101	1 899 900 114D	36

Continued on page 43.

Severe Duty

When an extreme working environment calls for a tough gauge, Severe Duty will get the job done. Specially designed for industrial applications, these instruments feature legendary VDO quality by incorporating our patented air core and stepper motor movements.

For additional protection against the elements, we incorporated corrosion proof materials, silver contact connectors and special seals with dual lenses. The dual lens system is made up of contoured impact-proof plastic that not only

prevents gauge fogging, but also minimizes reflections, making the instrument readable in almost any condition.

For versatility, Severe Duty instruments also feature built-in warning lights and are available in 12/24-volt applications. As a finishing touch, we incorporated our unique Spin-Lok™ mounting system for fast, positive instrument mounting. Instruments can also be adapted to a square bezel gauge by using an accessory kit.



PROGRAMMABLE TACHOMETERS w/LCD hourmeter

For use with all current electronic control unit (DDEC, etc.), inductive, alternator, standard ignition, electronic ignition and hall-effect applications. Engine hours are displayed in the LCD window.

Description	Size	Dwg.	Terminal	Voltage	Part No.
3,000 RPM w/EHM	3 ³ / ₈ " (85 mm) dia.	-	Spade	12/24	02 012 126
4,000 RPM w/EHM	3 ³ / ₈ " (85 mm) dia.	-	Spade	12/24	02 012 150

For 24V applications, use bulb #600 829 (2x).

PROGRAMMABLE TACHOMETERS w/o hourmeter

For use with alternator.

Description	Size	Dwg.	Terminal	Voltage	Part No.
3,000 RPM w/o EHM	3 ³ / ₈ " (85 mm) dia.	-	Spade	12	02 012 426
4,000 PRM w/o EHM	3 ³ / ₈ " (85 mm) dia.	-	Spade	12	02 012 430

For 24V applications, use bulb #600 829 (2x) and resistor kit 391 031.

TEMPERATURE GAUGE, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Terminal	Sender Table	Voltage	Part No.
250°F / 120°C	VDO	"Water"	Spade	A	24	02 321 728
250°F / 120°C	VDO	"Water"	Spade	A	12	02 321 628

See page 32 for sender tables.

Severe Duty cont.

PRESSURE GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Terminal	Sender Table	Voltage	Part No.
80 PSI	VDO	Oil symbol	Spade	1	12	02 124 126
80 PSI	VDO	Oil symbol	Spade	1	24	02 124 526
150 PSI	VDO	Oil symbol	Spade	5	12	02 124 166
150 PSI	VDO	Oil symbol	Spade	5	24	02 124 566
400 PSI	VDO	Trans. symbol	Spade	7	12	02 124 168
400 PSI	VDO	Trans. symbol	Spade	7	24	02 124 568

See pages 28 & 29 for sender tables.

FLUID LEVEL GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	Terminal	Sender Table	Voltage	Part No.
Fuel gauge	240-33	Spade	12	12	02 222 306
Fuel gauge	240-33	Spade	12	24	02 222 106
Fuel gauge	VDO	Spade	11	12	02 222 112
Fuel gauge	VDO	Spade	11	24	02 222 312
Fuel, adjustable tube type (90-0 Ohms)		Spade	14	12	02 222 512
Fuel, adjustable tube type (90-0 Ohms)		Spade	14	24	02 222 712
Water gauge	VDO	Spade	15	12	02 230 712
Water gauge	VDO	Spade	15	24	02 230 812

See page 32 for sender tables.

VOLTMETERS, 2¹/₁₆" (52 mm) dia.

Description	Range	On Dial	Terminal	Voltage	Part No.
12V	8-16V	"Symbol"	Spade	12	02 410 806
24V	16-32V	"Symbol"	Spade	24	02 410 906

AMMETERS (Shunted), 2¹/₁₆" (52 mm) dia.

Description	Range	On Dial	Terminal	Voltage	Part No.
80 Amp gauge, illuminated	-80/0/+80	"Amp"	Spade	12	02 420 712
Kit	-80/0/+80	"Amp"	Spade	12	02 400 310
Shunt only	-	-	-	12	03 320 116

For 24V applications, use resistor kit #391 101.

ANGLE INDICATOR GAUGE, 2¹/₁₆" (52 mm) dia.

Description	Range	Terminal	Voltage	Part No.
Position indicator	VDO	Spade	12	03 200 514

CLOCK, 2¹/₁₆" (52 mm) dia.

Description	Range	Terminal	Voltage	Part No.
Analog	9-28V	Spade	12/24	03 270 612

ACOUSTICAL WARNING ALARM, 2¹/₁₆" (52 mm) dia.

Description	Terminal	Voltage	Part No.
Buzzer (Piezo)	Spade	12/24	03 230 702

WARNING LIGHTS

Description	Terminal	Voltage	Part No.
For volt, temp, pressure and fuel	Spade	12	05 800 762
For volt, temp, pressure and fuel	1/8" (.125")	24	05 800 764

Cockpit International

These world-class instruments are designed to be the standard in the industry at an economical price. All instruments feature VDO's latest generation patented air core and steeper motor movements for the reliability and durability you've come to expect from a leader in instrumentation.

These instruments are made for durability with

a choice of two terminals: M4 studs and .250" male spade. All 52 mm instruments feature zinc-plated metal housing and black painted, brass bezels for rugged, reliable service.

Each instrument in this product line incorporates standard flood-lit illumination and is available in 12/24-volt applications.



PROGRAMMABLE SPEEDOMETERS w/resettable LCD trip odometer

Feature a unique auto-calibration function for easy adjustment through the LCD display. Odometer and trip odometer are clearly displayed in the LCD window.

For use with hall-effect, inductive, OEM electronic output and generator senders.

Description	Size	Dwg.	Terminal	Voltage	Part No.
120 MPH	3 1/8" (80 mm) dia.	A	Spade	12	437 050
45 MPH / 75 KMH	3 3/8" (85 mm) dia.	A	Spade	12	437 950
130 KMH / 85 MPH	3 3/8" (85 mm) dia.	A	Spade	12	437 956
120 MPH / 200 KMH	3 3/8" (85 mm) dia.	A	Spade	12	437 954
120 MPH	3 3/8" (85 mm) dia.	A	Spade	12	437 052
160 MPH	3 3/8" (85 mm) dia.	A	Spade	12	437 053

For 24V applications, use bulb #600 826 (2x).

PROGRAMMABLE TACHOMETERS w/LCD hourmeter

For use with all current electronic control unit (DDEC, etc.), inductive, alternator, standard ignition, electronic ignition and hall-effect applications. Engine hours are displayed in the LCD window.

Description	Size	Dwg.	Terminal	Voltage	Part No.
7,000 RPM	3 1/8" (80 mm) dia.	-	Spade	12	333 051
3,000 RPM	3 3/8" (85 mm) dia.	B	Spade	12	333 962
4,000 RPM	3 3/8" (85 mm) dia.	B	Spade	12	333 963
7,000 RPM	3 3/8" (85 mm) dia.	-	Spade	12	333 055

For 24V applications, use bulb #600 826 (2x).

Cockpit International cont.

PROGRAMMABLE TACHOMETERS w/o hourmeter

For use with alternator, 4/6/8 cylinder ignition and 12V square wave applications.

Description	Size	Dwg.	Terminal	Voltage	Part No.
4,000 RPM	2 ¹ / ₁₆ " (52 mm) dia.	D	Spade	12	333 965
6,000 RPM	2 ¹ / ₁₆ " (52 mm) dia.	D	Spade	12	333 958
8,000 RPM	2 ¹ / ₁₆ " (52 mm) dia.	D	Spade	12	333 959
3,000 RPM	3 ³ / ₈ " (85 mm) dia.	C	Spade	12	333 952
4,000 RPM	3 ³ / ₈ " (85 mm) dia.	C	Spade	12	333 953

For 24V applications, use resistor kit #391 101, 2¹/₁₆".

For 24V applications, use resistor kit #391 103, 3³/₈".

TEMPERATURE GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
240°F / 110°C	U.S.	Water symbol	G	Stud	–	12	310 907
250°F / 120°C	VDO	Water symbol	G	Stud	A	12	310 909
250°F	VDO	"Water"	E	Spade	A	12	310 039
250°F / 120°C	VDO	Water symbol	G	Spade	A	12	310 934B
280°F / 140°C	U.S.	Water symbol	G	Stud	–	12	310 911
300°F / 150°C	VDO	Oil symbol	G	Stud	B	12	310 915
300°F	VDO	"Oil"	E	Spade	B	12	310 012
250°F / 120°C	VDO	Water symbol	G	Stud	A	24	310 910
300°F / 150°C	VDO	"Oil"	G	Spade	B	12	310 936B
300°F / 150°C	VDO	Oil symbol	G	Stud	B	24	310 916
600°F	VDO	Cyl. head temp	G	Spade	–	12	310 033B

See page 30 & 31 for sender tables.

Mechanical, 2¹/₁₆" (52 mm) dia.

Description	Length	Dwg.	Fitting Size	Voltage	Part No.
265°F/130°C	72" cap.	H	1/2–14 NPT	12	180 901
265°F/130°C	96" cap.	H	1/2–14 NPT	12	180 902
265°F/130°C	144" cap.	H	1/2–14 NPT	12	180 903

For 24V applications, use bulb #600 826.

Adapters

Description	Part No.
1/2–14 NPT	180 066
3/8–18 NPT	180 067

Cylinder Head Temperature, 2¹/₁₆" (52 mm) dia.

Description	Dwg.	Voltage	Part No.
600°F, complete kit	P	12	310 901
14 mm dia. thermal sender (included in kit)	–	–	323 701
12 mm dia. thermal sender	–	–	323 705

For 24V applications, use bulb #600 807.

PYROMETERS, 250° – 1650°F, 2¹/₁₆" (52 mm) dia.

Description	Dwg.	Voltage	Part No.
12' kit	O	12	310 953
Gauge only	O	12	310 951
Pyrometer sender only	O	–	323 892
30' extension	–	–	240 092

For 24V applications, use resistor kit #391 101.

Cockpit International cont.

PRESSURE GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
80 PSI / 5 bar	VDO	Oil symbol	G	Stud	1	12	350 901
80 PSI	VDO	"Oil"	E	Spade	1	12	350 040
80 PSI	VDO	"Oil"	E	Spade	1	12	350 934B
150 PSI / 10 bar	VDO	Oil symbol	G	Stud	5	12	350 909
150 PSI	VDO	Air symbol	E	Spade	5	12	350 041
400 PSI	VDO	Trans. symbol	G	Stud	7	12	350 913
80 PSI / 5 bar	VDO	Oil symbol	G	Stud	1	24	350 902
150 PSI / 10 bar	VDO	Oil symbol	G	Stud	5	24	350 910

See pages 28 & 29 for sender tables.

Mechanical, 2¹/₁₆" (52 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
15 PSI	"Boost"	I	1/8-27 NPT	12	150 051
30 PSI	"Boost"	I	1/8-27 NPT	12	150 052
100 PSI	"Oil"	I	1/8-27 NPT	12	150 030
150 PSI / 10 bar	Oil symbol	I	1/8-27 NPT	12	150 904
150 PSI / 10 bar	Air symbol	I	1/8-27 NPT	12	150 905
400 PSI / 25 bar	Oil symbol	I	1/8-27 NPT	12	150 906

For 24V applications, use bulb #600 826.

DUAL AIR PRESSURE GAUGE, Mechanical, 3¹/₈" (80 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
Red / Green pointer	"Air"	I	1/8-27 NPT	24	151 002

For 12V applications, use bulb #600 803 (2x).

VACUUM, 2¹/₁₆" (52 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
30" Hg. / 1 bar	"Vacuum"	I	1/8-27 NPT	12	150 042

For 24V applications, use bulb #600 826.

Tubing kit not included, see page 34.

TURBO BOOST, 2¹/₁₆" (52 mm) dia.

Description	Dwg.	Fitting Size	Voltage	Part No.
30" Hg. / 20 PSI	I	1/8-27 NPT	12	150 921

For 24V applications, use bulb #600 826.

Tubing kit not included, see page 34.

FUEL LEVEL GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
For VDO sender	10-180	"Fuel"	E	Spade	11	12	301 015
For VDO sender	10-180	symbol	G	Stud	11	12	301 901
For U.S. sender	240-33	"Fuel"	G	Stud	12	12	301 903
For GM sender, (from 1965)	0-90	"Tank"	E	Spade	13	12	301 030
For O.E.M. sender	0-90	"LP"	-	Spade	N/A	12	301 036
For O.E.M. sender	0-90	symbol	-	Spade	13	12	301 930B
For VDO sender	10-180	symbol	G	Stud	11	24	301 902
For U.S. sender	240-33	symbol	G	Stud	12	24	301 904

See page 32 for sender tables.

Cockpit International cont.

VOLTMETERS, Electrical, 2¹/₁₆" (52 mm) dia., w/ISO symbol

Description	Range	Dwg.	Terminal	Voltage	Part No.
12V	8-16V	G	Stud	12	332 901
12V	8-16V	G	Spade	12	332 932B
12V, w/colorband	8-16V	E	Spade	12	332 041
24V	18-32V	G	Stud	24	332 902

AMMETERS (Non-shunted), 2¹/₁₆" (52 mm) dia.

Description	Range	On Dial	Dwg.	Terminal	Voltage	Part No.
30 Amp	30/0/30	" Amp"	L	Stud	12	190 903
60 Amp	60/0/60	" Amp"	L	Stud	12	190 904

For 24V applications, use bulb #600 826.

AMMETER (Shunted), 2¹/₁₆" (52 mm) dia., complete kit w/shunt

Description	Range	On Dial	Dwg.	Terminal	Voltage	Part No.
300 Amp kit	300/0/300	" Amp"	M	Spade	12	190 966

For 24V applications, use resistor #391 101.

Accessories

Description	Part No.
300 Amp, shunt only	391 009

CLOCK, 2¹/₁₆" (52 mm) dia.

Description	Range	Dwg.	Terminal	Voltage	Part No.
Analog	9-28V	J	Spade	12/24	370 951

For 24V applications, use bulb #600 807.

Vision

VDO Vision represents a true technological advancement in instrument illumination. Using light piping techniques, we have created fully-backlit "through dial lighting" and pointer illumination with an unmatched level of nighttime readability.

Vision instruments also feature our innovative Spin-Lok™ mounting system for fast and easy

installation. Using our unique spin-on clamp, it provides a full 360 degrees of mounting force when installed, preventing panel warping and gauge rotation.

As with all VDO instruments, Vision incorporates the use of our own patented air core or stepper motor movements. Designed and used worldwide exclusively by VDO.



PROGRAMMABLE SPEEDOMETERS w/resettable LCD trip odometer

Vision speedometers feature a unique auto-calibration function, allowing for easy adjustment through the LCD display. Odometer and trip odometer are clearly displayed in the LCD window, and the operator may toggle between these modes with the push of a button.

For use with hall-effect, inductive, OEM electronic output and generator senders.

Description	Size	Dwg.	Terminal	Voltage	Part No.
85 MPH / 130 KMH	3 ³ / ₈ " (85 mm) dia.	A	Spade	12/24	437 152
120 MPH	3 ³ / ₈ " (85 mm) dia.	A	Spade	12/24	437 153
120 MPH	4" (100 mm) dia.	A	Spade	12/24	437 155

For 24V applications, use bulb #600 826 (2x).

PROGRAMMABLE TACHOMETERS w/LCD hourmeter

For use with all current electronic control units (DDEC, etc.), inductive, alternator, standard ignition, electronic ignition and hall-effect applications. Engine hours are displayed in the LCD window.

Description	Size	Dwg.	Terminal	Voltage	Part No.
3,000 RPM	3 ³ / ₈ " (85 mm) dia.	B	Spade	12/24	333 162
4,000 RPM	3 ³ / ₈ " (85 mm) dia.	B	Spade	12/24	333 163
6,000 RPM	3 ³ / ₈ " (85 mm) dia.	B	Spade	12/24	333 164

For 24V applications, use bulb #600 826 (2x).



Trioptic™ technology for superior illumination.



VDO's Spin-Lok™ mounting system secures the instrument with 360° of force.

Vision cont.

PROGRAMMABLE TACHOMETERS w/o hourmeter

For use with alternator, 4/6/8 cylinder ignition and 12V square wave applications.

Description	Size	Dwg.	Terminal	Voltage	Part No.
4,000 RPM	2 ¹ / ₁₆ " (52 mm) dia.	D	Spade	12/24	333 156
6,000 RPM	2 ¹ / ₁₆ " (52 mm) dia.	D	Spade	12/24	333 158
8,000 RPM	2 ¹ / ₁₆ " (52 mm) dia.	D	Spade	12/24	333 159
7,000 RPM	3 ¹ / ₈ " (80 mm) dia.	C	Spade	12/24	333 151
3,000 RPM	3 ³ / ₈ " (85 mm) dia.	C	Spade	12/24	333 152
7,000 RPM	3 ³ / ₈ " (85 mm) dia.	C	Spade	12/24	333 155
8,000 RPM	4" (100 mm) dia.	C	Spade	12/24	333 160

For 24V applications, use resistor kit #391 101, 2 1/16".

For 24V applications, use resistor kit #391 103, 3 1/8", 3 3/8" and 4".

TEMPERATURE GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
250°F	VDO	"Water"	E	Spade	A	12	310 105
300°F	VDO	"Oil"	E	Spade	B	12	310 106
400°F	VDO	"Trans"	E	Spade	C	12	310 107

For 24V applications, use bulb #600 826.

See pages 30 & 31 for sender tables.

Mechanical, 2¹/₁₆" (52 mm) dia.

Description	Length	On Dial	Dwg.	Fitting Size	Voltage	Part No.
110°F/265°C	72" cap.	"Water"	H	1/2-14 NPT	12	180 101

For 24V applications, use bulb #600 826.

Adapters

Description	Part No.
1/2-14 NPT	180 066
3/8-18 NPT	180 067

OUTSIDE TEMPERATURE GAUGE, Electrical, 2¹/₁₆" (52 mm) dia.

Description	On Dial	Dwg.	Voltage	Part No.
Complete kit, Fahrenheit	-10°F - 120°F	N	12	397 154

For 24V applications, use resistor kit #391 101.

PYROMETERS, Electrical, 2¹/₁₆" (52 mm) dia., 250°F - 1650°F

Description	Dwg.	Voltage	Part No.
12' Kit	O	12	310 153
Gauge only	O	12	310 151
Pyrometer sender only	O	-	323 892
30' extension	-	-	240 092

For 24V applications, use resistor kit #391 101.

Vision cont.

PRESSURE GAUGES, Electrical, 2 1/16" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
80 PSI	10 – 180	"Oil"	E	Spade	1	12	350 104
80 PSI	240 – 33	"Oil"	E	Spade	2	12	350 105
100 PSI	10 – 180	"Oil"	E	Spade	3	12	350 106
100 PSI	240 – 33	"Oil"	E	Spade	4	12	350 107
150 PSI	10 – 180	"Oil"	E	Spade	5	12	350 108
150 PSI	240 – 33	"Oil"	E	Spade	–	12	350 109
150 PSI	10 – 180	"Front Air"	E	Spade	5	12	350 111
150 PSI	10 – 180	"Rear Air"	E	Spade	5	12	350 112
400 PSI	10 – 180	"Trans"	E	Spade	7	12	350 110

For 24V applications, use bulb #600 826.

See pages 28 & 29 for sender tables.

PRESSURE GAUGES, Mechanical, 2 1/16" (52 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
15 PSI	"Boost"	I	1/8–27 NPT	12	150 101
30 PSI	"PSI"	I	1/8–27 NPT	12	150 103
30 PSI	"Boost"	I	1/8–27 NPT	12	150 104
100 PSI	"Oil"	I	1/8–27 NPT	12	150 107
150 PSI	"Front Air"	I	1/8–27 NPT	12	150 105
150 PSI	"Rear Air"	I	1/8–27 NPT	12	150 106
150 PSI	"Oil"	I	1/8–27 NPT	12	150 111
150 PSI	"Air"	I	1/8–27 NPT	12	150 112

For 24V applications, use bulb #600 826.

Tubing kit not included, see page 34.

FUEL GAUGES, Electrical, 2 1/16" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
For VDO sender	10 – 180	Fuel symbol	E	Spade	11	12	301 104
For U.S. sender	240 – 33	Fuel symbol	E	Spade	12	12	301 105
For GM sender	0 – 90	Fuel symbol	E	Spade	13	12	301 106
Adjustable, for tube type sender only	90–0	Fuel symbol	E	Spade	14	12	301 107

See page 32 for sender tables.

TURBO BOOST, Mechanical, 2 1/16" (52 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
0 – 30 in. Hg. to 0 – 25 PSI	"Turbo"	I	1/8–27 NPT	12	150 121

For 24V applications, use bulb #600 826.

Tubing kit not included, see page 34.

VACUUM GAUGE, Mechanical, 2 1/16" (52 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
0 – 30 in. Hg.	"Vacuum"	I	1/8–27 NPT	12	150 131

For 24V applications, use bulb #600 826.

Tubing kit not included, see page 34.

Vision cont.

VOLTMETER, 2¹/₁₆" (52 mm) dia.

Description	On Dial	Dwg.	Terminal	Voltage	Part No.
8-16V	"Volt"	E	Spade	12	332 103

AMMETERS (Non-Shunted), Electrical, 2¹/₁₆" (52 mm) dia.

Description	Range	On Dial	Dwg.	Terminal	Voltage	Part No.
60 Amp	60/0/60	"Amp"	L	Stud	12	190 104
100 Amp	100/0/100	"Amp"	L	Stud	12	190 105

For 24V applications, use bulb #600 826.

AMMETERS (Shunted), Electrical, 2¹/₁₆" (52 mm) dia.

Description	Range	On Dial	Dwg.	Terminal	Voltage	Part No.
150 Amp, gauge only	150/0/150	"Amp"	M	Spade	12	190 151B
150 Amp, shunt only		-	-	-	-	391 007

For 24V applications, use resistor #kit 391 101.

CLOCK, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Range	Dwg.	Terminal	Voltage	Part No.
Analog	9-28V	J	Spade	12/24	370 152

For 24V applications, use bulb #600 826.

Series 1

VDO Series 1 instruments feature standard scales with step-type, chrome-plated brass bezels. Series 1 instruments utilize edge-lit dials and feature easy-to-read white numerals and pointers on black faces. All housings are constructed of

zinc-plated steel and have U-bracket mounting and stud-type connections except where noted in the technical specifications and dimensions section of this catalog.



PROGRAMMABLE SPEEDOMETERS w/resettable LCD tripodometer

Series 1 speedometers feature a unique auto-calibration function, allowing for easy adjustment through the LCD display. Odometer and tripodometer readings are clearly displayed in the LCD window, and the operator may toggle between these modes with the push of a button.

For use with hall-effect, inductive, OEM electronic output and generator senders.

Description	Size	Dwg.	Terminal	Voltage	Part No.
120 MPH	3 ³ / ₈ " (85 mm) dia.	A	Spade	12/24	437 353
160 MPH	3 ³ / ₈ " (85 mm) dia.	A	Spade	12/24	437 354

For 24V applications, use bulb #600 826 (2x).

MECHANICAL SPEEDOMETER w/o tripodometer, ⁵/₈-18 thread, 1.0 ratio

Description	Size	Dwg.	Terminal	Voltage	Part No.
120 MPH / 200 KMH	3 ³ / ₈ " (85 mm) dia.	-	-	12	120 302

PROGRAMMABLE TACHOMETER w/LCD hourmeter

For use with all current electronic control unit (DDEC, etc.), inductive, alternator, standard ignition, electronic ignition and hall-effect applications. Engine hours are displayed in the LCD window.

Description	Size	Dwg.	Terminal	Voltage	Part No.
4,000 RPM	3 ³ / ₈ " (85 mm) dia.	B	Spade	12/24	333 363

For 24V applications, use bulb #600 826 (2x).

PROGRAMMABLE TACHOMETERS w/o hourmeter

For use with alternator, 4/6/8 cylinder ignition and 12V square wave applications.

Description	Size	Dwg.	Terminal	Voltage	Part No.
4,000 RPM	3 ³ / ₈ " (85 mm) dia.	C	Spade	12	333 353
7,000 RPM	3 ³ / ₈ " (85 mm) dia.	C	Spade	12	333 355

For 24V applications, use resistor kit #391 103.

Series 1 cont.

TEMPERATURE GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
250°F	VDO	"Water"	G	Stud	A	12	310 304
300°F	VDO	symbol	G	Stud	B	12	310 305
400°F	VDO	"Transmission"	G	Stud	C	12	310 303

For 24V applications, use bulb #600 826.

See pages 30 & 31 for sender tables.

Mechanical, 2¹/₁₆" (52 mm) dia.

Description	Length	On Dial	Dwg.	Fitting Size	Voltage	Part No.
110°F / 265°F	48" cap.	"Water"	I	1/2-14 NPT	12	180 310
110°F / 265°F	72" cap.	"Water"	I	1/2-14 NPT	12	180 301
110°F / 265°F	144" cap.	"Water"	I	1/2-14 NPT	12	180 302
110°F / 265°F	288" cap.	"Water"	I	1/2-14 NPT	12	180 308

For 24V applications, use bulb #600 826.

Mechanical, oil temperature, 2¹/₁₆" (52 mm) dia.

Description	Length	On Dial	Dwg.	Fitting Size	Voltage	Part No.
120°F / 340°F	72" cap.	"Oil"	I	1/2-14 NPT	12	180 315
120°F / 340°F	144" cap.	"Oil"	I	1/2-14 NPT	12	180 317

For 24V applications, use bulb #600 826.

Adapters

Description	Part No.
1/2-14 NPT	180 066
3/8-18 NPT	180 067

PRESSURE GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
80 PSI	VDO	"Oil"	G	Stud	1	12	350 303
100 PSI	VDO	"Oil"	G	Stud	3	12	350 306

For 24V applications, use bulb #600 826.

See pages 28 & 29 for sender tables.

Mechanical, 2¹/₁₆" (52 mm) dia., 1/8-27 NPT connection

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
100 PSI	"Oil"	I	1/8-27 NPT	12	150 330
150 PSI	"Air"	I	1/8-27 NPT	12	150 307
150 PSI	"Oil"	I	1/8-27 NPT	12	150 306

For 24V applications, use bulb #600 826.

Tubing kit not included, see page 34.

TURBO BOOST, Mechanical, 2¹/₁₆" (52 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
30 in. Hg. to 15 PSI	"Turbo"	I	1/8-27 NPT	12	150 361

For 24V applications, use bulb #600 826.

Tubing kit not included, see page 34.

Series 1 cont.

VACUUM GAUGES, Mechanical, 2¹/₁₆" (52 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Part No.
0-30 in. Hg. complete kit	"Vacuum" & "in./Hg."	I	1/8-27 NPT	12	150 302
0-30 in. Hg., gauge only	"Vacuum" & "in./Hg."	I	1/8-27 NPT	12	150 301

For 24V applications, use bulb #600 826.
 Tubing kit not included, see page 34.

FUEL GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Voltage	Part No.
For VDO sender	10-180	"Fuel"	G	Stud	11	12	301 301
For U.S. sender	240-33	"Fuel"	G	Stud	12	12	301 302
For GM sender (from 1965)	0-90	"Fuel"	G	Stud	13	12	301 303

For 24V applications, use bulb #600 826.
 See page 32 for sender tables.

VOLTMETERS, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Range	On Dial	Dwg.	Terminal	Voltage	Part No.
12V	8-16V	-	G	Stud	12	332 341
12V	8-16V	w/color band	G	Stud	12	332 342

AMMETER (Non-shunted), Electrical, 2¹/₁₆" (52 mm) dia.

Description	Range	On Dial	Dwg.	Voltage	Part No.
60 Amp	60/0/60	"Amp"	L	12	190 301

For 24V applications, use bulb #600 826.

CLOCK, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Range	Dwg.	Terminal	Voltage	Part No.
Analog	9-28V	K	Spade	12/24	370 301

For 24V applications, use bulb #600 829.

Industrial (service parts only)



PROGRAMMABLE TACHOMETERS w/LCD hourmeter

For use with all current electronic control unit (DDEC, etc.), inductive, alternator, standard ignition, electronic ignition and hall-effect applications. Engine hours are displayed in the LCD window.

Description	Size	Dwg.	Terminal	Voltage	Chrome	Black
3,000 RPM	3 ³ / ₈ " (85 mm) dia.	A	Spade	12/24	333 561	333 562
4,000 RPM	3 ³ / ₈ " (85 mm) dia.	A	Spade	12/24	333 563	333 564

For 24V applications, use bulb #600 826 (2x).

PROGRAMMABLE TACHOMETERS w/o hourmeter

For use with magnetic pickups.

Description	Size	Terminal	Voltage	Chrome	Black
3,000 RPM	3 ³ / ₈ " (85 mm) dia.	Spade	12/24	333 531	333 532
4,000 RPM	3 ³ / ₈ " (85 mm) dia.	Spade	12/24	333 533	333 534

For 24V applications, use bulb #600 807.

PROGRAMMABLE TACHOMETER w/o hourmeter

For use with 4/6/8 cylinder ignition and 12V square wave application.

Description	Size	Terminal	Voltage	Chrome	Black
6,000 RPM	3 ³ / ₈ " (85 mm) dia.	Spade	12	333 535	333 536

For 24V applications, use bulb #600 826 (2x) and resistor #391 032.

ALTERNATOR TACHOMETER w/o hourmeter

Description	Size	Terminal	Voltage	Chrome	Black
4,000 RPM*	2 ¹ / ₁₆ " (52 mm) dia.	Spade	12/24	333 515	-

*For 24V applications, use resistor #391 032 and bulb #600 807, 2¹/₁₆".

MECHANICAL TACHOMETER w/rev. counter, 3,500 RPM

Description	Size	Voltage	Chrome	Black
1:2 Ratio	3 ³ / ₈ " (85 mm) dia.	12	128 501B	-

Industrial (service parts only) cont.

TEMPERATURE GAUGES, 12V, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Chrome	Black
250°F / 120°C	VDO	"Water"	F	Spade	A	310 501	310 502
300°F / 150°C	VDO	"Engine Oil"	F	Spade	B	310 511	310 512
400°F / 200°C	VDO	"Trans Oil"	F	Spade	C	-	310 514

For 24V applications, use resistor kit #391 704.

See pages 30 & 31 for sender tables.

TEMPERATURE GAUGES, Mechanical, 2¹/₁₆" (52 mm) dia.

Description	Length	On Dial	Dwg.	Fitting Size	Voltage	Chrome	Black
265°F / 130°C	72" cap.	"Water"	H	1/2-14 NPT	12	180 501	-
265°F / 130°C	144" cap.	"Water"	H	1/2-14 NPT	12	180 503	180 504
265°F / 130°C	180" cap.	"Water"	H	1/2-14 NPT	12	180 505	-

For 24V applications, use bulb #600 826.

PRESSURE GAUGES, 12V, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Sender Table	Chrome	Black
80 PSI / 5 kp/cm ²	VDO	"Engine Oil"	F	Spade	1	350 515	350 516
80 PSI / 5 kp/cm ²	U.S.	"PSI"	F	Spade	2	350 505	350 506
100 PSI / 7 kp/cm ²	VDO	"Engine Oil"	F	Spade	3	350 519	350 520
150 PSI / 10 kp/cm ²	VDO	"Engine Oil"	F	Spade	5	350 507	350 508
150 PSI / 10 kp/cm ²	VDO	"Air"	F	Spade	5	-	350 510B
350 PSI / 25 kp/cm ²	VDO	Gear symbol	F	Spade	6	350 511	350 512
400 PSI / 28 kp/cm ²	VDO	Trans. symbol	F	Spade	7	350 513	-

For 24V applications, use resistor kit #391 704.

See pages 28 & 29 for sender tables.

Mechanical, 2¹/₁₆" (52 mm) dia.

Description	On Dial	Dwg.	Fitting Size	Voltage	Chrome	Black
30 PSI / 2 kp/cm ²	Oil symbol	I	1/8-27 NPT	12	150 505	150 506
100 PSI / 7 kp/cm ²	Oil symbol	I	1/8-27 NPT	12	150 507	150 508
150 PSI / 10 kp/cm ²	ISO Oil symbol	I	1/8-27 NPT	12	150 509	150 510
150 PSI / 10 kp/cm ²	"Air"	I	1/8-27 NPT	12	150 513	150 514
400 PSI / 28 kp/cm ²	-	I	1/8-27 NPT	12	150 511	-
150 PSI / 10 kp/cm ²	"Front Air"	I	1/8-27 NPT	12	-	150 518
150 PSI / 10 kp/cm ²	"Rear Air"	I	1/8-27 NPT	12	-	150 520

For 24V applications, use bulb #600 826.

Tubing kit not included, see page 34.

FUEL GAUGES, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Ω Range	On Dial	Dwg.	Terminal	Voltage	Chrome	Black
For VDO sender	10-180	"Fuel"	F	Spade	12	301 501	301 502
For U.S. sender	240-33	"Fuel"	F	Spade	12	301 505	301 506
Adjustable, for tube type sender	90-0	"Fuel"	F	Spade	12	301 509	301 510

For 24V applications, use resistor kit #391 704.

Industrial (service parts only) cont.

VOLTMETERS, Electrical, 2¹/₁₆" (52 mm) dia.

Description	Range	Dwg.	Terminal	Voltage	Chrome	Black
12V	8-16V	F	Spade	12	332 501	332 502
24V	18-32V	F	Spade	24	332 503	332 504

AMMETER (Non-shunted), Electrical, 2¹/₁₆" (52 mm) dia.

Description	Range	On Dial	Dwg.	Terminal	Voltage	Chrome	Black
60 Amp	60/0/60	" Amp "	L	Spade	12	190 501	190 502

For 24V applications, use bulb #600 826.

AMMETERS (Shunted)

Description	Range	On Dial	Dwg.	Terminal	Voltage	Chrome	Black
150 Amp, complete kit	150/0/150	" Amp "	M	Spade	12	190 953	-
150 Amp, shunt only w/lead wire	-	-	-	-	-	391 003	-
200 Amp, gauge only	200/0/200	" Amp "	M	Spade	12	-	190 514
200 Amp, shunt only	-	-	-	-	-	391 009	-

For 24V applications, use bulb #600 826.

DC Hourmeters (12/24V)

VDO has long since been a leading producer of hourmeters, setting the standard for quality and reliability worldwide. In fact, each hourmeter is factory "burnt-in" assuring you of its reliability and accuracy.

Our selection is second-to-none in the industry, allowing you to match your other instrument styles, bezels and mounting configurations. We pay attention to detail by providing several units in illuminated, non-illuminated and waterproof versions.



DC HOURMETERS, Electrical, 2¹/₁₆" (52 mm) dia.

Cockpit International*

Description	On Dial	Dwg.	Terminal	Voltage	Part No.
Non-illuminated	"Hours"	J	Spade	12/24	331 951
Illuminated	"Hours"	K	Spade	12/24	331 020

LCD Hourmeter, 2¹/₁₆" (52 mm) dia.**

Description	On Dial	Terminal	Voltage	Part No.
Non-illuminated	"Hours"	Spade	9-64	331 523

Industrial**

Description	On Dial	Dwg.	Terminal	Voltage	Chrome	Black
Illuminated	"Engine Hours"	K	Spade	12/24	331 501	331 502
Non-illuminated	"Hours"	K	Spade	12/24	331 503	331 504
Illuminated	"Pump Hours"	K	Spade	12/24	331 517B	-

Waterproof

Description	On Dial	Terminal	Voltage	Chrome	Black
Non-illuminated	"Hours"	Spade	12/24	331 511	331 512

Three-hole flange

Description	On Dial	Terminal	Voltage	Part No.
Non-illuminated, waterproof	"Hours"	Spade	12/24	331 514

Mini hourmeter

Description	On Dial	Dwg.	Terminal	Voltage	Part No.
Rectangular, non-illuminated	"Hours"	Q	Spade	12/24	331 534

*For 24V applications, use bulb #600 826.

**For 24V applications, use bulb #600 807.

BAI (Bus Analog Interface) System

The BAI (Bus Analog Interface) System from VDO is the simple, economical solution to bridging the gap between electronic engines and analog instrumentation. BAI interprets and converts your electronic engine's digital signals and sends them directly to your vehicle's existing analog gauges.

BAI saves you money because it eliminates the need to buy and install new gauges. BAI saves you time because it's easy to install on any diesel engine. There is no clumsy wire harness to stuff under the hood or dash. BAI requires only two wires to run from the ECM (Electronic Control Module) output plug to the unit.

With BAI, you can monitor up to 10 engine and chassis functions – including speedometer,

tachometer and hourmeter. BAI includes 8 programmable channels for warning lights, shutdowns and alarm systems, plus 3 additional analog inputs to monitor air pressure, transmission fluid and fuel levels, etc. BAI also allows you to pre-set warnings, alarms and even shutdowns to prevent engine damage.

BAI comes complete with easy-to-use, Windows-based software that you can program for any diesel system application based on SAE J1708/1587 protocols. Using your desktop or laptop computer, you can program the system for one engine or an entire fleet.

All units require programming.

Description	Voltage	Part No.
BAI extended w/3 analog inputs	8-34	N03 321 008

BAI Technical Specifications

A multi-functional modular device that interprets signals and data from electronic engines for interface to predetermined gauges, sound alarms and warning lamps.

Dimensions: Length: 104 mm (4.09 in.)
Width: 107 mm (4.29 in.)

Diagnostics: Coded blink light

Instrument Channels: Operates up to 10 analog or newer 4-20ma instruments including tachometer, speedometer and hourmeter.

Alarm Outputs

8 Programmable Channels: for warning lights, shut downs and alarm systems

7 Auxiliary Analog Inputs: for monitoring additional chassis functions

Max. Alarm Outputs: 300ma

Electronic Capabilities

SAE J1708 /J1587 interface
CAN v2.0A (B passive) interface
EMC compatible

Electrical Capabilities

Operating Voltage: 8-34v
Current Consumption: 100ma (no load)
Output Voltage: 30v (continuous)
Input Voltage: 5-15v (ignition switched)

Environmental Capabilities

Sealed/fluid resistant to IEC IP-65 (IP-67 pending)
Sealed connectors (as desired)

Thermal Operating Temperature

-10° to 70°C (14° – 158°F)

Thermal Storage Temperature

-30° to 85°C (-22° – 185°F)



N03 321 008

D'Mac System

Visibility and more of it is the trend in design of today's off-highway equipment. More glass all around the cab means there's less room for gauges and monitoring equipment and the wiring they require. This is why VDO developed the D'Mac System.

D'Mac gives you a full display of vital engine and chassis data in one compact instrument and warning package. In fact, D'Mac's LCD monitor is only 100 mm square, about the size of a slice of bread. It can easily be mounted centrally, so the operator can check it with a quick glance.

D'Mac is one wire easy. No need for complicated wire harnesses. With D'Mac CAN bus technology, you run just one wire from the sensor to the display. Fewer wires mean better reliability. Plus, you save both space and installation time.

D'Mac includes visual pre-alarm systems to warn of potential engine and chassis problems. You can also program D'Mac to shut down your vehicle before damage occurs. You can monitor up to 8 signal inputs with a single D'Mac unit. Check vehicle speed, engine speed, temperatures, pressures, liquid levels and more. Add more sensor units and you can monitor as many as 24 channels of information. Plus, D'Mac gives you additional data including an hourmeter, working hours, trip distance and total distance.

With the optional data archiving unit, you can store and review all warnings and alarms that occurred during equipment operation. Program service information into D'Mac and the system alerts the operator when it's time for regular check-ups and maintenance.

D'Mac Technical Specifications

Display Unit

(L = 100 mm, W = 100 mm, D = 73 mm)

Rated Voltage: 12–24v DC
 Operating Voltage: 10.5 – 32v DC
 EMC: DIN 40839, part 1, 3, 4
 EN 50081, part 2
 EN 50082, part 1

CE Certified to: 89/336 EWG
 KBA Registration: 72/245 resp. 95/54
 Vibration Strength: 1g, 25 – 2,000 Hz
 Permanent Shock: 25g, 1 Hz, 6ms
 Oper./Storage Temp.: -20° to 80°C
 Protection: IP65 DIN 40 050 front
 IP20 DIN 40 050 back

Input Signal Illum.: 10, 8–32v
 Type of Connection: AMP MTA 156 pin connector

Display LCD: Dim.: 72x72 mm visible
 Illum.: LED white (life cap. 60,000h)

Color: green
 Projection: non-inverse
 Pickup: segment multiplex oper.
 Segments No.: 204
 Visual Angle: NL 10 – 80,
 DIN 16 257

Sensor Unit

(L = 112 mm, W = 132 mm, D = 35 mm)

Rated Voltage: 12–24v DC
 Operating Voltage: 10.5 – 32v DC voltage
 hall sensor at 24v = 12v
 EMC: DIN 40839, part 1, 3, 4
 EN 50082, part 2
 EN 50082, part 1

CE Certified to: 89/336 EWG
 KBA Registration: 72/245 resp. 95/54
 Vibration Strength: 3g, 25 – 2,000 Hz
 Permanent Shock: 25g, 1 Hz, 6ms
 Oper./Storage Temp.: -40° to 85°C
 Protection: IP65 DIN 40 050
 Type of Connection : AMP Econoseal 156 pin connector

Keypad

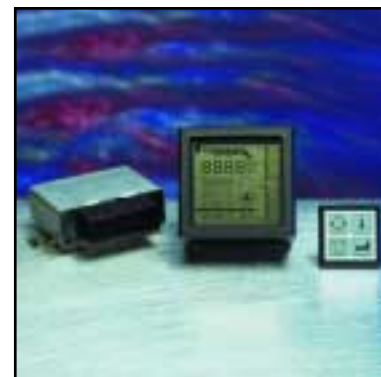
(L = 54 mm, W = 54 mm, D = 20 mm)

Control Field: Keypad foil (protected by plastic frame)
 Protection: IP65 DIN 40 050 front
 Type of Connection: AMP MTA 156 pin connector

Data Recorder

(L = 130 mm, W = 137.5 mm, D = 33 mm)

Rated Voltage: 12–24v DC
 Operating Voltage: 10.5 – 32v DC
 EMC: DIN 40839, part 1, 3, 4
 EN 50081, part 2
 EN 50082, part 1
 CE Certified to: 89/336 EWG
 KBA Registration: 72/245 resp. 95/54
 Vibration Strength: 5g, 10 – 500 Hz, 1 octave/min.
 Permanent Shock: 25g, 1 Hz, 6ms
 Oper./Storage Temp.: -40° to 85°C
 Protection: IP53 DIN 40 050
 Type of Connection: AMP, 25-pole



D'Mac System
 (sensor unit, LCD display, keypad)



Full representation
 of the display

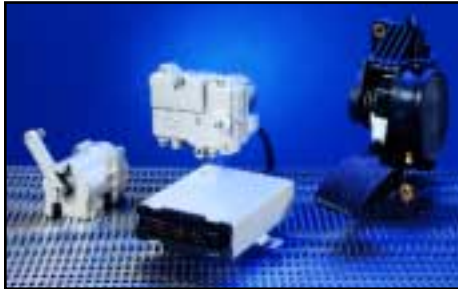
Please call for part numbers and details.

E-Gas® Electronic Actuator System

Here is the affordable way to add safety and comfort . . . plus solve the technical issues associated with mechanically actuated cable systems – the E-Gas® System from VDO. E-Gas can be used for engine acceleration or anywhere that you need electronic actuation for smooth, controlled operation. The system consists of a fully programmable regulator and electronic actuator

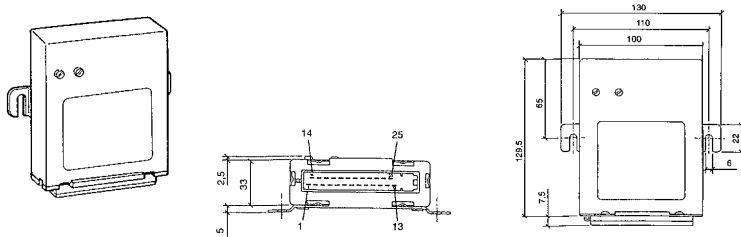
that can be driven by any PWM signal device. Available options include a foot pedal or set-point sensor for level operation.

With E-Gas, you get simple, PC-based programmability, integrated diagnostics, actuator limitations, the ability to regulate or limit working speed and frequency/analog inputs for great control.



Please call for part numbers and details.

Electronic Regulator (Electronics)



E-Gas Technical Specifications

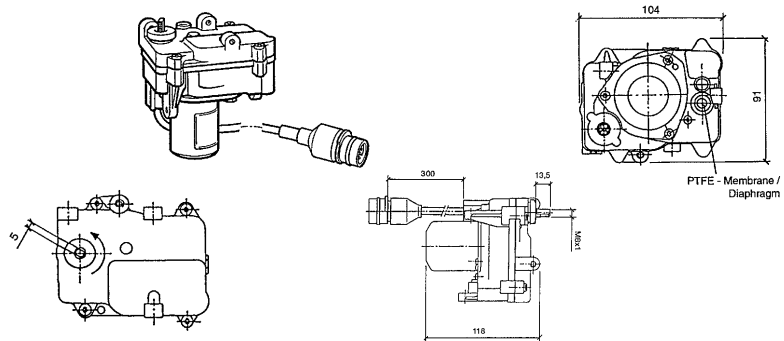
Electronic Regulator (Electronics)

Normal Voltage: 12–24V
 Test Voltage: 14–28V
 Operating Voltage: 9.5–30V
 Oper. Temp. Range: -40°C to +70°C
 Storage Temp.: -40°C to +80°C
 Standards: protection IP 53/
 DIN 40050
 Fault Memory: in EEPROM
 Fault Output: via flasher or
 diagnostics interface
 Installation Site: driver's cab

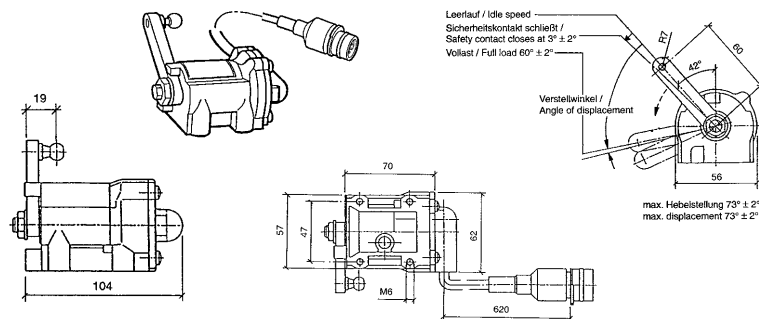
Electric Actuator

Normal Voltage: 24V
 Oper. Temp. Range: -25°C to +90°C
 Storage Temp.: -35°C to +115°C
 Rated Torque: 250 Ncm
 Response Time: ≤ 1 sec.
 (typical): 750 ms
 Positioning Angle: 87° ± 3°
 Standards: protection IP 56A/
 DIN 40050
 Normal Voltage: 12V
 Response Time: < 2 sec.

Electric Actuator



Set-Point Sensor



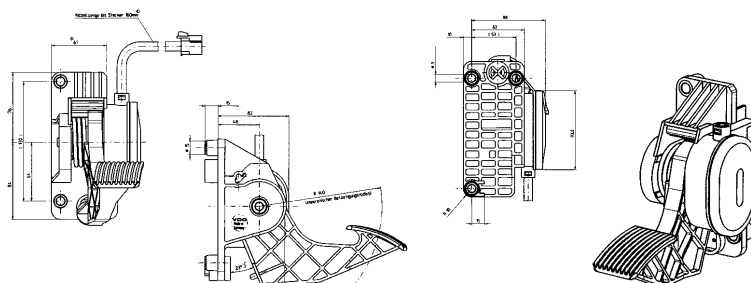
Set-Point Sensor

Oper. Voltage: supplied thru regulator
 Oper. Temp. Range: -30°C to +80°C
 Storage Temp.: -30°C to +90°C
 Initial Torque: 160 Ncm + 20 Ncm/
 -30 Ncm
 Final Torque: 280 Ncm ± 40 Ncm
 Kickdown Torque: 550 Ncm ± 40 Ncm
 Standards: protection IP 66/
 DIN 40050

Pedal Unit

Service Voltage: supplied thru regulator
 Oper. Temp. Range: -40°C to +80°C
 Storage Temp.: -40°C to +100°C
 Standards: protection IP 54/
 DIN 40050
 Signal: PWM

Pedal Unit



Windshield Washer System

VDO Windshield Washer Systems were developed to meet the demanding requirements of construction and agricultural equipment and specialty vehicles.

The system is comprised of a washer container with integrated pump, filter, mounting hardware and optional low level sensor. Available in 12- and 24-volt models both for single and dual washer applications.

The fully adjustable single and dual nozzles are made of high-quality chrome plated brass for long-term durability, less clogging and versatility for use in any application. Installation kits include hose, hose fittings, check valve and wiring harness complete with pump connector.

Washer System, 1.5 Liter / 1.6 Quarts

Description	Pkg. Qtys.	Part No.
Windshield only, 12V	10	X10 246 001 007
Windshield only, 24V	10	X10 246 001 008
Dual two window, 12V	10	X10 246 001 009
Windshield only, 12V, with warning switch	10	X10 246 001 010
Dual two window, 12V, with warning switch	10	X10 246 001 011

Washer System, 4.0 Liter / 4.24 Quarts

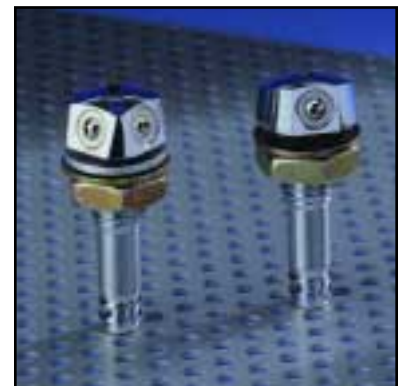
Description	Pkg. Qtys.	Part No.
Windshield only, 12V	6	X10 246 001 012
Windshield only, 24V	6	X10 246 001 013
Dual two window, 12V	6	X10 246 001 014

Washer System, 6.0 Liter / 6.36 Quarts

Description	Pkg. Qtys.	Part No.
Windshield only, 12V	10	X10 246 001 015
Windshield only, 24V	10	X10 246 001 016
Dual two window, 12V	10	X10 246 001 017

Accessories

Description	Pkg. Qtys.	Part No.
Installation kit, 12V applications	1	X10 246 001 018
Installation kit, 24V applications	1	X10 246 001 019
Single squirt adjustable nozzle	1	246 068 003 001G
Dual squirt adjustable nozzle	1	246 069 006 006G
"Heated," dual squirt adjustable nozzle, 12V	1	(ask for information)
Momentary push button	1	4 633 030 007B



Shown on Left:
246 069 006 006G

Shown on Right:
246 068 003 001G

Windshield Washer System Technical Specifications

Bottle		Connecting Elements	
Content:	1.5L (1.6 Quarts) 4.0L (4.24 Quarts) 6.0L (6.36 Quarts)	Material:	weather-resistant and aging-resistant
Materials:	Temperature-resistant from -30°C to +100°C, weather-resistant and aging-resistant	VDO Monopump, 12V	
VDO Dual Pump, 12V		Pressure:	P= +2.2 bar
Pressure:	P= +2.1 bar	Flow Rate:	V= 2.0 l/min
Flow Rate:	V= 2.0 l/min	Current Consumption:	V= 2.0 l/min
Current Consumption:	V= 2.0 l/min	VDO Monopump, 24V	
		Pressure:	P= +1.8 bar
		Flow Rate:	V= 1.0 l/min
		Current Consumption:	I= max = 1.2A

230 Series Heavy-Duty Pressure Switch

The Series 230 Heavy-Duty Pressure Switches provide an economical and reliable choice for a multitude of pressure switch applications. Available in a variety of part numbers to cover most commonly demanded set points. Optional set points may also be field set to meet customer requirements.

Series 230 Pressure Switches are compact and compatible with a wide variety of fluids, making them ideal for most engine, brake, hydraulic and air system applications. All switches are provided with an insulated ground terminal to assure a quality ground circuit.

Normally Open – Single Circuit; 2 terminals, insulated ground

Range	Part No.
4 PSI	230 404
15 PSI	230 415
60 PSI	230 460

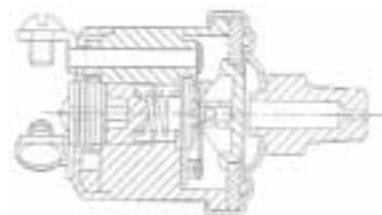
Normally Closed – Single Circuit; 2 terminals, insulated ground

Range	Part No.
4 PSI	230 504
15 PSI	230 515
60 PSI	230 560

Dual Circuit – normally open, normally closed, insulated ground

Range	Part No.
4 PSI	230 604
15 PSI	230 615
60 PSI	230 660

Overall Dimensions: Length = 2.52" / Width = 1.47"



(2 terminal configuration)



(3 terminal configuration)

Heavy-Duty Pressure Switch Technical Specifications

Normally Open: Contacts open until pressure rises which then completes the circuit.

Normally Closed: Contacts closed until pressure rises which then breaks the circuit.

Direct action blade contact pressure switches with adjustable contact ranges:

4 – 7 PSI ± 1; 14 – 24 PSI ± 3; 51 – 90 PSI ± 7

Contacts: Silver alloy, gold-plated

Operating Pressure (Set Point Range)

4 – 24 PSI = 150 PSI 25 – 90 PSI = 250 PSI

Proof Pressure: 500 PSI

Burst Pressure (Set Point Range)

4 – 24 PSI = 750 PSI 25 – 90 PSI = 1,250 PSI

Base: Brass

Diaphragm: Polyimide film

Cover: Glass reinforced polyester

Electrical Ratings

Resistive: 15 Amp – 6 VDC

8 Amp – 12 VDC

4 Amp – 24 VDC

Inductive: 1 Amp – 120 VAC

5 Amp – 240 VAC

Temperature Range: -40°F to 250°F

Terminals: 1/4" blade, #8 – 32 screws

Thread Size: 1/8 – 27 NPT

232 Series Temperature Switches

Temperature Switch Technical Specifications

Switching Capacity: 1.2W to 3W, non-inductive for monitoring various mediums

Normally Open, Single Circuit, Standard Ground Systems

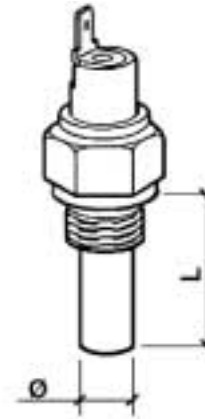
Rated Voltage: 6V to 24V

Type of Contact:

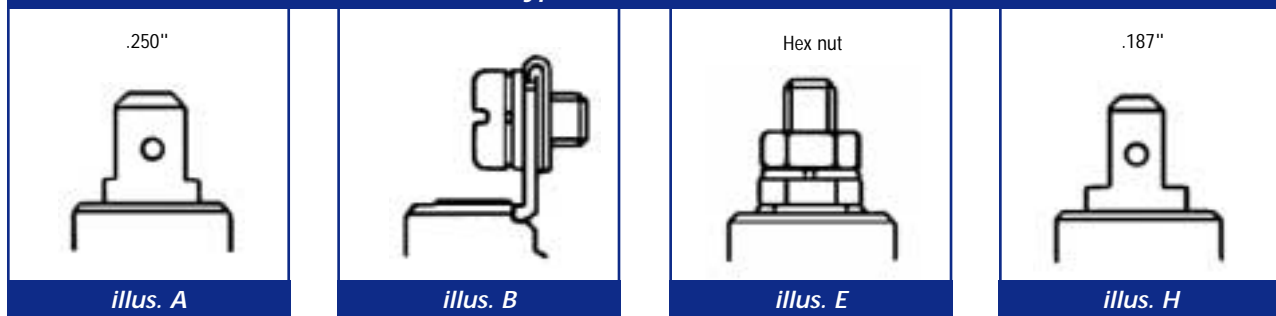
SS=contact close as temperature rises
OS=contact open as temperature rises

Break Point: 5°C max. below make point

Contacting Mode: Slow-acting



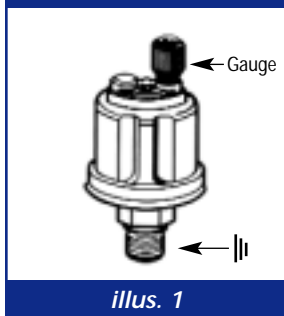
Types of Connections



Temperature Switches Table						
Make Point +°C	Thread	Max.	Type	L (mm)	Ø (mm)	Order No.
210 ± 10 SS	M10 x 1.5	240	E	38.5	6.9	232 011 005 012
195 ± 10 SS	M10 x 1.5	250	E	38.5	6.9	232 011 019 003
170 ± 5 SS	M10 x 1.5	220	E	38.5	6.9	232 011 005 004
150 ± 5 SS	M10 x 1.5	200	E	38.5	6.9	232 011 005 017
145 ± 5 SS	M10 x 1.5	210	E	38.5	6.9	232 011 005 005
135 ± 10 SS	M10 x 1.5	180	E	38.5	6.9	232 011 005 015
125 ± 5 SS	M10 x 1.5	155	E	38.5	6.9	232 011 005 011
120 ± 5 SS	M10 x 1.5	170	E	38.5	6.9	232 011 005 014
120 ± 3 SS	1/2-14 NPTF	130	B	29	10	232 011 017 005
110 ± 3 SS	M10 x 1	150	E	33	6.9	232 011 005 024
105 ± 3 SS	M14 x 1.5	150	E	29	10	232 011 017 136
105 ± 3 SS	1/2-14 NPTF	120	A	29	10	232 011 017 041
105 ± 3 SS	3/8-27 NPTF	120	E	33	6.9	232 011 005 020
105 ± 3 SS	3/8-18 NPTF	120	H	29	10	232 011 017 145
103 ± 3 SS	1/2-14 NPTF	120	A	29	10	232 011 017 131
103 ± 3 SS	3/8-18 NPTF	120	A	29	10	232 011 017 139
96 ± 3 SS	1/8-27 NPTF	120	E	33	6.9	232 011 055 019
95 ± 3 SS	1/2-14 NPTF	120	A	29	10	232 011 017 039
93 ± 3 SS	3/8-18 NPTF	120	A	29	10	232 011 017 088
90 ± 3 SS	M10 x 1.5	120	E	38.5	6.9	232 011 005 003

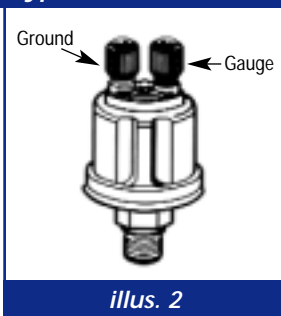
Pressure Senders

Types of Connections



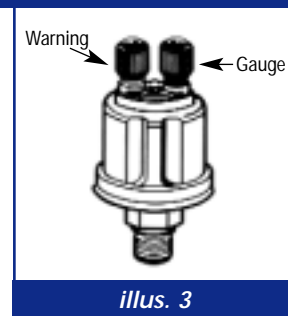
illus. 1

Standard Ground:
sender case to
common ground



illus. 2

Floating Ground:
isolated terminal to
common ground; and
Dual Station Floating
Ground



illus. 3

Standard Ground
with Warning Contact

Table 1: 80 PSI / 5 bar (10–180 OHM)

Thread	Warning Contact (illus. 3)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 1)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender	Washer Required
1/8–27 NPT	–	360 003	–	–	–	29/4	–
1/8–27 NPT	–	–	360 410	–	–	32/1	–
1/8–27 NPT	–	–	–	–	362 001	1/1	–
1/8–27 NPT	7.0 PSI	360 009	–	–	–	30/23	–
1/8–27 NPT	–	–	–	362 033	–	3/1	–
1/4–18 NPT	–	360 005	–	–	–	29/8	–
1/4–18 NPT	8.0 PSI	360 019	–	–	–	30/20	–
1/4–18 NPT	–	–	360 441B	–	–	32/16	–
1/8–28 BSP	–	360 080	–	–	–	29/61	–
M10 x 1K	–	360 001	–	–	–	29/1	–
M10 x 1K	7.0 PSI	360 006	–	–	–	30/2	–
M10 x 1K	10.0 PSI	360 034	–	–	–	30/4	–
M12 x 1.5	–	360 002	–	–	–	29/85	X
M12 x 1.5	8.5 PSI	360 007	–	–	–	30/6	X
M14 x 1.5	–	360 027	–	–	–	29/26	X
M15 x 1.5	7.1 PSI	360 028	–	–	–	30/28	X

Universal Sender Kit includes 360 003 sender, 1/4–18", 3/8–18" and 1/2–14" bushing.

360 900

Table 2: 80 PSI / 5 bar (240–33 OHM)

Thread	Warning Contact (illus. 3)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 1)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender
1/8–27 NPT	–	360 801	–	–	–	AT 84200

Table 3: 100 PSI / 7 bar (10–180 OHM)

Thread	Warning Contact (illus. 3)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 1)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender
1/8–27 NPT	–	360 086	–	–	–	655

Table 4: 100 PSI / 7 bar (240–33 OHM)

Thread	Warning Contact (illus. 3)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 1)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender
1/8–27 NPT	–	360 811	–	–	–	734

Table 5: 150 PSI / 10 bar (10–180 OHM)

Thread	Warning Contact (illus. 3)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 1)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender	Washer Required
1/8–27 NPT	–	360 004	–	–	–	29/12	–
1/8–27 NPT	–	–	360 430	–	–	32/14	–
1/8–27 NPT	–	–	–	362 034	–	3/2	–
1/8–27 NPT	–	–	–	–	362 002	1/2	–
1/8–27 NPT	11.4 PSI	360 025	–	–	–	30/15	–
1/8–28 BSP	–	360 081	–	–	–	29/62	–
1/4–18 NPT	–	360 021	–	–	–	29/20	–
M10 x 1K	–	360 015	–	–	–	29/10	–
M10 x 1K	7.0 PSI	360 023	–	–	–	30/9	–
M10 x 1K	29.6 PSI	360 033	–	–	–	30/41	–
M12 x 1.5	–	360 016	–	–	–	29/13	X
M12 x 1.5	7.0 PSI	360 024	–	–	–	30/22	X

Universal Sender Kit includes 360 004 sender, 1/4–18", 3/8–18" and 1/2–14" bushing.

360 905

Table 6: 350 PSI / 25 bar (10–180 OHM)

Thread	Warning Contact (illus. 3)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 1)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender	Washer Required
1/8–27 NPT	–	–	360 431	–	–	38/3	–
1/8–27 NPT	–	–	–	362 035	–	4/1	–
1/8–27 NPT	–	–	–	–	362 003	2/1	–
3/8–18 NPT	–	–	360 432	–	–	38/2	–
3/8–18 NPT	–	–	–	–	362 007	2/2	–
M14 x 1.5	–	–	360 442	–	–	38/1	X

Table 7: 400 PSI / 28 bar (10–180 OHM)

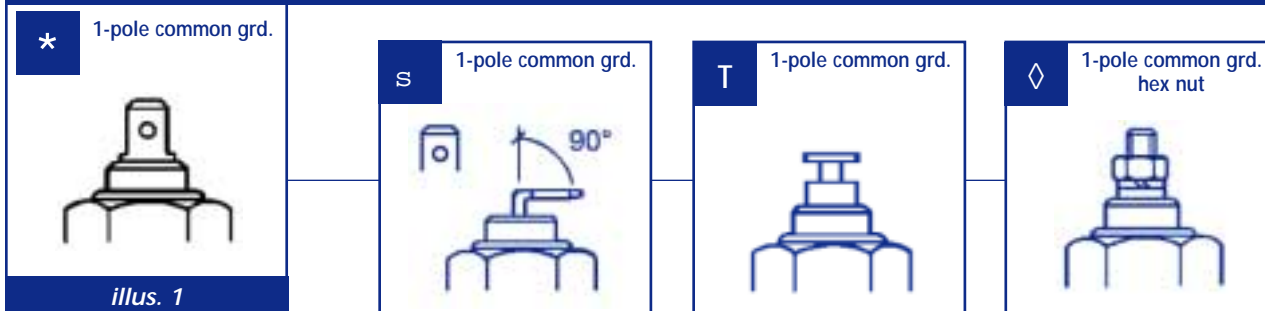
Thread	Warning Contact (illus. 3)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 1)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender
1/8–27 NPT	–	–	360 406	–	–	38/8
1/8–27 NPT	–	–	–	362 004	–	2/3

Table 8: 30 PSI / 2 bar (10–180 OHM)

Thread	Warning Contact (illus. 3)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 1)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender
1/8–27 NPT	–	–	360 043	–	–	32/25

Temperature Senders

Types of Connections



illus. 1
Standard Ground:
sender case to
common ground

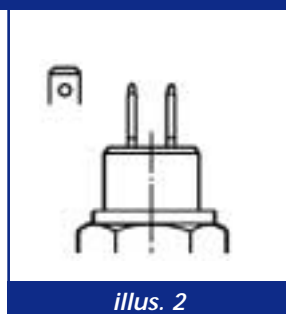
Table A: 250°F / 120°C

Thread	Terminal Type	Warning Contact (illus. 4)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 3)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender	Washer Required
1/8-27 NPT	T	-	323 095	-	-	-	801/5/1	-
1/4-18 NPT	*	-	323 420	-	-	-	801/1/9	-
1/4-18 NPT	*	-	-	323 477	-	-	805/1/7	-
1/4-18 NPT	*	-	-	-	325 001	-	801/2/1	-
1/4-18 NPT	*	-	-	-	-	325 002	805/3/1	-
3/8-18 NPT	*	-	323 094	-	-	-	801/1/7	-
3/8-18 NPT	◇	-	323 421	-	-	-	801/1/38	-
3/8-18 NPT	*	-	-	323 479	-	-	805/1/5	-
3/8-18 NPT	*	-	-	-	325 008	-	801/2/4	-
3/8-18 NPT	*	-	-	-	-	325 007	805/3/3	-
1/2-14 NPT	*	-	323 093	-	-	-	801/1/10	-
1/2-14 NPT	◇	-	323 419	-	-	-	801/1/16	-
1/2-14 NPT	**	195°F ± 5°F	323 097	-	-	-	803/1/37	-
1/2-14 NPT	**	205°F ± 5°F	323 098	-	-	-	803/1/19	-
1/2-14 NPT	**	217°F ± 5°F	323 099	-	-	-	803/1/25	-
1/2-14 NPT	**	230°F ± 5°F	323 100	-	-	-	803/1/32	-
1/2-14 NPT	*	-	-	323 478	-	-	805/1/4	-
5/8-18 NF-3	**	209°F ± 5°F	323 026	-	-	-	803/1/2	-
5/8-18 UNF	◇	-	323 422	-	-	-	801/1/25	-
5/8-18 UNF	*	-	-	-	-	325 003	805/3/2	-
5/8-18 UNF	*	-	-	323 483	-	-	805/1/2	-
5/8-18 NF-3	*	203°F ± 5°F	323 487	-	-	-	803/1/11	-
M10 x 1	T	-	323 088	-	-	-	801/17/1	X
M14 x 1.5	◇	-	323 416	-	-	-	801/1/26	X
M14 x 1.5	*	-	-	323 425	-	-	805/1/1	X
M16 x 1.5	**	203°F ± 5°F	323 028	-	-	-	803/1/7	X
M16 x 1.5	◇	-	323 417	-	-	-	801/1/29	X
M18 x 1.5	*	-	323 418	-	-	-	801/1/22	X

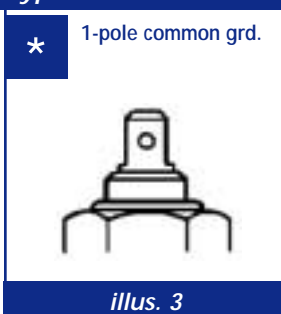
Universal Sender Kit includes 323 095 sender, 1/4-18", 3/8-18" and 1/2-14" bushing and .250 (1/4") spade terminal

323 900

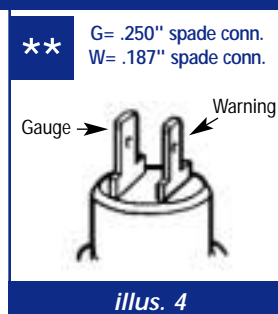
Types of Connections



illus. 2
Floating Ground:
isolated terminal to
common ground



illus. 3
Dual Station:
2 gauges operation
from single sender



illus. 4
Dual Station
Floating Ground:
same as Dual Station;
however, isolated
terminal to ground

Connection Key

- * Straight .250" spade terminal
- ◇ 4 mm screw stud
- s 90° angle .250" spade spade terminal
- T .250" "posi lock" terminal
- * 56 Series "Packard" female terminal, unsealed w/terminal housing
- ** Gauge .250" spade terminal; Warning .187" spade terminal

Table B: 300°F / 150°C

Thread	Terminal Type	Warning Contact (illus. 4)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 3)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender	Washer Required
1/8-27 NPT	T	-	323 057	-	-	-	801/9/1	-
1/4-18 NPT	◇	-	323 058	-	-	-	801/4/17	-
1/4-18 NPT	*	-	-	323 485	-	-	805/3/2	-
3/8-18 NPT	*	-	323 059	-	-	-	801/4/15	-
1/2-14 NPT	◇	-	323 060	-	-	-	801/4/6	-
1/2-14 NPT	**	250°F ± 5°F	323 120	-	-	-	803/2/15	-
5/8-18 UNF	◇	-	323 061	-	-	-	801/4/9	-
5/8-18 UNF	*	-	-	323 431	-	-	805/3/3	-
M10 x 1	T	-	323 423	-	-	-	801/9/3	X
M12 x 1.5	T	-	323 092	-	-	-	801/10/3	X
M14 x 1.5	s	-	323 055	-	-	-	801/12/2	X
M16 x 1.5	s	-	323 056	-	-	-	801/12/1	X
M18 x 1.5	s	-	323 064	-	-	-	801/12/3	X
M22 x 1.5	s	-	323 066	-	-	-	801/12/4	X

Universal Sender Kit includes 323 057 sender, 1/4-18", 3/8-18" and 1/2-14" bushing and .250 (1/4") spade terminal

323 905

Table C: 400°F / 200°C

Thread	Terminal Type	Warning Contact (illus. 4)	Std. Ground (illus. 1)	Floating Ground (illus. 2)	Dual Station (illus. 3)	Dual Station Floating Ground (illus. 2)	# Stamped on Sender	Washer Required
1/8-27 NPT	T	-	323 050	(Long probe, 5/8" long) Ford			801/13/1	-
1/8-27 NPT	T	-	323 086	(Short probe, 3/8" long) GM			801/18/1	-
M10 x 1.5	T	-	323 091	-	-	-	801/3/1	X
M10 x 1	T	-	323 090	-	-	-	801/3/2	X

Fuel Level Senders

Table 11: Fuel Level Senders

Lever Arm Fuel Senders (10–180 OHM), adjustable for tank depths 6" to 23"	
Description	Part No.
Fuel sender, VDO OHM range	226 001
Replacement gasket, 2 1/8" (54 mm), neoprene	226 053



226 001

Table 12: Fuel Level Senders

Lever Arm Fuel Senders (240–33 OHM), adjustable for tank depths 6" to 23"	
Description	Part No.
Fuel sender, U.S. OHM range	226 007
Replacement gasket, 2 1/8" (54 mm), neoprene	226 053

Table 13: Fuel Level Senders

Lever Arm Fuel Senders (0–99 OHM), adjustable for tank depths 6" to 23"	
Description	Part No.
Fuel sender, GM OHM range	226 008
Replacement gasket, 2 1/8" (54 mm), neoprene	226 053



226 053

Table 14: Fuel Level Senders

Tube Type Fuel Level Sender w/neg. ground (90–0 OHM), adjustable fuel gauges only			
Length (inch)	Length (mm)	Stamped on Sender	Part No.
5 1/8"	131.5 mm	82/8/17	224 058
8 11/16"	221.5 mm	82/8/21	224 061
9 15/16"	251.5 mm	82/6/97	224 062
11"	279.5 mm	82/7/22	224 055
12 1/4"	310.5 mm	82/5/136	224 063
14 5/8"	372 mm	82/7/4	224 065
15 15/16"	404.5 mm	82/5/142	224 054
17 1/16"	433.5 mm	82/5/98	224 066
19 5/8"	498.5 mm	82/5/117	224 067
22"	559 mm	82/7/58	224 003
23 7/8"	596 mm	82/7/17	224 069
27 1/4"	692 mm	82/5/11	224 004
31"	787.5 mm	82/5/72	224 049
32 7/8"	835 mm	82/5/34	224 051
Replacement gasket, 2 1/8" (54 mm), bolt circle, neoprene			226 053
Replacement gasket, 3 1/8" (80 mm), bolt circle, cork			600 525



224 055

Table 15: Fresh Water Level Senders

Lever Arm Water Senders (10–180 OHM), adjustable for tank depths 8" to 24"	
Description	Part No.
Stainless steel water level sender, VDO OHM range	226 452
Replacement gasket, 2 1/8" (54 mm), bolt circle, neoprene	226 053

Speedometer & Tachometer Senders

Generator Senders

For use with VDO speedometers and tachometers designated as generator-type

Without odometer/revolution counter terminal

Description	Part No.
7/8" - 18 thread	340 001
M22 x 1.5 thread	340 002

Drive keys for generator senders listed above

Description	Part No.
.152" - tang	340 060
.187" - tang	340 061
.203" - tang	340 062
.104" - square	340 065
.200" - Perkins	340 064



340 001



340 060

Inductive / Magnetic Pick-Up Sender

For inductive and programmable speedometers and tachometers

Description	Part No.
2" long, 3/4" - 16 thread	340 020



340 020

Hall-Effect

For electronic, programmable speedometers, 7/8" - 18 thread, 16 pulse

Description	Part No.
Standard, GM	340 011
GM, through-drive, for cruise control hook-up	340 012
Ford, plug-in	340 013
Ford, plug-in, through-drive	340 014



340 011



340 013

Gauge Accessories

Tubing Kits

Description	Fitting Size	Part No.
6' plastic tubing	1/8-27 and 1/4-18 NPT adapters	150 851
16' plastic tubing	1/8-27 and 1/4-18 NPT adapters	150 855
6' copper tubing	1/8-27 and 1/4-18 NPT adapters	150 856



Tubing Kits

Wiring Kit

Includes necessary wire and terminals.

Description	Part No.
For all instruments except ammeters	240 023



Wiring Kits

Pressure Sender Adapters

Includes hose adapter and clamp for remote mounting pressure senders. Designed especially for high-vibration applications.

Description	Length	Part No.
1/8-27 NPT	16"	240 902



Pressure Sender Adapters

T-Adapters

Description	Part No.
Male 1/8-27 NPT	240 855
Male M10 x 1	240 850



T-Adapters

Shock Mount Grommet

Description	Part No.
For 2 1/16" (52 mm) diameter instruments	240 832



Shock Mount Grommet

Safety Mount Brackets for 2 1/16" (52 mm) dia. instruments

Made of a flexible, rubber material for cockpit safety. Matte black.

Description	Dimensions (H x D x L)	Part No.
1 opening	3 7/8" x 1 1/4" x 2 1/2"	240 802
2 openings	3 7/8" x 1 1/4" x 4 7/8"	240 803
3 openings	3 7/8" x 1 1/4" x 7 1/2"	240 804



Safety Mount Brackets

Mounting Cups

Steel mounting cups with smooth black or chrome finishes.

Description	Chrome	Black
For 2 1/16" (52 mm) dia. gauge	240 017*	240 016*
For 3 3/8" (85 mm) dia. gauge	240 019	240 018

*Will not work with 2 1/16" dia. clocks, tachometers, outside temp. gauges or pyrometers.



Mounting Cups

Gauge Accessories cont.

Mounting Brackets for 2¹/₁₆" (52 mm) dia. instruments

VDO mounting brackets are metal with smooth black or chrome finishes. 1, 2 and 3 opening units.

Description	Dimensions (H x D)	Chrome	Black
1 opening	2 ⁷ / ₈ " x 2 ¹¹ / ₁₆ "	240 034	240 027
2 openings	2 ⁷ / ₈ " x 5 ³ / ₁₆ "	240 035	240 028
3 openings	2 ⁷ / ₈ " x 7 ¹ / ₂ "	240 036	240 029

Custom Mini-Console for 2¹/₁₆" (52 mm) dia. instruments

Consoles are made of durable ABS plastic with black leather-like finish. Can be surface mounted to nearly any flat surface, horizontally or vertically. Consoles are angled toward driver for maximum readability.

Description	Dimensions (H x D x L)	Part No.
1 opening	2" x 3 ¹ / ₈ " x 4 ¹ / ₂ "	110 860
2 openings	2" x 3 ³ / ₈ " x 8"	110 861
3 openings	2" x 3 ³ / ₈ " x 11 ¹ / ₂ "	110 862

PLEASE NOTE: An additional 2¹/₂" of depth is required beneath console to ensure proper installation of gauges.

Adjustable Mounting Cups

In durable ABS plastic with matte black finish.

Description	Part No.
For all 2 ¹ / ₁₆ " dia. electrical gauges, except outside temp. gauge, pyrometer, clock, ammeter and 2 ¹ / ₁₆ " dia. tach.	240 100
2 ¹ / ₁₆ " dia., long version for outside temp. gauge, pyrometer, clock, ammeter and 2 ¹ / ₁₆ " dia. tach.	240 101

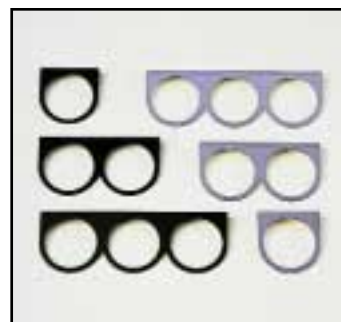
Blind Covers

Description	Part No.
2 ¹ / ₁₆ " (52 mm) dia.	240 864
3 ³ / ₈ " (85 mm) dia.	240 866B

Reducing Rings

VDO's matte black mounting rings permit the installation of smaller units in larger existing dashboard openings.

Description	Part No.
From 2 ³ / ₈ " to 2 ¹ / ₁₆ "	600 851
From 2 ⁷ / ₈ " to 2 ¹ / ₁₆ "	600 884
From 3 ³ / ₈ " to 3 ¹ / ₈ "	600 885



Mounting Brackets



Custom Mini Consoles



Adjustable Mounting Cups

Gauge Accessories cont.

Resistors

For conversion of 12V electrical instruments (except clocks and hourmeters) to 24V systems. Conversion of instruments to 24V systems may require installing a new bulb. See page 37 for bulb listings.

Description	Part No.
Resistor only for tachometers w/o hourmeters, 2 ¹ / ₁₆ " (52 mm) dia. tachometers, outside temperature gauges, pyrometers and shunted ammeters.	391 101
Resistor only for all 2 ¹ / ₁₆ " (52 mm) dia. instruments except clocks, hourmeters, 52 mm dia. tachometers, outside temperature gauges, pyrometers and shunted ammeters. Includes additional terminals for use with stud terminal instruments.	391 102

Resistor, 3³/₈" tachometers w/o hourmeter

For 2¹/₁₆" alternator tachometers.

Description	Part No.
Resistor	391 032

Resistor Kit

For 3³/₈" programmable tachometers w/o hourmeter.

Description	Part No.
Resistor and two (2) 24V bulb	391 103

Resistor Kit

For Industrial Line instruments only.

Description	Part No.
Resistor and 24V bulb	391 704
32V Resistor, 150 Ω, 5 watt	391 702

Stud Mounting Kits

For converting Spin-Lok™ mounted instruments to stud type mounting.

Gauge Diameter	Part No.
2 ¹ / ₁₆ " (52 mm)	600 402
3 ¹ / ₈ " (80 mm), 3 ³ / ₈ " (85 mm)	600 401

Replacement Spin-Lok™ Mounting Rings

Gauge Diameter	Part No.
2 ¹ / ₁₆ " (52 mm)	600 404
3 ¹ / ₈ " (80 mm)	600 405
3 ³ / ₈ " (85 mm)	600 406
4" (100 mm)	600 407

Push-On Connectors

Provides convenient installation for 2¹/₁₆" (52 mm) dia. temperature, pressure and fuel gauges with three-prong connectors.

Description	Part No.
Housing w/crimp connectors	240 026
Housing w/o crimp connectors for use on Cockpit and Industrial	600 814
Housing w/crimp connectors	240 025
Housing w/o crimp connectors for use on Vision and Cockpit International w/spade terminals	999 115 015

Push-On Amp Connector for Speedometers and Tachometers

Description	Part No.
Amp connector (amp part #163007)	999 115 016
Terminal (not shown) (part #421 001-1)	



391 704



600 402



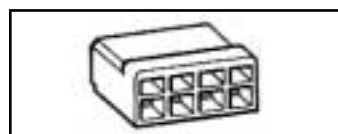
600 405



600 404



240 026



999 115 016

Light Bulbs and Sockets

Type A: Fits sockets #600 813, #600 816 and #600 817

Description	Part No.
9/32" 12V, 2W	600 802
9/32" 24V, 3W	600 807

Type B: Fits sockets #600 818 and #600 819

Description	Part No.
1 1/32" 12V, 2W	600 804
1 1/32" 12V, 4W	600 806

Type C: Fits socket #600 821

Description	Part No.
3/8" 12V, 2W	600 820

Type D: (peanut type): Fits socket #600 823

Description	Part No.
Peanut bulb, 12V, 1.2W	600 809
Peanut bulb, 24V, 1.2W	600 829

Type E: Fits socket #600 839

Description	Part No.
Wedge-base bulb, 12V	600 815
Wedge-base bulb, 24V	600 826

INSULATED LIGHT BULB SOCKETS

Description	Part No.
3/8" , uses bulb type A	600 813
15/32" , uses bulb type B	600 819
Uses peanut-type bulb D	600 808
Uses wedge-type bulb E	600 840
Uses peanut-type bulb D	600 823

LIGHT BULB SOCKETS

Description	Part No.
3/8" steel, uses bulb type A	600 816
3/8" brass, uses bulb type A	600 817
5/8" steel, uses bulb type C	600 821
15/32" steel, uses bulb type B	600 818

LIGHT DIFFUSERS

The easy and convenient way to change the lighting color in your VDO gauge. Simply slips over light bulb to give your dash a whole new color at night.

Description	Part No.
Red, Type A, 9/32" bulb	600 853
Green, Type A, 9/32" bulb	600 856
Red, Type B, 1 1/32" bulb	600 857
Green, Type B, 1 1/32" bulb	600 858
Red, Type D, "peanut" bulb	600 859
Green, Type D, "peanut" bulb	600 860
Red, Types E and C bulbs	600 861
Green, Types E and C bulbs	600 862

WARNING LIGHTS

12V snap-in warning lights with bulb. Requires 9/32" hole.

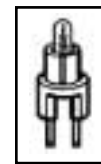
Description	Part No.
Red lens	600 844
Green lens	600 845
Yellow lens	600 846
Blue lens	600 847



600 813



600 819



600 823



600 840



600 816



600 817



600 821



600 818



Light Diffusers

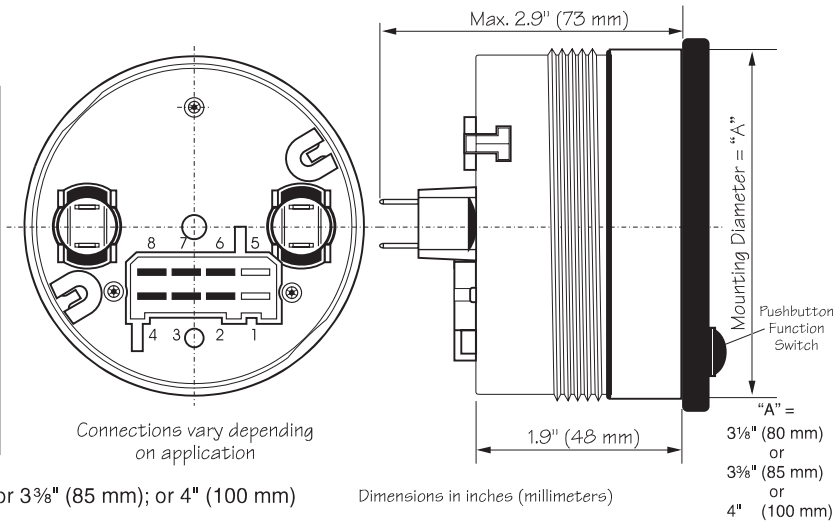


Warning Lights

Technical Specifications and Dimensions

A Programmable Speedometer

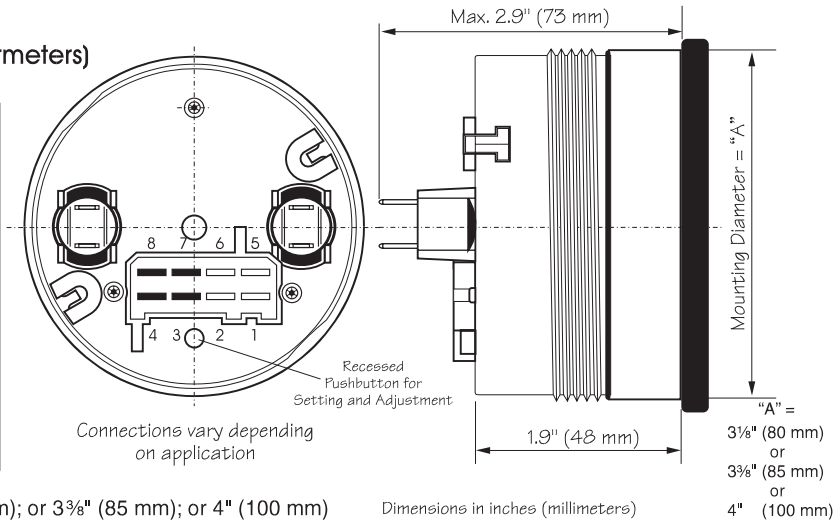
Specifications (Common to all Programmable Speedometers)	
Operating Temperature:	-4° F...+158° F (-20° C...+70° C)
Storage Temperature:	-22° F...+185° F (-30° C...+85° C)
Illumination:	2 push-in, wedge-type lamp sockets; 12 volt: VDO #600 815 24 volt: VDO #600 826
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Dial Graphics:	See product line for specific information
Connection:	Tin-plated brass blade connectors (6.3 x 0.8 mm)
Mounting:	Mounting clamp. Clamping range: 0 - 0.8" (0 - 20 mm).
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0° to 90° ↯
Operating Voltage:	10.8 volts to 32 volts
Nominal Voltage:	12v -24v with insulated return
Current Consumption:	< 100 mA, without illumination
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)



Mounting hole dimension: 3 1/8" (80 mm); or 3 3/8" (85 mm); or 4" (100 mm)

B Programmable Tachometers (with hourmeters)

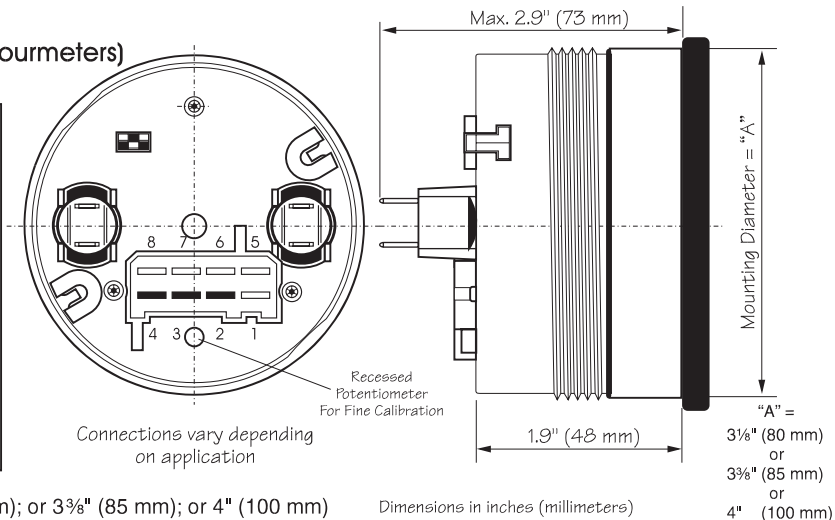
Specifications (Common to all Tachometers with Engine Hourmeter)	
Operating Temperature:	-4° F...+158° F (-20° C...+70° C)
Storage Temperature:	-22° F...+185° F (-30° C...+85° C)
Illumination:	2 push-in, wedge-type lamp sockets; 12 volt: VDO #600 815 24 volt: VDO #600 826
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Dial Graphics:	See product line for specific information
Connection:	Tin-plated brass blade connectors (6.3 x 0.8 mm)
Mounting:	Mounting clamp. Clamping range: 0 - 0.8" (0 - 20 mm).
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0° to 90° ↯
Operating Voltage:	10.8 volts to 32 volts
Nominal Voltage:	12v -24v with insulated return
Current Consumption:	< 100 mA, without illumination
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)



Mounting hole dimension: 3 1/8" (80 mm); or 3 3/8" (85 mm); or 4" (100 mm)

C Programmable Tachometers (without hourmeters)

Specifications (Common to all Tachometers without Engine Hourmeters)	
Operating Temperature:	-4° F...+158° F (-20° C...+70° C)
Storage Temperature:	-22° F...+185° F (-30° C...+85° C)
Illumination:	2 push-in, wedge-type lamp sockets; 12 volt: VDO #600 815 24 volt: VDO #600 826
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Dial Graphics:	See product line for specific information
Connection:	Tin-plated brass blade connectors (6.3 x 0.8 mm)
Mounting:	Mounting clamp. Clamping range: 0 - 0.8" (0 - 20 mm).
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0° to 90° ↯
Operating Voltage:	10.8 to 16 volts
Nominal Voltage:	12v with insulated return
Current Consumption:	< 100 mA, without illumination
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)

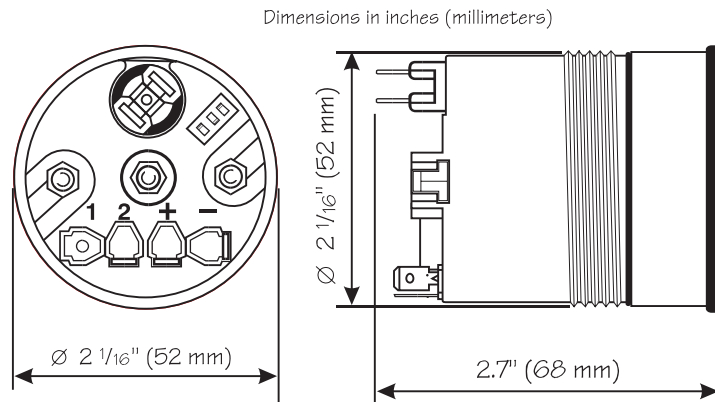


Mounting hole dimension: 3 1/8" (80 mm); or 3 3/8" (85 mm); or 4" (100 mm)

Technical Specifications and Dimensions

D Electronic Tachometer (2 1/16" (52 mm))

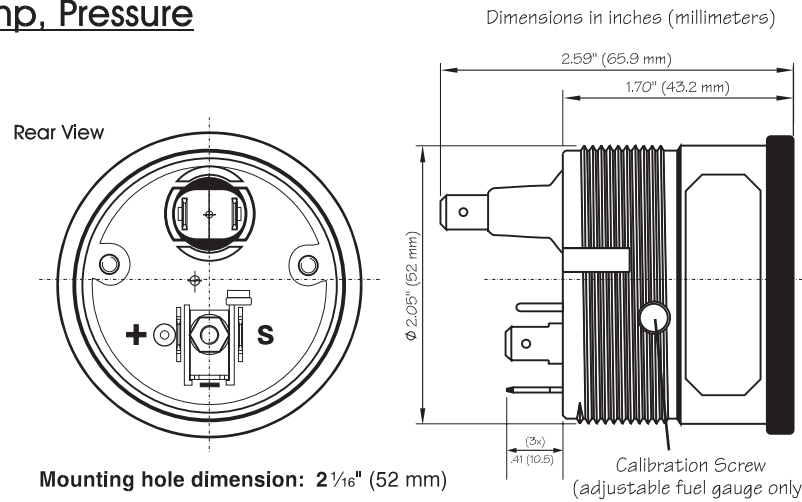
Specifications	
(Common to all 2 1/16" [52 mm] Tachometers)	
Operating Temperature:	-4° F...+158° F (-20° C...+70° C)
Storage Temperature:	-22° F...+185° F (-30° C...+85° C)
Illumination:	Push-in, wedge-type lamp sockets; 12 volt: VDO #600 809 24 volt: VDO #600 829
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Connection:	1/4" brass blade
Mounting:	Mounting clamp, Clamping range: 0 - 0.8" (0 - 20 mm). Or, with optional 2 brackets with 2 bolts (M4x45) and nuts (M4x10). Clamping range: 0-1/2" (0-12mm)
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0° to 90° ↺
Operating Voltage:	10.8 to 16 volts
Nominal Voltage:	12v with insulated return
Current Consumption:	< 100 mA, without illumination
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)



Mounting hole dimension: 2 1/16" (52 mm)

E Electric Fuel, Volt, Temp, Pressure (Spin-Lok™ clamp mount)

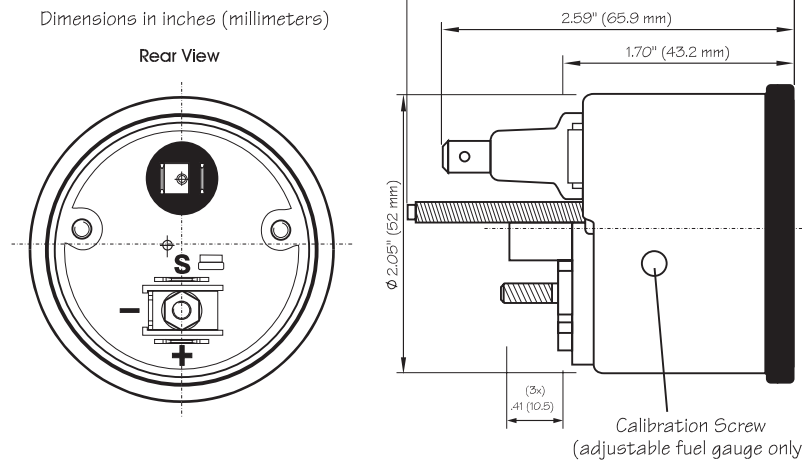
Specifications	
(Common to all Electric 2 1/16" (52 mm.) Instruments with VDO's Spin-Lok™ Mounting Clamp)	
Operating Temperature:	-22° F...+185° F (-30° C...+85° C)
Storage Temperature:	-40° F...+221° F (-40° C...+105° C)
Illumination:	Push-in wedge-base sockets, 12 volt: VDO #600 815 24 volt: VDO #600 826
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Dial Graphics:	See product line for specific information
Connection:	1/4" brass blade
Mounting:	Housing with 16 threads/inch, Class 2A fit and rotating plastic Spin-Lok™ clamp
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	NPO - 90° ↺
Operating Voltage:	11-16 volts (12 v) or 21.5 - 30 volts (24 v)
Nominal Voltage:	12v or 24v, insulated return (floating ground)
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)



Mounting hole dimension: 2 1/16" (52 mm)

F Electric Fuel, Volt, Temp, Pressure (stud mount [Industrial Line Only])

Specifications	
(Common to all Electric 2 1/16" (52 mm) Gauges with Stud Terminals and Stud Mounting)	
Operating Temperature:	-22° F...+185° F (-30° C...+85° C)
Storage Temperature:	-40° F...+194° F (-40° C...+90° C)
Illumination:	Push-in wedge type lamp socket; 12 volt: VDO #600 802 24 volt: VDO #600 807
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Dial Graphics:	See product line for specific information
Connection:	1/4" brass blade
Mounting Bracket:	Steel, zinc chromate plated
Mounting Nut:	Hexagon; steel, zinc chromate plated
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristic
Nominal Position:	0 - 90° ↺
Operating Voltage:	11 - 16 volts (12v)
Nominal Voltage:	12v, insulated return (floating ground)
Torque Values:	For M4 nuts: 2.2 - 4. 2 in. lb. (.25 - .47 Nm)

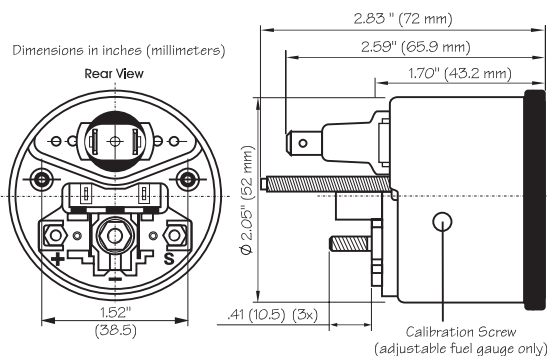


Mounting hole dimension: 2 1/16" (52 mm)

Technical Specifications and Dimensions

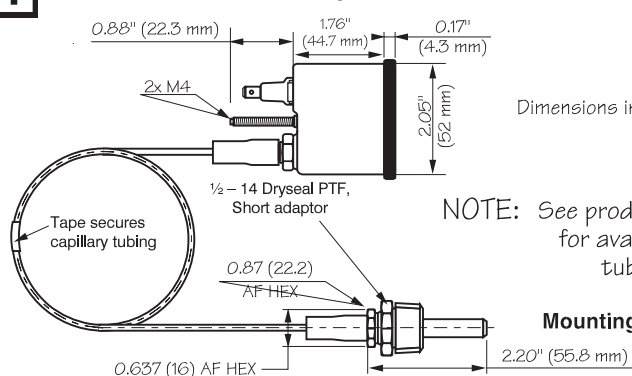
G Electric Fuel, Volt, Temp, Pressure (stud mount)

Specifications	
(Common to all Electric 2 1/16" (52 mm) Gauges with Stud Terminals and Stud Mounting)	
Operating Temperature:	-22° F...+185° F (-30° C...+85° C)
Storage Temperature:	-40° F...+194° F (-40° C...+90° C)
Illumination:	Push-in wedge-type lamp socket; 12 volt: VDO #600 815 24 volt: VDO #600 826
Bezel Material:	See product line for specific information
Dial Graphics:	See product line for specific information
Connection:	M4 Stud
Mounting Bracket:	Steel, zinc chromate plated
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0 - 90° ↻
Operating Voltage:	11 - 16 volts (12v) or 21.5 - 30 volts (24v)
Nominal Voltage:	12 volts or 24 volts, insulated return (floating ground)
Torque Values:	For M4 nuts: 2.2 - 4.2 in.lb. (.25 - .47 Nm)



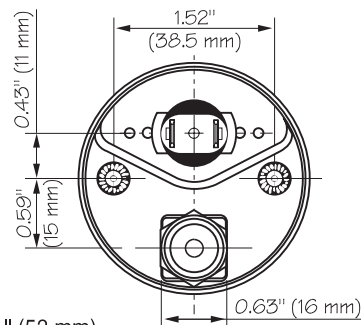
Mounting hole dimension: 2 1/16" (52 mm)

H Mechanical Temperature

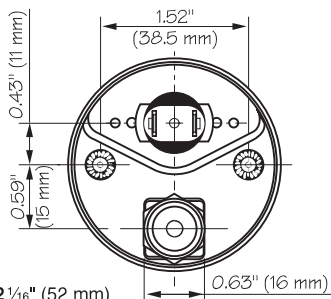


NOTE: See product line sections for available capillary tube lengths.

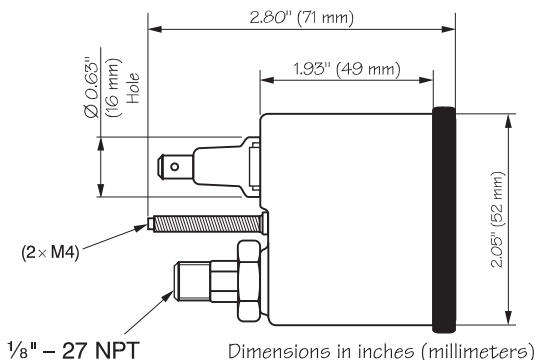
Mounting hole dimension: 2 1/16" (52 mm)



I Mechanical Pressure



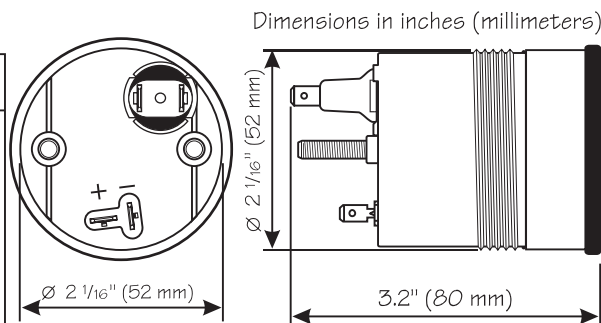
Mounting hole dimension: 2 1/16" (52 mm)



J Clocks & Hourmeters

(Cockpit International and Vision Lines Only)

Specifications	
(Common to all 2 1/16" [52 mm] Clocks and Hourmeters)	
Operating Temperature:	-4° F...+158° F (-20° C...+70° C)
Storage Temperature:	-22° F...+185° F (-30° C...+85° C)
Illumination:	Push-in, wedge-type lamp sockets; 12volt: VDO #600 815 24 volt: VDO #600 826
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Connection:	1/4" brass blade
Mounting:	Mounting clamp. Clamping range: 0 - 0.8" (0 - 20 mm). Or, with optional 2 brackets with 2 bolts (M4x45) and nuts (M4x10). Clamping range: 0 - 1/2" (0-12mm)
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0° to 90° ↻
Operating Voltage:	10.8 volts to 32 volts
Nominal Voltage:	12v - 24v with insulated return
Current Consumption:	< 100 mA, without illumination
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)



Mounting hole dimension: 2 1/16" (52 mm)

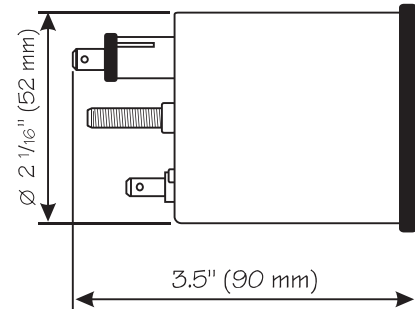
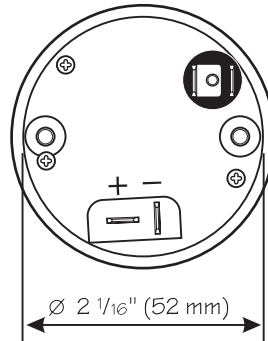
Technical Specifications and Dimensions

K Clocks & Hourmeters

(Series 1, Industrial and Cockpit Lines Only)

Dimensions in inches (millimeters)

Specifications	
(Common to all 2 1/16" [52 mm] Clocks and Hourmeters)	
Operating Temperature: -4° F...+158° F (-20° C...+70° C)	
Storage Temperature: -22° F...+185° F (-30° C...+85° C)	
Illumination: Push-in, wedge-type lamp sockets;	
12 volt: VDO #600 802	
24 volt: VDO #600 807	
Bezel Material: See product line for specific information	
Lens: Window glass, clear	
Connection: 1/4" brass blade	
Mounting Bracket: Steel, zinc chromate plated	
Mounting Nut: Hexagon, steel, zinc chromate plated	
Product Marking: Date of manufacture (Julian); part number;	
nominal voltage; gauge characteristics	
Nominal Position: 0° to 90° ↗	
Operating Voltage: 10.8 volts to 16 volts	
Nominal Voltage: 12v with insulated return	
Current Consumption: < 100 mA, without illumination	
Torque Values: For M4 Nuts: 2.2 - 4.2 in.lb. (.25 - .47 Nm)	



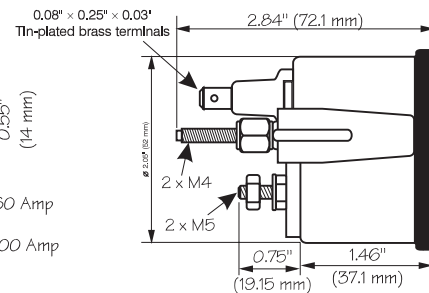
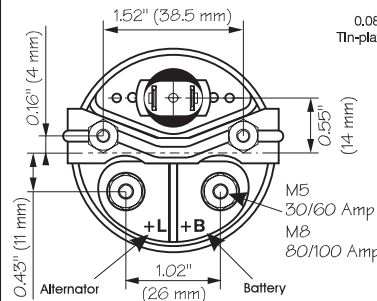
Mounting hole dimension: 2 1/16" (52 mm)

L Ammeter

Mounting hole dimension: 2 1/16" (52 mm)

Dimensions in inches (millimeters)

Specifications	
(Common to all Ammeters)	
Operating Temperature: -22° F...+185° F (-30° C...+85° C)	
Storage Temperature: -40° F...+194° F (-40° C...+90° C)	
Illumination: 12 volt: VDO #600 815	
24 volt: VDO #600 826	
Bezel Material: See product line for specific information	
Lens: Window glass, clear	
Dial Graphics: See product line for specific information	
Connection: Stud	
Mounting Bracket: Steel, zinc chromate plated	
Mounting Nut: Hexagon, steel, zinc chromate plated	
Product Marking: Date of manufacture (Julian); part number;	
nominal voltage; gauge characteristic	
Nominal Position: 0 - 90° ↗	
Torque Values: For M4 nuts: 2.2 - 4.2 in. lb. (.25 - .47 Nm)	

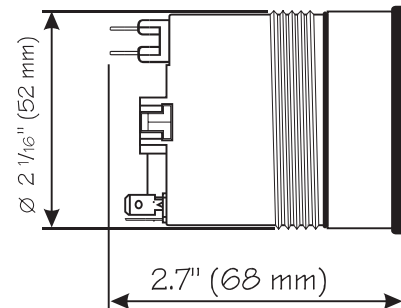
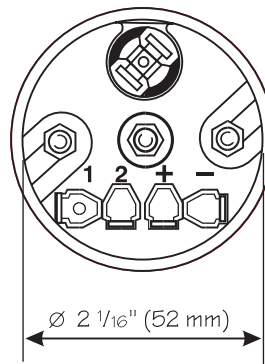


M Shunted Ammeter

Mounting hole dimension: 2 1/16" (52 mm)

Dimensions in inches (millimeters)

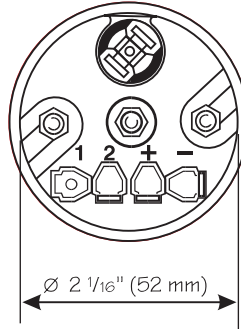
Specifications	
(Common to all 2 1/16" [52 mm] Shunted Ammeters)	
Operating Temperature: -4° F...+158° F (-20° C...+70° C)	
Storage Temperature: -22° F...+185° F (-30° C...+85° C)	
Illumination: Push-in, wedge-type lamp sockets;	
12 volt: VDO #600 809	
24 volt: VDO #600 829	
Bezel Material: See product line for specific information	
Lens: Window glass, clear	
Connection: 1/4" brass blade	
Mounting: Mounting clamp. Clamping range: 0 - 0.8" (0 - 20 mm). Or, with optional 2 brackets with 2 bolts (M4x45) and nuts (M4x10). Clamping range: 0-1/2" (0-12mm)	
Product Marking: Date of manufacture (Julian); part number;	
nominal voltage; gauge characteristics	
Nominal Position: 0° to 90° ↗	
Operating Voltage: 10.8 to 16 volts	
Nominal Voltage: 12v with insulated return	
Current Consumption: < 100 mA, without illumination	
Torque Values: For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)	



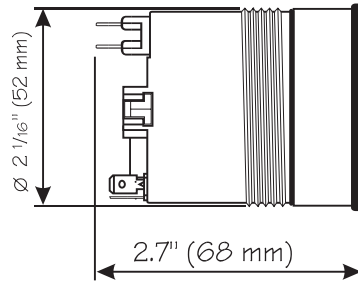
Technical Specifications and Dimensions

N Outside Temperature

Specifications	
(Common to all 2 1/16" [52 mm] Outside Temperature Gauges)	
Operating Temperature:	-4° F...+158° F (-20° C...+70° C)
Storage Temperature:	-22° F...+185° F (-30° C...+85° C)
Illumination:	Push-in, wedge-type lamp sockets; 12 volt: VDO #600 809 24 volt: VDO #600 829
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Connection:	1/4" brass blade
Mounting:	Mounting clamp. Clamping range: 0 - 0.8" (0 - 20 mm). Or, with optional 2 brackets with 2 bolts (M4x45) and nuts (M4x10). Clamping range: 0-1/2" (0-12mm)
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0° to 90°
Operating Voltage:	10, 8 to 16 volts
Nominal Voltage:	12v with insulated return
Current Consumption:	< 100 mA, without illumination
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)



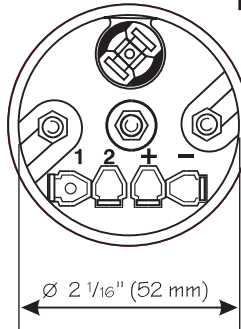
Mounting hole dimension: 2 1/16" (52 mm)



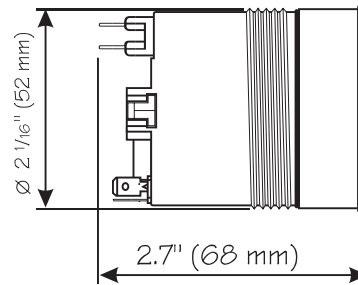
Dimensions in inches (millimeters)

O Pyrometer

Specifications	
(Common to all 2 1/16" [52 mm] Pyrometers)	
Operating Temperature:	-4° F...+158° F (-20° C...+70° C)
Storage Temperature:	-22° F...+185° F (-30° C...+85° C)
Illumination:	Push-in, wedge-type lamp sockets; 12 volt: VDO #600 809 24 volt: VDO #600 829
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Connection:	1/4" brass blade
Mounting:	Mounting clamp. Clamping range: 0 - 0.8" (0 - 20 mm). Or, with optional 2 brackets with 2 bolts (M4x45) and nuts (M4x10). Clamping range: 0-1/2" (0-12mm)
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0° to 90°
Operating Voltage:	10, 8 to 16 volts
Nominal Voltage:	12v with insulated return
Current Consumption:	< 100 mA, without illumination
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)



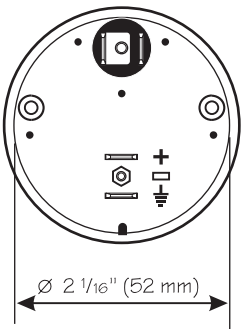
Mounting hole dimension: 2 1/16" (52 mm)



Dimensions in inches (millimeters)

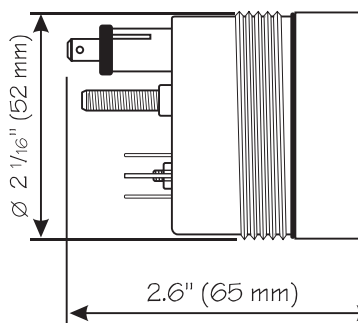
P Cylinder Head Temperature Gauge

Specifications	
(Common to all 2 1/16" [52 mm] Cylinder Head Temperature Gauges)	
Operating Temperature:	-4° F...+158° F (-20° C...+70° C)
Storage Temperature:	-22° F...+185° F (-30° C...+85° C)
Illumination:	Push-in bulb; 12 volt: VDO #600 802 24 volt: VDO #600 807
Bezel Material:	See product line for specific information
Lens:	Window glass, clear
Connection:	1/4" brass blade
Mounting:	Mounting clamp. Clamping range: 0 - 0.8" (0 - 20 mm). Or, with optional 2 brackets with 2 bolts (M4x45) and nuts (M4x10). Clamping range: 0-1/2" (0-12mm)
Product Marking:	Date of manufacture (Julian); part number; nominal voltage; gauge characteristics
Nominal Position:	0° to 90°
Current Consumption:	< 100 mA, without illumination
Torque Values:	For Spin-Lok™ Mounting Clamp: 2.2 - 2.4 ft. lb. (3 - 8 Nm)



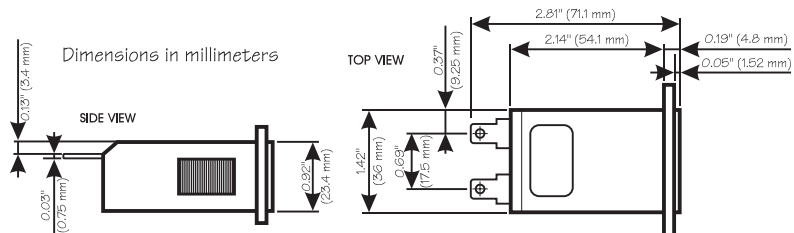
Mounting hole dimension: 2 1/16" (52 mm)

Dimensions in inches (millimeters)



Q Mini Hourmeter

Specifications	
(Common to all Mini Hourmeters)	
Temperature:	-40° F...+185° F (-40° C...+85° C)
Vibration Resistance:	Withstands 10 to 75 Hz at 1to 8 g's
Terminations:	6.35 mm Male Blade Terminals
Protected From:	Alternator Load Dump, Inductive Switching and Reverse Polarity
Mounting:	Panel Mount with 2 holes (front or back)
Gauge Face:	White Characters on black background
Identification:	VDO P/N (1 763 003 213A) and description stamped on label; position of label as shown



Cross Reference (Catalog # to Mfr. #)

CAT. #	MFR. #	PAGE	CAT. #	MFR. #	PAGE	CAT. #	MFR. #	PAGE
391 102	1 899 900 121D	36	340 062	3 092 003 032D	33	350 909	350 030 009D	9
391 103	1 899 900 138D	36	340 064	3 092 003 056D	33	350 913	350 030 010D	9
150 921	150 037 011D	9	340 065	3 092 003 063D	33	350 934B	350 030 021C	9
150 904	150 037 013D	9	226 053	3 096 001 182D	32	350 902	350 040 007D	9
150 905	150 037 014D	9	600 525	3 096 001 481D	32	350 910	350 040 009D	9
150 906	150 037 016D	9	391 032	3 097 003 044	36	350 041	350 220 001D	9
150 107	150 077 002D	13	600 844	3 108 001 012D	37	350 040	350 220 002D	9
150 104	150 077 003D	13	600 845	3 108 001 029D	37	350 303	350 260 001D	16
150 121	150 077 004D	13	600 846	3 108 001 036D	37	350 306	350 260 002D	16
150 131	150 077 005D	13	600 847	3 108 001 043D	37	370 152	370 012 002D	14
150 112	150 077 006D	13	600 853	3 126 002 091D	37	370 951	370 032 002D	10
150 101	150 077 007D	13	600 856	3 126 002 101D	37	397 154	397 015 002C	12
150 111	150 077 009D	13	600 860	3 126 002 156D	37	4 633 030 007B	4 633 030 007B	25
180 901	180 037 011D	8	600 859	3 126 002 163D	37	437 155	437 015 015D	11
180 902	180 037 012D	8	600 857	3 126 002 170D	37	600 809	5 635 010 013D	37
180 903	180 037 013D	8	600 858	3 126 002 187D	37	600 815	5 635 010 037D	37
180 101	180 077 001D	12	600 814	3 130 001 046D	36	600 804	5 635 020 027D	37
190 903	190 037 004D	10	240 866B	3 143 002 164B	35	600 802	5 635 030 017D	37
190 904	190 037 005D	10	240 864	3 143 002 171D	35	600 807	5 635 030 024D	37
190 151B	190 075 001C	14	301 104	301 010 003D	13	600 806	5 635 030 055D	37
190 104	190 077 004D	14	301 105	301 010 004D	13	600 820	5 635 030 103D	37
190 105	190 077 005D	14	301 107	301 010 005D	13	600 829	5 635 030 189	37
232 011 005 003	232 011 005 003	27	301 106	301 010 006D	13	600 826	5 635 030 206D	37
232 011 005 004	232 011 005 004	27	301 903	301 030 004D	9	600 840	999 067 001D	37
232 011 005 005	232 011 005 005	27	301 901	301 030 005D	9	600 405	999 071 001D	36
232 011 005 011	232 011 005 011	27	301 930B	301 030 008C	9	600 406	999 071 002D	36
232 011 005 012	232 011 005 012	27	301 904	301 040 004D	9	600 407	999 071 003D	36
232 011 005 014	232 011 005 014	27	301 902	301 040 005D	9	600 404	999 072 001	36
232 011 005 015	232 011 005 015	27	301 015	301 220 001D	9	999 115 015	999 115 015	36
232 011 005 017	232 011 005 017	27	301 303	301 260 001D	17	240 025	999 115 015D	36
232 011 005 020	232 011 005 020	27	301 302	301 260 002D	17	999 115 016	999 115 016	36
232 011 005 024	232 011 005 024	27	301 301	301 260 003D	17	150 042	M 121 001 048D	9
232 011 017 005	232 011 017 005	27	310 105	310 010 006D	12	150 051	M 121 003 143D	9
232 011 017 039	232 011 017 039	27	310 106	310 010 007D	12	150 052	M 121 003 167D	9
232 011 017 041	232 011 017 041	27	310 107	310 010 008D	12	150 030	M 121 004 144D	9
232 011 017 088	232 011 017 088	27	310 151	310 015 002D	12	150 505	M 121 015 056D	19
232 011 017 131	232 011 017 131	27	310 909	310 030 006D	8	150 506	M 121 015 063D	19
232 011 017 136	232 011 017 136	27	310 915	310 030 007D	8	150 507	M 121 015 070D	19
232 011 017 139	232 011 017 139	27	310 907	310 030 009D	8	150 508	M 121 015 087D	19
232 011 017 145	232 011 017 145	27	310 911	310 030 010D	8	150 511	M 121 015 111D	19
232 011 019 003	232 011 019 003	27	310 934B	310 030 023C	8	150 513	M 121 015 180D	19
232 011 055 019	232 011 055 019	27	310 936B	310 030 024C	8	150 514	M 121 015 197D	19
246 068 003 001G	246 068 003 001G	25	310 951	310 035 002D	8	150 518	M 121 015 245D	19
246 069 006 006G	246 069 006 006G	25	310 910	310 040 006D	8	150 520	M 121 015 269D	19
600 861	3 011 002 058D	37	310 916	310 040 007D	8	150 510	M 121 015 348D	19
600 862	3 011 002 065D	37	310 012	310 220 002D	8	150 306	M 121 020 065D	16
240 092	3 069 000 011D	8, 12	310 039	310 220 003D	8	150 302	M 121 020 089D	17
600 808	3 079 001 088D	37	310 304	310 260 002D	16	180 317	M 131 020 079D	16
600 813	3 079 001 428D	37	331 951	331 032 002D	21	180 308	M 131 020 093D	16
600 819	3 079 002 041D	37	332 103	332 010 002D	14	437 052	M 211 012 073D	7
600 823	3 079 002 072	37	332 932B	332 030 001C	10	437 053	M 211 012 176D	7
600 817	3 079 003 035D	37	332 901	332 030 002D	10	437 353	M 211 020 023D	15
600 816	3 079 003 080D	37	332 902	332 040 002D	10	301 030	M 251 006 085D	9
600 818	3 079 003 114D	37	332 041	332 220 001D	10	301 036	M 251 006 157D	9
600 821	3 079 003 121D	37	332 341	332 260 001D	17	600 803	N/A	37
240 832	3 085 001 012D	34	332 342	332 260 002D	17	N03 321 008	N03 321 008	22
240 027	3 088 003 048D	35	333 158	333 015 018D	12	X10 246 001 007	X10 246 001 007	25
240 028	3 088 003 055D	35	333 159	333 015 019D	12	X10 246 001 008	X10 246 001 008	25
240 029	3 088 003 062D	35	333 160	333 015 022D	12	X10 246 001 009	X10 246 001 009	25
240 034	3 088 003 079D	35	333 156	333 015 027D	12	X10 246 001 010	X10 246 001 010	25
240 035	3 088 003 086D	35	333 958	333 035 019D	8	X10 246 001 011	X10 246 001 011	25
240 036	3 088 003 093D	35	333 959	333 035 020D	8	X10 246 001 012	X10 246 001 012	25
240 828	3 092 001 016D	34	333 965	333 035 021D	8	X10 246 001 013	X10 246 001 013	25
240 850	3 092 001 391D	34	350 110	350 010 001D	13	X10 246 001 014	X10 246 001 014	25
240 855	3 092 001 418D	34	350 108	350 010 002D	13	X10 246 001 015	X10 246 001 015	25
180 067	3 092 001 621D	8, 12, 16	350 106	350 010 003D	13	X10 246 001 016	X10 246 001 016	25
180 066	3 092 001 700D	8, 12, 16	350 104	350 010 004D	13	X10 246 001 017	X10 246 001 017	25
600 851	3 092 002 017D	35	350 109	350 010 011D	13	X10 246 001 018	X10 246 001 018	25
600 884	3 092 002 055D	35	350 107	350 010 012D	13	X10 246 001 019	X10 246 001 019	25
340 060	3 092 003 018D	33	350 105	350 010 013D	13			
340 061	3 092 003 025D	33	350 901	350 030 007D	9			

Be sure to check out our new products on pages 5 and 22-26.



The 230 Series Heavy-Duty Pressure Switch



The VDO Windshield Washer System



The BAI (Bus Analog Interface) System



The D'Mac System



Severe Duty

Distributed by:

VDO North America LLC

188 Brooke Road, P.O. 2897, Winchester, VA 22604
Telephone 540-665-2428 / Fax 540-722-4198 / www.vdona.com

02/2001