



www.vdo.com/usa

2011 Special OEM Instrumentation Catalog

Part #VSOC0510 (Supersedes Part #VSOC0908)

- Instrumentation
- Sensors

VDO

A heritage of engineering quality and innovation

We're focused on providing our customers with the best possible instrumentation – a goal that we've pursued since 1920. We continue to work to deliver the functionality, durability, and high quality finish that have earned our products a best-in-class reputation, worldwide. At the same time, we strive to continually pursue innovations that make our instrumentation more efficient, affordable, and useful to the people who own and operate vehicles and equipment that feature our products.

While we're aware of the vital role of our instruments as a human-machine interface and the importance of factors such as ergonomics, cost, and reliability, we haven't neglected aesthetics. In this catalog you'll find the all new Viewline family of instruments, the expanded Vision and Cockpit International lines, updated *CANcockpit* GEN III, the new ALAS II fuel senders and complete accessories.

From rugged analog gauges to sophisticated, flexible CAN bus platforms, we're working to give our customers choice, flexibility, and style for all their monitoring needs.





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RPM x 100



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2300

VDO

Introducing VDO Viewline

Our engineers started with a clean sheet of paper and a worldwide view to create an instrument line like no other in today's market. Their goal to create an instrument with flexibility, class and integrity something you've come to expect from VDO.

It begins with a fresh style and three choices of instrument sizes. For styling, you have a choice of dial face colors of Onyx or Ivory. Next we added three choices of bezel styles along with two choices of bezel colors, white, black and chrome. To complete your choices we give you three choices of instrument sizes 100mm, 85mm and 52mm giving you more flexibility than ever to create the instrument you are looking for.

They did not stop with just a pretty face, next they added integrity. With the use of fully sealed dual lens, lifetime LED lighting and warning indicators assure you that Viewline can withstand even open cab environments easily.

Whether you are looking for standard or customized products, you are truly getting "more bang for your buck" with Viewline.

The VDO Heritage: Reliability, durability and accuracy.

Reliability

- IP67 water resistance means, that no matter how wet it gets, our gauges keep on working.
- Anti-corrosion materials mean no oxidation or rust will develop – Viewline will continue to work and look like new.

Accuracy

- VDO patented stepper motors and resistive movements.
- OEM derived technology in every instrument.

Durability

- CE certification.
- GL registered.
- UL94 flame resistance.
- Tested to 25 G continuous vibration and 100 G shock.
- 100% LED warning lights and telltales for long service life.



Viewline Ivory with chrome triangle bezel

VDO Viewline: Standard or customized, you get "more bang for your buck!"

Standard features on all Viewline speedometers:

- LCD shows odometer, trip odometer, voltage and clock
- Warning alarm output
- Speed warning indicator on all speedometers

Available Viewline speedometer features:

- Turn signal indicators
- Emergency brake warning
- High beam indicator

OEMs can have all features listed and more,
customized for their specific needs



Speedometers available in 85mm
and 110mm diameters



Viewline Onyx with chrome triangle bezel

Standard features on all Viewline tachometers:

- LCD shows odometer, trip odometer, voltage and clock
- User defined engine speed warning indicator
- Warning alarm output on all 85mm and 110mm tachometers

Available Viewline tachometer features:

- Up to four additional telltales

OEMs can have all features listed and more, customized for their specific needs



Tachometers available in 52mm, 85mm and 110mm diameters

Viewline 52mm resistive, frequency and specialty instruments

Available variants include:

- Single and dual scale
- With or without ISO symbols
- US/Metric or Metric/US
- LED warning light standard on all 52mm Viewline gauges

OEMs can have all these features and more, customized for their specific need.



Resistive, frequency and specialty instruments in 90° and 270° sweeps.

Maximum flexibility, minimum inventory



Builders can choose any Viewline gauge and select from nine different bezel options.



Builders can choose surface mount with bezel or back mount to flush with panel.



VDO Viewline:
OEM technology. OEM quality.
In each and every instrument.





Viewline Ivory with round black bezel

1. Spin-Lok™ mounting – a VDO innovation developed to safeguard against mounting panel warping and makes installation fast & easy.
2. Single PCB increases reliability and minimizes instrument depth.
3. Built-in LED warning indicator (up to 5) is programmable to OEM-specified function.
4. Single cavity connectors reduce wiring installation time.
5. Reverse polarity and over voltage protection virtually eliminate the possibility of installation failures.
6. VDO is one of the few companies in the world to design, patent and manufacture stepper motors and resistive movements.
7. Corrosion-free and flame retardant materials comply with manufacturer's latest specifications.
8. Laser welded lenses ensure the highest level of protection against water intrusion.
9. Dual domed lenses eliminate fogging – another VDO innovation.
10. LED lit pointers and "through dial lighting" minimize current consumption while optimizing nighttime viewing.
11. Detail finish ring enhances the overall appearance of finished instrument – a VDO exclusive.
12. Designed to withstand continuous 25 G vibrations and 100 G single shock, to ensure maximum reliability of each instrument.
13. Large, multifunction backlit LCD provides easy readout of programmed functions.
14. Customer installed bezels with nine style choices allow for greater styling differentiation between product lines.



VDO Spin-Lok™ mounting



Viewline Onyx



Viewline Onyx with round chrome bezel

Speedometer w/ LCD & Telltales



Speedometers feature 1-button auto calibration programming, user defined speed warning, left & right turn signals, e-brake warning and high-beam indicator.

LCD features odometer, trip odometer, voltage and clock. Accepts signal inputs from Hall Effect and inductive sender and most electronic controlled transmission outputs.

Description	Size	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
120 MPH	3 3/8" (85mm) dia	MPH	✓	✓	table 15	table 18	12/24	A2C53408268-S	A2C53408268-B

See page 62 for speedometer senders

Standard Speedometer w/ LCD



Speedometers feature 1-button auto calibration programming and user defined speed warning. LCD features odometer, trip odometer, voltage and clock. Accepts signal inputs from

Hall Effect and inductive sender and most electronic controlled transmission outputs.

Description	Size	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
85 MPH/140 km/h	3 3/8" (85mm) dia	MPH/ km/h	✓	✓	table 15	table 18	12/24	A2C53194748-S	A2C53194748-B
120 MPH	3 3/8" (85mm) dia	MPH	✓	✓	table 15	table 18	12/24	A2C53194759-S	A2C53194759-B
160 MPH	3 3/8" (85mm) dia	MPH	✓	✓	table 15	table 18	12/24	A2C53194765-S	A2C53194765-B
85 MPH/140 km/h	4" (110mm) dia	MPH/ km/h	✓	✓	table 16	table 18	12/24	A2C53194641-S	A2C53194641-B
120 MPH	4" (110mm) dia	MPH	✓	✓	table 16	table 18	12/24	A2C53194639-S	A2C53194639-B

See page 62 for speedometer senders

Viewline Onyx



Viewline Onyx with triangle black bezel

Programmable Tachometers w/ LCD Hourmeter



Programmable tachometers feature: User defined rev. limit warning, LCD display for total hours, resettable hours, voltage and clock. Accepts signal inputs from most

electronic controlled ignitions with tachometer output terminal, standard coil ignition, alternator signal and 12V square wave applications.

Description	Size	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
3,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12/24	A2C53194789-S	A2C53194789-B
4,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12/24	A2C53194863-S	A2C53194863-B
5,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12/24	A2C53194867-S	A2C53194867-B
6,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12/24	A2C53194872-S	A2C53194872-B
7,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12/24	A2C53194881-S	A2C53194881-B
8,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12/24	A2C53194885-S	A2C53194885-B
3,000 RPM	4" (110mm) dia	RPMx100	✓	✓	table 16	table 18	12/24	A2C53194597-S	A2C53194597-B
4,000 RPM	4" (110mm) dia	RPMx100	✓	✓	table 16	table 18	12/24	A2C53194596-S	A2C53194596-B
6,000 RPM	4" (110mm) dia	RPMx100	✓	✓	table 16	table 18	12/24	A2C53194593-S	A2C53194593-B
8,000 RPM	4" (110mm) dia	RPMx100	✓	✓	table 16	table 18	12/24	A2C53194590-S	A2C53194590-B

Programmable Tachometers w/o LCD Hourmeter



Programmable tachometers feature: Accepts signal inputs from 2, 4, 6, 8, 10, 12 & 16 cylinder standard coil ignition, alternator signal and 12V square wave applications.

User defined rev. limit warning and programming can be done using Viewline programming software (available separately).

Description	Size	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
4,000 RPM	2 1/16" (52mm) dia	RPMx100	✓	✓	table 14	table 17	12/24	A2C53210903-S	A2C53210903-B
6,000 RPM	2 1/16" (52mm) dia	RPMx100	✓	✓	table 14	table 17	12/24	A2C53210899-S	A2C53210899-B

Viewline Onyx



Viewline Onyx with white triangle bezel

Programmable Tachometers w/o LCD Hourmeter (cont.)

8,000 RPM	2 1/16" (52mm) dia	RPMx100	✓	✓	table 14	table 17	12/24	A2C53210895-S	A2C53210895-B
3,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 17	12/24	A2C53218716-S	A2C53218716-B
4,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 17	12/24	A2C53218722-S	A2C53218722-B
6,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 17	12/24	A2C53218726-S	A2C53218726-B
3,000 RPM	4" (110mm) dia	RPMx100	✓	✓	table 16	table 17	12/24	A2C53218711-S	A2C53218711-B
4,000 RPM	4" (110mm) dia	RPMx100	✓	✓	table 16	table 17	12/24	A2C53218712-S	A2C53218712-B
7,000 RPM	4" (110mm) dia	RPMx100	✓	✓	table 16	table 17	12/24	A2C53218713-S	A2C53218713-B

Fluid Temperature Gauges, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
240°F	WATER °F	✓	✓	table 14	table 17	-	12	A2C53191359-S	A2C53191359-B
250°F	°F	✓	✓	table 14	table 17	A	12	A2C53191360-S	A2C53191360-B
250°F/120°C	°F/°C	✓	✓	table 14	table 17	A	12	A2C53191722-S	A2C53191722-B
300°F/150°C	°F/°C	✓	✓	table 14	table 17	B	12	A2C53191723-S	A2C53191723-B

Outside Temperature Gauges, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
-10°F/+120°F	°F	✓	✓	table 14	table 17	-	12	A2C53210847-S	A2C53210847-B
-10°F/+120°F Outside Temperature Sender								323-112	323-112B

Pyrometers, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
250°F-1650°F	°F	✓	✓	table 14	table 17	-	12	A2C53210907-S	A2C53210907-B
250°F-1650°F Pyrometer Sender								326-001	
13' Extension cable								326-002	

Oil Pressure Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
80 PSI	10-180	psi	✓	✓	table 14	table 17	1	12	A2C53191383-S	A2C53191383-B
80 PSI	240-33	psi	✓	✓	table 14	table 17	2	12	A2C53191384-S	A2C53191384-B
80 PSI/5 bar	10-180	psi/bar	✓	✓	table 14	table 17	1	12	A2C53191733-S	A2C53191733-B
80 PSI/5 bar	240-33	psi/bar	✓	✓	table 14	table 17	2	12	A2C53191402-S	A2C53191402-B
100 PSI/7 bar	240-33	psi/bar	✓	✓	table 14	table 17	4	12	A2C53191734-S	A2C53191734-B
150 PSI/10 bar	10-180	psi/bar	✓	✓	table 14	table 17	5	12	A2C53191736-S	A2C53191736-B
150 PSI/10 bar	240-33	psi/bar	✓	✓	table 14	table 17	-	12	A2C53191735-S	A2C53191735-B
400 PSI/25 bar	10-180	psi/bar	✓	✓	table 14	table 17	7	12	A2C53191737-S	A2C53191737-B

Air Pressure Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
150PSI/1000kPa	10-180	AIR	✓	✓	table 14	table 17	—	12	A2C53191445-S	A2C53191445-B

Brake Pressure Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
150PSI/1000kPa	10-180	psi/kPa	✓	✓	table 14	table 17	—	12	A2C53191446-S	A2C53191446-B

Turbo Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
2 bar/30 PSI	10-180	bar/psi	✓	✓	table 14	table 17	1	12	A2C53191728-S	A2C53191728-B
30 PSI	10-180	psi	✓	✓	table 14	table 17	1	12	A2C53191382-S	A2C53191382-B

Fuel Level Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
For VDO sender	10-180	E-F	✓	✓	table 14	table 17	9	12	A2C53191757-S	A2C53191757-B
For U.S. sender	240-33	E-F	✓	✓	table 14	table 17	10	12	A2C53191758-S	A2C53191758-B
For GM sender (0-90)	0-90	E-F	✓	✓	table 14	table 17	11	12	A2C53191760-S	A2C53191760-B
For Tube type sender	90-0 (adjustable)	E-F	✓	✓	table 14	table 17	12	12	A2C53191759-S	A2C53191759-B

Water Level Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
Freshwater	10-180	WATER E-F	✓	✓	table 14	table 17	13	12	A2C53192574-S	A2C53192574-B
Freshwater	Capacitive	0-1/1	✓	✓	table 14	table 17	13	12	A2C53210954-S	A2C53210954-B
Blackwater	Capacitive	0-1/1	✓	✓	table 14	table 17	13	12	A2C53210834-S	A2C53210834-B

Viewline Onyx



Viewline Onyx with white round bezel

Voltmeter, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
8-16V	VOLT	✓	✓	table 14	table 17	12	A2C53191766-S	A2C53191766-B
18-32V	VOLT	✓	✓	table 14	table 17	24	A2C53191767-S	A2C53191767-B

Ammeter, electrical, 2 1/16" (52mm) dia



Description	Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
30 Amp	30 / 0 / 30	AMP	✓	✓	table 14	table 17	12/24	A2C53211039-S	A2C53211039-B
60 Amp	60 / 0 / 60	AMP	✓	✓	table 14	table 17	12/24	A2C53210959-S	A2C53210959-B
100 Amp	100 / 0 / 100	AMP	✓	✓	table 14	table 17	12/24	A2C53210973-S	A2C53210973-B
150 Amp	150 / 0 / 150	AMP	✓	✓	table 14	table 17	12/24	A2C53210957-S	A2C53210957-B

Note: Viewline ammeters require external 60mv shunt, not included

Clocks, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Analog	-	✓	table 14	table 17	12	A2C53321687-S	A2C53321687-B
Analog	-	✓	table 14	table 17	24	A2C53321689-S	A2C53321689-B

Hourmeter, electrical, 2 1/16" (52mm) dia



Description	Range	On Dial	Mounting Spin-Lok™	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Illuminated	100,000 hrs	Hour	✓	table 14	table 17	12/24	A2C59510876-S	A2C59510876-B

See page 55 for fuel and water level sender tables

For technical specifications and dimensions, please visit our website at www.vdo.com/usa

Viewline Ivory



Viewline Ivory with white triangle bezel

Speedometer w/ LCD & Telltales



Speedometers feature 1-button auto calibration programming, user defined speed warning, left and right turn signals, e-brake warning and high-beam indicator.

LCD features odometer, trip odometer, voltage and clock. Accepts signal inputs from Hall Effect and inductive sender and most electronic controlled transmission outputs.

Description	Size	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
120 MPH	3 3/8" (85mm) dia	MPH	✓	✓	table 15	table 18	12 / 24	A2C53408300-S	A2C53408300-B

Standard Speedometer w/ LCD



Speedometers feature 1-button auto calibration programming and user defined speed warning. LCD features odometer, trip odometer, voltage and clock. Accepts signal

inputs from Hall Effect and inductive sender and most electronic controlled transmission outputs.

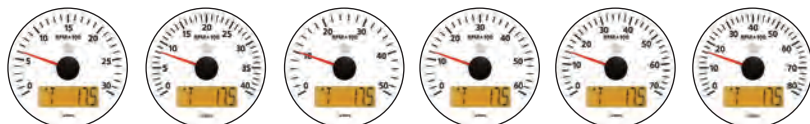
Description	Size	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
85 MPH/140 km/h	3 3/8" (85mm) dia	MPH/ km/h	✓	✓	table 15	table 18	12 / 24	A2C53194748-S	A2C53194748-B
120 MPH	3 3/8" (85mm) dia	MPH	✓	✓	table 15	table 18	12 / 24	A2C53194760-S	A2C53194760-B
160 MPH	3 3/8" (85mm) dia	MPH	✓	✓	table 15	table 18	12 / 24	A2C53194766-S	A2C53194766-B

Viewline Ivory



Viewline Ivory with white round bezel

Programmable Tachometers w/ LCD Hourmeter



Programmable tachometers feature: User defined rev. limit warning, LCD display for total hours, resettable hours, voltage and clock. Accepts signal inputs from most

electronic controlled ignitions with tachometer output terminal, standard coil ignition, alternator signal and 12V square wave applications.

Description	Size	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
3,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12 / 24	A2C53194791-S	A2C53194791-B
4,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12 / 24	A2C53194865-S	A2C53194865-B
5,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12 / 24	A2C53194869-S	A2C53194869-B
6,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12 / 24	A2C53194875-S	A2C53194875-B
7,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12 / 24	A2C53194883-S	A2C53194883-B
8,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 18	12 / 24	A2C53194887-S	A2C53194887-B

Programmable Tachometers w/o LCD Hourmeter



Programmable tachometers feature: Accepts signal inputs from 2, 4, 6, 8, 10, 12 & 16 cylinder standard coil ignition, alternator signal and 12v square wave applications. User

defined rev. limit warning and programming can be done using Viewline programming software (available separately).

Description	Size	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
4,000 RPM	2 1/16" (52mm) dia	RPMx100	✓	✓	table 14	table 17	12 / 24	A2C53210901-S	A2C53210901-B
6,000 RPM	2 1/16" (52mm) dia	RPMx100	✓	✓	table 14	table 17	12 / 24	A2C53210897-S	A2C53210897-B
8,000 RPM	2 1/16" (52mm) dia	RPMx100	✓	✓	table 14	table 17	12 / 24	A2C53210892-S	A2C53210892-B
3,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 17	12 / 24	A2C53218718-S	A2C53218718-B
4,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 17	12 / 24	A2C53218724-S	A2C53218724-B
6,000 RPM	3 3/8" (85mm) dia	RPMx100	✓	✓	table 15	table 17	12 / 24	A2C53218727-S	A2C53218727-B

See page 62 for speedometer senders

For technical specifications and dimensions, please visit our website at www.vdo.com/usa

Viewline Ivory



Viewline Ivory with black triangle bezel

Fluid Temperature Gauges, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
240°F	°F	✓	✓	table 14	table 17	-	12	A2C53191369-S	A2C53191369-B
250°F	°F	✓	✓	table 14	table 17	A	12	A2C53191370-S	A2C53191370-B
250°F/120°C	°F/°C	✓	✓	table 14	table 17	A	12	A2C53191726-S	A2C53191726-B
300°F/150°C	°F/°C	✓	✓	table 14	table 17	B	12	A2C53191727-S	A2C53191727-B

Outside Temperature Gauges, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
-10°F/+120°F	°F	✓	✓	table 14	table 17	-	12	A2C53210844-S	A2C53210844-B
-10°F/+120°F Outside Temperature Sender								323-112	323-112B

Pyrometers, electrical, 2 1/16" (52mm) dia

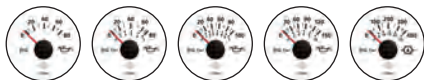


Description	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
250°F-1650°F	°F	✓	✓	table 14	table 17	-	12	A2C53210905-S	A2C53210905-B
250°F-1650°F Pyrometer Sender								326-001	
13' Extension cable								326-002	

Viewline Ivory



Oil Pressure Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
80 PSI	10-180	psi	✓	✓	table 14	table 17	1	12	A2C53191419-S	A2C53191419-B
80 PSI/5 bar	10-180	psi	✓	✓	table 14	table 17	2	12	A2C53191745-S	A2C53191745-B
80 PSI/5 bar	240-33	psi/bar	✓	✓	table 14	table 17	1	12	A2C53191744-S	A2C53191744-B
100 PSI/7 bar	240-33	psi/bar	✓	✓	table 14	table 17	4	12	A2C53191746-S	A2C53191746-B
150 PSI/10 bar	10-180	psi/bar	✓	✓	table 14	table 17	5	12	A2C53191748-S	A2C53191748-B
150 PSI/10 bar	240-33	psi/bar	✓	✓	table 14	table 17	-	12	A2C53191747-S	A2C53191747-B
400 PSI/25 bar	10-180	psi/bar	✓	✓	table 14	table 17	7	12	A2C53191750-S	A2C53191750-B

Turbo Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
2 bar	10-180	bar/psi	✓	✓	table 14	table 17	1	12V	A2C53191739-S	A2C53191739-B

Fuel Level Gauges, electrical, 2 1/16" (52mm) dia



Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
For VDO sender	10-180	E-F	✓	✓	table 14	table 17	9	12	A2C53191761-S	A2C53191761-B
For U.S. sender	240-33	E-F	✓	✓	table 14	table 17	10	12	A2C53191763-S	A2C53191763-B
For GM sender (0-90)	0-90	E-F	✓	✓	table 14	table 17	11	12	A2C53191764-S	A2C53191764-B
For Tube type sender	90-0 (adjustable)	E-F	✓	✓	table 14	table 17	12	12	A2C53191765-S	A2C53191765-B

See pages 56-57 for pressure sender tables

See page 55 for fuel and water level sender tables

For technical specifications and dimensions, please visit our website at www.vdo.com/usa

Water Level Gauges, electrical, 2 1/16" (52mm) dia



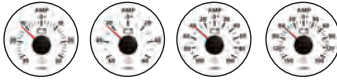
Description	Ohm Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
Freshwater	10-180	WATER E-F	✓	✓	table 14	table 17	13	12	A2C53192576-S	A2C53192576-B
Freshwater	Capacitive	0-1/1	✓	✓	table 14	table 17	13	12	A2C53210953-S	A2C53210953-B
Blackwater	Capacitive	0-1/1	✓	✓	table 14	table 17	13	12	A2C53210833-S	A2C53210833-B

Voltmeter, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
8-16V	VOLT	✓	✓	table 14	table 17	12	A2C53191768-S	A2C53191768-B
18-32V	VOLT	✓	✓	table 14	table 17	24	A2C53191769-S	A2C53191769-B

Ammeter, electrical, 2 1/16" (52mm) dia



Description	Range	On Dial	Mounting Spin-Lok™	Warning Indicator	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
30 Amp	30 / 0 / 30	AMP	✓	✓	table 14	table 17	12 / 24	A2C53211037-S	A2C53211037-B
60 Amp	60 / 0 / 60	AMP	✓	✓	table 14	table 17	12 / 24	A2C53210958-S	A2C53210958-B
100 Amp	100 / 0 / 100	AMP	✓	✓	table 14	table 17	12 / 24	A2C53210974-S	A2C53210974-B
150 Amp	150 / 0 / 150	AMP	✓	✓	table 14	table 17	12 / 24	A2C53210956-S	A2C53210956-B

Note: Viewline ammeters require external 60mv shunt, not included

Clocks, electrical, 2 1/16" (52mm) dia



Description	On Dial	Mounting Spin-Lok™	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Analog	-	✓	table 14	table 17	12	A2C53311885-S	A2C53311885-B
Analog	-	✓	table 14	table 17	24	A2C53321688-S	A2C53321688-B

Hourmeter, electrical, 2 1/16" (52mm) dia



Description	Range	On Dial	Mounting Spin-Lok™	Bezel	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Illuminated	100,000 hrs	Hour	✓	table 14	table 17	12 / 24	A2C59510877-S	A2C59510877-B

Viewline Instrument Table Reference

Viewline Bezel Tables

Table 14: Viewline Bezel

Size	Color	Shape	
		Triangle	Round
2 1/16" (52mm)	Chrome	A2C53186026-S	A2C53186029-S
2 1/16" (52mm)	Black	A2C53186024-S	A2C53186027-S
2 1/16" (52mm)	White	A2C53186025-S	A2C53186028-S

Table 15: Viewline Bezel

Size	Color	Shape	
		Triangle	Round
3 3/8" (85mm)	Chrome	A2C53192918-S	A2C53192914-S
3 3/8" (85mm)	Black	A2C53192917-S	A2C53192913-S
3 3/8" (85mm)	White	A2C53192920-S	A2C53192916-S

Table 16: Viewline Bezel

Size	Color	Shape	
		Triangle	Round
4" (110mm)	Chrome	A2C53210765-S	A2C53210761-S
4" (110mm)	Black	A2C53210763-S	A2C53210749-S
4" (110mm)	White	A2C53210764-S	A2C53210760-S

All bezels are available in 10 pack bulk by changing part number suffix to a "B"



Viewline Wire Harness Tables

Table 17 - Wire Harness for 52mm Instruments & Tachometers w/o LCD

Requires (1) 8 pole per instrument (included with all single packs)

	Harness (connector w/ 500mm (19 1/2 in.) wire leads)	Connector & pins (for custom made harness)	Connector (bulk, no pins)	Pins (bulk)
8 Pole-single pack	240 201	240 098	-	-
8 Pole-bulk pack	240 201B	-	A2C59510847B	240 048B

Table 18 - Wire Harness for Speedometers and Tachometers with LCD

Requires (1) 8 pole, (1) 14 pole connector & (1) momentary push button per instrument, (included with all single packs)

	Harness connector w/ 500mm (19 1/2 in.) wire leads)	Connector & pins (for custom made harness)	Connector (bulk, no pins)	Pins (bulk)	Push button for programming and mode functions
8 Pole-single pack	240 201	240 098	-	-	240-046
8 Pole-bulk pack	240 201B	-	A2C59510847B	240 048B	
14 Pole-single pack	240 204	240 099	-	-	
14 Pole-bulk pack	240 204B	-	A2C59510848B	240 048B	

Vision Chrome Instruments

VDO Vision instruments deliver world-class accuracy, reliability, and technology at very competitive pricing. These precision instruments feature stepper motor technology or air core movements for smooth, accurate performance and long-life dependability. Our unique VDO Spin-Lok™ mounting system makes installing Vision instruments fast and easy and provides a full 360 degrees of mounting force to prevent panel warping and gauge rotation.

Vision gauges incorporate easy-to-read white graphics on an illuminated black dial, and use red pointers featuring our exclusive Trioptic™ through dial illumination for maximum nighttime visibility. Optional light diffusers allow the dial illumination color to be changed to red or green.

Vision line instruments are offered with bezels in either classic black or sleek, polished chrome.



Programmable Speedometers w/ resettable LCD trip odometer

Speedometer features push button odometer and trip odometer clearly displayed in the LCD window. Unique auto-calibration feature allows for easy adjustment and can

be used with Hall Effect and inductive senders or most electronic controlled transmissions outputs.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
120 MPH	3 3/8" (85mm) dia	A	.250" Spade	12	437 191	437 191B
120 MPH	4" (100mm) dia	C	.250" Spade	12	437 198	437 198B

Programmable Tachometers w/ LCD hourmeter

Programmable for use with most engine electronic control ignitions with tachometer output terminal, standard coil ignition, alternator signal, and 12V

square wave applications. Non-resettable engine hourmeter is displayed in LCD window.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
3,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12	333 192	333 192B
4,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12	333 193	333 193B
6,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12	333 194	333 194B

Programmable Tachometers w/o hourmeter

For use on 4,5,6,8 cylinder application engines with standard coil ignitions, most square wave electronic

control ignitions with tachometer output terminal, and alternators with "w" tachometer terminal.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
3,000 RPM	3 3/8" (85mm) dia	C	.250" Spade	12	333 199	333 199B
6,000 RPM	3 3/8" (85mm) dia	C	.250" Spade	12	333 197	333 197B
8,000 RPM	4" (100mm) dia	C	.250" Spade	12	333 195	333 195B

Vision Chrome Instruments

Fluid Temperature Gauges, electrical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
220° F	"Water"	E	.250" Spade	—	12	310 194	310 194B
250° F	"Water"	E	.250" Spade	A	12	310 195	310 195B
300° F	"Oil"	E	.250" Spade	B	12	310 196	310 196B

See pages 59-60 for temperature sender tables.

Fluid Temperature Gauge Kits, electrical, includes sender, 2 1/16" (52mm) dia

Description	Thread Type	On Dial	Dwg	Terminal	Adapter Incl.	Voltage	Single Pack Part No.
250° F	US	"Water"	E	.250" Spade	1/4", 3/8", 1/2"	12	310 1951
250° F	Metric	"Water"	E	.250" Spade	M10, M12, M14, M16, 1/8 BSP	12	310 1952
300° F	US	"Oil"	E	.250" Spade	1/4", 3/8", 1/2"	12	310 1961
300° F	Metric	"Oil"	E	.250" Spade	M10, M12, M14, M16, 1/8 BSP	12	310 1962

Water Temperature Gauges, mechanical, 2 1/16" (52mm) dia

Description	Length	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
265° F	72"	"Water"	H	1/2-14 NPT	12	180 191	180 191B
265° F	96"	"Water"	H	1/2-14 NPT	12	180 192	180 192B

Adapters, for fluid temperature gauges, mechanical

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

Oil Pressure Gauges, electrical, 2 1/16" (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
80 PSI	10-180	"Oil"	E	.250" Spade	1	12	350 194	350 194B
80 PSI	240-33	"Oil"	E	.250" Spade	2	12	350 195	350 195B
100 PSI	10-180	"Oil"	E	.250" Spade	3	12	350 196	350 196B
100 PSI	240-33	"Oil"	E	.250" Spade	4	12	350 197	350 197B
150 PSI	10-180	"Oil"	E	.250" Spade	5	12	350 198	350 198B
150 PSI	240-33	"Oil"	E	.250" Spade	—	12	350 199	350 199B
400 PSI	10-180	"Trans"	E	.250" Spade	7	12	350 290	350 290B

See pages 56-57 for pressure sender tables.

Oil Pressure Gauge Kits, electrical, includes sender, 2 1/16" (52mm) dia

Description	Thread Type	Adapter Incl.	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.
80 PSI	US	1/4", 3/8", 1/2"	"Oil"	E	.250" Spade	12	350 1941
80 PSI	Metric	M10, M12, M14, M16, 1/8 BSP	"Oil"	E	.250" Spade	12	350 1942
100 PSI	US	1/4", 3/8", 1/2"	"Oil"	E	.250" Spade	12	350 1961
100 PSI	Metric	M10, M12, M14, M16, 1/8 BSP	"Oil"	E	.250" Spade	12	350 1962
150 PSI	US	1/4", 3/8", 1/2"	"Oil"	E	.250" Spade	12	350 1981
150 PSI	Metric	M10, M12, M14, M16, 1/8 BSP	"Oil"	E	.250" Spade	12	350 1982

Vision Chrome Instruments

Oil Pressure Gauges, mechanical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
100 PSI	"Oil"	I	1/8-27NPT	12	150 197	150 197B
150 PSI	"Oil"	I	1/8-27NPT	12	150 192	150 192B

Tubing kit not included, see page 63.

Oil Pressure Gauge Kits, mechanical, includes 6ft of tubing & adapters, 2 1/16" (52mm) dia

Description	Thread Type	On Dial	Dwg	Adapters Incl.	Voltage	Single Pack Part No.
100 PSI	US	"Oil"	I	1/4", 3/8", 1/2"	12	150 1971
100 PSI	Metric	"Oil"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1972
150 PSI	US	"Oil"	I	1/4", 3/8", 1/2"	12	150 1921
150 PSI	Metric	"Oil"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1922

Boost Pressure Gauges, mechanical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
15 PSI	"Boost"	I	1/8-27NPT	12	150 191	150 191B
30 PSI	"Boost"	I	1/8-27NPT	12	150 194	150 194B

Tubing kit not included, see page 63.

Boost Pressure Gauge Kits, mechanical, includes 6ft of tubing & adapters, 2 1/16" (52mm) dia

Description	Thread Type	On Dial	Dwg	Adapters Incl.	Voltage	Single Pack Part No.
15 PSI	US	"Boost"	I	1/4", 3/8", 1/2"	12	150 1911
15 PSI	Metric	"Boost"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1912
30 PSI	US	"Boost"	I	1/4", 3/8", 1/2"	12	150 1941
30 PSI	Metric	"Boost"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1942

Pyrometers, electrical, 2 1/16" (52mm) dia 250° F–1650° F

Description	Dwg	Voltage	Single Pack Part No.	10 Pack Part No.
Complete kit with 12' lead wire	O	12	310 193	–
Gauge only	O	12	310 191	310 193B
Pyrometer sender only	–	–	323 892	–
30' extension wire	–	–	240 092	–
12' Replacement lead wire	–	–	240-702	–

Fuel Level Gauges, electrical, 2 1/16" (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
For VDO sender	10–180	"Fuel"	E	.250" Spade	9	12	301 194	301 194B
For U.S. sender	240–33	"Fuel"	E	.250" Spade	10	12	301 195	301 195B
For Tube Type	90–0 (ADJ)	"Fuel"	E	.250" Spade	12	12	301 197	301 197B

See pages 54-55 for fuel level sender tables.

Voltmeters, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
8–16V	"Volt"	E	.250" Spade	12	332 193	332 193B

Hourmeters, 2 1/16" (52mm) dia

Description	On Dial	Maximum Hours	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
Non-illuminated	☒	100,000	J	.250" Spade	12	331 955	331 955B

Vision Black Instruments



Programmable Speedometers w/ resettable LCD trip odometer

Speedometer features push button odometer and trip odometer clearly displayed in the LCD window. Unique auto-calibration feature allows for easy adjustment and can

be used with Hall Effect and inductive senders or most electronic controlled transmissions outputs.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
45 MPH / 70 km/h	3 1/8" (80mm) dia	A	.250" Spade	12	437 160	437 160B
120 MPH	3 1/8" (80mm) dia	A	.250" Spade	12	437 151	437 151B
140 MPH / 220 km/h	3 1/8" (80mm) dia	A	.250" Spade	12	437 157	437 157B
200 km/h	3 1/8" (80mm) dia	A	.250" Spade	12	437 154	437 154B
85 MPH / 130 km/h	3 3/8" (85mm) dia	A	.250" Spade	12	437 152	437 152B
120 MPH	3 3/8" (85mm) dia	A	.250" Spade	12	437 153	437 153B
140 MPH / 220 km/h	4" (100mm) dia	A	.250" Spade	12	437 158	437 158B
200 km/h	4" (100mm) dia	A	.250" Spade	12	437 156	437 156B
120 MPH	4" (100mm) dia	A	.250" Spade	12	437 155	437 155B
220 MPH	4" (100mm) dia	A	.250" Spade	12	437 159	437 159B

437 159 uses U-bracket mounting, See page 62 for speedometer senders

Programmable Tachometers w/ LCD hourmeter

Programmable for use with most engine electronic control ignitions with tachometer output terminal, standard coil ignition, alternator signal, and

12V square wave applications. Non-resettable engine hourmeter is displayed in LCD window.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
3,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12	333 162	333 162B
4,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12	333 163	333 163B
6,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12	333 164	333 164B

Programmable Tachometers w/o LCD hourmeter

For use on 4,5,6,8 cylinder application engines with standard coil ignitions, most square wave electronic

control ignitions with tachometer output terminal, and alternators with "w" tachometer terminal.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
4,000 RPM	2 1/16" (52mm) dia	D	.250" Spade	12	333 156	333 156B
6,000 RPM	2 1/16" (52mm) dia	D	.250" Spade	12	333 158	333 158B
8,000 RPM	2 1/16" (52mm) dia	D	.250" Spade	12	333 159	333 159B
7,000 RPM	3 1/8" (80mm) dia	C	.250" Spade	12	333 151	333 151B
3,000 RPM	3 3/8" (85mm) dia	C	.250" Spade	12	333 152	333 152B
7,000 RPM	3 3/8" (85mm) dia	C	.250" Spade	12	333 155	333 155B
8,000 RPM	4" (100mm) dia	C	.250" Spade	12	333 160	333 160B

Vision Black Instruments

Fluid Temperature Gauges, electrical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
220° F	"Water"	E	.250" Spade	–	12	310 104	310 104B
250° F	"Water"	E	.250" Spade	A	12	310 105	310 105B
300° F	"Oil"	E	.250" Spade	B	12	310 106	310 106B
300° F	"Trans"	E	.250" Spade	B	12	310 111	310 111B
400° F	"Trans"	E	.250" Spade	C	12	310 107	310 107B
120° C	"Water"	E	.250" Spade	A	12	310 108	310 108B
150° C	"Oil"	E	.250" Spade	B	12	310 109	310 109B

See pages 56-57 for pressure sender tables.

Fluid Temperature Gauge Kits, electrical, includes sender, 2 1/16" (52mm) dia

Description	Thread Type	On Dial	Dwg	Terminal	Adapters Incl.	Voltage	Single Pack Part No.
250° F	US	"Water"	E	.250" Spade	1/4", 3/8", 1/2	12	310 1051
250° F	Metric	"Water"	E	.250" Spade	M10, M12, M14, M16, 1/8 BSP	12	310 1052
300° F	US	"Oil"	E	.250" Spade	1/4", 3/8", 1/2	12	310 1061
300° F	Metric	"Oil"	E	.250" Spade	M10, M12, M14, M16, 1/8 BSP	12	310 1062
400° F	US	"Trans"	E	.250" Spade	1/4", 3/8", 1/2	12	310 1071
400° F	Metric	"Trans"	E	.250" Spade	M10, M12, M14, M16, 1/8 BSP	12	310 1072

Fluid Pressure Gauges, mechanical, 2 1/16" (52mm) dia

Description	Length	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
265° F	72"	"Water"	H	1/2–14 NPT	12	180 101	180 101B

Adapters, for fluid temperature gauges, mechanical

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

Oil Pressure Gauges, electrical, 2 1/16" (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
80 PSI	10–180	"Oil"	E	.250" Spade	1	12	350 104	350 104B
80 PSI	240–33	"Oil"	E	.250" Spade	2	12	350 105	350 105B
100 PSI	10–180	"Oil"	E	.250" Spade	3	12	350 106	350 106B
100 PSI	240–33	"Oil"	E	.250" Spade	4	12	350 107	350 107B
150 PSI	10–180	"Oil"	E	.250" Spade	5	12	350 108	350 108B
150 PSI	240–33	"Oil"	E	.250" Spade	–	12	350 109	350 109B
400 PSI	10–180	"Trans"	E	.250" Spade	7	12	350 110	350 110B
5 bar	10–180	Oil Symbol	E	.250" Spade	1	12	350 101	350 101B
10 bar	10–180	Oil Symbol	E	.250" Spade	5	12	350 102	–

See pages 56-57 for pressure sender tables.

Vision Black Instruments

Oil Pressure Gauge Kits, electrical, includes sender, 2 1/16" (52mm) dia, 250° F–1650° F

Description	Thread Type	On Dial	Dwg	Terminal	Adapters Incl.	Voltage	Single Pack Part No.
80 PSI	US	"Oil"	E	.250" Spade	1/4", 3/8", 1/2"	12	350 1041
80 PSI	Metric	"Oil"	E	.250" Spade	M10, M12, M14, M16, 1/8 BSP	12	350 1042
100 PSI	US	"Oil"	E	.250" Spade	1/4", 3/8", 1/2"	12	350 1061
100 PSI	Metric	"Oil"	E	.250" Spade	M10, M12, M14, M16, 1/8 BSP	12	350 1062
150 PSI	US	"Oil"	E	.250" Spade	1/4", 3/8", 1/2"	12	350 1081
150 PSI	Metric	"Oil"	E	.250" Spade	M10, M12, M14, M16, 1/8 BSP	12	350 1082

Oil Pressure Gauges, mechanical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
100 PSI	"Oil"	I	1/8–27NPT	12	150 107	150 107B
150 PSI	"Oil"	I	1/8–27NPT	12	150 111	150 111B

Tubing kit not included, see page 63.

Oil Pressure Gauge Kits, mechanical, includes 6ft of tubing & adapters, 2 1/16" (52mm) dia

Description	Thread Type	On Dial	Dwg	Adapters Incl.	Voltage	Single Pack Part No.
100 PSI	US	"Oil"	I	1/4", 3/8", 1/2"	12	150 1071
100 PSI	Metric	"Oil"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1072
150 PSI	US	"Oil"	I	1/4", 3/8", 1/2"	12	150 1111
150 PSI	Metric	"Oil"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1112

Air Pressure Gauges, electrical, 2 1/16" (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
150 PSI	10–180	"Front Air"	E	.250" Spade	5	12	350 111	350 111B
150 PSI	10–180	"Rear Air"	E	.250" Spade	5	12	350 112	350 112B

See pages 56–57 for pressure sender tables.

Air Pressure Gauges, mechanical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
150 PSI	"Front Air"	I	1/8–27NPT	12	150 105	150 105B
150 PSI	"Rear Air"	I	1/8–27NPT	12	150 106	150 106B
150 PSI	"Air"	I	1/8–27NPT	12	150 112	150 112B

Vision Black Instruments

Pyrometers, electrical, 2 1/16" (52mm) dia, 250° F–1650° F

Description	On Dial	Dwg	Voltage	Single Pack Part No.	10 Pack Part No.
Complete kit with 12' lead wire	"°F"	O	12	310 153	–
Gauge only	"°F"	O	12	310 151	310 151B
Pyrometer sender only	–	O	–	323 892	–
30' extension wire	–	–	–	240 092	–
12' Replacement lead wire	–	–	–	240-702	–

Turbo & Boost Gauges, mechanical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
15 PSI	"Boost"	I	1/8-27NPT	12	150 101	150 101B
30 PSI	"Boost"	I	1/8-27NPT	12	150 104	150 104B
0-30 in Hg to 0-25 PSI	"Turbo"	I	1/8-27NPT	12	150 121	150 121B
0-3 bar	"Boost"	I	1/8-27NPT	12	150 102	150 102B

Tubing kit not included, see page 63.

Turbo & Boost Gauge Kits, mechanical, includes 6ft of tubing & adapters, 2 1/16" (52mm) dia

Description	Thread Type	On Dial	Dwg	Adapters Incl.	Voltage	Single Pack Part No.
15 PSI	US	"Boost"	I	1/4", 3/8", 1/2	12	150 1011
15 PSI	Metric	"Boost"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1012
30 PSI	US	"Boost"	I	1/4", 3/8", 1/2	12	150 1041
30 PSI	Metric	"Boost"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1042
0-30 in Hg to 0-25 PSI	US	"Turbo"	I	1/4", 3/8", 1/2	12	150 1211
0-30 in Hg to 0-25 PSI	Metric	"Turbo"	I	M10, M12, M14, M16, 1/8 BSP	12	150 1212

Fuel Level Gauges, electrical, 2 1/16" (52mm) dia

Description	Ohm Range	On Dial	Dwg	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
For VDO sender	10-180	"Fuel"	E	9	12	301 104	301 104B
For U.S. sender	240-33	"Fuel"	E	10	12	301 105	301 105B
For GM sender (from 1965)	0-90	"Fuel"	E	11	12	301 106	301 106B
For tube type sender	90-0 (ADJ)	"Fuel"	E	12	12	301 107	301 107B

See pages 54-55 for fuel level sender tables.

Vacuum Gauge, mechanical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
0-30 in Hg	"Vacuum"	I	1/8-27 NPT	12	150 131	150 131B

Tubing kit not included, see page 63.

Vision Black Instruments

Voltmeter, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
8-16V	"Volt"	E	.250" Spade	12	332 103	332 103B
16-32V	"Volt"	E	.250" Spade	24	332-104	332-104B

Ammeters (non-shunted), electrical, 2 1/16" (52mm) dia

Description	Range	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
30 Amp	30 / 0 / 30	"Amp"	L	Stud	12	190 103	190 103B
60 Amp	60 / 0 / 60	"Amp"	L	Stud	12	190 104	190 104B
100 Amp	100 / 0 / 100	"Amp"	L	Stud	12	190 105	190 105B

Ammeter (shunted) , electrical, 2 1/16" (52mm) dia, complete kit w/shunt

Description	Range	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
150 Amp, gauge only	150 / 0 / 150	"Amp"	M	.250" Spade	12	190 151	190 151B
150 Amp, shunt only	—	—	—	—	—	391 007	—

Outside Temperature Gauges, electrical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Voltage	Single Pack Part No.	10 Pack Part No.
Complete Kit, Fahrenheit -10° F-120° F	"°F"	N	12	397 154	397 154B
Complete Kit, Celsius -25° C-40° C	"°C"	N	12	397 155	397 155B
Replacement Sender	—	—	—	323 087	323 087B

Clocks, electrical, 2 1/16" (52mm) dia

Description	Range	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Analog	9-28V	—	J	.250" Spade	12 / 24	370 155	370 155B
Quartz, Adjuster on dial	—	—	—	.250" Spade	12 / 24	370 100	—

Cockpit International Instruments

World-class Cockpit International instruments are the standard in the industry for reliability and economy. These instruments feature our latest generation patented air core movements or stepper motor technology to deliver the precision and durability that has made VDO renowned as the leading brand in instrumentation.

VDO Cockpit International instruments are made for durability with a choice of two terminals: M4 studs or .250" male spades. Most 2 1/16" (52mm) instruments feature zinc-plated metal housing and black painted, brass bezels for rugged, reliable service. Cockpit International Instruments feature standard flood-lit illumination and are available in 12 / 24V applications.



Programmable Speedometers w/ resettable LCD trip odometer

Speedometer features push button odometer and trip odometer clearly displayed in the LCD window. Unique auto-calibration feature allows for easy

adjustment and can be used with Hall Effect and inductive senders or most electronic controlled transmissions outputs.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
45 MPH / 75 km/h	3 3/8" (85mm) dia	A	.250" Spade	12 / 24	437 950	437 950B
85MPH/130 km/h	4" (100mm) dia	A	.250" Spade	12 / 24	437 957	437 957B
130 km/h / 85 MPH	3 3/8" (85mm) dia	A	.250" Spade	12 / 24	437 956	437 956B
120 MPH / 200 km/h	3 3/8" (85mm) dia	A	.250" Spade	12 / 24	437 954	437 954B
120 MPH	3 1/8" (80mm) dia	A	.250" Spade	12 / 24	437 050	437 050B
120 MPH	3 3/8" (85mm) dia	A	.250" Spade	12 / 24	437 052	437 052B
160 MPH	3 3/8" (85mm) dia	A	.250" Spade	12 / 24	437 053	437 053B

For 24V applications, use bulb #600 826 (2x).
See page 62 for speedometer senders

Programmable Tachometers w/ LCD hourmeter

Programmable for use with most engine electronic control ignitions with tachometer output terminal, standard coil ignition, alternator signal, and 12v square

wave applications. Non-resettable engine hourmeter is displayed in LCD window.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
3,000 RPM	3 1/8" (80mm) dia	B	.250" Spade	12 / 24	333 961	333 961B
4,000 RPM	3 1/8" (80mm) dia	B	.250" Spade	12 / 24	333 964	333 964B
3,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12 / 24	333 962	333 962B
4,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12 / 24	333 963	333 963B

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

Cockpit International Instruments

Programmable Tachometers w/o LCD hourmeter

For use on 4,5,6,8 cylinder application engines with standard coil ignitions, most square wave electronic control ignitions

with tachometer output terminal, and alternators with "w" tachometer terminal.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
4,000 RPM (400–1300Hz)*	2 1/16" (52mm) dia	D	.250" Spade	12	333 969	333 969B
4,000 RPM (800–2400Hz)*	2 1/16" (52mm) dia	D	.250" Spade	12	333 965	333 965B
6,000 RPM	2 1/16" (52mm) dia	D	.250" Spade	12	333 958	333 958B
8,000 RPM	2 1/16" (52mm) dia	D	.250" Spade	12	333 959	333 959B
8,000 RPM (1 & 2 cyl)	2 1/16" (52mm) dia	D	.250" Spade	12	333 968	333 968B
7,000 RPM	3 1/8" (80mm) dia	C	.250" Spade	12	333 051	333 051B
3,000 RPM	3 3/8" (85mm) dia	C	.250" Spade	12	333 952	333 952B
4,000 RPM	3 3/8" (85mm) dia	C	.250" Spade	12	333 953	333 953B
7,000 RPM	3 3/8" (85mm) dia	C	.250" Spade	12	333 055	333 055B

For 2 1/16" 24V applications, use resistor kit #391 101. For 3 3/8" 24V applications, use resistor kit #391 103.

*For Alternator use only.

Fluid Temperature Gauges, electrical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
240°F / 110°C		G	M4 Stud	—	12	310 907	310 907B
250°F	"Water"	E	.250" Spade	A	12	310 039	310 039B
250°F / 120°C		G	M4 Stud	A	12	310 909	310 909B
250°F / 120°C		G	.250" Spade	A	12	310 934	310 934B
250°F / 120°C		G	M4 Stud	A	24	310 910	310 910B
300°F / 150°C		—	.250" Spade	B	12	310 936	310 936B
300°F / 150°C		G	M4 Stud	B	12	310 915	310 915B
300°F / 150°C		G	M4 Stud	B	24	310 916	310 916B
300°F		E	.250" Spade	B	12	310 012	310 012B
400°F	"Transmission Oil Temp"	E	.250" Spade	C	12	310 015	310 015B
150°C		A	.250" Spade	B	12	310 912	310 912B
120°C		A	.250" Spade	A	24	310 920	310 920B
120°C		A	.250" Spade	A	12	310 917	310 917B
150°C		A	.250" Spade	B	12	310 918	310 918B
200°C	—	A	.250" Spade	C	12	310 919	310 919B

See pages 59-60 for temperature sender tables.

Water Temperature Gauges, mechanical, 2 1/16 (52mm) dia

Description	Length	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
265°F	72"	"Water"	H	1/2–14 NPT	12	180 901	180 901B
265°F	96"	"Water"	H	1/2–14 NPT	12	180 902	180 902B
265°F	144"	"Water"	H	1/2–14 NPT	12	180 903	180 903B

For 24V applications, use bulb #600 826.

Adapters, for fluid temperature gauges, mechanical

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

Cockpit International Instruments

Cylinder Head Temperature Gauges, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
600° F, complete kit	Cyl Head Temp	P	Spade	12	310 901	—
600° F, gauge only	Cyl Head Temp	P	Spade	12	310 033	310 033B
14mm dia thermal sender (included in kit)	—	—	—	—	323 701	—
12mm dia thermal sender	—	—	—	—	323 705	—
Replacement 15' lead wire	—	—	—	—	240 701	—

For 24V applications, use bulb #600 807 (does not require separate 24V resistor).

Pyrometers, electrical, 2 1/16" (52mm) dia, 250° F–1650° F

Description	On Dial	Dwg	Voltage	Single Pack Part No.	10 Pack Part No.
Complete kit with 12' lead wire	°F	O	12	310 953	—
Gauge only	°F	O	12	310 951	310 951B
Pyrometer sender only	—	O	—	323 892	—
30' extension wire	—	—	—	240 092	—

For 24V applications, use resistor kit 391 101 (kit includes required bulb).

Fluid Pressure Gauges, electrical, 2 1/16 (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
80 PSI / 5 bar	10–180		G	M4 Stud	1	12	350 901	350 901B
80 PSI / 5 bar	10–180		E	.250" Spade	1	12	350 934	350 934B
80 PSI	10–180	"Oil"	E	.250" Spade	1	12	350 040	350 040B
100 PSI / 7 bar	10–180		G	M4 Stud	3	12	350 905	350 905B
150 PSI / 10 bar	10–180		G	M4 Stud	5	12	350 909	350 909B
150 PSI	10–180	"lbs/sq inch"	E	.250" Spade	5	12	350 041	350 041B
400 PSI / 25 bar	10–180		G	M4 Stud	7	12	350 913	350 913B
80 PSI / 5 bar	10–180		G	M4 Stud	1	24	350 902	350 902B
150 PSI / 10 bar	10–180		G	M4 Stud	5	24	350 910	350 910B
1000kPa	10–180		E	.250" Spade	5	24	350 917	350 917B
10bar/150 PSI	10–180		E	.250" Spade	5	24	350 921	350 921B
10bar	10–180		E	.250" Spade	5	24	350 922	350 922B
150PSI/10bar	10–180		E	.250" Spade	5	12	350 911	350 911B

See pages 56-57 for pressure sender tables.

Oil Pressure Gauges, mechanical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
100 PSI	"Oil"	I	1/8–27 NPT	12	150 030	150 030B
150 PSI / 10 bar		I	1/8–27 NPT	12	150 904	150 904B
400 PSI / 25 bar		I	1/8–27 NPT	12	150 906	150 906B

Tubing kit not included, see page 63.

Single Air Pressure Gauge, mechanical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
150 PSI / 10 bar		I	1/8–27 NPT	12	150 905	150 905B

Cockpit International Instruments

Dual Air Pressure Gauges, mechanical, 2 1/16 (52mm) dia

Description	Size	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
150 PSI	2 1/16" (52mm) dia	"Air"	I	1/8-27 NPT	12	151 910	151 910B
150 PSI	3 1/8" (80mm) dia	"PSI"	I	1/8-27 NPT	12	151 002	151 002B

For 24V applications, use bulb #600 807 (1x for 151 910(B), 2x for 151 002(B)).

Vacuum Gauges, mechanical, 2 1/16 (52mm) dia, 0-30" Hg

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
Complete kit w/ 6ft of tubing	"Vacuum"	I	1/8-27 NPT	12	150 042	-
Gauge only	"Vacuum"	I	1/8-27 NPT	12	-	150 045B

For 24V applications, use bulb #600 826.

Boost Gauges, mechanical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
15 PSI	"Boost"	I	1/8-27 NPT	12	150 051	150 051B
30 PSI	"Boost"	I	1/8-27 NPT	12	150 052	150 052B

Tubing kit not included, see page 63.

Turbo Boost Gauge, mechanical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
0-30" Hg to 0-20 PSI		I	1/8-27 NPT	12	150 921	150 921B

For 24V applications, use bulb #600 826. Tubing kit not included, see page 63.

Fuel Level Gauges, electrical, 2 1/16 (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
For VDO sender	10-180	"Fuel"	E	.250" Spade	9	12	301 015	301 015B
For VDO sender	10-180		G	M4 Stud	9	12	301 901	301 901B
For U.S. sender	240-33		G	M4 Stud	10	12	301 903	301 903B
For GM sender (from 1965)	0-90	"Fuel"	E	.250" Spade	11	12	301 030	301 030B
For Tube Type	90-0 (ADJ)		G	M4 Stud	12	12	301 905	301 905B
For Tube Type	90-0 (ADJ)		G	M4 Stud	12	24	301 906	301 906B
For OEM sender	0-90		K	.250" Spade	11	12	301 930	301 930B
For VDO sender	10-180		G	M4 Stud	9	24	301 902	301 902B
For U.S. sender	240-33		G	M4 Stud	10	24	301 904	301 904B
For VDO sender	10-180		E	.250" Spade	9	12	301 910	301 910B
For VDO sender	10-180		E	.250" Spade	9	24	301 911	301 911B
For VDO sender	10-180		E	.250" Spade	9	12	301 907	301 907B

See pages 54-55 for fuel level sender tables.

Cockpit International Instruments

Voltmeters, 2 1/16 (52mm) dia, w/ ISO symbol

Description	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
8-16V, with colorband		G	M4 Stud	12	332 901	332 901B
8-16V, with colorband		G	.250" Spade	12	332 932	332 932B
8-16V, with colorband	"Volt"	E	.250" Spade	12	332 041	332 041B
18-32V, with colorband		G	M4 Stud	24	332 902	332 902B
18-32V, with colorband		E	.250" Spade	24	332 933	332 933B

Ammeters (non-shunted), electrical, 2 1/16 (52mm) dia

Description	Range	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
30 Amp	30 / 0 / 30	"AMP"	L	M4 Stud	12 / 24	190 903	190 903B
60 Amp	60 / 0 / 60	"AMP"	L	M4 Stud	12 / 24	190 904	190 904B

For 24V applications, use bulb #600 826.

Ammeter (shunted) , electrical, 2 1/16" (52mm) dia, complete kit w/shunt

Description	Range	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
300 Amp kit	300 / 0 / 300	"AMP"	M	.250" Spade	12 / 24	190 966	—
300 Amp, gauge only	300 / 0 / 300	"AMP"	M	.250" Spade	12 / 24	190 963	190 963B
300 Amp, shunt only						391 009	—

For 24V applications, use resistor #391 101 (kit includes required bulb).

Clocks, 2 1/16" (52mm) dia

Description	Range	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Analog	9-28V	J	.250" Spade	12 / 24	370 955	370 955B

Hourmeters, 2 1/16" (52mm) dia

Description	Max Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Non-Illuminated	100,000	"Hours"	J	.250" Spade	12	331 953	331 953B
Illuminated	100,000	"Hours"	J	.250" Spade	12	331 957	331 957B
Illuminated	100,000	"Hours"	J	.250" Spade	24	331 960	331 960B

Hourmeters, 2 1/16" (52mm) dia w/ minute hand

Description	Max Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Illuminated	100,000	"Hours"	J	.250" Spade	12	331 959	331 959B

Series 1 Instruments

VDO Series 1 instruments feature standard US scales, edge-lit dials, and easy-to-read white numerals and pointers on black faces. Step-type, chrome-plated brass bezels and zinc-plated steel housings make them attractive as well as

rugged. All 52mm gauges have metal housings, U-bracket mountings and M4 stud-type connections, except where noted.



Series 1 Instruments

Programmable Speedometers w/ resettable LCD trip odometer

Speedometer features push button odometer and trip odometer clearly displayed in the LCD window. Unique auto-calibration feature allows for easy

adjustment and can be used with Hall Effect and inductive senders or most electronic controlled transmissions outputs.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
120 MPH	3 3/8 (85mm) dia	A	.250" Spade	12	437 353	437 353B
160 MPH	3 3/8 (85mm) dia	A	.250" Spade	12	437 354	437 354B

See page 62 for speedometer senders

Mechanical Speedometers w/o trip odometer, 5/8-18 thread, 1.0 ratio

Description	Size	Voltage	Single Pack Part No.	10 Pack Part No.
120 MPH	3 3/8" (85mm) dia	12	120 302	120 302B

Programmable Tachometer w/ LCD hourmeter

Programmable for use with most engine electronic control ignitions with tachometer output terminal, standard coil ignition, alternator signal, and 12v square wave

applications. Non-resettable engine hourmeter is displayed in LCD window.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
4,000 RPM	3 3/8" (85mm) dia	B	.250" Spade	12	333 363	333 363B

Programmable Tachometers w/o LCD hourmeter

For use on 4,5,6,8 cylinder application engines with standard coil ignitions, most square wave electronic

control ignitions with tachometer output terminal, and alternators with "w" tachometer terminal.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
4,000 RPM	3 3/8 (85mm) dia	C	.250" Spade	12	333 353	333 353B
7,000 RPM	3 3/8 (85mm) dia	C	.250" Spade	12	333 355	333 355B

Series 1 Instruments

Fluid Temperature Gauges, electrical, 2 1/16 (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
250° F	10-180	"Water"	G	M4 Stud	A	12	310 304	310 304B
300° F	10-180	"°F"	G	M4 Stud	B	12	310 312	310 312B
400° F	10-180	"Trans"	G	M4 Stud	C	12	310 303	310 303B

See pages 59-60 for temperature sender tables.

Fluid Temperature Gauge Kits, electrical, includes sender, 2 1/16 (52mm) dia

Description	Thread Type	On Dial	Dwg	Terminal	Adapters Incl.	Voltage	Single Pack Part No.
250° F	US	"Water"	G	M4 Stud	1/4", 3/8", 1/2"	12	310 3041
250° F	Metric	"Water"	G	M4 Stud	M10, M12, M14, M16, 1/8 BSP	12	310 3042
300° F	US	"°F"	G	M4 Stud	1/4", 3/8", 1/2"	12	310 3051
300° F	Metric	"°F"	G	M4 Stud	M10, M12, M14, M16, 1/8 BSP	12	310 3052
400° F	US	"Trans"	G	M4 Stud	1/4", 3/8", 1/2"	12	310 3031
400° F	Metric	"Trans"	G	M4 Stud	M10, M12, M14, M16, 1/8 BSP	12	310 3032

Water Temperature Gauges, mechanical, 2 1/16 (52mm) dia

Description	Length	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
110-265° F	48"	"Water"	I	1/2-14 NPT	12	180 310	180 310B
110-265° F	72"	"Water"	I	1/2-14 NPT	12	180 301	180 301B
110-265° F	144"	"Water"	I	1/2-14 NPT	12	180 302	180 302B
110-265° F	288"	"Water"	I	1/2-14 NPT	12	180 308	180 308B

Oil Temperature Gauges, mechanical, 2 1/16 (52mm) dia

Description	Length	On Dial	Dwg	Fitting Size	Voltage	Single pack Part No.	10 Pack Part No.
120-340° F	72"	"Oil"	I	1/2-14 NPT	12	180 315	180 315B
120-340° F	144"	"Oil"	I	1/2-14 NPT	12	180 317	180 317B

Adapters, for fluid temperature gauges, mechanical

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

Oil Pressure Gauges, electrical, 2 1/16 (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
80 PSI	10-180	"Oil"	G	M4 Stud	1	12	350 303	350 303B
100 PSI	10-180	"Oil"	G	M4 Stud	3	12	350 306	350 306B

See pages 56-57 for pressure sender tables.

Series 1 Instruments

Oil Pressure Gauge Kits, electrical, includes sender, 2 1/16 (52mm) dia

Description	Thread Type	On Dial	Dwg	Terminal	Adapters Incl.	Voltage	Single Pack Part No.
80 PSI	US	"Oil"	G	M4 Stud	1/4", 3/8", 1/2	12	350 3031
80 PSI	Metric	"Oil"	G	M4 Stud	M10, M12, M14, M16, 1/8 BSP	12	350 3032
100 PSI	US	"Oil"	G	M4 Stud	1/4", 3/8", 1/2	12	350 3061
100 PSI	Metric	"Oil"	G	M4 Stud	M10, M12, M14, M16, 1/8 BSP	12	350 3062

Oil Pressure Gauges, mechanical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
100 PSI	"Oil"	I	1/8-27 NPT	12	150 330	150 330B
150 PSI	"Oil"	I	1/8-27 NPT	12	150 306	150 306B

Tubing kit not included, see page 63.

Oil Pressure Gauge Kits, mechanical, includes 6ft of tubing and adapters, 2 1/16 (52mm) dia

Description	Thread Type	On Dial	Dwg	Adapters Incl.	Voltage	Single Pack Part No.
100 PSI	US	"Oil"	I	1/4", 3/8", 1/2	12	150 3301
100 PSI	Metric	"Oil"	I	M10, M12, M14, M16, 1/8 BSP	12	150 3302
150 PSI	US	"Oil"	I	1/4", 3/8", 1/2	12	150 3061
150 PSI	Metric	"Oil"	I	M10, M12, M14, M16, 1/8 BSP	12	150 3062

Air Pressure Gauge, mechanical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
150 PSI	"Air"	I	1/8-27 NPT	12	150 307	150 307B

Turbo Boost Gauges, mechanical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
0-30 in. Hg to 0-25 PSI	"Turbo"	I	1/8-27 NPT	12	150 361	150 361B

Tubing kit not included, see page 63.

Turbo Boost Gauge Kits, mechanical, includes 6ft of tubing and adapters, 2 1/16 (52mm) dia

Description	Thread Type	On Dial	Dwg	Adapters Incl.	Voltage	Single Pack Part No.
0-30 in. Hg to 0-25 PSI	US	"Turbo"	I	1/4", 3/8", 1/2	12	150 3611
0-30 in. Hg to 0-25 PSI	Metric	"Turbo"	I	M10, M12, M14, M16, 1/8 BSP	12	150 3612

Series 1 Instruments

Fuel Level Gauges, electrical, 2 1/16 (52mm) dia

Description	Ohm Range	On Dial	Dwg	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
For VDO sender	10-180	"Fuel"	G	9	12	301 301	301 301B
For U.S. sender	240-33	"Fuel"	G	10	12	301 302	301 302B
For GM sender	0-90	"Fuel"	G	11	12	301 303	301 303B

See pages 54-55 for fuel level sender tables.

Vacuum Gauges, mechanical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Fitting Size	Voltage	Single Pack Part No.	10 Pack Part No.
0-30 in. Hg	"Vacuum"	I	1/8-27 NPT	12	150 301	150 301B

Tubing kit not included, see page 63.

Voltmeters, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
8-16V	"Volts"	G	M4 Stud	12	332 341	332 341B
8-16V , with colorband	"Volts"	G	M4 Stud	12	332 342	332 342B

Ammeter (non-shunted), electrical, 2 1/16 (52mm) dia

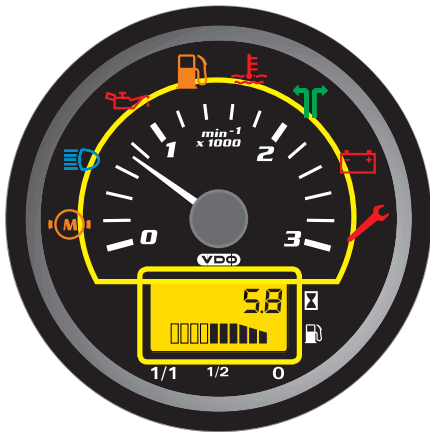
Description	Range	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
60 Amp	60 / 0 / 60	"Amp"	L	M4 Stud	12	190 301	190 301B

Centrobase 300

Centrobase 300 Series Analog Instrument Clusters

These units were developed to provide a flexible inexpensive solution for analog engine monitoring needs. The compact 100mm size allows for monitoring of several vehicle functions where space is limited. Available in 12 or 24 volt versions, these units can be supplied fully programmed

to your specification or programmed in the field using our "Centrowin" software allowing one instrument to be used in various equipment applications. The dials also can be adapted to individual customer requirements in terms of design, scales, and symbols.



Model 300 – These multifunction instruments allow digital and analog displays to be combined. Two versions are available.

Technical Specifications	
Diameter:	100mm
Housing:	Plastic white
Bezel:	Plastic black
Mounting:	Spin-Lok™ ring
Lens:	PMMA scratch resistant, non-reflective
Warning Indicators:	Super bright LED'S, switch to ground activation
LCD Illumination:	Yellow, LCD
Connector:	AMP 92143307, 32PIN, single cavity
Rated Voltage:	12V or 24V options available
Operating Voltage:	9V to 16V DC, 18V to 32V DC
Current consumption:	400mA ± 20%
EMC:	DIN 40 839, 95/54-89/336-EWG, ISO 7637-1-2
Vibration resistance:	TPV - UP 12;SAE J1810
Physical Shock:	SAE J1399
UV Protection:	Yes
Environmental Protection:	IP65 front side; IP30 backside ACC. to IEC 60 529
Corrosion Protection:	ACC. to IEC 60068-2-11/52
LCD:	6 character
Bar Graph:	10 bar display
Operating Temperature:	-30°C to +80°C
Display Temperature:	-20°C to +70°C
Storage Temperature:	-40°C to +85°C

	Centrobase 300	Centrobase 300 with analog instrument
Standard Features	Non resettable hourmeter	Non resettable hourmeter
		Analog instrument Accuracy ± 5°
		Analog dial, backlit white illumination
User Defined Features		Analog pointer white illumination
	12 individual telltales	8 individual telltales
	Pressure, temperature, or fluid level LCD bar graph	Pressure, temperature, or fluid level LCD bar graph
		Analog speedometer, tachometer, pressure, temperature, or fluid level
	1x resistance input	1x resistance or 1x frequency input

Centrobase 500

Centrobase 500 Series Multi Function Analog Cluster

Designed for that low volume vehicle or equipment that requires an 'off the shelf' instrument cluster solution without expensive tooling and development cost. Even though it is compact in size (291mm x 144mm) it has 4 analog instrument displays, 15 warning indicators and an LCD

display. The LCD display can be programmed to monitor odometer including w/trip reset, cumulative and service hour meter, gear indicator and clock. The dials also can be adapted to individual customer requirements in terms of design, scales, and symbols.



Model 500 – This intelligent instrument cluster with a central connector and compact housing offers versatile installation options.

Technical Specifications

Housing:	Plastic, black
Mounting:	"Push to Lock" vibration shock mount
Lens:	PMMA scratch resistant
Connector:	GNW, Nr. 14137, 28 Pin
5 Movements:	VDO proprietary stepper motor and cross coil
Input:	2X frequency 3X resistance PWM
LCD Display:	Odometer, Trip Odometer, Hour meter, service hour meter, clock and gear shift
Instrument Dial Illumination:	Green LED's
Instrument Pointer Illumination:	Red LED's
Programming:	Centrowin (Proprietary) software
Outputs:	C3-signal
Rated Voltage:	12V and 24V models
Operating Voltage:	9V to 16V DC 18V to 32V DC
Current consumption:	400mA $\pm$ 20%
EMC:	DIN 40 839, 95/54- 89/336-EWG, ISO 7637-1-2
Operating Temperature:	-30°C to +75°C
Storage Temperature:	-40°C to +85°C
LCD Display Temperature:	-20°C to +65°C

Hourmeters

The VDO hourmeter line has been expanded to offer hourmeters in many sizes, styles and configurations. They include models which are illuminated and non-

illuminated and have recording hour ranges from 10,000 to 100,000 hours. VDO hourmeters are not resettable.

Viewline style, electrical, 2 1/16(52mm) dia, see Table 14 (pg 20) for available bezels



Description	Maximum Hours	On Dial	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Black Dial, Illuminated	100,000		Table 17	12/24	A2C59510876-S	A2C59510876-B
White Dial, Illuminated	100,000		Table 17	12/24	A2C59510877-S	A2C59510877-B

Vision Chrome style, electrical, 2 1/16 (52mm) dia



Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Non-illuminated	100,000		J	.250" spade	12	331 955	331 955B

Cockpit International style, electrical, 2 1/16 (52mm) dia



Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Non-illuminated	100,000		J	.250" spade	12	331 953	331 953B
Illuminated	100,000		J	.250" spade	12	331 957	331 957B
Illuminated	100,000		J	.250" spade	24	331 960	331 960B

Severe Duty style, electrical, 2 1/16 (52mm) dia, chrome bezel



Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Illuminated	100,000	"Engine Hours"	U	.250" spade	12/24	3314101	3314101B

Severe Duty style, electrical, 2 1/16 (52mm) dia, black bezel



Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Illuminated	100,000	"Engine Hours"	U	.250" spade	12/24	3311101	3311101B

Hourmeters

Electrical, 2 1/16 (52mm) dia, with minute hand



Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Non-illuminated	100,000	"Engine Hours"	J	.250" spade	12/24	331 959	

Mini w/ 2 hole mounting flange, electrical, 1.42"Wx.92"Hx2.91"W (36mmx23.4mmx71.1mm)



Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Non-illuminated	10,000	"Quartz"	Q	.250" spade	12-60	331 534	
Non-illuminated	10,000	"Quartz"	Q	.250" spade	12-60	331 536	
Non-illuminated	100,000	"VDO"	Q	.250" spade	12-60	331 539	

Mini w/ flush mount flange, electrical, 1.42"Wx.92"Hx2.91"W (36mmx23.4mmx71.1mm)



Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Non-illuminated	100,000	"VDO"	Q	.250" spade	12-60	331 537	

Mini w/ 3 hole round mounting flange, electrical, 1.42"Wx.92"Hx2.91"W (36mmx23.4mmx71.1mm)



Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Non-illuminated	10,000	"Quartz"	Q	.250" spade	12-60	331 958	



CAN Severe Link

Engines used in off-highway products increasingly feature electronic engine management. To meet these requirements, We now offer a modular instrumentation concept: VDO CAN *Severe Link*. The main element is a multifunction tachometer connected to the CAN bus with SAE J1939 protocol. The tachometer can display and/or forward all available data to a maximum of 20 satellite gauges. Installation is made simple with the plug and play design.

All satellite gauges have integrated wire harnesses for daisy chaining, and with the VDO Easy Link architecture,

these gauges can be connected in any sequence minimizing installation time and effort. Push Button programming on the front allows easy configuration to the user's specific requirements. Data displayed on the LCD and sent to the satellite gauges is updated every 20 msec.

All gauges offer white lettering on black dial faces, black plastic bezels, and superior red illumination with translucent backlighting. The pointer is white with a black hub.



Master Tachometer

Description	Size	Dwg	Voltage	Part No.
3,000 RPM	3 3/8" (85mm) dia	F	12 / 24	N02-012-920
4,000 RPM	3 3/8" (85mm) dia	F	12 / 24	N02-012-922
5,000 RPM	3 3/8" (85mm) dia	F	12 / 24	A2C59500012

Satellite Gauges

Pressure

Description	Size	Dwg	Voltage	Part No.
Engine Oil Pressure 150 PSI	2 1/16" (52mm) dia	F	12 / 24	N02-140-512
Gear Box Oil Press Gauge 300 PSI	2 1/16" (52mm) dia	F	12 / 24	N02-140-516

Temperature Gauges

Description	Size	Dwg	Voltage	Part No.
Engine Coolant Temp 100–250°F	2 1/16" (52mm) dia	F	12 / 24	N02-311-552
Engine Temp 100–300°F	2 1/16" (52mm) dia	F	12 / 24	N02-311-542
Exhaust Gas 200–1700°F	2 1/16" (52mm) dia	F	12 / 24	N02-311-546

Voltmeters

Description	Size	Dwg	Voltage	Part No.
Voltmeter 8–16V	2 1/16" (52mm) dia	F	12 / 24	N02-413-066
Voltmeter, 18–32V	2 1/16" (52mm) dia	F	12 / 24	N02-413-058

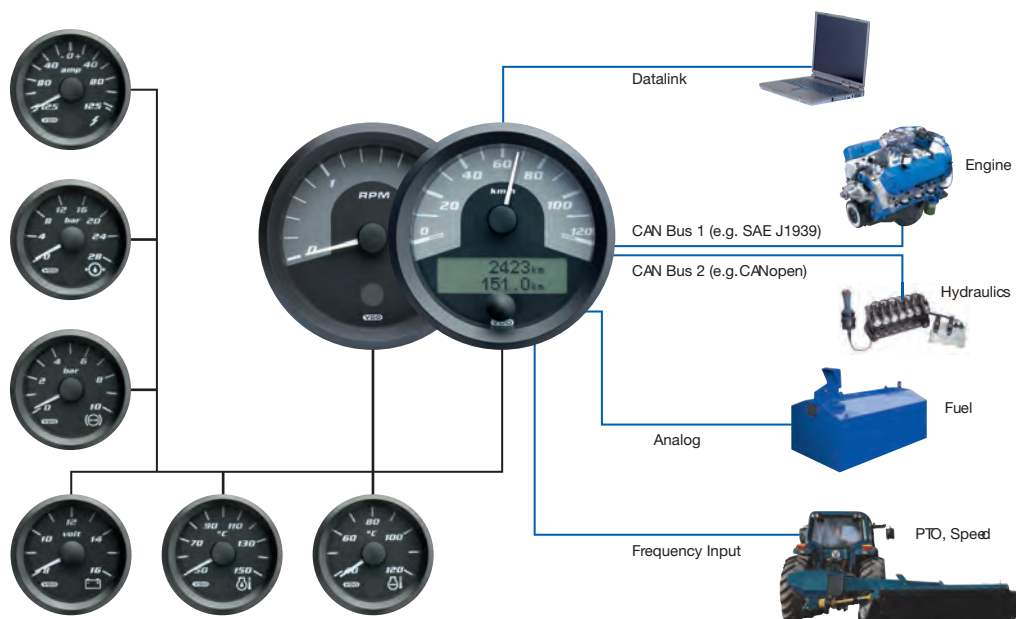
Fuel Gauge

Description	Size	Dwg	Voltage	Part No.
Fuel Level Gauge 0–4 / 4	2 1/16" (52mm) dia	F	12 / 24	N02-224-080

Harness

Description	Part No.
CAN Input to Master with two analog inputs	A2C53092432

CANcockpit GEN III Instrumentation System



VDO CANcockpit GEN III is a flexible, intelligent instrumentation system designed to operate in a Control Area Network (CAN) environment. The system can process digital signals from two CAN bus inputs simultaneously, as well as data provided from analog sensors, such as fuel tank level senders. VDO CANcockpit GEN III can process data protocols from all of the leading engine manufacturers. It is simple to expand and can be easily configured to meet specific application needs.

The CANcockpit GEN III system is built around a master instrument, which can stand alone or be used to control up to 16 additional display instruments. In addition to monitoring speed or RPM, the master instrument can also handle 25 additional engine signals via an integrated LCD display. Data such as temperature, pressure, or fill levels can be displayed using individual instruments, driven by the master instrument.

VDO CANcockpit GEN III can be easily programmed, using WINgauge software, to monitor critical operating parameters and trigger warning signals, or directly display warnings transmitted from the CAN bus when readings are out-of-range. It can also be customized to display service functions, such as specified engine service intervals, which can help reduce operating costs and make scheduling easier.

The CANcockpit GEN III System technology is completely self-contained and eliminates the cost and complexity of external "black boxes" and other interface electronics. Its programmable capability also helps manufacturers reduce production costs and minimizes wiring installation time and sensor assembly requirements.

The master instrument features a yellow backlit monochrome LCD 132 x 33 dot matrix display with white illumination. The housing is made from sturdy flame retardant plastic and mounts easily with our Spin-Lok™ mounting ring.

CANcockpit GEN III Technical Specifications:

Connector:	MP 26 pins MODU II, MATE-N-LOK 4 pins
Inputs:	2 x CAN inputs, 2 x frequency, 3 x resistance, 1 x 4–20mA, 1 x 0–5V
Outputs:	Up to 16 display instruments, 2 x switch output
Rated voltage:	12 to 24V DC
Operating voltage:	9 to 32V DC
Current:	50 mA +/- 10%
Operating temp:	-40° F to 176° F (-40° C to +85° C) (visible restrictions outside -4° F and 158° F [-20° C and +70° C])
Storage temp:	-40° F to 176° F (-40° C to +85° C)
Software:	All instruments must be programmed using VDO WINgauge software
Wire Harness Components:	See page 43
Compatibility:	CANcockpit GEN III is not backwards compatible with previous versions of CANcockpit

CANcockpit GEN III Instrumentation System

Description	Size	Voltage	Part No.
Master Instruments			
Speedometers			
60 km/h	3 1/8" (80mm)	12 / 24	A2C60000022
80 MPH/120 km/h	3 1/8" (80mm)	12 / 24	A2C60000025
80 MPH	3 3/8" (85mm)	12 / 24	A2C60000073
100 MPH	3 3/8" (85mm)	12 / 24	A2C60000074
120 MPH	3 3/8" (85mm)	12 / 24	A2C60000075
50 MPH/80 km/h	4" (100mm)	12 / 24	A2C60000131
120 MPH/200 km/h	4" (100mm)	12 / 24	A2C60000134
140 MPH/220 km/h	4" (100mm)	12 / 24	A2C60000132
Tachometers			
3 k/min	3 1/8" (80mm)	12 / 24	A2C60000020
3 k/min	3 3/8" (85mm)	12 / 24	A2C60000070
3 k/min	4" (100mm)	12 / 24	A2C60000126
4 k/min	3 1/8" (80mm)	12 / 24	A2C60000021
4 k/min	3 3/8" (85mm)	12 / 24	A2C60000071
4 k/min	4" (100mm)	12 / 24	A2C60000127
5 k/min	3 3/8" (85mm)	12 / 24	A2C60000076
8 k/min	3 1/8" (80mm)	12 / 24	A2C60000027
Satellite Instruments			
Speedometers			
60 km/h	3 1/8" (80mm)	12 / 24	A2C60000357
Tachometers			
3 k/min	2 1/16" (52mm)	12 / 24	A2C60000286
3 k/min	3 1/8" (80mm)	12 / 24	A2C60000356
3 k/min	4" (100mm)	12 / 24	A2C60000360
Ammeter			
-125/+125	2 1/16" (52mm)	12 / 24	A2C60000285
Level Gauges			
Fresh water 0-1	2 1/16" (52mm)	12 / 24	A2C60000280
Fuel 0-1	2 1/16" (52mm)	12 / 24	A2C60000278
Fuel E-F	2 1/16" (52mm)	12 / 24	A2C60000279
Waste water 0-1	2 1/16" (52mm)	12 / 24	A2C60000281
AdBlue	2 1/16" (52mm)	12 / 24	A2C60000299
Pressure Gauges			
Engine oil 80 PSI / 5 bar	2 1/16" (52mm)	12 / 24	A2C60000255
Brake 150 PSI / 10 bar	2 1/16" (52mm)	12 / 24	A2C60000263
Brake 1 150 PSI / 10 bar	2 1/16" (52mm)	12 / 24	A2C60000297
Brake 2 150 PSI / 10 bar	2 1/16" (52mm)	12 / 24	A2C60000298
Engine oil 100 PSI / 7 bar	2 1/16" (52mm)	12 / 24	A2C60000256
Engine oil 150 PSI / 10 bar	2 1/16" (52mm)	12 / 24	A2C60000257
Transmission oil 400 PSI / 28 bar	2 1/16" (52mm)	12 / 24	A2C60000266
Turbo 2 bar	2 1/16" (52mm)	12 / 24	A2C60000267

CANcockpit GEN III Instrumentation System

Description	Size	Voltage	Part No.
Temperature Gauges			
Engine coolant 100°-280°F / 40°-120°C	2 1/16" (52mm)	12 / 24	A2C60000275
Engine oil 120°-300°F / 50°-150°C	2 1/16" (52mm)	12 / 24	A2C60000288
Hydraulic oil 20°C-120°C	2 1/16" (52mm)	12 / 24	A2C60000276
Pyrometer 100°C-900°C	2 1/16" (52mm)	12 / 24	A2C60000277
Transmission oil 120°-300°F / 50°-150°C	2 1/16" (52mm)	12 / 24	A2C60000271
Transmission oil 50°-150°C / 120°-300°F	2 1/16" (52mm)	12 / 24	A2C60000270
Voltmeters			
8-16V	2 1/16" (52mm)	12 / 24	A2C60000282
18-32V	2 1/16" (52mm)	12 / 24	A2C60000284
Blackbox			
Master	100mmx100mm	12 / 24	A2C60500641
Inputs: 2xCAN, 2xFrequency, 3xResistance Outputs: 16CAN, 2 switched			
<i>CANcockpit GEN III instruments are supplied with black bezels. Chrome bezel option also available.</i>			
CANcockpit GEN III Harnesses			
Data source to Master (Type A) with gold contact pins			A2C53344032
Master to Satellite (Type B) with gold contact pins			A2C53344035
Satellite to Satellite (Type C) with gold contact pins			A2C53344036
<i>note: Do not use harnesses from previous CANcockpit versions with CANcockpit GEN III</i>			
CANcockpit GEN III Harness Components			
Pin housing for 26 pin connector			X11-602-000-001
Coupling for pin housing (26 pin connector)			X11-602-000-002
Gold plated pin for 26 pin connector (master)			A2C59512861
Pin locking for 26 pin housing (master)			X11-602-000-004
Bracket for coupling 26 pin housing (master)			X11-602-000-005
4 pin connector for master			X11-602-000-006
Gold plated pin for 4+6 pin connector			A2C59512862
6 pin connector for satellite			X11-602-000-008

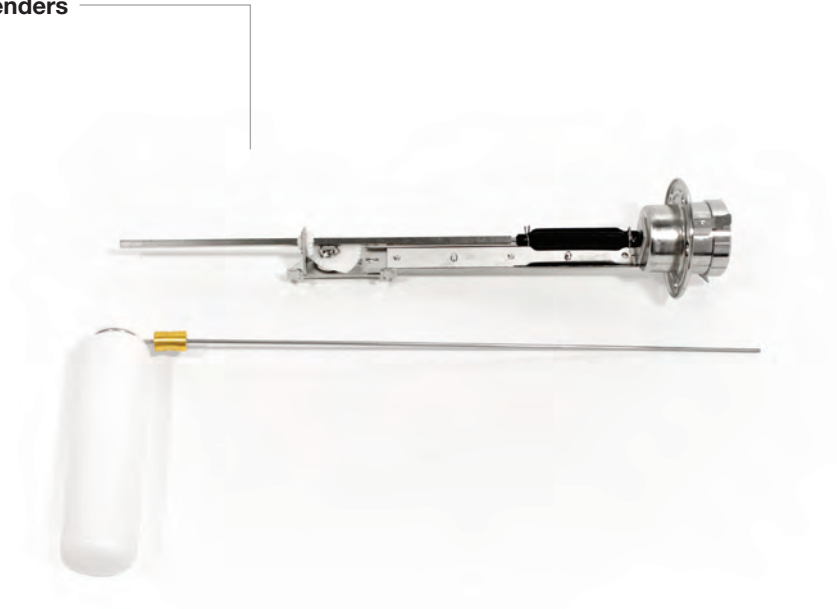


VDO fuel and water level senders

Today more than ever, due to tank configurations, you need choices when it comes to designing new systems. VDO gives you those choices, from simple economical solutions to ones which give you integrated delivery and return tubes.

Our original ALAS design, which has been often copied in the industry but never duplicated in its quality or durability is now joined by two new designs, ALAS I & ALAS II. On the following pages you can see the features of each design and decide for yourself which best meet your requirements.

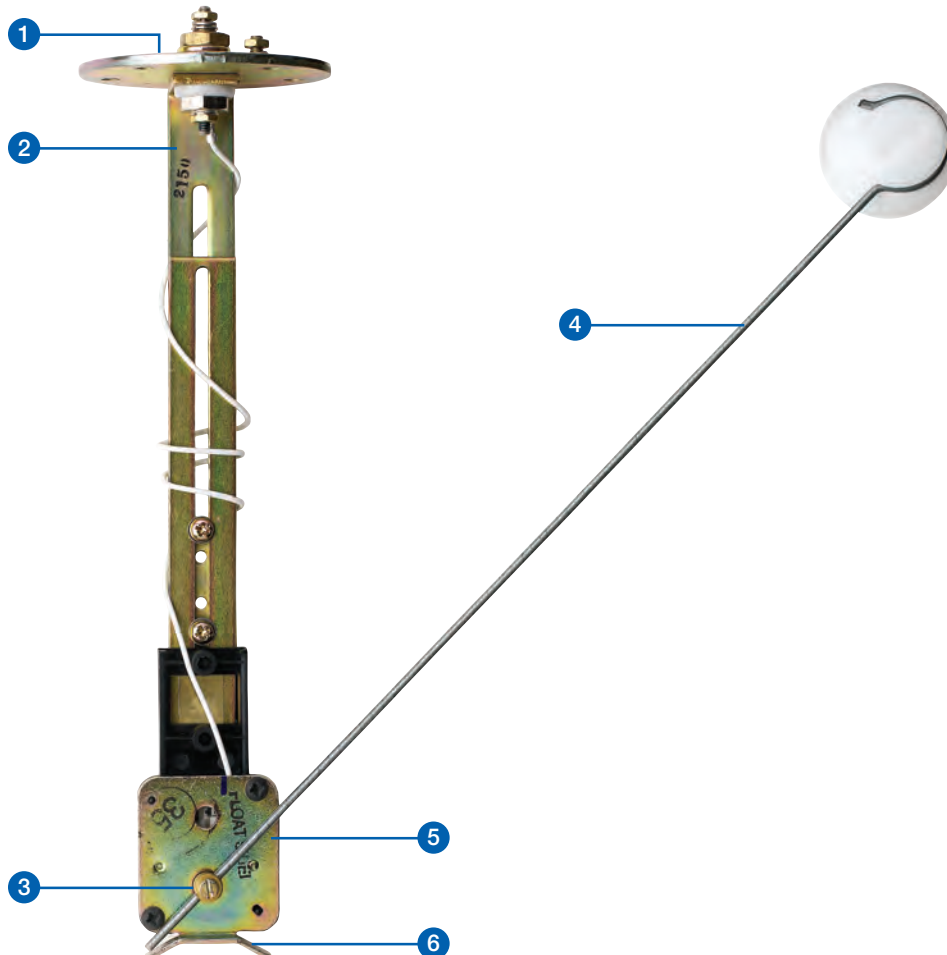
- **ALAS** (adjustable length arm sender)
- **ALAS I** (adjustable length arm sender with low warning contact)
- **ALAS II** (adjustable length arm sender with low warning contact, draw & return tubes)
- **Tube Type** (compact tubular resistive design)
- **Water Level Senders**



VDO ALAS Plated Steel 12/24V Adjustable Swing Arm Sender

Designed for severe duty use, each of these senders contains an SAE standard five hole metal mounting flange and body components which can be adjusted from 6" to 23" tank depth. Adaptable to right hand or left hand swing arm. Each contains thick film resistor technology for greater resistance to wear associated with standard wire wound units. Each kit contains neoprene mounting gasket and mounting screws. For tanks without flange mounting holes our optional tank mounting kit may be used.

1. SAE 5-hole mounting flange can rotate to position sender for right or left hand swing.
2. Body constructed of plated steel to eliminate damage caused by fuel slosh.
3. Swing arm pivot uses oversized bearings for long life.
4. Adjustable for tank depths from 152mm to 584mm.
5. Wiper and thick film resistor are shielded from fuel slosh for maximum durability.
6. Float arm stops ensure wiper remains in contact with resistor board when tank is full or low.



NEW!

VDO ALAS I 12/24V Fuel Senders

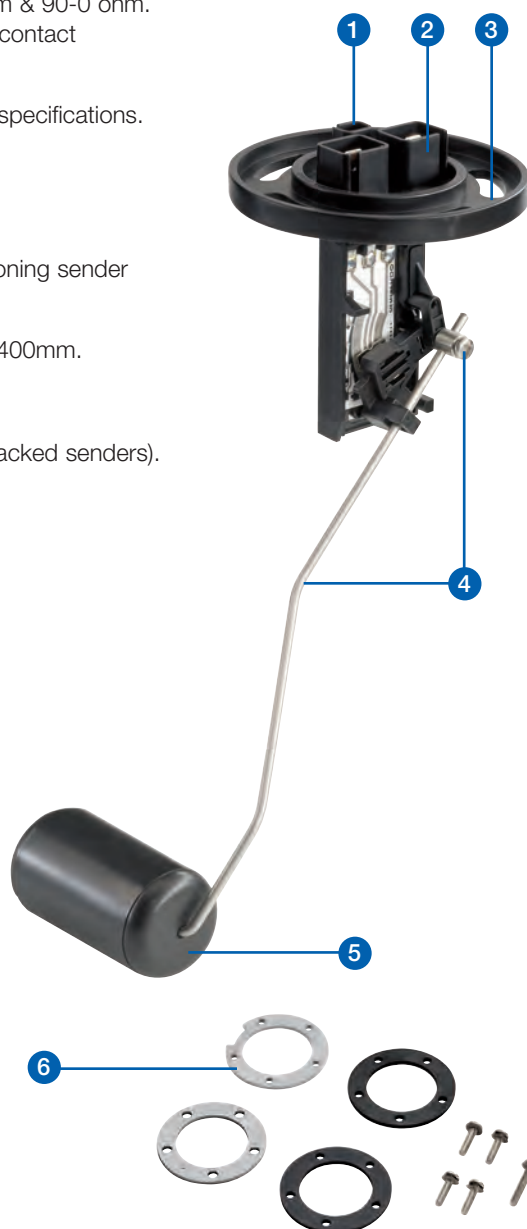
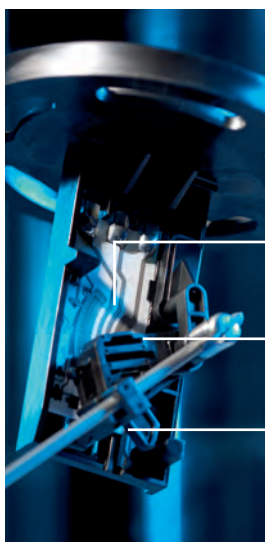
An economical and practical solution for fuel monitoring for tank depths from 140mm to 400mm

Engineered with a redundant dual wiper system, our unique VDO 'quiet arm' and thick film technology, VDO ALAS I leads the field in reliability and durability. In fact, this family of senders has the ability to withstand over one million swing arm cycles without failure. ALAS I senders feature our unique slotted SAE five-hole flange mount, an industry first that gives you the utmost in versatility for sender mounting positions.

Three resistance values are available, 10-180 ohm, 240-33 ohm & 90-0 ohm. ALAS I senders are available with an optional low fuel warning contact circuit found in no other universal type sender.

Upon request, we can supply senders fully assembled to your specifications.

1. Available with low fuel warning contact.
2. Redundant ground connection.
3. Unique SAE 5-hole slotted mounting plate allows for positioning sender for left or right hand applications.
4. Stainless steel float arm and pivot adjusts from 140mm to 400mm.
5. "No sink" solid float.
6. Steel reinforced mounting hardware (included with single packed senders).
7. VDO thick film element with 39-step resolution.
8. Redundant dual wiper system.
9. 'Quiet arm' minimizes float movement.



NEW!

ALAS II 12/24V Fuel Senders with Draw / Return Tubes

Again, VDO is first to market with the only adjustable fuel sender featuring interchangeable draw / return tubes, plus optional low fuel warning contact. Just pick the length and diameter of the draw / return tubes based on your gas or diesel application, set the float length and you're ready for installation.

If you have several tank configurations, inventory is minimized with our 'one size fits all' design, without compromising the durability or integrity of the sender. These units are fully adjustable from 140mm to 400mm.

Engineered with a redundant dual wiper system, the unique VDO 'quiet arm' and thick film technology, ALAS II leads the field in reliability and durability. In fact, this family of senders has the ability to withstand over one million swing arm cycles without failure. VDO ALAS II senders feature our unique slotted SAE 5-hole flange mount, an industry first that gives you the utmost in versatility for sender mounting positions.

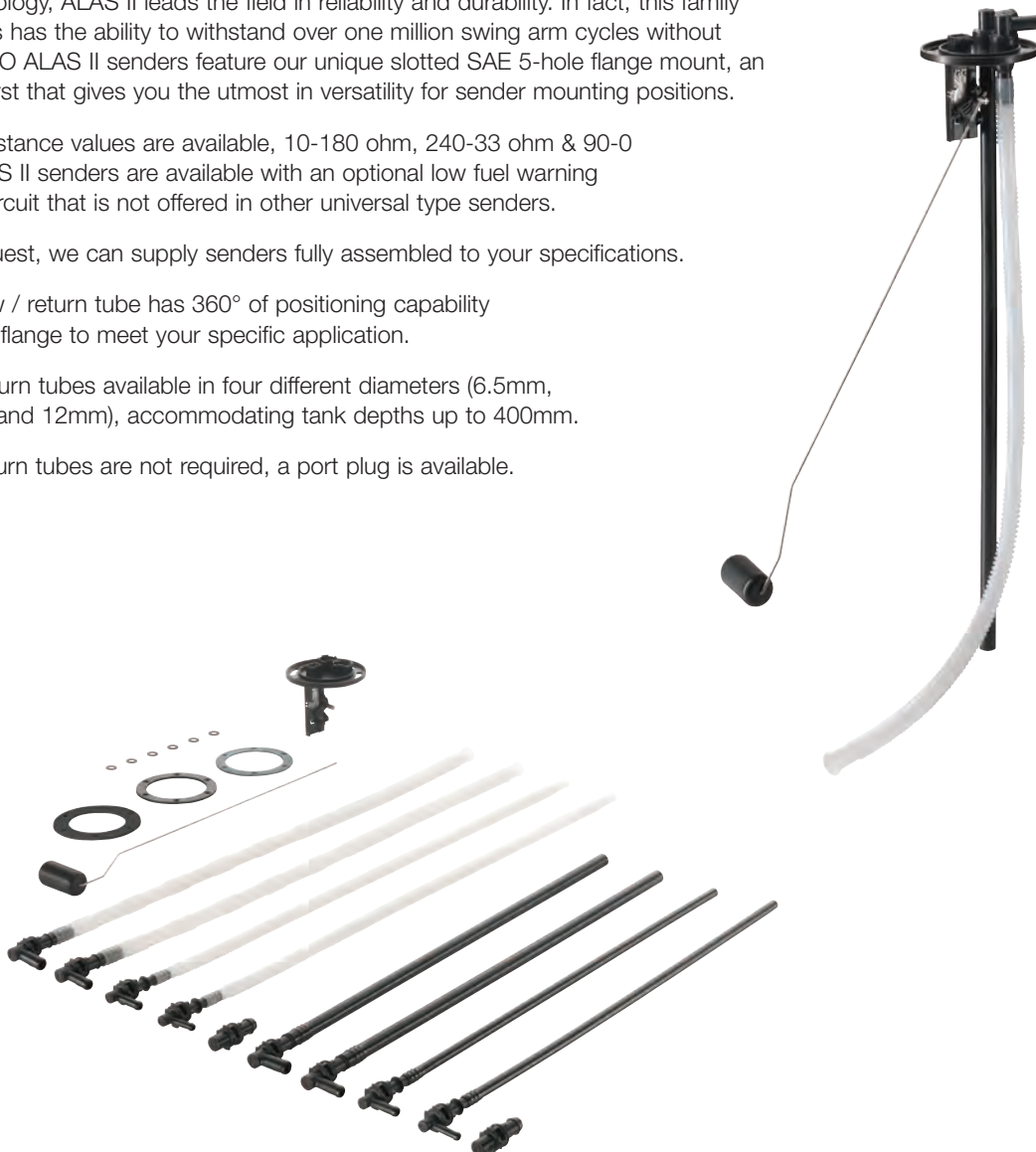
Three resistance values are available, 10-180 ohm, 240-33 ohm & 90-0 ohm. ALAS II senders are available with an optional low fuel warning contact circuit that is not offered in other universal type senders.

Upon request, we can supply senders fully assembled to your specifications.

Each draw / return tube has 360° of positioning capability within the flange to meet your specific application.

Draw / return tubes available in four different diameters (6.5mm, 8mm, 10 and 12mm), accommodating tank depths up to 400mm.

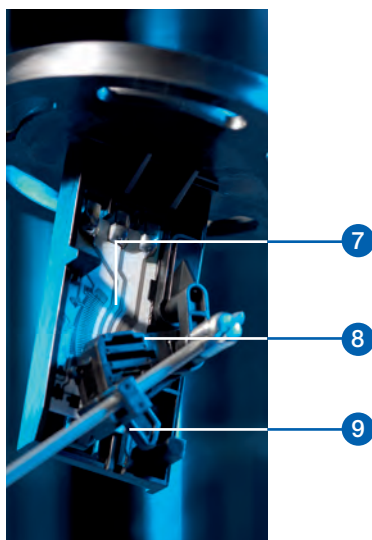
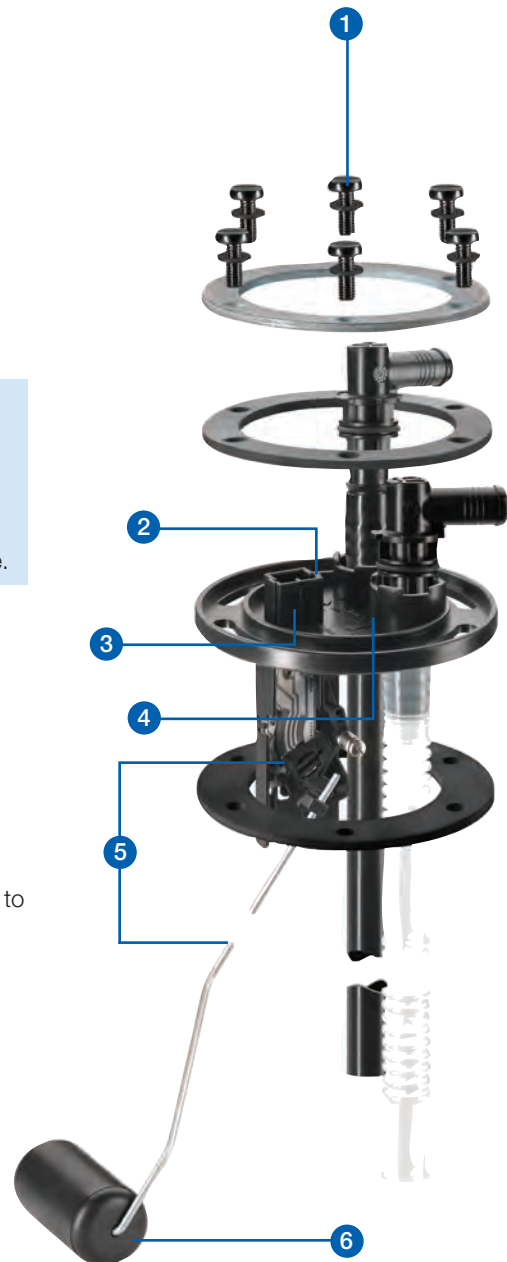
Where return tubes are not required, a port plug is available.



ALAS II Platform:

- Composite construction.
- Available with or without low fuel warning contact.
- Available factory set to customer specifications.
- Available in 10-180 ohm, 240-33 ohm, 90-0 ohm range.

1. Steel reinforced mounting hardware.
2. Available with low fuel warning contact.
3. Redundant ground connection.
4. Unique SAE 5-hole slotted mounting plate allows for positioning sender for left or right hand applications.
5. Stainless steel float arm and pivot adjusts from 140mm to 400mm.
6. 'No sink' solid float.
7. VDO thick film element with 39-step resolution.
8. Redundant dual wiper system.
9. 'Quiet arm' minimizes float movement.



NEW!

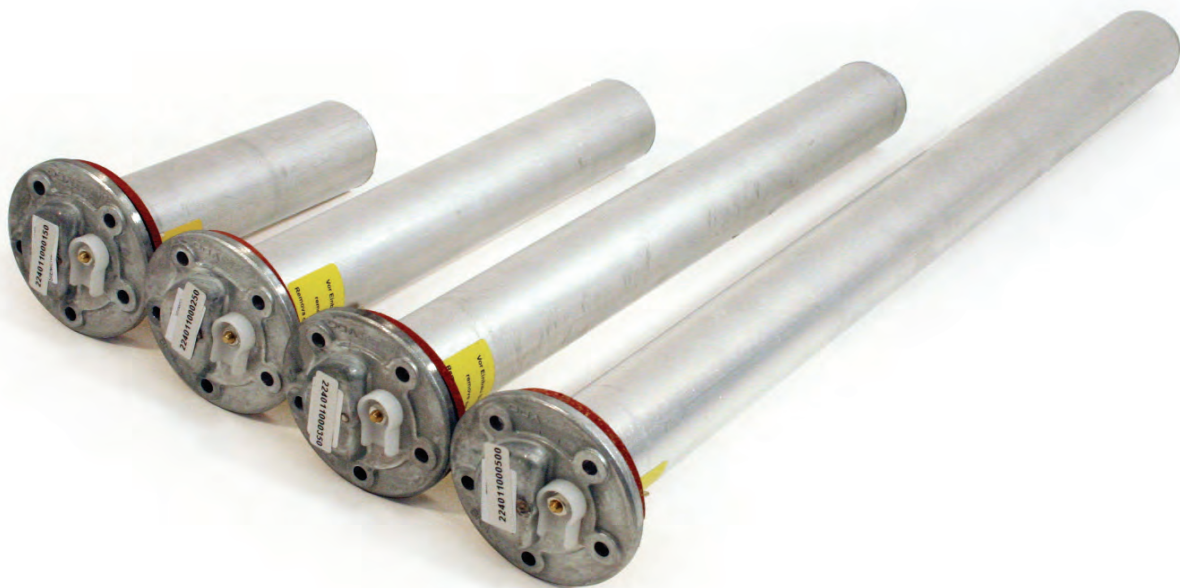
VDO Tube Type 12/24V Fuel Senders

Our VDO tube type fuel senders are considered to be the most robust fuel sender in our product offering today.

The advantage of a tube type sender is that it uses the least amount of space within a tank, with no worries about float arm direction. The float is contained within the aluminum cylindrical housing, and it rides on two resistive wires that protect it from the 'extreme fuel sloshing' that occurs in many shallow, large or odd sized tanks.

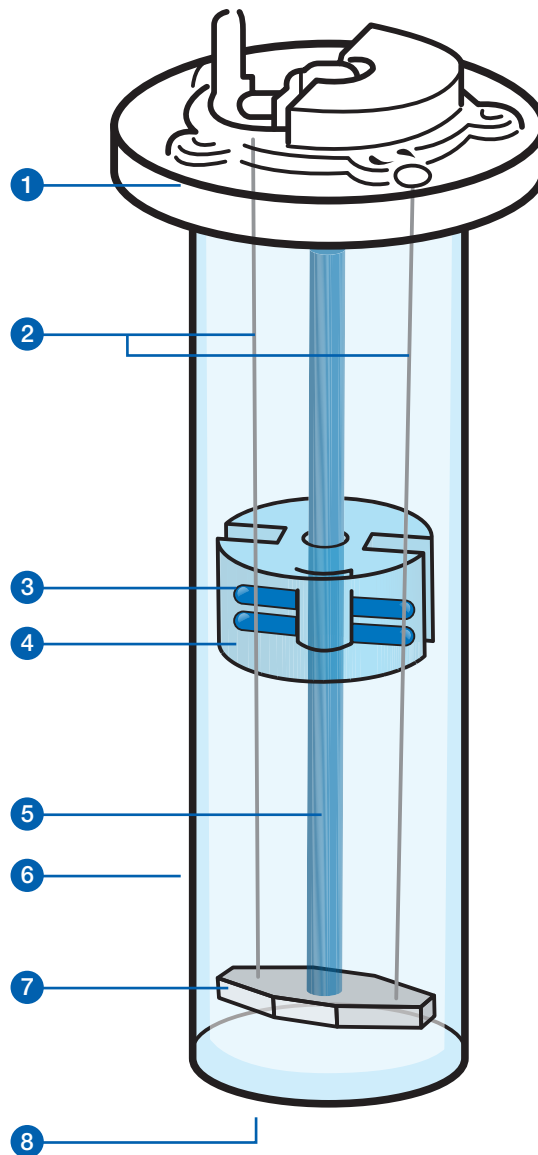
VDO tube type fuel senders feature a standard SAE 5-hole mounting flange and can fit tanks depths from 150mm to 800mm.

- Suitable for gasoline and diesel fuels.
- Ideal for situations where fuel slosh is problematic.
- Aluminum flange and housing can withstand extreme environments, where dust or salt water spray are present.
- Available in 34 standard lengths from 150mm (~6in) to 800mm (~31 ½ in).
- M4 stud and .250" spade connections provided with each sender.
- Supplied with neoprene mounting gasket.



VDO tubular level sensor

1. Mounting flange.
2. Resistance wires.
3. Contact springs.
4. Float.
5. Guide bar.
6. Protecting tube.
7. Insulating piper.
8. Liquid access hole.



Fuel and Water Level Senders

Table 9: Lever Arm Fuel Level Senders (10-180 Ohm)

Description	Low Fuel Warning Contact	Mounting Diameter	Tank Depth Min (inches/mm)	Tank Depth Max (inches/mm)	Voltage	Reference # on sender	Single Pack Part No.	Bulk Pack Part No.
ALAS Plated Steel	No	54mm	6"/152mm	23"/584mm	6-24	1-551-004-082B	226 001	226 001B
ALAS Plated Steel, with flange kit	No	54mm	6"/152mm	23"/584mm	6-24	1-551-004-082B	226 002	
ALAS I	Yes	54mm	5½"/140mm	15¾/400mm	6-24	A2C53170774	226 162	226 162B
ALAS I	No	54mm	5½"/140mm	15¾/400mm	6-24	A2C53170771	226 168	226 168B
ALAS II*	Yes	80mm	5½"/140mm	15¾/400mm	6-24	A2C53278239	226 946	226 946B

*see below for ALAS II return & draw tubes and installation kit (sold separately)

Table 10: Lever Arm Fuel Level Senders (240-33 Ohm)

Description	Low Fuel Warning Contact	Mounting Diameter	Tank Depth Min (inches/mm)	Tank Depth Max (inches/mm)	Voltage	Reference # on sender	Single Pack Part No.	Bulk Pack Part No.
ALAS Plated Steel	No	54mm	6"/152mm	23"/584mm	6-24	1-551-004-123D	226 007	
ALAS I	Yes	54mm	5½"/140mm	15¾/400mm	6-24	A2C53170773	226 163	226 163B
ALAS I	No	54mm	5½"/140mm	15¾/400mm	6-24	A2C53170770	226 169	226 169B
ALAS II*	Yes	80mm	5½"/140mm	15¾/400mm	6-24	A2C53278250	226 973	226 973B

*see below for ALAS II return & draw tubes and installation kit (sold separately)

Table 11: Lever Arm Fuel Level Senders (0-90 Ohm)

Description	Low Fuel Warning Contact	Mounting Diameter	Tank Depth Min (inches/mm)	Tank Depth Max (inches/mm)	Voltage	Reference # on sender	Single Pack Part No.	Bulk Pack Part No.
ALAS Plated Steel	No	54mm	6"/152mm	23"/584mm	6-24	1-551-004-161D	226 008	
ALAS I	Yes	54mm	5½"/140mm	15¾/400mm	6-24	A2C53170772	226 164	226 164B
ALAS I	No	54mm	5½"/140mm	15¾/400mm	6-24	A2C53170769	226 170	226 170B
ALAS II*	Yes	80mm	5½"/140mm	15¾/400mm	6-24	A2C53278251	226 975	226 975B

*see below for ALAS II return & draw tubes and installation kit (sold separately)

ALAS II Fuel Sender Installation Kit and Draw & Return Tubes

Step 1: Required installation kit	Installation Kit	226 985	
Step 2: Select draw tube	Tube inside diameter	Single	Bulk
	6.5mm	226 955	226 955B
	8.0mm	226 953	226 953B
	10.0mm	226 951	226 951B
	12.0mm	226 949	226 949B
Step 3: Select return tube	Tube inside diameter	Single	Bulk
	6.5mm	226 956	226 956B
	8.0mm	226 954	226 954B
	10.0mm	226 952	226 952B
	12.0mm	226 950	226 950B
Step 4: (optional - if 1 or both tubes are not required)	port plug	Single	Bulk
		226 965	226 965B



Fuel and Water Level Senders

Table 12: Fuel Level Senders (90–0 Ohms)

Our tube senders contain an SAE standard five hole metal flange. These senders are ideal in applications where vehicle or equipment movement causes severe fuel sloshing and premature sender failure is a problem. The float, attached to resistive wires, is captive within the tube which limits exposure to fuel slosh thereby substantially increasing

sender life. These senders are well suited for instances where tank dimensions do not allow for swing arm type senders. Each sender is supplied with a neoprene mounting gasket. For tanks without flange mounting holes, our optional tank mounting kit may be used.

Length (inches)	Length (mm)	Reference No.	Single Pack Part No	Bulk Pack Part No.
9.90	251.5	82/6/97	224 062	224 062B
11.00	279.5	82/7/22	224 055	224 055B
12.22	310.5	82/5/136	224 063	224 063B
14.6	372	82/7/4	224 065	224 065B
15.93	404.5	82/5/142	224 054	224 054B
17.07	433.5	82/5/98	224 066	224 066B
19.63	498.5	82/5/117	224 067	224 067B
21.32	541.5	82/7/58	224 003	224 003B
23.48	596.5	82/7/17	224 069	224 069B
27.22	691.5	82/5/11	224 004	224 004B
31.00	787.5	82/5/72	224 049	224 049B
32.9	835	82/5/34	224 051	224 051B
5.9	150	224-011-000-015X	224 215	224 215B
6.3	160	224-011-000-016X	224 216	224 216B
6.7	170	224-011-000-017X	224 217	224 217B
7.1	180	224-011-000-018X	224 218	224 218B
7.5	190	224-011-000-019X	224 219	224 219B
7.9	200	224-011-000-020X	224 220	224 220B
8.3	210	224-011-000-021X	224 221	224 221B
8.7	220	224-011-000-022X	224 222	224 222B
9.1	230	224-011-000-023X	224 223	224 223B
9.4	240	224-011-000-024X	224 224	224 224B
9.8	250	224-011-000-025X	224 225	224 225B
10.2	260	224-011-000-026X	224 226	224 226B

Length (inches)	Length (mm)	Reference No.	Single Pack Part No	Bulk Pack Part No.
10.6	270	224-011-000-027X	224 227	224 227B
11.0	280	224-011-000-028X	224 228	224 228B
11.4	290	224-011-000-029X	224 229	224 229B
11.8	300	224-011-000-030X	224 230	224 230B
12.2	310	224-011-000-031X	224 231	224 231B
12.6	320	224-011-000-032X	224 232	224 232B
13.0	330	224-011-000-033X	224 233	224 233B
13.4	340	224-011-000-034X	224 234	224 234B
13.8	350	224-011-000-035X	224 235	224 235B
14.2	360	224-011-000-036X	224 236	224 236B
14.6	370	224-011-000-037X	224 237	224 237B
15.0	380	224-011-000-038X	224 238	224 238B
15.4	390	224-011-000-039X	224 239	224 239B
15.7	400	224-011-000-040X	224 240	224 240B
17.7	450	224-011-000-045X	224 245	224 245B
19.7	500	224-011-000-050X	224 250	224 250B
21.7	550	224-011-000-055X	224 255	224 255B
23.6	600	224-011-000-060X	224 260	224 260B
25.6	650	224-011-000-065X	224 265	224 265B
27.6	700	224-011-000-070X	224 270	224 270B
29.5	750	224-011-000-075X	224 275	224 275B
31.5	800	224-011-000-080X	224 280	224 280B
42.75	1086	X10-224-009-040	224-075	

Table 13: Water Level Senders

Constructed of durable stainless steel, these senders are designed for fresh and blackwater applications as indicated.

Mounting hardware is supplied with each sender.

Description	Type	Tank Depth Min (in)	Tank Depth Min (mm)	Tank Depth Max (in)	Tank Depth Max (mm)	Voltage	Single Pack Part No.	10 Pack Part No.
Freshwater	Lever	8	203	24	609	6-24	226 452	226 452B
Freshwater	Capacitive	3.0	80	23.6	600	4-20mA	226 453	
Freshwater	Capacitive	23.6	600	47.3	1200	4-20mA	226 454	
Freshwater	Capacitive	47.3	1200	59.0	1500	4-20mA	226 455	
Blackwater	Capacitive	7.8	200	23.6	600	4-20mA	226 456	
Blackwater	Capacitive	23.6	600	47.3	1200	4-20mA	226 457	
Blackwater	Capacitive	47.3	1200	59.0	1500	4-20mA	226 458	

Pressure Senders

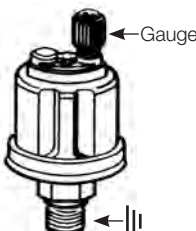
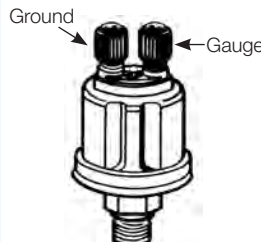
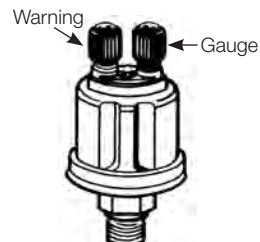
Types of Connections			Terminal Key
 ← Gauge ←	 Ground ← Gauge	 Warning ← Gauge	
Illus. 1	Illus. 2	Illus. 3	
Standard Ground: sender case to common ground; and Dual Station Standard Ground	Floating Ground: isolated terminal to common ground; and Dual Station Floating Ground	Standard Ground with Warning Contact	Terminal Key All Pressure Senders have knurled nut terminals, except where noted: * w/ .250" Spade terminal ** w/ M4 Stud *** w/ 10-32 Stud

Table 1: 80 PSI / 5 bar (10-180 Ohm)

Thread	Warning Contact (illus. 3)	Standard 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	—
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
M14 x 1.5	7.1 PSI	360 028	—	—	—	30 / 28	X

Table 2: 80 PSI / 5 bar (240-33 Ohm)

Thread	Warning Contact (illus. 3)	Standard 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	—	360 801***	—	—	—	AT 84200	—

Table 3: 100 PSI / 7 bar (10-180 Ohm)

Thread	Warning Contact (illus. 3)	Standard 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	—	360 086***	—	—	—	655	—

Warning Notice: VDO mechanical oil pressure senders are not to be used with any type of fuel application. VDO mechanical oil pressure senders may be used in

motor vehicles and boats only. VDO mechanical oil pressure senders are not suitable for use in aircraft or any other purposes.

Pressure Senders

Table 4: 100 PSI / 7 bar (240-33 Ohm)

Thread	Warning Contact (illus. 3)	Standard 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	–	360 811***	–	–	–	734	–

Table 5: 150 PSI / 10 bar (10-180 Ohm)

Thread	Warning Contact (illus. 3)	Standard 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

Table 6: 350 PSI / 25 bar (10-180 Ohm)

Thread	Warning Contact (illus. 3)	Standard 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)	Standard 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)	Standard 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

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motor vehicles and boats only. VDO mechanical oil pressure senders are not suitable for use in aircraft or any other purposes.

Heavy-Duty Pressure Switches

VDO 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.

Our Heavy Duty 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	Single Pack Part No.	10 Pack Part No.
4 PSI	230 404	230 404B
15 PSI	230 415	230 415B
60 PSI	230 460	230 460B

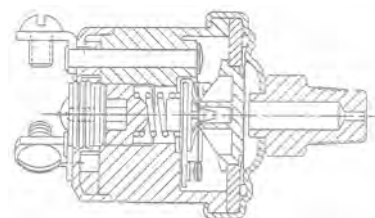
Normally Closed—single circuit; 2 terminals, insulated ground

Range	Single Pack Part No.	10 Pack Part No.
4 PSI	230 504	230 504B
15 PSI	230 515	230 515B
60 PSI	230 560	230 560B

Dual Circuit—normally open, normally closed, insulated ground

Range	Single Pack Part No.	10 Pack Part No.
4 PSI	230 604	230 604B
15 PSI	230 615	230 615B
60 PSI	230 660	230 660B

Overall dimensions: 2.52" (64mm) L X 1.47" (37mm) W



(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

Electrical Ratings

Resistive: 15 Amp–6 VDC

8 Amp–12 VDC

4 Amp–24 VDC

Operating Pressure (Set Point Range)

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

Proof Pressure: 500 PSI

Inductive: 1 Amp–120 VAC

0.5 Amp–240 VAC

Burst Pressure (Set Point Range)

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

Temperature Range: -40° F to 250° F

Base: Steel plated

Diaphragm: Polyimide film

Terminals: #8–32 screws

Cover: Glass reinforced polyester

Thread Size: 1/8–27 NPT

Warning Notice: VDO mechanical oil pressure senders are not to be used with any type of fuel application. VDO mechanical oil pressure senders may be used in motor vehicles and boats only. VDO mechanical oil pressure senders are not suitable for use in aircraft or any other purposes.

NO OTHER USE OR APPLICATION IS RECOMMENDED. ANY OTHER USE OR APPLICATION WILL AUTOMATICALLY VOID ANY WARRANTY.

VDO WILL NOT BE RESPONSIBLE FOR THE IMPROPER USE OF THE MECHANICAL OIL PRESSURE SENDERS.

Temperature Senders

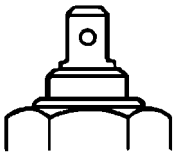
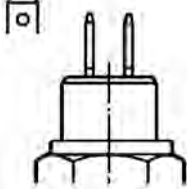
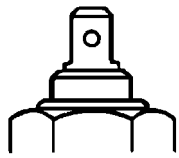
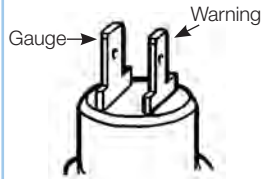
Types of Senders			
* 1-pole common ground  Illus. 1 Standard Ground: sender case to common ground	*  Illus. 2 Floating Ground: isolated terminal to common ground	* 1-pole common ground  Illus. 3 Dual Station: 2 gauges operation from single sender	**  Illus. 4 Dual Station Floating Ground: same as dual station; however, isolated terminal to ground

Table A: 250° F / 120° C

Thread	Terminal Type	Warning Contact (illus. 4)	Standard 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	Δ	—	323 095	—	—	—	801 / 5 / 1 or 151	—
1/4-18 NPT	*	—	323 420	—	—	—	801 / 1 / 9	—
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 or 118	—
3/8-18 NPT	*	—	—	323 479	—	—	805 / 1 / 5	—
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 or 116	—
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 or 315	—
1/2-14 NPT	**	230° F ± 5° F	323 100	—	—	—	803 / 1 / 32	—
1/2-14 NPT	*	—	—	323 478	—	—	805 / 1 / 4 or 514	—
5/8-18 NF-3	**	209° F ± 5° F	323 026	—	—	—	803 / 1 / 2	—
5/8-18 UNF	*	—	323 422	—	—	—	801 / 1 / 8	—
5/8-18 UNF	*	—	—	—	—	325 003	805 / 3 / 2	—
5/8-18 UNF	*	—	—	323 483	—	—	805 / 1 / 2	—
M10 x 1	Δ	—	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
M14 x 1.5	**	205° F ± 5° F	323 102	—	—	—	801/1/6	X
M16 x 1.5	**	230° 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

Senders available in bulk, please contact customer service for part number and detail.
Senders requiring sealing washer, as noted, are not supplied with sender.

Temperature Senders

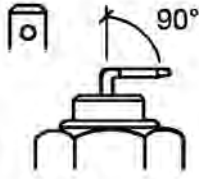
Types of Connectors			Connection Key
S	1-pole common ground	Δ	1-pole common ground
			
		◇	1-pole common ground M4 stud or knurled nut
			
			* Straight .250" spade terminal ◇ 4 mm screw stud S 90° angle .250" spade terminal Δ 56 Series "Packard" female terminal, unsealed w/ terminal housing ** Gauge .250" spade terminal; WARNING: .187" spade terminal

Table B: 300° F / 150° C

Thread	Terminal Type	Warning Contact (illus. 4)	Standard 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	Δ	—	323 057	—	—	—	801 / 9 / 1 or 191	—
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 or 145	—
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 or 149	—
M10 x 1	Δ	—	323 423	—	—	—	801 / 9 / 3	X
M10 x 1.5	Δ	—	323 089	—	—	—	801 / 10 / 1	X
M12 x 1.5	Δ	—	323 092	—	—	—	801 / 10 / 3	X
M14 x 1.5	S	—	323 055	—	—	—	801 / 12 / 2	X
M14 x 1.5	**	266° F ± 5° F	323 121	—	—	—	801 / 2 / 7	X
M16 x 1.5	S	—	323 056	—	—	—	801 / 12 / 1	X
M18 x 1.5	S	—	323 064	—	—	—	801 / 12 / 3	X

Table C: 400° F / 200° C

Thread	Terminal Type	Warning Contact (illus. 4)	Standard 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	Δ	—	323 050	(Long probe, 5/8" long) Ford	—	—	801 / 13 / 1 or 131	—
1/8-27 NPT	Δ	—	323 086	(Short probe, 3/8" long) GM	—	—	801 / 18 / 1 or 181	—
M10 x 1.5	Δ	—	323 091	—	—	—	801 / 3 / 1	X
M10 x 1	Δ	—	323 090	—	—	—	801 / 3 / 2	X

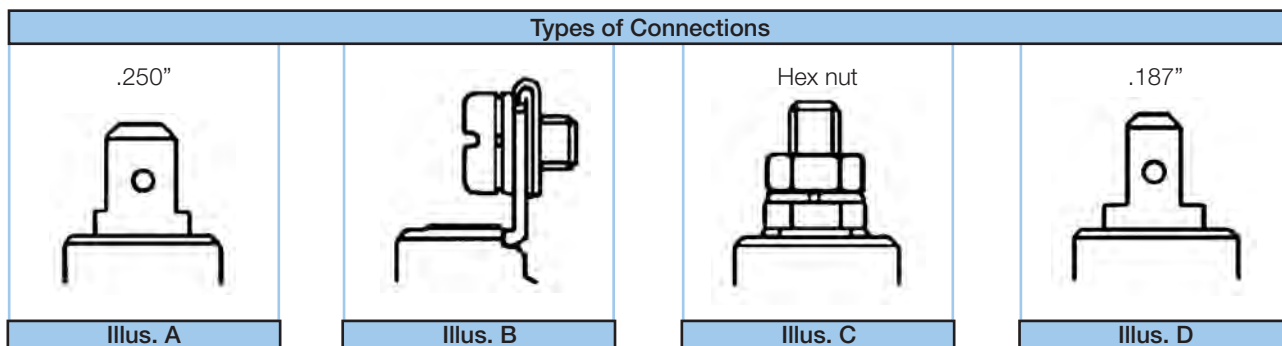
Senders available in bulk, please contact customer service for part number and detail.
 Senders requiring sealing washer, as noted, are not supplied with sender.

Air, Cylinder & Exhaust Temperature Senders

Description	Range	Thread	Terminal Type	Single Pack Part No.	Bulk Pack Part No.
Pyrometer, for Vision & Cockpit	250°F to 1650°F	1/4 NPT	#6 ring terminal	323 892	
Pyrometer, for Viewline & Severe Duty	250°F to 1650°F	1/4 NPT	#6 ring terminal	326 001	
Outside Temperature, Vision	-13°F to +250°F	M10x1.0	M4 Stud	323 087	323 087B
Outside Temperature, Viewline	-40°F to +185°F	—	Bare wire leads	323 112	323 112B
Cylinder Head Temp	100-600F	—	14mm ring terminal	323 701	
Cylinder Head Temp	100-600F	—	12mm ring terminal	323 705	

For technical specifications and dimensions, please visit our website at www.vdo.com/usa

Temperature Switches



Temperature Switch Technical Specifications:

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

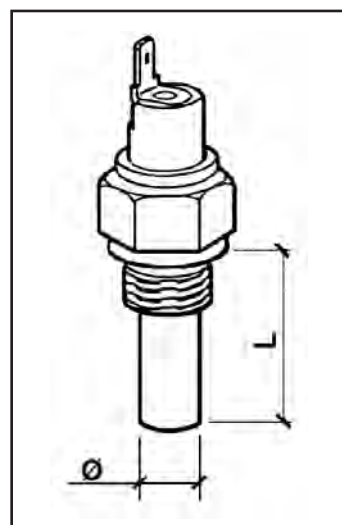
Normally Open, Single Circuit, Standard Ground Systems

Rated Voltage: 6V to 24V

Type of Contact: SS = contact closes as temperature rises

Break Point: 5° C max. below make point

Contacting Mode: Slow-acting



Temperature Switches

Make Point C° / F°	Thread	Max Temp C° / F°	Conn. Illus.	L (mm)	Ø(mm)	Single Pack Part No.	10 Pack Part No.
195 +/- 10 / 383 +/- 18	M10 x 1.5	250 / 482	C	38.5	6.9	232 020	232 020B
170 +/- 5 / 338 +/- 9	M10 x 1.5	220 / 428	C	38.5	6.9	232 002	232 002B
150 +/- 5 / 302 +/- 9	M10 x 1.5	200 / 392	C	38.5	6.9	232 006	232 006B
130 +/- 10 / 275 +/- 18	M10 x 1.5	180 / 356	C	38.5	6.9	232 021	232 021B
125 +/- 5 / 257 +/- 9	M10 x 1.5	155 / 311	C	38.5	6.9	232 022	232 022B
120 +/- 3 / 248 +/- 5	3/4-16 UNF	150 / 302	A	29	10	232 018	232 018B
120 +/- 3 / 248 +/- 5	1/2-14 NPTF	130 / 266	B	29	10	232 010	232 010B
110 +/- 3 / 230 +/- 5	M14 x 1.5	160 / 320	A	29	10	232 011	232 011B
110 +/- 3 / 230 +/- 5	M10 x 1	150 / 302	C	33	6.9	232 009	232 009B
105 +/- 3 / 221 +/- 5	M14 x 1	150 / 302	C	29	10	232 016	232 016B
105 +/- 3 / 221 +/- 5	1/2-14 NPTF	120 / 248	A	29	10	232 005	232 005B
105 +/- 3 / 221 +/- 5	1/8-27 NPTF	120 / 248	C	33	6.9	232 008	232 008B
105 +/- 3 / 221 +/- 5	3/8-18 NPTF	120 / 248	D	29	10	232 019	232 019B
103 +/- 3 / 217 +/- 5	1/2-14 NPTF	120 / 248	A	29	10	232 015	232 015B
103 +/- 3 / 217 +/- 5	3/8-18 NPTF	120 / 248	A	29	10	232 017	232 017B
95 +/- 3 / 203 +/- 5	1/2-14 NPTF	120 / 248	A	29	10	232 012	232 012B
96 +/- 3 / 205 +/- 5	1/8-27 NPTF	120 / 248	C	33	6.9	232 007	232 007B
90 +/- 3 / 194 +/- 5	M10 x 1.5	120 / 248	C	38.5	6.9	232 001	232 001B
70 +/- 3 / 158 +/- 5	M14 X 1.5	120 / 248	A	29	10	232 013	232 013B

Speedometer and Tachometer Senders

Generator Senders

For use with VDO speedometers and tachometers designated as generator-type (4 pulses per revolution).

Senders w/o odometer revolution counter terminal (2 terminals)

Description	Single Pack	Bulk Pack
	Part No.	Part No.
7/8-18 thread	340 001	340 001B
M22 x 1.5 thread	340 002	340 002B



340 001

Senders w/ odometer revolution counter terminal (3 terminals)

Description	Single Pack	Bulk Pack
	Part No.	Part No.
7/8-18 thread	340 008	340 008B
M22 x 1.5 thread	340 007	340 007B



340 060

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



340 020

Inductive / Magnetic Pick-Up Senders

For inductive and programmable speedometers and tachometers.

Description	Single Pack	Bulk Pack
	Part No.	Part No.
2" (51mm) long, 3/4-16 thread	340 020	340 020B



340 011

Hall-Effect Senders

For electronic, programmable speedometers, 16 pulse/revolution

Description	Voltage	Part No.	Part No.
7/8-18 (GM) aluminum body	12V	340 011	340 011B
7/8-18 (GM) heavy duty	12/24	340 011E	
GM, through drive, for cruise control hook-up	12/24	340 012	340 012B
Standard, Ford	12/24	340 013	340 013B
Ford, through drive for cruise control hook-up	12/24	340 014	340 014B

For Chrysler, AMC application with threaded sender, use GM style.

For Chrysler, AMC applications with push-in sender, use Ford style.



340 013

Instrument Accessories and Service Parts

Tubing Kits

Description	Fitting Size	Part No.
0–150 PSI nylon tubing (6')	1/8–27 and 1/4–18 NPT adapters	150 851
0–150 PSI nylon tubing (16')	1/8–27 and 1/4–18 NPT adapters	150 855
0–400 PSI copper tubing (6')	1/8–27 and 1/4–18 NPT adapters	150 856

Warning Notice: Tubing Kits are not for use on any aircraft, fuel, or brake applications (vacuum, hydraulic or air).

Universal Bushing Kits

Inside diameter 1/8–27 NPT, for use with all pressure and temperature senders.

Description	Part No.
Includes 1/4–18, 3/8–18, and 1/2–14 bushings	240 903
Includes M16 x 1.5, M14 x 1.5, M12 x 1.5, M10 x 1.0, 1/8 x 28 BSP	240 904

Adapters and Fittings

Description	Part No.
Male 1/8–27 NPT	240 855
Male M10 x 1	240 850
Weld-on Adaptor for Pyrometer Sender	240 863
1/8 male to 1/8 female Angled Brass Adaptor	240 828
Adaptor M10 Right Angle Oil Pressure Adaptor	240 041
Remote Hose ADP Kit M10 x 1	150 752

Anti-Glare Rings

Description	Part No.
2 pk. for 52mm gauge	240 005

Safety Mount Brackets

For 2 1/16" (52mm) 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" (98 mm x 32 mm x 64 mm)	240 802
2 openings	3 7/8" x 1 1/4" x 4 7/8" (98 mm x 32 mm x 124 mm)	240 803
3 openings	3 7/8" x 1 1/4" x 7 1/2" (98 mm x 32 mm x 191 mm)	240 804

Mounting Cups

Steel mounting cups with smooth black or chrome finishes.

Description	Chrome Part No.	Black Part No.
For 2 1/16" (52mm) dia gauge	240 017*	240 016*
For 3 3/8" (85mm) dia gauge	240 019	240 018

Will not work with 2 1/16" (52mm) dia clocks, tachometers, outside temp. gauges or pyrometers.

Adjustable Mounting Cups

In durable ABS plastic with matte black finish.

Description	Part No.
2 1/16" (55mm) dia, long version for outside temp. gauge, pyrometer, clock, ammeter and 2 1/16" (55mm) dia tach.	240 101



Nylon Tubing Kits



Copper Tubing Kits



Universal Bushing Kit



T-Adapters



Anti-glare Rings



Safety Mount Brackets



Mounting Cups



Adjustable Mounting Cups

Instrument Accessories and Service Parts

Mounting Brackets for 2 1/16" (52mm) 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 Part No.	Black Part No.
1 opening	2 7/8" x 2 11/16" (73mm x 68mm)	240 034	240 027
2 openings	2 7/8" x 5 3/16" (73mm x 132mm)	240 035	240 028
3 openings	2 7/8" x 7 1/2" (73mm x 205mm)	240 036	240 029

Instrument Panel Hole Covers

Description	Single Pack Part No.	10 Pack Part No.
2 1/16" (52mm) dia, round cover	240 864	240 864B
2 1/16" (52mm) dia, square cover	600 508	—
3 3/8" (85mm) dia	240 866	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" (60mm x 52mm)	600 851
From 3 3/8" to 3 1/8" (86mm x 79mm)	600 885

Position Indicator Senders

For use with VDO 12 / 24V gauges.

Description	Part No.
Single station transmitter, for operating one VDO indicator	440 003
Dual station transmitter, for operating two VDO indicators from one sender	440 004
Installation kit and arm assembly	440 050
Replacement arm	440 100

Acoustical Warning Alarm, 2 1/16" (52mm) dia

Description	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
Piezo Buzzer	.250" Spade	12 / 24	4071101	03 230 702

Analog Instrument Wiring Harnesses and Accessories

Description	Part No.
Pyrometer Extension Cable (30 ft.)	240 092
Pyrometer Lead Wire 12', Replacement	240 702
6 Pin Tach/Speedo Connector with terminal end	240 053
8 Pin connector for Speedometer/Tachometer with hourmeter	240 024
8 Pin connector for Speedometer/Tachometer with hourmeter / 100 pk	240 024B
100 pk .25" Blade Terminals	240 045
Ammeter Wire Kit	240 021
Universal 1 Instrument Wire Kit	240 023
3-Prong Instrument connector w/ terminals for Severe Duty	240 026
3-Prong Instrument connector w/o terminals for Severe Duty	600 814
3-Prong Instrument connector w/o terminals for Severe Duty / 100 pk	600 814B
3-Prong Instrument connector w/ terminals for Vision & Cockpit Int'l	240 025
3-Prong Instrument connector w/o terminals for Vision & Cockpit Int'l / 100pk	240 025B
Replacement Cylinder Head Temp gauge lead wire, 15'	240 701



Mounting Brackets



Instrument Panel Hole Cover



440 003



Acoustical Warning Alarm



240 026

Instrument Accessories and Service Parts

Analog Instrument Wiring Harnesses and Accessories For Viewline Instruments

Description	Single Pack Part No.	Bulk Pack Part No.
8 pole harness	240 201	240 201B
14 pole harness	240 204	240 204B
Pushbutton for speedo & tachometer	240 046	240 046B
Harness adapter (<i>allows use of Viewline instruments with Vision wire harness</i>)	240 097	240 097B
8 pole connector & pin kit	240 098	
8 pole connector, bare		A2C59510847-B
14 pole connector & pin kit	240 099	
14 pole connector, bare		A2C59510848-B
Pins for Viewline Connector (Note: single pack contains 14)	240 048	240 048B

Connector & Voltage Conversions

For Cockpit International and Series 1 only

Description	Part No.
3 TERMINAL STUD 12V WWG	2-032-001-525B
3 TERMINAL STUD WWG 24V	2-032-001-556B
3 TERMINAL SPADE WWG 12V	2-032-001-563B
3 TERMINAL SPADE WWG 24V	2-032-001-570B
2 TERMINAL STUD WWG 12V	2-032-001-659B
2 TERMINAL STUD WWG 24V	2-032-001-666B
2 TERMINAL SPADE WWG 12V	2-032-001-673B
2 TERMINAL SPADE WWG 24V	2-032-001-680B

note: Available in quantities of 500 only

CANcockpit Harnesses

Description	Part No.
Harness Type A (Master)	A2C53041729
Harness Type B (Master to Satellite)	A2C53171895
Harness Type C (Satellite to Satellite)	A2C53041730

CANcockpit Harness Components

Description	Part No.
Pin Housing for 26 Pin Connector	X11-602-000-001
Coupling for Pin Housing (26 Pin Connector)	X11-602-000-002
Pin for 26 Pin Connector (Master)	X11-602-000-003
Pin Locking for 26 Pin Housing (Master)	X11-602-000-004
Bracket for Coupling 26 Pin Housing (Master)	X11-602-000-005
4 pin connector for master	X11-602-000-006
Pin for 4+6 pin connector	X11-602-000-007
6 pin connector for satellite	X11-602-000-008

CANcockpit GEN III Harnesses

Description	Part No.
Data source to Master (Type A) with gold contact pins	A2C53344032
Master to Satellite (Type B) with gold contact pins	A2C53344035
Satellite to Satellite (Type C) with gold contact pins	A2C530344036

Note: Do not use harnesses from previous CANcockpit versions with CANcockpit GEN III

CANcockpit GEN III Harness Components

Description	Part No.
Pin housing for 26 pin connector	X11-602-000-001
Coupling for pin housing (26 pin connector)	X11-602-000-002
Gold plated pin for 26 pin connector (master)	A2C59512861
Pin locking for 26 pin housing (master)	X11-602-000-004
Bracket for coupling 26 pin housing (master)	X11-602-000-005
4 pin connector for master	X11-602-000-006
Gold plated pin for 4+6 pin connector	A2C59512862

Instrument Accessories and Service Parts

Stud Mounting Kits

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

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

Flush Mounting Kits

To flush mount instruments from behind instrument panel.

Description	Single Pack Part No.	Bulk Pack Part No.
Severe Duty flush mount kit, 3 3/8" (85mm)	600 409	
Severe Duty flush mount kit, 2 1/16" (52mm)	600 410	
Viewline flush mount kit, all sizes	600 413	600 413B

Replacement Spin-Lok™ Mounting Rings

Gauge Diameter	Single Pack Part No.	Bulk Pack Part No.
2 1/16" (52mm)	600 404	
3 1/8" (80mm)	600 405	
3 3/8" (85mm)	600 406	
3 3/8" (85mm), Viewline only	600 415	600 415B
4" (100mm), Viewline only	600 416	600 416B

Optional Black Square Bezels (Severe Duty only)

Description	Part No.
For 2 1/16" (52mm)	600 001
For 3 3/8" (85mm)	600 002

Fuel Sender Service Parts

Description	Single Pack Part No.	Bulk Pack Part No.
Replacement float for lever arm type sender	600 601	
Replacement neoprene gasket for fuel and water senders	226 053	
SAE 5 hole mounting flange kit	226 451	
ALAS I fuel sender installation kit	600 408	
Replacement float arm with float	226 479	226 479B
Replacement draw/return plug for ALAS II fuel senders	226 965	226 965B
ALAS II fuel sender installation kit	226 985	

Resistor & Shunt Kits

Description	Part No.
Resistor for Viewline 2 1/16" (52mm) dia, 24V to 12V	A2C59510221-S
Resistor for Severe Duty 2 1/6" (52mm) dia, 24V to 12V	391 706
Resistor for Vision & Cockpit International 24V to 12V with peanut bulb	391 101
Resistor for Vision & Cockpit International 24V to 12V with wedge bulb	391 102
80 A shunt, Severe Duty	391 010
140 A shunt, Severe Duty	391 011

Makepoint Switch

Description	Part No.
For Viewline instruments	A2C59510886-S

Replacement Lenses for Severe Duty

Description	Part No.
For 52mm Instruments	600 515
For 85mm Instruments	600 514



600 402



Spin-Lok™ Mounting Rings



Black Square Bezels



600 601



A2C59510221-S

Light Bulbs and Sockets

Description	12V Clear	12V Red	24V Clear	24V Red	Insulated Socket	Steel
Socket						
Type A, 9/32" (7mm)	600 802		600 807		600 813	600 816
Type B, 11/32" (9mm)	600 804		600 806		600 819	600 818
Type C, 3/8" (10MM)	600 820					600 821
Type D, Peanut	600 809	600 829	600 824	600 822	600 823	
Type E, Wedge	600 815		600 826		600 840	
Severe Duty Instruments, warning light bulb & socket		600 834		600 835		
Severe Duty Instruments, illumination bulb socket (tachometers)			600 841			
Severe Duty Instruments, illumination bulb socket (52mm instruments)			600 842			

All bulbs sold in packages of four.

Panel Mount Warning Lights

12V snap-in warning lights with bulb. Requires 1 1/32" hole.

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

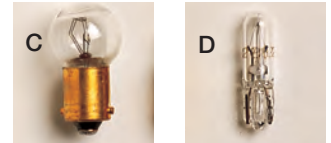
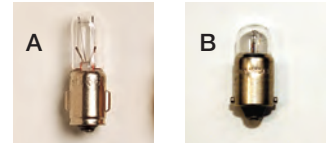
Light Diffusers

The easy and convenient way to change the lighting color in your gauge.
Diffuser simply slips over the existing light bulb. Sold in packages of four.

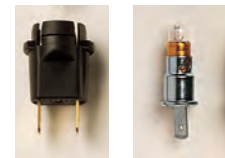
Description	Type A	Type B	Type D	Type E & C
Red	600 853	600 857	600 859	600 861
Green	600 856	600 858	600 860	600 862
Blue	-	-	-	600 863
Amber	-	-	-	600 864

Optional In-Gauge Warning Lights (Severe Duty only)

Description	Terminal	Voltage	Part No.
For volt, temp, pressure and fuel	.250" Spade	12	05 800 762
For volt, temp, pressure and fuel	.125" Spade	24	05 800 764



600 813 600 819 600 823



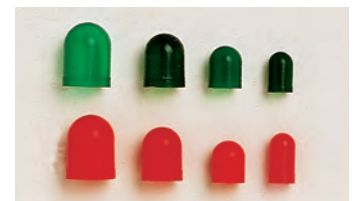
600 840 600 816



600 821 600 818



Warning Lights



Light Diffusers

Severe Duty Instruments - Service Parts Only



Severe Duty Chrome Series

Programmable Tachometers w/ LCD hourmeter

Programmable for use with most engine electronic control ignitions with tachometer output terminal, standard coil ignition, alternator signal, and 12V square wave applications.

Non-resettable engine hourmeter is displayed in LCD window.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
4,000 RPM	3 3/8" (85mm) dia	R	.250" Spade	12 / 24	3334105	3334105B
6,000 RPM	3 3/8" (85mm) dia	R	.250" Spade	12 / 24	3334106	3334106B

Programmable Tachometers w/o hourmeter

For use on 4,5,6,8 cylinder application engines with standard coil ignitions, most square wave electronic control ignitions

with tachometer output terminal, and alternators with "w" tachometer terminal.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
4,000 RPM	3 3/8" (85mm) dia	S	.250" Spade	12	3334102	3334102B
6,000 RPM	3 3/8" (85mm) dia	S	.250" Spade	12	3334101	3334101B

Fluid Temperature Gauges, electrical, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
240° F / 100° C	Water Symbol	T	.250" Spade	A	12	3104101	3104101B
250° F / 120° C	Water Symbol	T	.250" Spade	A	12	3104103	3104103B
250° F / 120° C	Water Symbol	T	.250" Spade	A	24	3104104	3104104B
300° F / 150° C	Oil Symbol	T	.250" Spade	B	12	3104108	3104108B
300° F / 150° C	Oil Symbol	T	.250" Spade	B	24	3104109	3104109B
400° F	Gear Symbol	T	.250" Spade	C	12	3104107	3104107B

See pages 59-60 for temperature sender tables. Note: Warning lights must be ordered separately.

Severe Duty Instruments - Service Parts Only

Pyrometer, electrical, 2 1/16" (52mm) dia, 250° F–1650° F

Description	Dwg	Voltage	Single Pack Part No.
Complete Kit with 13' extension wire	V	12	3104106
Pyrometer sender only			326 001
13' extension wire			326 002

Oil Pressure Gauges, electrical, 2 1/16" (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
80 PSI / 5 bar	10–180	Oil Symbol	T	.250" Spade	1	12	3504103	3504103B
80 PSI / 5 bar	10–180	Oil Symbol	T	.250" Spade	1	24	3504104	3504104B
80 PSI / 5 bar	240–33	Oil Symbol	T	.250" Spade	2	12	3504121	3504121B
100 PSI / 7 bar	240–33	Oil Symbol	T	.250" Spade	4	12	3504101	3504101B
150 PSI / 10 bar	10–180	Oil Symbol	T	.250" Spade	5	12	3504105	3504105B
150 PSI / 10 bar	10–180	Oil Symbol	T	.250" Spade	5	24	3504106	3504106B
150 PSI / 10 bar	240–33	Oil Symbol	T	.250" Spade	–	12	3504107	3504107B
150 PSI / 10 bar	240–33	Oil Symbol	T	.250" Spade	–	24	3504108	3504108B
400 PSI / 28 bar	10–180	Oil Symbol	T	.250" Spade	7	12	3504109	3504109B
400 PSI / 28 bar	10–180	Oil Symbol	T	.250" Spade	7	24	3504110	3504110B

See pages 56-57 for pressure sender tables. Note: Warning lights must be ordered separately.

Fuel Level Gauges, electrical, 2 1/16" (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
For VDO sender	10–180	Fuel Symbol	T	.250" Spade	9	12	3014103	3014103B
For VDO sender	10–180	Fuel Symbol	T	.250" Spade	9	24	3014104	3014104B
For U.S. sender	240–33	Fuel Symbol	T	.250" Spade	10	12	3014101	3014101B
For U.S. sender	240–33	Fuel Symbol	T	.250" Spade	10	24	3014102	3014102B
For tube type sender	90–0 (ADJ)	Fuel Symbol	T	.250" Spade	12	12	3014105	3014105B
For tube type sender	90–0 (ADJ)	Fuel Symbol	T	.250" Spade	12	24	3014106	3014106B

See pages 54-55 for fuel level sender tables. Note: Warning lights must be ordered separately.

Water Level Gauges, electrical, 2 1/16" (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	10 Pack Part No.
Water	10–180	Water Symbol	T	.250" Spade	13	12	3014109	3014109B
Water	10–180	Water Symbol	T	.250" Spade	13	24	3014121	3014121B

See pages 54-55 for water level sender tables. Note: Warning lights must be ordered separately.

Voltmeters, 2 1/16" (52mm) dia

Description	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
8–16V	Battery Symbol	T	.250" Spade	12	3324101	3324101B
18–32V	Battery Symbol	T	.250" Spade	24	3324102	3324102B

Note: Warning lights must be ordered separately.

Severe Duty Instruments - Service Parts Only

Ammeters, 2 1/16" (52mm) dia

Description	Range	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
80A, gauge only	80 / 0 / 80	AMP	W	.250" Spade	12 / 24	1904101	1904101B
140A, gauge only	140 / 0 / 140	AMP	W	.250" Spade	12 / 24	1904102	1904102B
80A, shunt only						391 010	
140A, shunt only						391 011	

Clocks, 2 1/16" (52mm) dia

Description	Range	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Analog	9-28V	.250" Spade	12 / 24	3704101	3704101B

Hourmeters, 2 1/16" (52mm) dia

Description	Max Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	10 Pack Part No.
Illuminated	10,000	"Engine Hours"	U	.250" Spade	12 / 24	3314101	3314101B

Optional In-Gauge Warning Lights

Description	Terminal	Voltage	Single Pack Part No.
For volt, temp, pressure and fuel	.250" Spade	12	600 834
For volt, temp, pressure and fuel	.125" Spade	24	600 835

Severe Duty Instruments - Service Parts Only



Programmable Tachometers w/ LCD hourmeter

Programmable for use with most engine electronic control ignitions with tachometer output terminal, standard coil ignition, alternator signal, and 12V square

wave applications. Non-resettable engine hourmeter is displayed in LCD window.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
3,000 RPM	3 3/8" (85mm) dia	R	.250" Spade	12 / 24	02 012 126D	02 012 126
4,000 RPM	3 3/8" (85mm) dia	R	.250" Spade	12 / 24	3331105	02 012 150
6,000 RPM	3 3/8" (85mm) dia	R	.250" Spade	12 / 24	3331106	3331106B

Programmable Tachometers w/o hourmeter

For use on 4,5,6,8 cylinder application engines with standard coil ignitions, most square wave electronic

control ignitions with tachometer output terminal, and alternators with "w" tachometer terminal.

Description	Size	Dwg	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
3,000 RPM	3 3/8" (85mm) dia	S	.250" Spade	12	02 012 426D	02 012 426
4,000 RPM	3 3/8" (85mm) dia	S	.250" Spade	12	3331102	02 012 430
6,000 RPM	3 3/8" (85mm) dia	S	.250" Spade	12	3331101	3331101B

Fluid Pressure Gauges, electrical, 2 1/16 (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	Bulk Pack Part No.
2 bar / 28 PSI	10-180	Oil Symbol	T	.250" Spade	8	12	02 124 122D	02 124 122
2 bar / 28 PSI	10-180	Oil Symbol	T	.250" Spade	8	24	02 124 522D	02 124 522
5 bar / 72 PSI	10-180	Oil Symbol	T	.250" Spade	1	12	02 124 126D	02 124 126
80 PSI / 5 bar	10-180	Oil Symbol	T	.250" Spade	1	12	3501103	3501103B
80 PSI / 5 bar	240-33	Oil Symbol	T	.250" Spade	2	12	02 124 162D	02 124 162
80 PSI / 5 bar	10-180	Oil Symbol	T	.250" Spade	1	24	3501104	3501104B
80 PSI / 5 bar	240-33	Oil Symbol	T	.250" Spade	2	24	02 124 562D	02 124 562
150 PSI / 10 bar	10-180	Oil Symbol	T	.250" Spade	5	12	02 124 166D	02 124 166
150 PSI / 10 bar	10-180	Oil Symbol	T	.250" Spade	5	24	3501106	02 124 566
400 PSI / 28 bar	10-180	Gear Symbol	T	.250" Spade	7	12	3501109	02 124 168
400 PSI / 28 bar	10-180	Gear Symbol	T	.250" Spade	7	24	3501110	02 124 568

See pages 56-57 for pressure sender tables. Note: Warning lights must be ordered separately.

Severe Duty Instruments - Service Parts Only

Fluid Temperature Gauges, electrical, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	Bulk Pack Part No.
250° F / 120° C	Water Symbol	T	.250" Spade	A	12	3101103	02 321 628
250° F / 120° C	Water Symbol	T	.250" Spade	A	24	3101104	02 321 728
300° F / 150° C	Oil Symbol	T	.250" Spade	B	12	3101108	3101108B
300° F / 150° C	Oil Symbol	T	.250" Spade	B	24	3101109	3101109B
400° F	Gear Symbol	T	.250" Spade	C	12	3101107	3101107B

See pages 59-60 for temperature sender tables. Note: Warning lights must be ordered separately.

Pyrometers, electrical, 2 1/16 (52mm) dia, 250° F–1650° F

Description	Dwg	Terminal	Voltage	Single Pack Part No.
Complete kit	V	.250" Spade	12	310 1106
Pyrometer sender only				326 001
13' extension wire				326 002

Fuel Level Gauges, electrical, 2 1/16 (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	Bulk Pack Part No.
For VDO sender	10–180	Fuel Level	T	.250" Spade	9	12	3011103	02 222 112
For VDO sender	10–180	Fuel Level	T	.250" Spade	9	24	3011104	02 222 312
For U.S. sender	240–33	Fuel Level	T	.250" Spade	10	12	3011101	02 222 106
For U.S. sender	240–33	Fuel Level	T	.250" Spade	10	24	3011102	02 222 306
For tube type sender	90–0 (ADJ)	Fuel Level	T	.250" Spade	12	12	3011105	02 222 512
For tube type sender	90–0 (ADJ)	Fuel Level	T	.250" Spade	12	24	3011106	02 222 712

See pages 54-55 for fuel level sender tables. Note: Warning lights must be ordered separately.

Water Level Gauges, electrical, 2 1/16 (52mm) dia

Description	Ohm Range	On Dial	Dwg	Terminal	Sender Table	Voltage	Single Pack Part No.	Bulk Pack Part No.
Water	10–180	Symbol	T	.250" Spade	13	12	3011109	02 230 712
Water	10–180	Symbol	T	.250" Spade	13	24	3011121	02 230 812

See pages 54-55 for water level sender tables. Note: Warning lights must be ordered separately.

Voltmeters, 2 1/16 (52mm) dia

Description	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
8–16V	Battery Symbol	T	.250" Spade	12	3321101	02 410 806
18–32V	Battery Symbol	T	.250" Spade	24	3321102	02 410 906

Note: Warning lights must be ordered separately.

Severe Duty Instruments - Service Parts Only

Ammeters, 2 1/16 (52mm) dia

Description	Range	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
80A, gauge only	80 / 0 / 80	AMP	W	.250" Spade	12 / 24	1901101	02 420 712
80A kit with shunt	80 / 0 / 80	AMP	W	.250" Spade	12 / 24	02 400 310D	02 400 310
140A, gauge only	140 / 0 / 140	AMP	W	.250" Spade	12 / 24	1901102	1901102B
80A, shunt only						391 010	
140A, shunt only						391 011	

Position Indicator Gauges w/ sender, 2 1/16 (52mm) dia

Description	Range	On Dial	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
Position Indicator Kit, with sender		Green/Red	.250" Spade	12	03 200 514D	03 200 514
Gauge only	10-180	Green/Red	.250" Spade	24	03 211 512	
Gauge only	10-180	Green/Red	.250" Spade	12	03 211 412	
Replacement movement arm					440 100	
Replacement sender					440 003	

Clocks, 2 1/16 (52mm) dia

Description	Range	Dwg	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
Analog	9-28V	K	.250" Spade	12 / 24	3701101	03 270 612

Hourmeters, 2 1/16 (52mm) dia

Description	Maximum Hours	On Dial	Dwg	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
Illuminated	100,000	"Engine Hours"	U	.250" Spade	12 / 24	3311101	03 110 412

Acoustical Warning Alarm, 2 1/16 (52mm) dia

Description	Terminal	Voltage	Single Pack Part No.	Bulk Pack Part No.
Piezo Buzzer	.250" Spade	12 / 24	4071101	03 230 702

Optional In-Gauge Warning Lights

Description	Terminal	Voltage	Single Pack Part No.
For volt, temp, pressure and fuel	.250" Spade	12	600 834
For volt, temp, pressure and fuel	.125" Spade	24	600 835

Optional Black Square Bezels

Description	Single Pack Part No.
For 2 1/16" (52mm)	600 001
For 3 3/8" (85mm)	600 002

CANcockpit Instrumentation System

Description	Diameter	CANcockpit	GEN III CANcockpit
Master Instruments			
Speedometers			
60 km/h	3 1/8" (80mm)	A2C60000013	A2C60000022
80 MPH/120 km/h	3 1/8" (80mm)	A2C60000016	A2C60000025
80 MPH	3 3/8" (85mm)	A2C60000066	A2C60000073
100 MPH	3 3/8" (85mm)	A2C60000067	A2C60000074
120 MPH	3 3/8" (85mm)	A2C60000068	A2C60000075
50 MPH/80 km/h	4" (100mm)	A2C60000116	A2C60000131
140 MPH/220 km/h	4" (100mm)	A2C60000117	A2C60000132
120 MPH/200 km/h	4" (100mm)	A2C60000119	A2C60000134
Tachometers			
3 k/min	3 1/8" (80mm)	A2C60000011	A2C60000020
3 k/min	3 3/8" (85mm)	A2C60000061	A2C60000070
3 k/min	4" (100mm)	A2C60000111	A2C60000126
4 k/min	3 1/8" (80mm)	A2C60000012	A2C60000021
4 k/min	3 3/8" (85mm)	A2C60000062	A2C60000071
4 k/min	4" (100mm)	A2C60000112	A2C60000127
5 k/min	3 3/8" (85mm)	A2C60000069	A2C60000076
8 k/min	3 1/8" (80mm)	A2C60000018	A2C60000027
Satellite Instruments			
Speedometers			
60 km/h	3 1/8" (80mm)	A2C60001892	A2C60000357
Tachometer			
3 k/min	4" (100mm)	A2C60001885	A2C60000360
3 k/min	2 1/16" (52mm)	A2C60000329	A2C60000286
3 k/min	3 1/8" (80mm)	A2C60005001	A2C60000356
Ammeter			
-125/+125	2 1/16" (52mm)	A2C60000328	A2C60000285
Level Gauges			
Fuel 0-1	2 1/16" (52mm)	A2C60000322	A2C60000278
Fuel E-F	2 1/16" (52mm)	A2C60000333	A2C60000279
Fresh water 0-1	2 1/16" (52mm)	A2C60000323	A2C60000280
Waste water 0-1	2 1/16" (52mm)	A2C60000324	A2C60000281
Pressure			
Engine Oil 80 PSI / 5 bar	2 1/16" (52mm)	A2C60000305	A2C60000255
Engine Oil 100 PSI / 7 bar	2 1/16" (52mm)	A2C60000334	A2C60000256
Engine Oil 150 PSI / 10 bar	2 1/16" (52mm)	A2C60000306	A2C60000257
Brake 150 PSI / 10 bar	2 1/16" (52mm)	A2C60000308	A2C60000263
Transmission Oil 400 PSI / 28 bar	2 1/16" (52mm)	A2C60000311	A2C60000266
Turbo 2 bar	2 1/16" (52mm)	A2C60000312	A2C60000267
Temperature			
Transmission Oil 50°-150°C / 120°-300°F	2 1/16" (52mm)	A2C60000315	A2C60000270
Transmission Oil 120°-300°F / 50°-150°C	2 1/16" (52mm)	A2C60000335	A2C60000271
Engine coolant 100°-280°F / 40°-120°C	2 1/16" (52mm)	A2C60000319	A2C60000275
Hydraulic Oil 20°C-120°C	2 1/16" (52mm)	A2C60000320	A2C60000276
Pyrometer 100°C-900°C	2 1/16" (52mm)	A2C60000321	A2C60000277
Engine oil 120°-300°F / 50°-150°C	2 1/16" (52mm)	A2C60000331	A2C60000288
Voltmeter			
8-16V	2 1/16" (52mm)	A2C60000325	A2C60000282
18-32V	2 1/16" (52mm)	A2C60000327	A2C60000284
Master BlackBox			
Master	100mmx100mm	A2C60000121	A2C60500641



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