

# Catalogue 2007



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**SIEMENS VDO**

# SIEMENS VDO

With many years of extensive experience in the development and manufacture of precision, high quality instruments, Siemens VDO Automotive has been able to develop an extensive range of Automotive, Commercial and Marine products that have exceeded worldwide expectations.

The success of Siemens VDO Automotive product ranges can be attributed to leading edge technology, easy operation and reliability.

Designed for the toughest environments the comprehensive Automotive and Commercial products will suit a large range of vehicles and conditions.

Marine products range from engine monitoring to navigation instruments for pleasure craft and commercial vessels.

This catalogue brings together the most comprehensive range of security products and instruments including Cockpit Vision, Cockpit White, Cockpit International, Titanium, Heritage Gold, Cockpit Royale along with a complete range of senders and accessories.

# Siemens VDO Automotive Warranty Policy

Siemens VDO Automotive (SVA) warrants the goods against defects in factory workmanship and materials within the warranty period.

The warranty period for automotive, commercial and marine products shall be 24 months from the date of invoice, subject to the usage limitation of 100,000 Km for goods installed in commercial vehicles.

The warranty period for audio and navigation products shall be 24 months from date of invoice.

The warranty period for repaired items shall be 90 days from the date of invoice.

The customer must notify the point of purchase / distributor of any defect coming within the provisions of this warranty within 30 days of the fault occurring.

A copy of the relevant invoice or the relevant invoice number as proof of the date of purchase must be provided with returned goods.

SVA liability with respect to this warranty shall be limited at the option of SVA to repair or replacement of the goods.

Removal and refitting costs and all freight costs associated with the warranty claims are the responsibility of the customer.

This warranty shall not apply to goods which have been opened by a third party.

Contaminated by oil, water or grease, fitted in

excessive vibration environments or improperly connected. Glass and capillary breakages are excluded from the provisions of this warranty.

Save and except for the express warranty set out above and to the maximum extent permitted by law, all conditions and warranties which may at the time be implied by common law, Trade Practices Act, Fair Trading Act, Goods Act or any other state or Federal Act are excluded. To the extent that these cannot be excluded and where the law permits. SVA's liability in respect of any such condition or warranty, shall be limited at the option of SVA to repair or replacement of the goods or the supply of equivalent goods or the payment of the costs of the replacing or repairing the goods, or having them replaced or repaired.

The illustrations, information and specifications presented and referred to in this catalogue are believed to be correct at the time of publication; however, accuracy cannot be absolutely guaranteed. Siemens VDO Automotive reserves the right to make changes from time to time without notice or obligation, in the specifications, design, colour or materials, and to change or discontinue models.

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# Cockpit Vision

Cockpit Vision is the pinnacle of instrument technology. It represents latest advances in instrument illumination and installation techniques. Using fibre-optic technology to illuminate the pointer and VDO's Trioptic through dial lighting we achieve superb night time illumination.

The installation technique used, where possible, disregards U-brackets and studs and features instead a 360° locking ring thereby eliminating panel warping and gauge rotation. We call it the VDO Spin-lock.

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# Cockpit Vision



## SPEEDOMETER

Illumination through dial and pointer. 12V globe included.

Field adjustable to suit 500 to 400,000 imp/km by pulse setting, or auto-calibration function through LCD readout via reset button. Total distance 999,999.9 not resettable. Speed display analogue; Odometer and trip distance LC-display trip distance 99,999.9 resettable.

Signal source Hall-effect, inductive or blocking oscillator sender units.

For 24V application use globe #240.053 (2 required).

For matching sender units refer to pages 75 and 76.

### Speedometer - Electronic

Part No.	Range	Size	Voltage
437 015 028	0-200km/h	80mm	12/24V
437 015 021	0-300km/h	80mm	12/24V
437 015 025	0-200km/h	85mm	12/24V
437 015 022	0-300km/h	100mm	12/24V
437 015 029	0-200km/h	100mm	12/24V

**Note:** 8 pin plug kit part no. 340.824 required. Not included in kit.



## TACHOMETER

Suitable for most petrol and diesel engines. Field programmable to suit 4, 6 or 8 cyl./4 stroke ignition and alternator pick-up

(terminal "W"). Single phase, not suitable for star point.

Illumination 12V included.

### Tachometer - Electronic

Part No.	Range	Size	Voltage
333 015 037	0 - 4000rpm	52mm	12V
333 015 031	0 - 8000rpm	52mm	12V
333 015 038	0 - 4000rpm	80mm	12V
333 015 032	0 - 7000rpm	80mm	12V
333 015 046	0-10000rpm	80mm	12V
333 015 033	0 - 7000rpm	85mm	12V
333 015 047	0 - 4000rpm	100mm	12V
333 015 034	0 - 8000rpm	100mm	12V

**Note:** 8 pin plug kit part no. 340.824 required. Not included in kit.



## TACHOURMETER

Suitable for most petrol and diesel engines. Adjustable through LCD and reset button. Field programmable to 1, 2, 3, 4, 5, 6, 8 or 12 cyl./4-stroke, 1, 2, 3 or 4 cyl./2-stroke ignition and alternator pick-up

("W" terminal). Also suitable for signal from generator or inductive sender unit. Incorporated hourmeter shows true engine hours.

Operating hours 99,999.9. Pulse range 0.5-200 pulses per rev.

Illumination 12V included. For 24V application use globe #240.053

(2 required).

For matching sender units refer to page 75 and 76.

### Tachourmeter - Electronic

Part No.	Range	Size	Voltage
333 015 035	0-7000rpm	85mm	12/24V

**Note:** 8 pin plug kit part no. 340.824 required. Not included in kit.

# Cockpit Vision

## FUEL GAUGES

Suitable for use with most petrol, diesel fuel, and LPG systems.  
Illumination 12V included.

Fuel Gauge - Float Arm Sender			52mm
Part No.	Description	Specifications	Voltage
301 010 011	Fuel gauge (float arm)	10-180 ohms	12V
301 010 010	Fuel gauge LPG	0 - 90 ohms	12V
	Suits 5 - 90 ohms LPG tank unit senders.		
301 010 003	Fuel gauge	10 -184 ohms	12V

Sender - Adjustable Float Arm		
Part No.	Specifications	Length
220.003	10 - 184 ohms	150 - 600mm
220.004	5 - 90 ohms	150 - 600mm
220.005	240 - 33 ohms	150 - 600mm

### Arm Type Fuel Senders

See complete listing of arm type fuel senders on page 62.

Fuel Gauge - OE Senders			52mm
Part No.	Description	Specifications	Voltage
301 010 015	Suits OE senders	73 -10 ohms	12V

Matching Sender - Replaces gauge for Holden HQ (73-76) on, HJ, HX, HZ, Torana LH, LX, Ford XR to XC, Escort and Cortina.

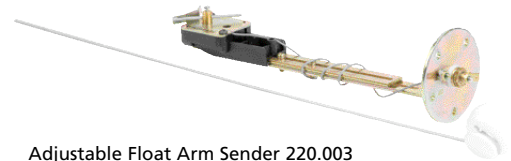
Fuel Gauge - Tubular			52mm
Part No.	Description	Ohms Empty Full	Voltage
301 010 009	Fuel gauge-tubular	110/50 2 ohms	12V

### Tubular Type Senders

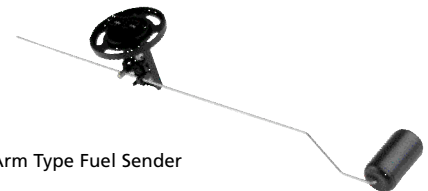
See complete listing of tubular type senders on page 62.

### Accessories

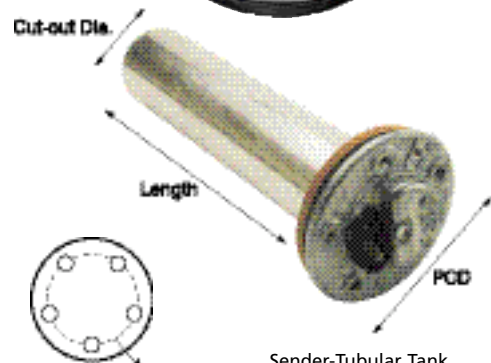
Part No.	Previous Part No.	Description	PCD
36373/9A		gasket-neoprene rubber	54mm
2251016		gasket	80mm
22502641141	(2250264)	welding flange	54mm
115910011401	(220.011)	welding flange	80mm
N05801432		flange mounting kit	54mm
2250234		gasket-cork (dim. as per 36373/9A)	54mm



Adjustable Float Arm Sender 220.003



Arm Type Fuel Sender



Sender-Tubular Tank

Note: PCD = Pitch Circle Diameter



Neoprene Rubber Gasket 36373/9A



Welding Flange 22502641141



Flange Mounting Kit N05801432  
Suits 220.003 / 220.004 / 220.005 and  
Tubular T / U Senders



# Cockpit Vision



Sender 360.001



Sender 360.002

## PRESSURE GAUGE, electrical

Suitable for most vehicles.  
Illumination 12V included.  
Adaptors are listed on page 66.

<i>Electric Pressure Gauge - 500KPA</i>			<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Specifications</i>	<i>Voltage</i>
350 010 016	Oil pressure symbol on dial	500kpa 10-184 ohms	12V

<i>Senders</i>			<i>10-180 ohms</i>
<i>Part No.</i>	<i>Range</i>	<i>Thread</i>	<i>Terminal</i>
360.001	500kpa	1/8"-27NPTF	Spade
360.004	500kpa	1/4"-18NPTF	Button
360.016	500kpa	1/8"-28BSBT	Button
360.018	500kpa	1/8"-27NPTF	M4 thread
360081030049K	5 Bar / 7 psi SW	1/8"-27NPTF	M4 thread

Refer to your engine manufacturers manual for correct oil pressure ratings.

**Note:** 500 kPa = 5 Bar = 72.5 psi    700 Kpa = 7 Bar = 101.5 psi  
1000 kPa = 10 Bar = 145 psi    2800 Kpa = 28 Bar = 406 psi

## PRESSURE GAUGE, electrical

Suitable for most vehicles.  
Illumination 12V included.  
Adaptors are listed on page 66.

<i>Electric Pressure Gauge - 1000KPA</i>			<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Specifications</i>	<i>Voltage</i>
350 010 017	Oil symbol on dial	1000kpa 10-199 OHMS	12V

<i>Senders</i>			<i>10-199 ohms</i>
<i>Part No.</i>	<i>Range</i>	<i>Thread</i>	<i>Terminal</i>
360.002	1000kpa	1/8"-27NPTF	Spade
360.019	1000kpa	1/8"-27NPTF	M4 thread
360081030052C	10 Bar / 7 psi SW	1/8"-27NPTF	M4 thread

Refer to your engine manufacturers manual for correct oil pressure ratings.

**Note:** 5 Bar = 72.5 psi    7 Bar = 101.5 psi  
10 Bar = 145 psi    28 Bar = 406 psi

## PRESSURE GAUGE, electrical

Pressure Gauge - 100psi			52mm	
Part No.	Previous Part No.	Description	Specifications	Voltage
350010021	(350 010 003)	Oil on dial	100psi	12V
		10-184 ohms		
350 010 001		Trans on dial	400psi	12V
		10-184 ohms		

Sender			10-180 ohms	
Part No.	Range	Thread	Terminal	
360.086	100psi	1/8"-27NPTF	M4 Thread	
360081038003C	25 Bar	1/8"-27NPTF	M4 Thread	
360081038008C	400psi	1/8"-27NPTF	M4 Thread	

Refer to your engine manufacturers manual for correct oil pressure ratings.  
(0 - 25 Bar Sender can drive the 400 Psi gauge.)

**Note:** 500 kPa = 5 Bar = 72.5 psi    700 Kpa = 7 Bar = 101.5 psi  
1000 kPa = 10 Bar = 145 psi    2800 Kpa = 28 Bar = 406 psi



Sender 360.086

## PRESSURE GAUGES, mechanical

Suitable for most vehicles.

Supplied with nut and cone to suit 3/16" PVC tubing.

Illumination 12V included.

Pressure Gauge - Air, Oil & Fuel		52mm
Part No.	Range	Size
150 077 010	0 - 15psi	52mm
150 077 011	0 - 30psi	52mm
150 077 027	0-100psi	52mm
150 077 026	0-150psi	52mm
150 077 020	0-700kPa	52mm

Accessories	
Part No.	Description
230.012	1.8m fitting kit - 3/16" PVC tubing & engine fitting
230.013	5m fitting kit - 3/16" PVC tubing & engine fitting
230.018	1.8m fitting kit - 3/16" PVC tubing & engine fitting and air restrictor
230.008	Nut and cone for 3/16" PVC Tubing, M12x1.5 thread
230.024	Engine fitting 1/8"-27NPTF male, 3/16" tubing
230.025	Nut and cone 1/8"-27NPTF nut
230.015	Air/Fuel pressure restrictor



Oil line kit 230.012



Nut and cone 230.008

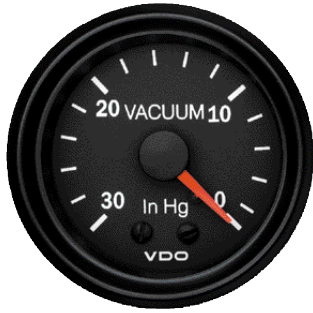


Engine fitting 230.024



Nut and cone 230.025

# Cockpit Vision



## VACUUM GAUGE, mechanical

Suitable for most vehicles.

Supplied with nut and cone to suit 3/16" PVC tubing.

Illumination 12V included.

<i>Vacuum Gauge</i>		<i>52mm</i>
<i>Part No.</i>	<i>Range</i>	<i>Size</i>
150 077 005	-30-0" Hg	52mm

**Note:** Accessories at end of page 8.



## TURBO CHARGER GAUGE, mechanical

Suitable for all vehicles.

Supplied with nut and cone to suit 3/16" PVC tubing.

Illumination 12V included.

<i>Turbo Charger Gauge - Mechanical</i>		<i>52mm</i>
<i>Part No.</i>	<i>Range</i>	<i>Size</i>
150 077 004	-30" Hg/+25psi	52mm

Hg = Negative 30 inches of vacuum of mercury.

**Note:** Use airline kit 230.018

Accessories at end of page 8.



## BOOST GAUGE, mechanical

Suitable for all vehicles.

Supplied with nut and cone to suit 3/16" PVC tubing.

Illumination 12V included.

<i>Boost Gauge - Mechanical</i>		<i>52mm</i>
<i>Part No.</i>	<i>Range</i>	<i>Size</i>
150 077 010	0-15 psi	52mm
150 077 011	0-30 psi	52mm

**Note:** Accessories at end of page 8.



Oil line kit 230.012



Nut and cone 230.008



Engine fitting 230.024



Nut and cone 230.025

<i>Accessories</i>	
<i>Part No.</i>	<i>Description</i>
230.012	1.8m fitting kit - 3/16" PVC tubing & engine fitting
230.013	5m fitting kit - 3/16" PVC tubing & engine fitting
230.025	Nut and cone 1/8"-27NPTF nut
230.008	Nut and cone for 3/16" PVC tubing, M12x1.5 thread
230.024	Engine fitting 1/8"-27NPTF male, 3/16" tubing
230.015	Air restrictor to fit 3/16" PVC Tubing

## TEMPERATURE GAUGE, electric

Suitable for most vehicles.

Illumination 12V included.

For more matching sender units refer to page 60.

Adaptors are listed on page 66.

Temperature Gauge - Water			52mm
Part No.	Description	Specifications	Voltage
310 010 014	Water temp. symbol on dial	40-120°C 287-23 ohms	12V

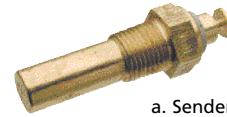
Sender					
Part No.	Previous Part No.	Range	Thread	Terminal	Body Type
320.002		40-120°C	1/8"-27NPTF	button	a
320.071		40-120°C	1/8"-27NPTF	M4 thread	b
323.801/005/001		40-120°C	1/8"-27NPTF	button	a
320.022		40-120°C	1/2"-14NPTF	spade	c
323801001006K (320.035)		40-120°C	M14x1.5mm	spade	c
320.004		40-120°C	M16x1.5mm	button	a

**Note:** 40-120°C = 100-250°F

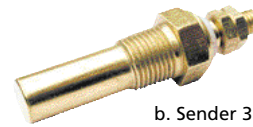
Temperature Gauge - Oil			52mm
Part No.	Description	Specifications	Voltage
310 010 015	Engine oil temp. symbol on dial	50-150°C 323-18 ohms	12V

Sender				
Part No.	Range	Thread	Terminal	Body Type
320.021	50-150°C	1/8"-27NPTF	button	a
320.028	50-150°C	1/8"-27NPTF	button	b
320.070	50-150°C	1/8"-27NPTF	M4 thread	e
320.072	50-150°C	1/8"-27NPTF	M4 thread	f
320.016	50-150°C	1/2"-20Whit.S	spade 90°	c
320.023	50-150°C	3/8"-16UNF	spade	c
320.010	50-150°C	M12x1.5mm	button	a
320.007	50-150°C	M14x1.5mm	spade 90°	c
323.801/004/029	50-150°C	M16x1.5mm	spade 90°	c

**Note:** 50-150°C = 120-300°F



a. Sender 320.002



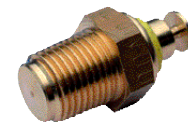
b. Sender 320.071



c. Sender 320.022



a. Sender 320.021



b. Sender 320.028



c. Sender 320.023

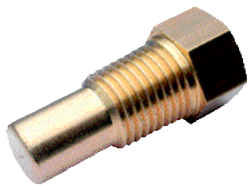


e. Sender 320.070

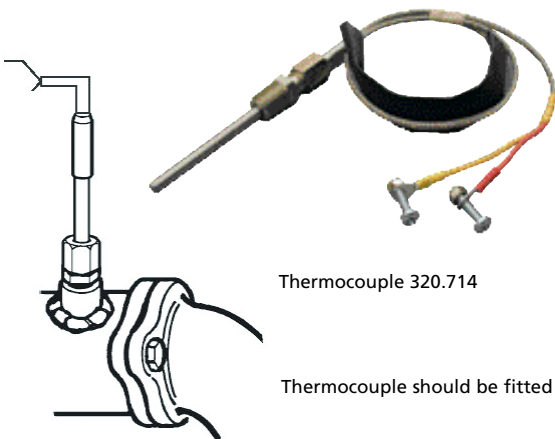


f. Sender 320.072

# Cockpit Vision



Thermowell 180.059



Thermocouple 320.714

Thermocouple should be fitted 100mm after Turbo

## TEMPERATURE GAUGES, mechanical

Suitable for most vehicles.

Process connection is 1/8"-27NPTF threaded removable thermowell.

Temperature is transmitted via capillary tube.

Coil up excess capillary tubing - **do not cut to shorten!**

Illumination 12V included.

Adaptors are listed on page 66.

Temperature Gauge - Water		52mm
Part No.	Range	Capillary Length
180 077 022	40-120°C	1600mm
180 077 023	40-120°C	2600mm
180 077 021	40-120°C	4000mm

Temperature Gauge - Oil		52mm
Part No.	Range	Capillary Length
180 077 020	50-150°C	1600mm
180 077 019	50-150°C	4000mm

Accessories		
Part No.	Description	Note
180.059	Thermowell 1/8"-27NPTF	Suits adaptors # 320.xxx

**Note:** Refer page 66 for adaptors.

## EXHAUST TEMPERATURE / PYROMETER electric

Suitable for most exhaust systems.

Thermocouple connection is by 1/4"-18NPTF compression fitting.

Illumination 12V included.

Pyrometer - Electronic Kit		52mm
Part No.	Range	Voltage
310.159	0-900°C (37.6mV@900°C)	12V

Spare Part	
Part No.	Description
310 015 009	Instrument
320.714	Thermocouple 1/4" NPTF Non bonded junction "K" type
240.035	Loom, 5m
240.037	Loom, 10m (optional)
320.059	Weld boss 1/4" - 1/8" NPTF
240.039	Loom 1m units (cut to length)

# Cockpit Vision

## AMMETERS, with internal shunts

Suitable for most engines which require battery and charging system monitoring.

Voltage dependent - suitable for 12V or 24V.

Ammeters with internal shunt are easily identified by the heavy duty threaded terminals on the back of the instrument.

Illumination 12V included.



Ammeter with Internal Shunt			52mm
Part No.	Description	Specifications	Voltage
190077006	30-0-30 amp gauge	use 6mm wire	12V
190077007	60-0-60 amp gauge	use 6mm wire	12V

## AMMETER, with external shunt

Suitable for monitoring heavy duty electrical charging system.

Voltage dependent - suitable for 12V or 24V.

Illumination 12V included. For 24V application use drop resistor N05801180 and globe 240.051.



Ammeter with External Shunt			52mm	
Part No.	Previous Part. No	Description	Specifications	Voltage
190.504		150-0-150 ammeter kit		12V

**Note:** For installation use 10mm wire.

Kit Components				
Part No.	Previous Part. No	Description	Specifications	Voltage
190 075 004		150-0-150 gauge, 52mm		
190.080	(190.079)	shunt - 150 amps	50mV @ 150 amps	
190.888		5m loom		

## VOLTMETER

Suitable for most engines/vehicles where battery and charging systems need to be monitored, Illumination 12V included.



Voltmeter			52mm
Part No.	Range	Voltage	
332 010 004	8-16V	12V	

# Cockpit Vision



## CLOCK, analogue

Suitable for most vehicles.

Features a 12V quartz movement for high accuracy.

Illumination 12V included.

<i>Clock</i>	<i>52mm</i>
<i>Part No.</i>	<i>Voltage</i>
370 012 001	12V



## CYLINDER HEAD TEMPERATURE GAUGE

Suitable for most engines including air cooled, industrial, agricultural.

Thermocouple connection fits under 13mm spark plug, or a bolt of the same or smaller diameter.

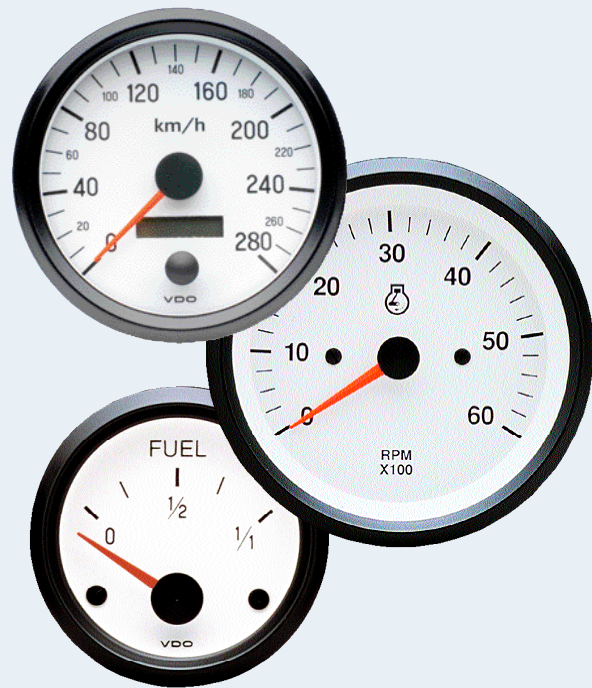
Illumination 12V included.

<i>Temperature Gauge - Electric</i>			<i>52mm</i>
<i>Part No.</i>	<i>Range</i>	<i>Dial Colour</i>	<i>Kit Specifications</i>
310.901	100-600°F	Black	Gauge, sender, loom

# Cockpit White

Cockpit White offers an alternative appearance to conventional black face dials, developed from VDO's strength and commitment to the automotive industry to provide a low cost range of gauges suited to a broad range of applications. These reliable gauges feature easy to read flood lit dial illumination for a fantastic look.

Exhaust Temperature / Pyrometer	18
Fuel Gauges	14
Oil Pressure Electric	15
Pressure Gauge Mechanical	15
Speedometers	14
Tachometers	14
Temperature Gauge Electric	16-17
Turbo Gauge Mechanical	16
Voltmeter	18





# Cockpit White



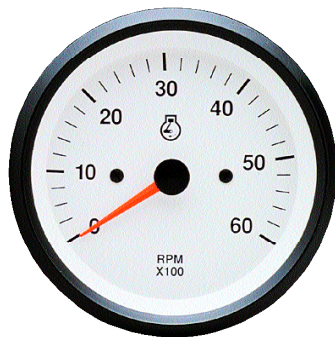
## SPEEDOMETER

Illumination through dial and pointer. 12V globe included  
 Field adjustable to suit 500 to 400,000 imp/km by pulse setting, or auto-calibration function through LCD readout via reset button. Total distance 999,999.9 not resettable. Speed display analogue; Odometer and trip distance LC-display trip distance 99,999.9 resettable. Signal source Hall-effect, inductive or blocking oscillator sender units. For 24V application use globe #240.053 (2 required). For matching sender units refer to page 75 and 76.

### Speedometer - Electronic

Part No.	Range	Size	Voltage
437.202	0-120mph	85mm	12V
437.100	0-280km/h	100mm	12V

**Note:** 8 pin plug kit part no. 340.824 required. Not included in kit.



## TACHOMETER

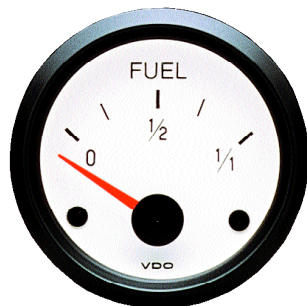
Field programmable to suit for 4, 6 or 8 cylinder, four stroke petrol engines with coil pickup or alternator pickup (terminal "W") on diesel applications.

Illumination 12V included.

### Tachometer - Electronic

Part No.	Range	Size	Voltage
333.100	0 - 8000rpm	100mm	12V
333.255	0 - 7000rpm	85mm	12V

**Note:** 8 pin plug kit part no. 340.824 required. Not included in kit.



## FUEL GAUGES

Suitable for use with petrol and diesel fuel.

Illumination 12V included.

### Fuel Gauge - Float Arm Sender

Part No.	Description	Specifications	Voltage
301.216	Fuel gauge-float arm	10-180 ohms	12V

### Sender - Adjustable Float Arm

Part No.	Specifications	Length
220.003	10 - 184 ohms	150-600mm

### Arm Type Fuel Senders

See complete listing of arm type fuel senders on page 62.

### Accessories

Part No.	Description	PCD
N05801432	Mounting kit	54mm

Arm Type Fuel Sender

Adjustable Float Arm Sender 220.003

Flange Mounting Kit N05801432



# Cockpit White

## PRESSURE GAUGE, electric

Suitable for most vehicles.

Illumination 12V included.

Adaptors are listed on page 66.

Electric Pressure Gauge - 80psi / 500kpa			52mm
Part No.	Description	Specifications	Voltage
350.240	"Oil" on dial	80psi (500kpa)	12V

Senders			10-180 ohms
Part No.	Range	Thread	Terminal
360.001	500kpa	1/8"-27NPTF	Spade
360.004	500kpa	1/4"-18NPTF	Button
360.016	500kpa	1/8"-28BSBT	Button
360.018	500kpa	1/8"-27NPTF	M4 thread
360081030049K	5 Bar / 7 psi SW	1/8"-27NPTF	M4 thread

Refer to your engine manufacturers manual for correct oil pressure ratings.

**Note:** 500 kPa = 5 Bar = 72.5 psi    700 Kpa = 7 Bar = 101.5 psi  
1000 kPa = 10 Bar = 145 psi    2800 Kpa = 28 Bar = 406 psi



Sender 360.001

## PRESSURE GAUGES, mechanical

Suitable for most vehicles.

Supplied with nut and cone for 3/16" PVC tubing.

Illumination 12V included.

Pressure Gauge			52mm
Part No.	Description	Specifications	
150.202	"Oil" on dial	0-100psi	

Accessories	
Part No.	Description
230.012	1.8m fitting kit - 3/16" PVC tubing & engine fitting
230.013	5m fitting kit - 3/16" PVC tubing & engine fitting
230.008	Nut and cone for 3/16" PVC tubing, M12x1.5 thread
230.024	Engine fitting 1/8"-27NPTF male, 3/16" PVC tubing
230.025	Nut and cone 1/8"-27NPTF nut
230.015	Air/Fuel pressure restrictor



Oil line kit 230.012



Nut and cone 230.008



Engine fitting 230.024



Nut and cone 230.025

# Cockpit White



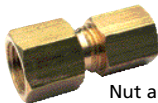
Oil line kit 230.012



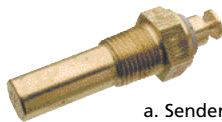
Nut and cone 230.008



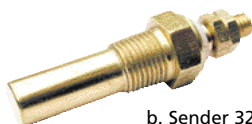
Engine fitting 230.024



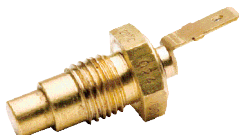
Nut and cone 230.025



a. Sender 320.002



b. Sender 320.071



c. Sender 320.022

## TURBO CHARGER GAUGE, mechanical

Suitable for most vehicles.

Supplied with nut and cone for 3/16" PVC tubing.

Illumination 12V included.

Turbo Charger Gauge - Mechanical		52mm
Part No.	Description	Specifications
150.206	"TURBO" on dial	-30"HG/+25psi

Accessories	
Part No.	Description
230.012	1.8m fitting kit - 3/16" PVC tubing & engine fitting
230.013	5m fitting kit - 3/16" PVC tubing & engine fitting
230.018	1.8m fitting kit - 3/16" PVC tubing & engine fitting and air restrictor
230.008	Nut and cone for 3/16" PVC tubing, M12x1.5 thread
230.024	Engine fitting 1/8"-27NPTF male, 3/16" PVC tubing
230.025	Nut and cone 1/8"-27NPTF nut
230.015	Air restrictor to fit 3/16" PVC tubing

## TEMPERATURE GAUGE, electric

Suitable for most vehicles.

Illumination 12V included.

For more matching sender units refer to pages 60.

Adaptors are listed on page 66.

Temperature Gauge - Water		52mm
Part No.	Description	Specifications
310.239	"WATER" on dial	100-250°F

Sender					
Part No.	Previous Part No.	Range	Thread	Terminal	Body Type
320.002		100-250°F	1/8"-27NPTF	button	a
320.071		100-250°F	1/8"-27NPTF	M4 thread	b
323.801/005/001		100-250°F	1/8"-27NPTF	button	a
320.022		100-250°F	1/2"-14NPTF	spade	c
323801001006K (320.035)		100-250°F	M14x1.5mm	spade	c
320.004		100-250°F	M16x1.5mm	button	a

**Note:** 40-120°C = 100-250°F

# Cockpit White

## TEMPERATURE GAUGE, mechanical

Suitable for most vehicles.

Process connection is via 1/2"-14NPTF wet bulb.

Temperature is transmitted via capillary tube.

Coil up excess capillary tubing - *do not cut to shorten!*

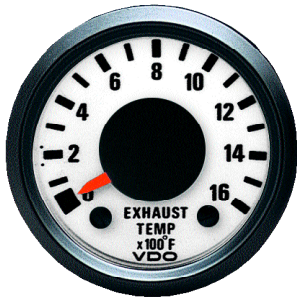
Illumination 12V included.

Temperature Gauge - Water			52mm
Part No.	Description	Range	Capillary Length
180.204	"WATER" on dial	120-260°F	96"(2438mm)

Temperature Gauge - Oil			52mm
Part No.	Description	Range	Capillary Length
180.207	"OIL" on dial	120-340°F	96"(2438mm)



# Cockpit White



## EXHAUST TEMPERATURE / PYROMETER electric

Suitable for most exhaust systems. Process connection is by a 1/4"-18NPTF compression fitting.

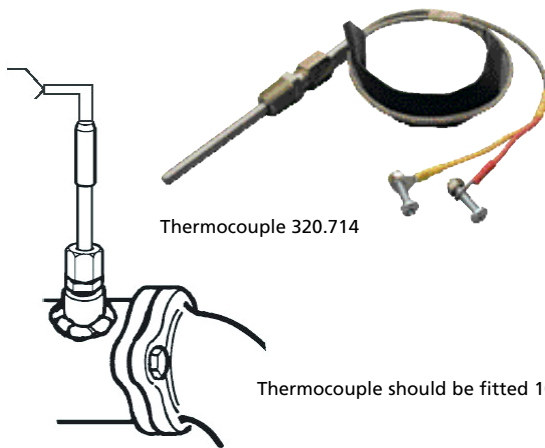
This kit features the VDO "Spin-lock" fastening system

Illumination 12V included.

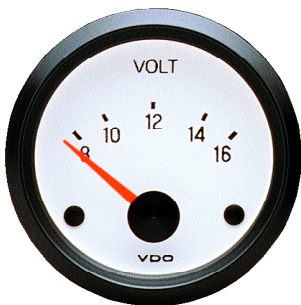
Adaptors are listed on page 66.

<i>Pyrometer - Electronic</i>		<i>52mm</i>
<i>Part No.</i>	<i>Range</i>	<i>Size</i>
310.240	250-1600°F	12V

Complete kit - consisting of instrument, thermocouple, 5m loom.



<i>Spare Part</i>	
<i>Part No.</i>	<i>Description</i>
320.714	Thermocouple Non bonded junction "K" type
240.035	Loom 5m
240.037	Loom 10m (Optional)
230.059	Weld boss
240.039	Loom 1metre units (cut to length)



## VOLTMETER

Suitable for all engines.

Illumination 12V included.

<i>Voltmeter</i>		<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Voltage</i>
332.241	"VOLT" on dial	8-16V

# Cockpit International

Cockpit International represents a range of heavy duty instruments designed for the commercial and industrial market.

The best combination of colours for readability and reduced eye fatigue are used in the styling of our cockpit instruments.

State of the art manufacturing and quality control procedures ensure that the end product features up to date engineering and design standards, such as the unique air core electric movements.

These reliable gauges feature easy to read floodlit dial illumination for accurate referencing

Ammeter	27
Exhaust Temperature / Pyrometer	26
Fuel Gauge Electric	21-22
Fuel Gauge Senders (Float & Tube)	21-22
Hourmeters	28
Pressure Gauge Electric	23
Pressure Gauge Mechanical	24
Speedometer	21
Tachometers	20
Tachourmeters	20
Temperature Gauges Electric	24-25
Temperature Gauges Mechanical	26
Voltmeter 12V-24V	27



# Cockpit International



## TACHOURMETERS, electronic with LCD Hourmeter

Suitable for most petrol and diesel engines. Adjustable through LCD and reset button. Field programmable to 1, 2, 3, 4, 5, 6, 8 or 12 cyl./4-stroke, 1, 2, 3 or 4 cyl./2-stroke ignition and alternator pick-up ("W" terminal). Also suitable for signal from generator or inductive sender unit. Incorporated hourmeter shows true engine hours. Operating hours 99,999.9. Pulse range 0.5-200 pulses per rev. Illumination 12V included. For 24V application use globe #240.053 (2 required). For matching sender units refer to page 75 and 76.

### Tachourmeter

Part Number	Range	Installation Ø	Voltage
333 035 010	3000rpm	80mm	12/24V
333 035 011	4000rpm	80mm	12/24V
333 035 025	3000rpm	85mm	12/24V
333 035 013	4000rpm	85mm	12/24V
333 055 002	3000rpm	100mm	12/24V

**Note:** 8 pin plug kit part no. 340.824 required. Not included in kit.



## TACHOMETER, electronic

Suitable for most petrol and diesel engines. Field programmable to suit 4, 6 or 8 cyl./4 stroke ignition and alternator pick-up (terminal "W"). Single phase not suitable for star point. Illumination 12V and 24V included.

### Tachometer

Part Number	Range	Installation Ø	Voltage
333 035 017	6000rpm	52mm	12V
333 035 001	3000rpm	80mm	12V
333 035 002	4000rpm	80mm	12V
333 035 003	7000rpm	80mm	12V
333 045 001	3000rpm	80mm	24V
333 045 002	4000rpm	80mm	24V
333 035 004	3000rpm	85mm	12V
333 055 001	3000rpm	100mm	12V
333 055 011	4000rpm	100mm	12V
333 065 001	3000rpm	100mm	24V

**Note:** 8 pin plug kit part no. 340.824 required. Not included in kit.

## SPEEDOMETER

Floodlit illumination. 12V globe included.

Field adjustable to suit 500 to 400,000 imp/km by pulse setting, or auto-calibration function through LCD readout via reset button.

Total distance 999,999.9 not resettable. Speed display analogue; Odometer and trip distance LC-display trip distance 99,999.9 resettable.

Signal source Hall-effect, inductive or blocking oscillator sender units.

For 24V application use globe #240.053 (2 required).

Note – 140mm Speedometer Impulse Ratio programmable 1000-60000 pulses / Km (via software).

For matching sender units refer to page 75 & 76.



<i>Speedometer</i>			
<b>Part Number</b>	<b>Range</b>	<b>Installation Ø</b>	<b>Voltage</b>
437 035 016	0-120km/h	85mm	12/24V
437 055 001	0-60km/h	100mm	12/24V
437 055 011	0-120km/h	100mm	12/24V
437 015 038	0-125km/h	140mm	12V
437 025 002	0-125km/h	140mm	24V

**Note:** 8 pin plug kit part no. 340.824 required. Not included in kit.

## FUEL GAUGES, electric

Suitable for use with most petrol, diesel fuel, and LPG systems.

Illumination 12V and 24V included.

For matching sender units refer to page 60.



<i>Fuel Gauge - 3-184 ohms</i>				<i>52mm</i>
<b>Part Number</b>	<b>Range</b>	<b>Installation Ø</b>	<b>Voltage</b>	
301 030 001	0-1/1	52mm	12V	
301 040 001	0-1/1	52mm	24V	

Without ISO symbol.

<i>Fuel Gauge - 10-184 ohms</i>				<i>52mm</i>
<b>Part Number</b>	<b>Range</b>	<b>Installation Ø</b>	<b>Voltage</b>	
301 030 005	0-1/1 ohms	52mm	12V	
301 040 005	0-1/1 ohms	52mm	24V	

<i>Sender - Adjustable Float Arm</i>		
<b>Part No.</b>	<b>Specifications</b>	<b>Length</b>
220.003	10 - 180 Ω	150-535mm

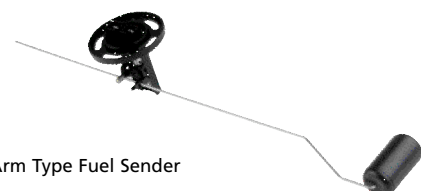
<i>Sender - Adjustable Float Arm</i>		
<b>Part No.</b>	<b>Specifications</b>	<b>Length</b>
220.004	5- 90 ohms	150-535mm

### *Arm Type Fuel Senders*

See complete listing of arm type fuel senders on page 62.



Sender-Adjustable Float Arm 220.003



Arm Type Fuel Sender



# Cockpit International

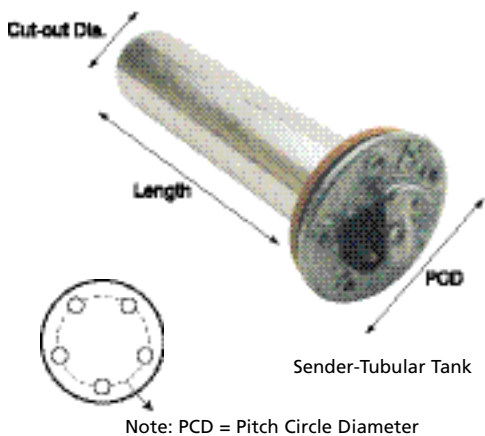


## FUEL GAUGE, electric continued

<i>Fuel Gauge - Tubular</i>			<i>52mm</i>
<i>Part Number</i>	<i>Range</i>	<i>Installation Ø</i>	<i>Voltage</i>
301 030 002	0-1/1	52mm	12V
301 040 002	0-1/1	52mm	24V

With ISO symbol.

For tubular tank units, adjustable resistance.



### *Tubular Type Senders*

See complete listing of tubular type senders on page 62.



Neoprene Rubber Gasket 36373/9A



Welding Flange 22502641141



Flange Mounting Kit N05801432

### *Accessories*

<i>Part No.</i>	<i>Previous Part No.</i>	<i>Description</i>	<i>PCD</i>
36373/9A		gasket-neoprene rubber	54mm
2251016		gasket	80mm
22502641141	(2250264)	welding flange	54mm
115910011401	(220.011)	welding flange	80mm
N05801432		flange mounting kit	54mm
2250234		gasket-cork (dim. as per 36373/9A)	54mm

## PRESSURE GAUGE, electric

Suitable for most vehicles and machines. Illumination 12V or 24V included.

Note: Not recommended for petrol.

Adaptors are listed on page 66.

Pressure Gauge - Engine Oil Pressure				52mm
Part Number	Range	Installation Ø	Voltage	
350 030 016	0-500kPa	52mm	12V	
350 040 016	0-500kPa	52mm	24V	

With ISO symbol.

**Note:** 500kPa = 5Bar = 72.5 psi

Senders				10-180 ohms
Part No.	Range	Thread	Terminal	
360.001	500kpa	1/8"-27NPTF	Spade	
360.004	500kpa	1/4"-18NPTF	Button	
360.016	500kpa	1/8"-28BSBT	Button	
360.018	500kpa	1/8"-27NPTF	M4 thread	

**Note:** 500kPa = 5Bar = 72.5 psi

Refer to your engine manufacturers manual for correct oil pressure ratings.

For thread adaptors see page 66. For additional pressure senders see page 65.

Pressure Gauge - Engine Oil Pressure				52mm
Part Number	Range	Installation Ø	Voltage	
350 030 017	0-1000kPa	52mm	12V	
350 040 017	0-1000kPa	52mm	24V	

With ISO symbol. 1000kPa = 10 Bar = 145 psi

For thread adaptors see page 66. For additional pressure senders see page 65.

Senders-1000kPa				10-199 ohms
Part No.	Range	Thread	Terminal	
360.002	1000kpa	1/8"-27NPTF	Spade	
360.019	1000kpa	1/8"-27NPTF	M4 thread	

Pressure Gauge				52mm
Part Number	Range	Installation Ø	Voltage	
350 040 011	0-10bar	52mm	24V	

With ISO symbol. 1000kPa = 10 Bar = 145 psi

Pressure Gauge - Transmission Oil Pressure				52mm
Part Number	Range	Installation Ø	Voltage	
350 030 005	0-25bar	52mm	12V	
350 040 005	0-25bar	52mm	24V	

With ISO symbol. 2500kPa = 25bar = 406psi

Senders				Insulated Return 2 terminal
Part No.	Previous Part No.	Description	Specifications	
360081038003C (360.722)		0-25 bar 360 psi single station	1/8"-27 NPTF	

For thread adaptors see page 66. For additional pressure senders see page 65.



Sender 360.001



Sender 360.002



Sender 360 081 038 003C

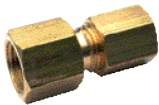
# Cockpit International



Oil line kit 230.012



Nut and cone 230.008



Nut and cone 230.025



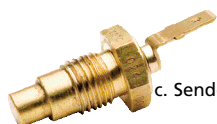
Engine fitting 230.024



a. Sender 320.002



b. Sender 320.071



c. Sender 320.022

## PRESSURE GAUGE, mechanical

Suitable for most vehicles and machines. Can be used on most non-aggressive gases and liquids. Supplied with nut and cone for 3/16" PVC tubing. Illumination 12V included.

For 24V application use globe part no. 240.053

Pressure Gauge		52mm
Part Number	Range	Installation Ø
150 035 019	0-700kPa	52mm
150 035 020	0-1000kPa	52mm
150 035 022	0-2500kPa	52mm

Accessories	
Part No.	Description
230.012	1.8m fitting kit - 3/16" PVC tubing & engine fitting
230.013	5m fitting kit - 3/16" PVC tubing & engine fitting
230.008	Nut and cone for 3/16" PVC tubing, M12x1.5 thread
230.024	Engine fitting 1/8"-27NPTF male, 3/16" PVC tubing
230.025	Nut and cone 1/8"-27NPTF nut

## DUAL PRESSURE GAUGE, mechanical

Suitable for most vehicles and machines.

Two independent measuring systems indicated separate pressures on one scale.

Mainly used for brake systems.

Supplied with nuts and cones for 3/16" PVC tubing.

Illumination 12V and 24V light globes included. Part No. 240.053

Dual Pressure Gauge		
Part Number	Range	Installation Ø
150.316	0-1000kPa	60mm
151.910	0-150 psi	52mm

## TEMPERATURE GAUGE, electric

Suitable for most vehicles and machines.

Illumination 12V or 24V included.

For matching sender units refer to pages 60.

Temperature Gauge - Water			52mm
Part Number	Range	Installation Ø	Voltage
310 030 002	40-120°C	52mm	12V
310 040 002	40-120°C	52mm	24V

With ISO symbol. 40-120°C = 100-250°F

Sender					
Part No.	Previous Part No.	Range	Thread	Terminal	Body Type
320.002		40-120°C	1/8"-27NPTF	button	a
320.071		40-120°C	1/8"-27NPTF	M4 thread	b
323.801/005/001		40-120°C	1/8"-27NPTF	button	a
320.022		40-120°C	1/2"-14NPTF	spade	c
323801001006K (320.035)		40-120°C	M14x1.5mm	spade	c
320.004		40-120°C	M16x1.5mm	button	a

**Note:** 40-120°C = 100-250°F

For thread adaptors see page 66. For additional pressure senders see page 65.

## TEMPERATURE GAUGE, electric

### Temperature Gauge - Engine Oil

Part Number	Range	Installation Ø	Voltage
310 030 003	50-150°C	52mm	12V
310 040 003	50-150°C	52mm	24V

With ISO symbol.

50-150°C = 120-300°F

### Sender

Part No.	Range	Thread	Terminal	Body Type
320.021	50-150°C	1/8"-27NPTF	button	a
320.028	50-150°C	1/8"-27NPTF	button	b
320.070	50-150°C	1/8"-27NPTF	M4 thread	d
320.072	50-150°C	1/8"-27NPTF	M4 thread	d
320.016	50-150°C	1/2"-20Whit.S	spade	c
320.023	50-150°C	3/8"-16UNF	spade	c
320.010	50-150°C	M12x1.5mm	button	a
320.007	50-150°C	M14x1.5mm	spade	c
323.801/004/029	50-150°C	M16x1.5mm	spade	c

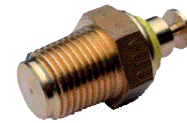
**Note:** 50-150°C = 120-300°F



a. Sender 320.021



b. Sender 320.028



c. Sender 320.023



d. Sender 320.070



### Temperature Gauge - Transmission Oil

Part Number	Range	Installation Ø	Voltage
310 030 004	60-200°C	52mm	12V
310 040 004	60-200°C	52mm	24V

With ISO symbol.

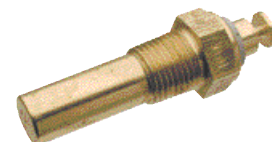
60-200°C = 140-392°F

### Sender

Part No.	Range	Thread	Terminal	Body Type
320.006	60-200°C	1/8"-27NPTF	button	a
320.020	60-200°C	1/8"-27NPTF	button	b



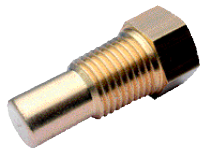
a. Sender 320.006



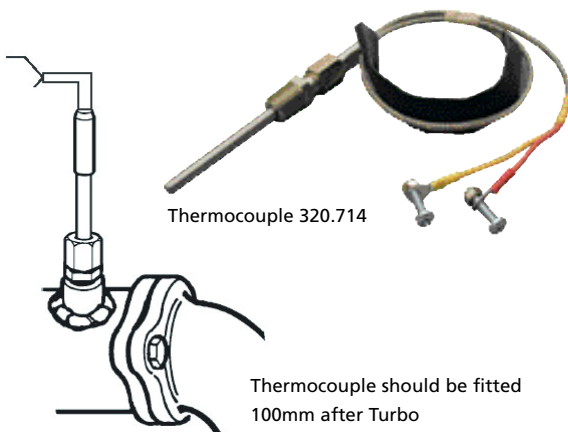
b. Sender 320.020



# Cockpit International



Thermowell 180.059



Thermocouple 320.714

Thermocouple should be fitted 100mm after Turbo

## TEMPERATURE GAUGE, mechanical

Suitable for most vehicles and machines.

Process connection is 1/8"-27NPTF threaded removable thermowell.

Temperature is transmitted via capillary tube.

Coil up excess capillary tubing – **do not cut to shorten!**

Illumination 12V included. For 24V application use globe #240.053.

Temperature Gauge (Water Temp)			52mm
Part Number	Range	Installation Ø	Capillary Length
180 035 002	40-120°C	52mm	1600mm
180 035 004	40-120°C	52mm	2600mm
180 035 005	40-120°C	52mm	4000mm
180 035 006	40-120°C	52mm	6000mm
180 035 008	50-150°C	52mm	2600mm
180 035 009	50-150°C	52mm	4000mm

Accessories		
Part No.	Description	Note
180.059	Thermowell 1/8"-27NPTF	Suits adaptors # 320.xxx

**Note:** Refer page 66 for adaptors.

## EXHAUST TEMPERATURE / PYROMETER electric

Suitable for most exhaust systems.

Thermocouple connection is by 1/4"-18NPTF compression fitting.

Illumination 12V included.

For 24V application use drop-resistor part no. N05801180 and globe #240.051.

Pyrometer-Electronic Kit		52mm
Part No.	Range	Voltage
397 015 003	0-900°C (37.6mV@900°C)	12V

Complete kit - consisting of instrument, thermocouple,

5m loom & weld boss.

**Note:** Cutting or adding length of loom will not effect calibration.

Components		
230.059	Weld boss 1/4"-18 NPTF	
240.035	Loom, 5 meter	
240.037	Loom, 10 metre (optional)	
240.039	Loom 1 metre units (cut to length)	
310 035 001	Instrument 0-900°C (37.6mv)	52mm
320.714	Thermocouple 1/4" NPTF Non bonded junction "K" type	

## AMMETER, with internal shunt

Suitable for most engines. Monitors Charge and battery condition.

Voltage independent – suitable for 12V or 24V.

Ammeters with internal shunt are easily identified by the heavy duty threaded terminals. Heavy duty wire must be used for wiring.

Illumination 12V included. For 24V application use globe #240.053.



Ammeter			52mm
Part Number	Range	Installation Ø	
190 037 002	60-0-60 amp	52mm	
190 037 003	100-0-100 amp	52mm	

**Note:** For installation use 6mm wire. Max length 15m.

## AMMETER, with external shunt

Suitable for most engines. Monitors Charge and battery condition.

Illumination 12V included.

For 24V application use drop resistor #240.701 and globe #240.051.



Ammeter			52mm
Part Number	Range	Installation Ø	Voltage
190.505	150-0-150AMP	52mm	12V

Complete kit consisting of instrument, shunt and loom.

**Note:** For shunt installation, use 10mm wire.

Kit Components			
190 075 004	150-0-150 gauge, 52mm		
190.080 (190.079)	shunt - 150 amps	50mV @ 150 amps	
190.888	5m loom		

## VOLTMETER

Suitable for all engines and machines.

Monitors Charge and battery condition.

Dial colour coded.

Illumination 12V or 24V included.



Voltmeter			52mm
Part Number	Range	Installation Ø	Voltage
332 030 001	8-16V	52mm	12V
332 040 001	18-32V	52mm	24V

With ISO symbol.

# Cockpit International



## HOURMETER, electronic

Suitable for all vehicles and machines.

Available with 360° minute hand sweep or as counters only.

12V globe included. For 24V applications, 24V globe #240.055 required

<i>Hourmeter</i>			
<i>Part Number</i>	<i>Range</i>	<i>Installation Ø</i>	<i>Voltage</i>
<b>With 360° minute hand sweep - Black bezel</b>			
331 032 004	0-99999.9hrs	52mm	12/24V
331.302	0-99999.9hrs	60mm illuminated	12/24V



<i>Hourmeter - Non illuminated</i>			<i>52mm</i>
<i>Part Number</i>	<i>Range</i>	<i>Installation Ø</i>	<i>Voltage</i>
<b>Counter type - with operation Indicator - Black bezel</b>			
331 032 001	0-99999.9hrs	52mm	12/24V
331810012004	0-99999.9hrs	52mm illuminated	12/24V



Sender 230.043



Sender 230.050

<i>Accessories</i>		
240.031	wiring kit	
230.043	pressure switch - 1 terminal	1/8"-27 NPTF
	70 kPa - 5 watts - N/O	6-24V
230.050	pressure switch - 2 terminal	1/8"-27 NPTF
	48 kPa - 5 watts - N/O	6-24V



## HOURMETER, electronic – rectangular type

Suitable for all vehicles and machines. Overall Dimension 53 X 32mm.

Note - Connections not polarity specific.

<i>Hourmeter</i>			
<i>Part Number</i>	<i>Range</i>	<i>Installation Ø</i>	<i>Voltage</i>
331.534	0-99999.9hrs	37mm x 25mm	12/24V
331.423	0-99999.9hrs	46mm x 46mm	240V AC

# Cockpit Titanium

## QUALITY

Gauges are designed and based on the proven & successful VDO 'Cockpit Vision' platform.

## ACCURACY

World class instrument technology for accuracy and performance.

## APPEARANCE

Trioptic thru-dial illumination using fibre optic technology to illuminate pointer.

## STYLE

Modern design with an eye catching sports look.

## DESIGN

Utilising VDO "Spin-Lock" locking ring – eliminating panel warping & gauge rotation.



Fuel Gauge	30
Gauges Pod Kit	32
Oil Pressure Gauges Electric	31
Speedometer	31
Tachometer	31
Temperature Gauge Electric	30
Voltmeter	31



# Cockpit Titanium



## FUEL GAUGE, electric

Suitable for use with most petrol, diesel fuel, and LPG systems.

Illumination 12V included.

For matching sender units refer to page 61 and 63.

Fuel Gauge			52mm
Part Number	Range	Installation Ø	Voltage
310.900	Empty-Full	52mm	12V

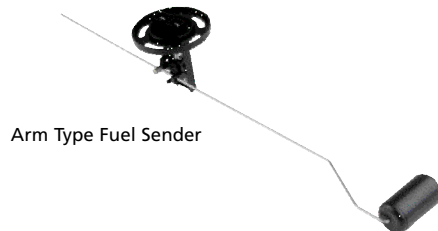
For tank units with 10-180 ohms resistance.

Without ISO symbol.



Sender-Adjustable Float Arm 220.003

Sender - Adjustable Float Arm		
Part No.	Specifications	Length
220.003	10 - 180 Ω	150-535mm



Arm Type Fuel Sender

### Arm Type Fuel Senders

See complete listing of arm type fuel senders on page 62.



## TEMPERATURE GAUGE, electric

Suitable for most vehicles and machines.

Illumination 12 or 24V included.

For matching sender units refer to pages 50.

Temperature Gauge - Water			52mm
Part Number	Range	Installation Ø	Voltage
301.900	100-250°F	52mm	12V

With ISO symbol.

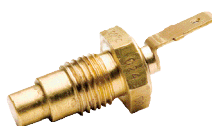
100-250°F = 40-120°C



a. Sender 320.002



b. Sender 320.071



c. Sender 320.022

### Sender

Part No.	Previous Part No.	Range	Thread	Terminal	Body Type
320.002		100-250°F	1/8"-27NPTF	button	a
320.071		100-250°F	1/8"-27NPTF	M4 thread	b
323.801/005/001		100-250°F	1/8"-27NPTF	button	a
320.022		100-250°F	1/2"-14NPTF	spade	c
323801001006K (320.035)		100-250°F	M14x1.5mm	spade	c
320.004		100-250°F	M16x1.5mm	button	a

**Note:** 40-120°C = 100-250°F

# Cockpit Titanium

## OIL PRESSURE GAUGE, electric

Suitable for most vehicles and machines.

Illumination 12V or 24V included.

For matching sender units refer to pages 60.

Oil Pressure - Engine Oil			52mm
Part Number	Range	Installation Ø	Voltage
350.900	0-80Psi	52mm	12V

With ISO symbol.

Sender				10-180 ohms
Part No.	Range	Thread	Terminal	
360.086	100Psi	1/8"-27NPTF	M4 Thread	
360081038003C	0 - 25 Bar	1/8"-27NPTF	M4 Thread	
360081038008C	400pppsi	1/8"-27NPTF	M4 Thread	

Refer to your engine manufacturers manual for correct oil pressure ratings.

(0 - 25 Bar Sender can drive the 400 Psi gauge.)

**Note:** 500 kPa = 5 Bar = 72.5 psi    700 Kpa = 7 Bar = 101.5 psi  
 1000 kPa = 10 Bar = 145 psi    2800 Kpa = 28 Bar = 406 psi



Sender 360.086

## VOLTMETER

Suitable for all engines and machines.

Monitors Charge and battery condition.

Dial colour coded.

Illumination 12V or 24V included.

Voltmeter			52mm
Part Number	Range	Installation Ø	Voltage
332.900	8-16V	52mm	12V

With ISO symbol.



## SPEEDOMETER

Speedometer			85mm
Part No.	Description	Specifications	Voltage
437.900	Titanium	200Km/h	12/24V

## TACHOMETER

Tachometer			85mm
Part No.	Description	Specifications	Voltage
333.900	Titanium	8000rpm	12V

# Cockpit Titanium



## GAUGE POD KIT

Suitable for VY-VZ Commodores.

- Fits all model VY-VZ Commodore for Holden sports vehicle look and function.
- The Pod is made of the same material and colour as the genuine dashboard that will not warp or discolour.
- Gauges are genuine high quality VDO instruments for accuracy and performance.
- Kits come complete with all you need for simple "plug n play" installation. No cutting or drilling required.  
Includes: Senders, Adaptors, Loom Extension, Cable Ties.
- Fitted correctly, this addition will not alter the vehicle's existing warning system.



### Gauge Pod Kit

Part No.	Description
740.300	Gauge & Pod kit

Kit Contents:

Gauges

350.900	Voltmeter Gauge
310.900	Oil Pressure Gauge
301 010 011	Main Wiring Loom
332 010 004	DIY Instructions

### Installation Kits - required to complete installation

Part No.	Description
740.020	Commodore VY V6
740.022	Commodore VZ V6
740.024	Commodore VY-VZ V8

# Heritage Gold / Cockpit Royale

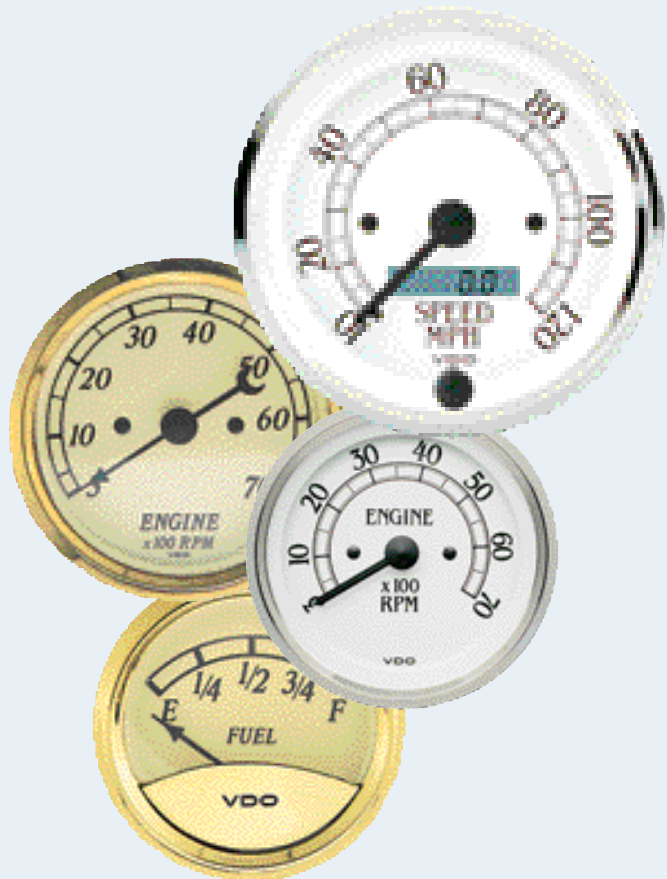
Heritage Gold instruments are the ultimate in classic style. Manufactured to the same stringent production and quality requirements as all VDO products. They incorporate yesterday's style with today's technology.

Cockpit Royale gauges are the perfect choice for the custom car builder who wants the look of the 30's and 40's.

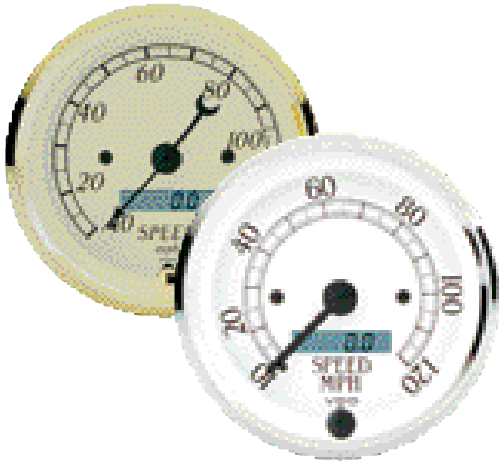
Brilliant chrome bezels and crisp white dials contrast with flat black typography authentic to the period and black pointers give the instruments a truly unique look.

As with all VDO instruments behind the stylish exterior is up to date technology.

Fuel Gauge	34
Instrument Kit	37
Oil Pressure Gauges Electric	35
Speedometer	34
Tachometer	34
Temperature Gauge Electric	35
Voltmeter	36



# Heritage Gold / Cockpit Royale



## SPEEDOMETERS

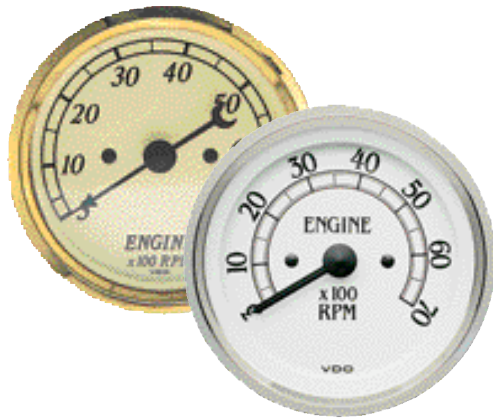
Flood lit illumination. 12V globe included.

Field adjustable to suit 500 to 400,000 imp/km by pulse setting, or auto-calibration function through LCD readout via reset button. Total distance 999,999.9 not resettable. Speed display analogue; Odometer and trip distance LC-display trip distance 99,999.9 resettable.

Signal source Hall-effect, inductive or blocking oscillator sender units.

For matching sender units refer to pages 75 and 76.

<i>Speedometers</i>			<i>85mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Specifications</i>	<i>Voltage</i>
437.852	Heritage Gold	120mph	12/24V
437.752	Cockpit Royale	120mph	12/24V
437.854	Heritage Gold	240km/h	12/24V
437.754	Cockpit Royale	240km/h	12/24V

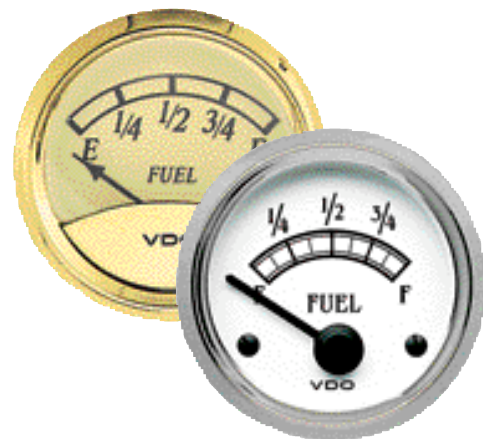


## TACHOMETERS

Suitable for petrol and diesel engines. Field programmable to suit 4, 6, or 8 cyl./4 stroke and alternator pick-up (terminal "W").

Illumination 12V included.

<i>Tachometers</i>			<i>85mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Specifications</i>	<i>Voltage</i>
333.801	Heritage Gold	7000rpm	12V
333.501	Cockpit Royale	7000rpm	12V



## FUEL GAUGES

Suitable for use with petrol and diesel fuel.

Illumination 12V included.

<i>Fuel Gauge - Float Arm Sender</i>			<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Specifications</i>	<i>Voltage</i>
301.800	Heritage Gold	10-180 ohms	12V
301.501	Cockpit Royale	10-180 ohms	12V

<i>Sender - Adjustable Float Arm</i>			
<i>Part No.</i>	<i>Specifications</i>	<i>Length</i>	<i>Voltage</i>
220.003	10-184 ohms	150-535mm	12V



Sender-Adjustable Float Arm 220.003

# Heritage Gold / Cockpit Royale

## PRESSURE GAUGES, electric

Suitable for most vehicles.

Illumination 12V included.

Adaptors are listed on page 66.

Pressure Gauge - Oil			52mm
Part No.	Description	Specifications	Voltage
350.800	Heritage Gold	80psi	12V
350.501	Cockpit Royale	80psi	12V

Senders			10-180 ohms
Part No.	Range	Thread	Terminal
360.001	80Psi	1/8"-27NPTF	Spade
360.004	80Psi	1/4"-18NPTF	Button
360.016	80Psi	1/8"-28BSBT	Button
360.018	80Psi	1/8"-27NPTF	M4 thread

Refer to your engine manufacturers manual for correct oil pressure ratings.

**Note:** 500 kPa = 5 Bar = 72.5 psi    700 Kpa = 7 Bar = 101.5 psi  
1000 kPa = 10 Bar = 145 psi    2800 Kpa = 28 Bar = 406 psi



Sender 360.001

## TEMPERATURE GAUGES, electric

Suitable for most vehicles.

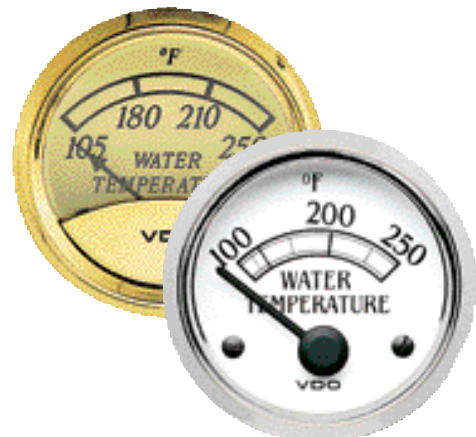
Illumination 12V included.

Adaptors are listed on page 66.

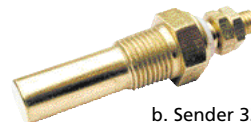
Temperature Gauge - Water			52mm
Part No.	Description	Specifications	Voltage
310.800	Heritage Gold	105-250°F	12V
310.501	Cockpit Royale	100-250°F	12V

Sender		287-23 ohms			
Part No.	Previous Part No.	Range	Thread	Terminal	Body Type
320.002		100-250°F	1/8"-27NPTF	button	a
320.071		100-250°F	1/8"-27NPTF	M4 thread	b
323.801/005/001		100-250°F	1/8"-27NPTF	button	a
320.022		100-250°F	1/2"-14NPTF	spade	c
323801001006K (320.035)		100-250°F	M14x1.5mm	spade	c
320.004		100-250°F	M16x1.5mm	button	a

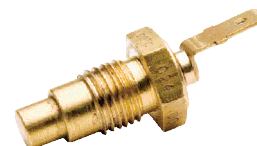
**Note:** 40-120°C = 100-250°F



a. Sender 320.002

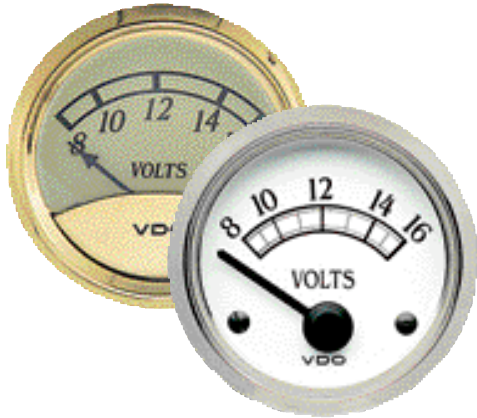


b. Sender 320.071



c. Sender 320.022

# Heritage Gold / Cockpit Royale



## VOLTMETERS

Suitable for most vehicles.  
Illumination 12V included.

<i>Voltmeter</i>		<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Voltage</i>
332.800	Heritage Gold	8-16V
332.501	Cockpit Royale	8-16V



# Heritage Gold / Cockpit Royale

## INSTRUMENT KITS

The new VDO gauge kits offer high impact presentation for our classic and vision ranges of gauges. The four new kits cover the popular automotive ranges and provide consumers with a first hand look at each range in a dashboard configuration.

Each kit is supplied with the necessary sender units to suit each gauge. Adaptors for sender units may be required for some vehicle applications.

### Heritage Gold Kit

Part No.	Description
----------	-------------

740.102	Gauge kit
---------	-----------

#### Kit Contents:

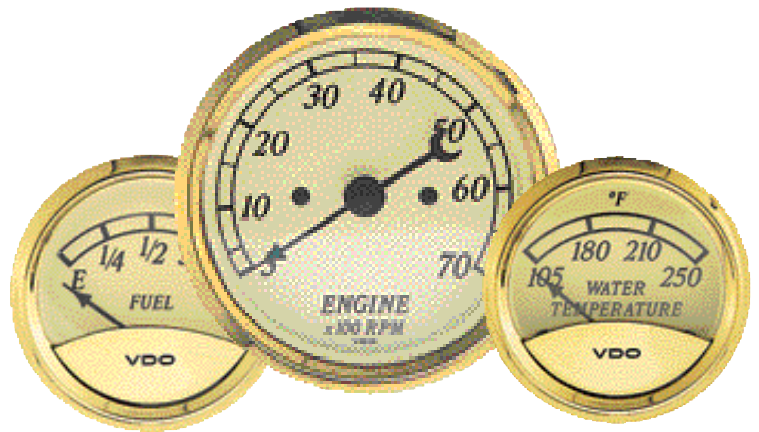
##### Gauges

- 350 800 Oil Pressure (52mm)
- 310 800 Water Temperature (52mm)
- 301 800 Fuel (52mm)
- 332 800 Volt Meter (52mm)
- 333 801 Tachometer (85mm)

##### Senders

- 360 001 Oil Pressure
- 320 002 Water Temperature
- 220 003 Fuel

**Note:** Choice of Speedo's available.



### Cockpit Royale Kit

Part No.	Description
----------	-------------

740.100	Gauge kit
---------	-----------

#### Kit Contents:

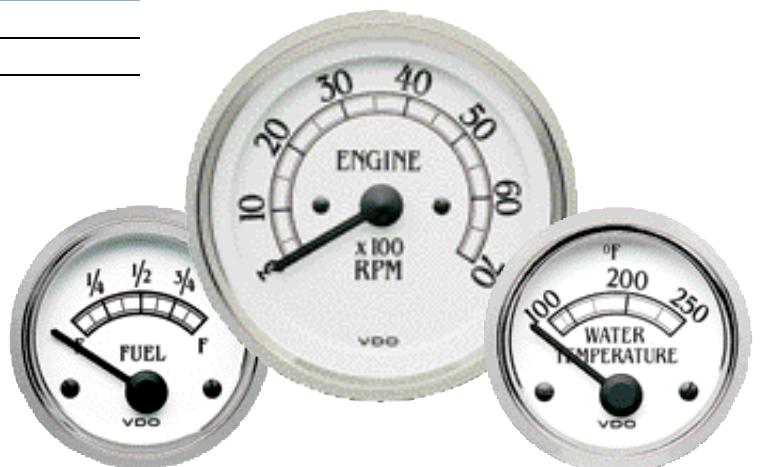
##### Gauges

- 350 501 Oil Pressure (52mm)
- 310 501 Water Temperature (52mm)
- 301 501 Fuel (52mm)
- 332 501 Volt Meter (52mm)
- 333 501 Tachometer (85mm)

##### Senders

- 360 001 Oil Pressure
- 320 002 Water Temperature
- 220 003 Fuel

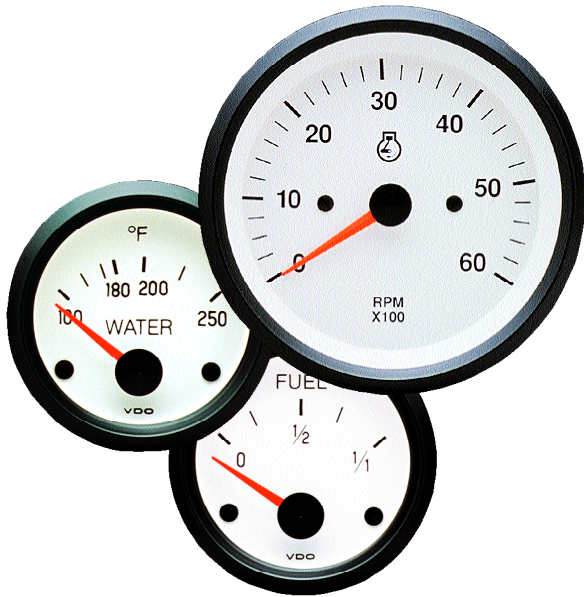
**Note:** Choice of Speedo's available.





# Cockpit White / Cockpit Vision

## INSTRUMENT KITS-continued



### Cockpit White Kit

Part No.	Description
----------	-------------

740.104	Gauge kit
---------	-----------

#### Kit Contents:

##### Gauges

- 350 240 Oil Pressure (52mm)
- 310 239 Water Temperature (52mm)
- 301 216 Fuel (52mm)
- 332 241 Volt Meter (52mm)
- 333 255 Tachometer (85mm)

##### Senders

- 360 001 Oil Pressure
- 320 002 Water Temperature
- 220 003 Fuel

**Note:** Speedo & other gauges available.



### Cockpit Vision Kit

Part No.	Description
----------	-------------

740.106	Gauge kit
---------	-----------

#### Kit Contents:

##### Gauges

- 350 010 017 Oil Pressure (52mm)
- 310 010 014 Water Temperature (52mm)
- 301 010 011 Fuel (52mm)
- 332 010 004 Volt Meter (52mm)
- 333 015 033 Tachometer (85mm)

##### Senders

- 360 002 Oil Pressure
- 320 002 Water Temperature
- 220 003 Fuel

**Note:** Speedo & other gauges available.

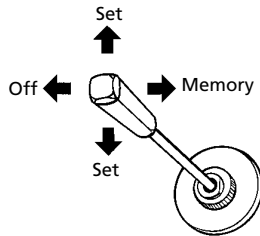
# Safety & Security

The Siemens VDO Safety and Security range of products offer premium quality, innovative and universal solutions to rigorous demands of the automotive industry.

Central Locking Kits	41
Cruise Control Accessories & Spares	40
Digital Clocks	45
Electronic Adjustable Switch Box	46
Immobiliser & Car Alarms	42-43
Low Water Level Alarms & Accessories	44
Pacesetter Cruise Control (Universal)	40
Remote Controlled Central Locking Kit	41
Reverse Warning System	45
RPM Switch Electric	47
Signal Amplifier / Divider	47
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VDO Electric Oil Pump	46
VDO Electronic Ratio Box	47
Warning Lights & Warning Buzzers	46
<b>Diagnostic Tools</b>	
Hand Held Tachometers	48
VDO Universal Gauge Check Tester	48
Gauge Check List	49-50



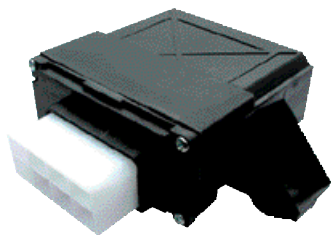
# Safety and Security Systems



Stalk control 412.006



Cruise control kit X10397106825



Frequency doubler 411.089

## PACESETTER CRUISE CONTROL (Universal)

Electronic cruise control suitable for petrol and diesel engines, automatic or manual transmissions. Actuator & control box in one compact unit. Dip switch controls for quick calibration and fine tuning. 12V operation.

### *Pacesetter Cruise Control*

<b>Part No.</b>	<b>Description</b>
X10397106825	Cruise Control, complete kit, includes 412.006 stalk control, electric actuator, wiring loom, bowden cable and clutch switch.

## CRUISE CONTROL ACCESSORIES & SPARES

### *Cruise Control Kits*

<b>Part No.</b>	<b>Description</b>
X39397106152	Clutch switch kit (micro sw)
X39737300009	Clutch switch kit (reed sw)
X39397106247	Control box (actuator)
X39397106239	Bowden cable
X39397106240	Wiring harness
X39397106152	Clutch switch
412.006	Stalk control
X39397106171	Actuator bracket to suit 412.077 cruise control.
X39397106179	L bracket & fittings to suit 412.077 cruise control.
X39397106247	Replacement actuator to suit X10397106825 Cruise Control.

### *Signal Amplifier/Divider*

12/24V

<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>
411.089	12/24V Electronic frequency doubler	Input: Hall effect, 0-10V p-p Inductive, 1.5-50V Output: Square wave 0-10V p-p

# Safety and Security Systems

## CENTRAL LOCKING KIT

The VDO Central Locking Kit is a universal kit which converts standard locks to key operated central locking, with master actuators for both front doors. This unit can be integrated with most remote controlled alarms and immobilisers for full keyless entry. The kit includes all necessary hardware, 4 actuators, wiring loom and control box. Can be integrated to VDO immobilisers part numbers: 900.600, 880.505, 880.555 and X10722002001 (Easy lock).

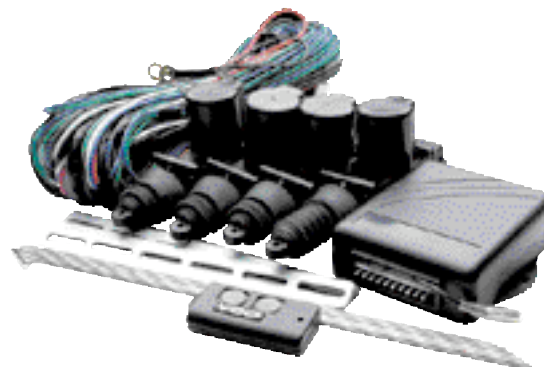
<i>Central Locking Kit</i>		<i>12V</i>
<i>Part No.</i>	<i>Description</i>	<i>Specification</i>
880.700	Central locking kit (key)	4 actuators



## REMOTE CONTROLLED CENTRAL LOCKING KIT

The VDO Remote Controlled Central Locking Kit is a universal kit which converts standard locks to transmitter operated central locking. Features indicator lamps output and an optional starter kill (use 880.012), and boot release function (additional relays required).

<i>Remote Controlled Central Locking Kit</i>		<i>12V</i>
<i>Part No.</i>	<i>Description</i>	<i>Specification</i>
900.705	Remote central locking	4 actuators, 2 transmitters



# Safety and Security Systems

## REMOTE CONTROLLED IMMOBILISER (Australian Standards Approved)

The VDO remote controlled immobiliser features a high level of security, with the added convenience of keyless entry where central locking is fitted to the vehicle. Features include 2 point on board immobilisation, all black wire harness, auto immobilisation, status LED, indicator lamps output, 2 code hopping remote transmitters, boot release output and full central door locking relay output. Interfaces with VDO central locking #880.700 and most factory central locking systems (some vehicles may require additional actuator #880.003 for drivers door).

Upgradeable to full alarm systems by adding siren #880.013, shock sensor #880.700 and/or microwave sensor #880.006.



<i>Remote Controlled Immobiliser</i>		<i>12V</i>
<b>Part No.</b>	<b>Description</b>	
900.600	Universal Remote Immobiliser	

## REMOTE CONTROLLED ALARM SYSTEM (Australian Standards Approved)

The VDO Remote Controlled Alarm System is a universal alarm system with a built in immobiliser for added security. Features include 2 point on board immobilisation, all black wire harness, auto immobilisation, built in, entry point protection, status LED, glass break sensor, indicator lamps output, 2 code hopping remote transmitters, sector diagnostics, options programmable using remote transmitter, battery backup mini siren, boot release output and full central door locking relay output. Interfaces with VDO central locking #880.007 and most factory central locking systems (some vehicles may require additional actuator #880.003 for drivers door). Compatible with microwave sensor #880.006.

Horn output = 115 dB @ 1 metre.



<i>Remote Controlled Alarm System</i>		<i>12V</i>
<b>Part No.</b>	<b>Description</b>	
900.505	Universal alarm/immobiliser	

# Safety and Security Systems

## PAGER CAR ALARM

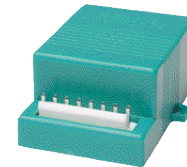
The VDO LCD Pager alarm provides all the benefits of an alarm/immobiliser with the added bonus of a LCD Pager so that the owner can monitor the status of the car from up to 600 to 800 metres away. The owner is notified by a visual, acoustic or vibration alert by the pager if the alarm is triggered. Features include 1 LCD Pager/transmitter, 1 code hopping transmitter, 1 external immobilisation, entry point protection, 2 stage shock sensor, battery backup mini siren, indicator lamp output, boot release output options programmable using remote transmitter, glass mount extended range transmitter and full central door locking relay output. Interfaces with VDO central locking #880.007 and most factory central locking systems (some vehicles may require additional actuator #880.003 for drivers door).



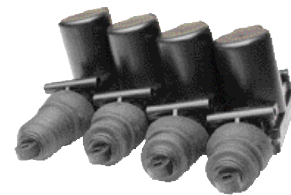
LCD Pager Alarm - Upgrade		12V
Part No.	Description	
880.555	Universal LCD Pager Alarm/Immobiliser	

## SECURITY ACCESSORIES

Security Accessories	
Part No.	Description
880.003	Slave locking actuator 2 wire
880.004	Master locking actuator 5 wire
880.005	Sliding door switch for vans
880.006	Microwave sensor. Suits 880.600 & 880.505
880.007	Shock sensor. Suits 880.600, 880.400
880.008	Central locking control box. Suits 880.700
880.012	Electric boot release kit 12V
880.013	Battery backup siren
880.014	Remote transmitter. Suits 880.600 & 880.505
880.015	Remote transmitter. Suits 880.705 kit and 900.705
880.016	Central locking control box. Suits 880.705 kit
880.017	Remote transmitter. Suits 880.555
880.018	LCD Pager/transmitter. Suits 880.555
880.020	Remote 900.600 and 900.505
880.021	Code key 900.605



Control box 880.008



Slave locking actuator 880.003



Battery backup siren 880.013



LCD Pager/transmitter 880.018

# Safety and Security Systems

## VDO LOW WATER ALARM

The VDO Low Water Alarm electronic module monitors current continuity while the low water level probe is submerged in water. The location of the probe in the radiator or header tank determines the critical water level. Warning occurs within a few seconds of this level being reached. The flashing warning light and continuously activated buzzer can only be cancelled by switching off the engine. The circuit design features a functional check which is carried out every time the ignition is turned off. It also includes a delay action to avoid premature triggering.

**Note: For aluminium core radiators, fit water level probe to vehicle thermostat housing.**



Warning Light 170.708

### VDO Low Water Alarm

Part No.	Description	Voltage
410.007	Low Water Warning Kit	12/24Volt

### Specifications

Switch Point – when continuity broken  $R > 10K$

Probe Material – Stainless Steel

Operation – AC current to prevent Electrolysis

**Note** kit contents – Warning light, electronic module water level probe, buzzer adaptor, soldering bush, and all wiring plugs and sockets.

### Components

Part No.	Description	Specification
410.006	Electronic Module	110 X 67 X 35mm
230.058	Water level probe	30mm Long
230.059	Water level probe	90mm Long
230.016	Soldering Bush	
230.017	Threaded Adaptor	M14 X1.5 Round.
230.057	Threaded Adaptor	M14 X1.5 Hex
230.056	2 terminal Ceramic Probe	M14 X1.5
230.090	Adaptor – Insulated return	Round
170.708	Warning light	12 volt
240.021	Buzzer 12V	40mm,34mm deep 75dB
240.022	Buzzer 24V	40mm,34mm deep 75dB

# Safety and Security Systems

## SPEED ALERT

Avoid expensive speeding fines and license suspension by installing a VDO Speed Alert. Features include acoustic and visual warnings when set speed is exceeded, with 1km/h increments for set speed. Headlight "On" alert provides acoustic and visual warning when headlights are left on and ignition is switched off. Suitable for both electronic and mechanical speedometers. Easy calibration for all cars. Double sided tape mounting.

For transmission mounted speed sender adaptors, refer to page 75 & 76.



<i>Speed Alert</i>		<i>12V</i>
<i>Part No.</i>	<i>Description</i>	<i>Size</i>
124.110	Speed Alert Kit. Suits electronic speedometers	70x45x22mm
124.120	Speed Alert Kit. Suits mechanical Speedometers	70x45x22mm

## REVERSE WARNING SYSTEM

The VDO Reverse Warning System provides a visual and acoustic alarm signal in stages when an obstacle reflects the ultrasonic wave. The system is activated automatically when the reverse gear is engaged. Features three range settings.



<i>Reverse Warning System</i>		<i>12V</i>
<i>Part No.</i>	<i>Specifications</i>	
X10730002001	Warning @ - 50cm, 100cm, 150cm	

## DIGITAL CLOCK

24 hour panel mounting digital clock, featuring green LED display.

<i>Digital Clock</i>		<i>12V</i>
<i>Part No.</i>	<i>Specifications</i>	<i>Size</i>
370.304	24hour	102x40mm
370.311	12 Hr - Digital Display On / Off Alarm function	102x40mm



## TYRE PRESSURE GAUGE

For the conscientious driver who likes to retain a consistent tyre pressure. Supplied in a handy leather pouch. Dual scale bar/psi.

<i>Tyre Pressure Gauge</i>	
<i>Part No.</i>	<i>Range</i>
150.050	0-4.5bar (0-64psi)

<i>Spare Parts</i>	
<i>Part No.</i>	<i>Description</i>
150.050S	Replacement seal





# Safety and Security Systems



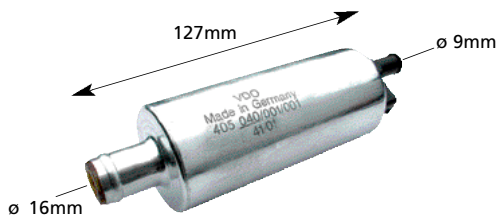
Switch Box 410.060



Switch Box 410.061



Warning Buzzer 240.021



## ELECTRONIC ADJUSTABLE SWITCH BOXES

Designed to be used in conjunction with VDO electric temp or pressure gauges with senders, or can be used using VDO senders only (extra resistor 1K, 1W required).

Ideal for switching warning lamps, buzzers, external relays, thermofan and other devices.

**Features 5 amp N/O or N/C relay contact output.**

### Adjustable Electronic Switch Boxes

Part No.	Description	Specification	Voltage
410.060	Suitable for 1 warning function	2000-10 ohms input 5 amp relay output 1 input - 1 output	24V-12/24V
410.061	Suitable for 3 separate warning functions	2000-10 ohms input 5 amp relay output 3 input - 3 output	24V-12/24V

## WARNING LIGHTS

### Warning Lights

Part No.	Description	Specification	Size
170.708	Red Light	Holder & 12V globe	15mm hole
170.709	Amber light	Holder & 12V globe	15mm hole
170.712	Green light	Holder & 12V globe	15mm hole
240.057	Globe	24V	
240.056	Globe	12V	

## WARNING BUZZERS

### Warning Buzzers

Part No.	Description	Specifications	Voltage
240.021	Buzzer 75db	50mA	12V
240.022	Buzzer 75db	50mA	24V

## VDO ELECTRIC OIL PUMP

Electric Oil pump used to pump Engine or Gear Oil.

### VDO Electric Oil Pump

Part No.	Description	Voltage
405040001001	160 Litres per hour	12V

**Note:** 100°C to 150°C working temperature, 4 bar pressure.

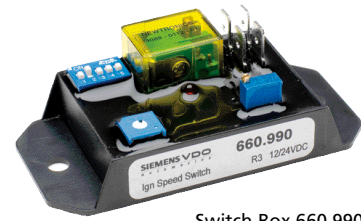
Polarity is written on the socket.

**Plug & terminals not available.**

# Safety and Security Systems

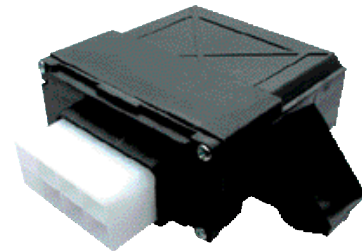
## RPM SWITCH ELECTRONIC

The VDO RPM Switch has been designed to work with all standard ignition systems, and will provide a negative output once a predetermined RPM has been reached. In standard format the signal will turn off once the RPM falls below the pre-set point. Dip Switches are provided to program the level of hysteresis, or alternatively latch the relay on. Applications include driving a warning light or buzzer. Compatible with VDO Mega Light 600.895. 12V applications.



Switch Box 660.990

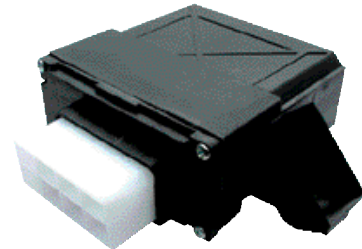
<i>RPM Switch</i>		
<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>
660.990	12V RPM switch	3 amp relay output RPM range 0-12000 rpm 4/6/8cyl
411.101	12/24V RPM switch	Switch range 2Hz - 9,990 Hz 5 amp relay contact output, 2 channels. Sine & Square wave inputs.



Switch Box 411.101

## ELECTRONIC RATIO BOX

The VDO Electronic Ratio Box is designed to divide or multiply an input frequency by a fixed ratio. The input signal could be a speedometer or tachometer signal from a magnetic pickup, alternator pickup or hall effect sender. Typical applications include correcting the speedometer on a vehicle which has had the diff ratio changed, or calibrating a tachometer which has no calibration adjustment. Suitable for 12/24V applications.



Switch Box 411.105

<i>Signal Amplifier/Divider</i>		<i>12/24V</i>
<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>
411.105	12/24V Electronic Ratio box	Input: Hall effect, 0-10V p-p Inductive, 1.5-50V Output: Square wave 0-10V p-p

## SIGNAL AMPLIFIER/DIVIDER

The VDO Signal Amplifier/Divider is a general purpose module designed to work with most speedometer and tachometer signals. This box will amplify a low voltage signal to a 10V peak to peak square wave. This can be useful when a signal is too low to drive a speedometer, tacho, cruise control or any other such device. The signal may also be divided in frequency by a factor of 1, 2, 4, 8 or 16 to allow easier integration to another instrument.



<i>Signal Amplifier/Divider</i>		<i>12/24V</i>
<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>
411.096	Signal amplifier/divider programmable	Signal input: 2+V p-p 0-10khz Output: 10.0V square wave
411.095	Signal amplifier/divider by 16 (permanent)	Signal input: 1>2V p-p 0-10khz Output: 10.0V square wave

# Diagnostic Tools



DT2236



DT2237



105.001

## DIGITAL HAND HELD TACHOMETERS

The DT Model Range of hand held tachometers offers an easy solution to any workshop that requires measuring the RPM of Engine, Process Machinery, Electric Motors etc.

Suits Photo, Photo/Mech, Inductive applications.

### Digital Hand Held Tachometers

Part No.	Description
DT 2234B	Digital Hand Held Tacho (Photo Only)
DT 2236	Digital Hand Held Tacho (Photo/Mech)
DT 2237	Digital Hand Held Tacho (Inductive )

### Specifications

Measurement:	
Photo:	5 – 99,999 Rpm
Contact	0.5 - 19,999 Rpm
Surface Speed:	0.05 – 1,999.9 Mts / Min
	0.2 - 6,560 Ft / Min

### Resolution

Photo:	0.1 Rpm (0.5 to 999.9 Rpm), 1 Rpm (over 1,000 Rpm)
Contact:	0.1 Rpm (0.5 to 999.9 Rpm), 1 Rpm (over 1,000 Rpm)
Surface Speed:	0.01 m / min to 0.05 – 99.99 m / min
	0.1 m / min (over 100 m/min)
	0.1 ft / min (0.1 to 999.9 ft / min)
	1 ft / min (over 1,000 ft / min)

### Accessories

Part No.	Description	
DT 2234 / 36 tape	Reflective tape for phototach	600 mm
AS - 35A	Adaptor Cone	
AS - 35B	Adaptor funnel	
AS - 35C	Speed test Wheel	

### Gauge Check Tester

12V

Part No.	Description
105.001	Ohms tester for resistance gauges 0-300 ohms

Gauge Check helps the serviceman to determine whether electrical gauges fitted to your vehicle are functional and accurate without having to remove or replace them. Suitable for testing automotive, commercial and marine gauges, it comes complete with operating instructions covering test data for all popular vehicles.

Also checks fuel gauges operating with capacitance tank senders - Ford Falcon, Fairlane, LTD, 1979 - 1987.

# Gauge Check List

## GAUGE CHECK LIST

Gauge Check List									
Vehicle Model	Empty	FUEL Half	Full	Cold	TEMP Mid	Hot	Low	OIL Mid	High
<b>HOLDEN</b>									
ASTRA LB-LC	110	97	3	282	—	40	—	—	—
BARINA	110	33	3	133	—	27	—	—	—
CAMIRA JB-JE	282	97	40	282	—	40	10	—	180
CAMIRA JD	282	97	40	282	—	40	130	54	26
FX-EH-HD-HR	0	15	30	24	—	179	10	—	193
GEMINI TF-TG	95	32	7	232	49	27	10	—	180
HQ (73/76)	190	25	10	315	—	22	10	—	190
HJ-HX-HZ	73	25	10	73	25	10	73	25	10
HK-HG-HT-HQ(9/73)	0	15	30	315	—	22	10	—	193
JACKAROO 7V	130	45	20	120	—	20	240	—	50
RODEO PETROL	1230	—	17	282	—	40	—	—	—
TORANA LC-LJ	0	15	30	315	—	18	10	—	193
TORANA LH-LX-S/B	73	25	10	73	25	10	73	25	10
TORANA UC	282	97	40	282	74	40	10	—	180
COMMODORE VB-VC-VH-VK-VL-VN	282	97	40	282	74	40	10	—	180
COMMODORE VN-VR V8	282	97	40	282	74	40	10	—	180
COMMODORE VP-VR-VS	282	97	40	282	74	40	—	—	—
COMMODORE VT-VX-VY	40	—	254	Can Bus	—	—	—	—	—
WB	282	97	40	282	74	40	10	—	193
<b>FORD</b>									
CARGO	73	—	10	—	—	—	—	—	—
CORTINA	73	25	10	73	—	10	—	—	—
COURIER DIESEL	95	33	7	278	—	16	—	—	—
COURIER PETROL	110	25	3	278	—	16	—	—	—
ECONOVAN	83	43	12	670	—	36	—	—	—
ECONOVAN II	95	33	7	154	30	12	—	—	—
ESCORT	73	25	10	73	25	10	—	—	—
FALCON AU	20	66	150	Can Bus	—	—	Can Bus	—	—
FALCON EA-EB-ED	2	84	200	220	—	39	28	—	180
FALCON EF - EL	10	—	149	Can Bus	—	—	0	—	73
FALCON BA	10	—	280	Can Bus	—	—	Can Bus	—	—
FALCON XD	0.2	2.6	4.2	73	25	10	73	—	10
FALCON XE	0.2	2.6	4.2	73	25	10	10	—	180
FALCON XF	0.2	2.6	4.2	220	—	36	10	—	180
FALCON XR-XT-XW-XY-XA- XB-XC	73	25	10	73	—	10	—	—	—
FAIRLANE ZF-ZG-ZH	73	25	10	73	—	10	—	—	—
F100 LOCAL	73	25	10	73	25	10	—	—	—
F100-F350 BI-TORQUE	500	—	5	—	—	—	—	—	—
LASER KA-KB	95	33	7	154	30	12	—	—	—
LASER KC	95	33	7	232	—	16	—	—	—
LTD P6	73	25	10	73	25	10	73	—	10
MAVERICK	80	37	10	80	—	10	80	—	10
METEOR GA-GB	95	33	7	154	30	12	—	—	—
METEOR GC	95	33	7	232	—	16	—	—	—
SPECTRON	95	33	7	233	40	16	—	—	—
TELSTAR TX5	95	33	7	154	30	12	—	—	—
TELSTAR TX5 DIGITAL	108	85	68	179	41	17	—	—	—
TRADER	95	33	7	154	30	12	—	—	—
<b>MITSUBISHI</b>									
CHRYSLER VH-CH-VJ-CJ	10	90	165	202	—	22	—	—	—
CHRYSLER VK-CK	10	94	180	202	—	22	—	—	—
CHRYSLER VL-CL	282	97	40	202	—	22	—	—	—
CORDIA, GALANT	95	32	7	311	—	27	—	—	—
SIGMA IMPORTED	95	32	7	255	—	17	—	—	—
SIGMA LOCAL	292	96	40	296	—	40	—	—	—
MAGNA TE, TF	107	—	4	152	—	17	—	—	—
MAGNA TM, TN, TP, TR, TS	95	32	7	152	—	17	—	—	—
EXPRESS VAN	95	32	7	85	—	15	—	—	—
LANCER	120	45	17	311	—	27	—	—	—
PAJERO	95	32	7	154	—	20	450	—	68

# Gauge Check List

## GAUGE CHECK LIST

Gauge Check List									
Vehicle Model	FUEL			TEMP			OIL		
	Empty	Half	Full	Cold	Mid	Hot	Low	Mid	High
<b>NISSAN</b>									
BLUEBIRD	282	97	40	310	—	32	10	—	180
MQ PATROL L28-P40	80	37	10	80	37	10	80	—	10
NAVARA	90	33	8	145	—	17	74	—	10
NOMAD VANETTE	90	33	14	80	37	10	74	—	10
PINTARA	202	90	40	202	—	40	27	—	180
PULSAR IMPORT	80	37	10	80	37	10	—	—	—
PULSAR LOCAL	282	97	40	200	90	40	—	—	—
PATHFINDER	—	—	—	318	—	28	—	—	—
SKYLINE 6CYL	202	90	40	202	90	40	27	—	180
240K 300ZX	80	37	10	145	—	17	80	—	10
DATSUN 120Y-180B LOCAL	80	37	10	115	—	10	—	—	—
DATSUN 120Y-180B IMPORT	80	37	10	145	—	17	—	—	—
DATSUN 1600	77	—	17	80	—	10	—	—	—
DATSUN 200B	282	97	40	310	—	32	—	—	—
STANZA S55	292	97	40	292	—	40	292	—	40
SUNNY	80	37	10	80	37	10	—	—	—
280Z	80	—	18	120	—	10	—	—	—
GAZELLE	90	32	4	180	—	15	180	—	15
GQ PATROL	80	37	10	100	30	10	75	27	16
MAXIMA	282	97	40	290	97	40	10	—	180
NAVARA	90	33	8	145	—	17	74	—	10
PINTARA	202	90	40	202	97	40	27	—	180
DATSUN SUNNY	80	37	10	80	37	10	—	—	—
URVAN	88	—	12	70	—	7	80	37	10
EXA 8V	80	37	10	110	—	6	80	37	10
<b>MAZDA</b>									
MAZDA 323 FWD	95	32	7	154	—	12	—	—	—
MAZDA 323 RWD	82	43	12	300	—	40	—	—	—
MADZA 626 FWD	95	32	7	154	—	12	—	—	—
MAZDA 626 RWD	95	32	7	233	40	16	—	—	—
MAZDA 929	95	32	7	233	40	16	—	—	—
RX7	95	32	7	233	—	16	—	—	—
MX5	—	—	—	180	—	12	—	—	—
MX6	110	33	7	233	—	16	—	—	—
MAZDA 121	82	43	12	—	—	—	—	—	—
<b>TOYOTA</b>									
LEXCEN	282	—	40	282	—	40	—	—	—
COASTER BUS	120	—	15	332	45	23	—	—	—
COROLLA 72-79	110	33	3	154	—	16	—	—	—
COROLLA 79-86	110	33	3	332	—	23	—	—	—
CROWN	110	33	3	155	—	20	—	—	—
LANDCRUISER	—	—	—	240	—	20	—	—	—
BLIZZARD	—	—	—	332	45	23	—	—	—
CAMRY 7V	110	33	3	240	40	18	—	—	—
CAMRY 12V	110	33	3	350	—	20	—	—	—
CELICA 7V	110	33	3	154	—	16	—	—	—
CELICA 12V	110	33	3	332	—	23	—	—	—
CRESSIDA 7V	120	45	17	136	—	20	—	—	—
CRESSIDA 12V	110	33	3	332	—	23	—	—	—
LITE ACE	120	45	17	134	—	23	—	—	—
SECA	110	33	3	—	—	—	—	—	—
TARAGO	110	33	3	154	—	16	500	—	75

# Vehicle Application Listing

## VEHICLE APPLICATION LISTING

Vehicle Application Listing							
Make/Series	Model	Year	Engine	Capacity	Oil Switch	Temp Sender	Pressure Sender
<b>ALFA ROMEO</b>							
75	Tween-Spark	88-92	4 Cyl 06224	2.0L		231.085	
75	2.5, 3.0	86-92	V6 01911,06174			231.085	
147		00-On	4 Cyl, V6	All		231.117	
156		99-04	4 Cyl, V6	2.0L, 2.5L		231.117	
166		99-01	V6	3.0L		231.117	
GT	2D Coupe	04-on	4 Cyl, V6	2.0L, 3.0L		231.117	
GTV	All	98-on	4 Cyl, V6	2.0L, 3.0L		231.117	
Spider	JTS Lusso, Convert	03-05	4 Cyl, V6	2.0L		231.117	
<b>AUDI</b>							
80	CC, 1.8E Quattro, 2.0 & 2.0S	86-87	4 Cyl	1.8L		231.110	320.086 360.022
80	CC, 1.8E Quattro	86-87	4 Cyl	1.8L		231.111	320.086 360.022
90	Sport & Quattro	89-92	5 Cyl	2.3L		231.110	
100	CD	83-91	5 Cyl	2.1L		231.110	
100	CD	83-91	5 Cyl	2.1L		231.111	
200	Turbo	86-91	5 Cyl	2.2L		231.110	
A3	4D Hatchback	97-04	4 Cyl	1.6L		231.111	
A3	4D Hatchback, Turbo	97-04	4 Cyl	1.8L		231.111	
A4	4D Hatchback, Turbo	95-01	4 Cyl	1.8L		231.111	320.086 360.022
A4	1.8T (incl Quattro)	95-99	4 Cyl	1.8L		231.111	
A4	2.4 V6	98-01	V6	2.4L		231.110	
A4	2.4 V6	98-on	V6	2.4L		231.111	
A4	2.4 V6	95-99	V6	2.6L		231.110	
A4	2.6 V6	95-99	V6	2.6L		231.110	
A4	2.6 V6 Quattro	95-99	V6	2.4L		231.111	
A4	2.6 V6 Quattro	94-97	V6	2.6L		231.111	
A6	2.8 Quattro	94-99	V6	2.8L		231.110	
A8	3.7 V8	96-99	V8	3.7L		231.110	
A8	4.2 V8	96-99	V8	4.2L		231.110	
<b>BMW</b>							
316i - 320i	E36, E46	95-99	4 Cyl	1.6L		231.115	
318i, 319S	E30	88-91	4 Cyl	1.8L		231.115	
318i	E36, E46	94-98	4 Cyl	1.8L		231.115	
320i	E30, E36	88-95	6 Cyl	2.0L		231.115	
320i	E30	82-85	6 Cyl	2.3L		231.109	
323i - 323Ci	E46	98-on	6 Cyl	2.5L		231.115	
325i - 325e	E30, E36	86-95	6 Cyl	2.5L, 2.7L		231.115	
325Ti - 325Ci	E46	02-on	6 Cyl	2.5L		231.115	
328i - 328Ci	E36, E46	95-00	6 Cyl	2.8L		231.115	
330i - 330Ci	E36	00-on	6 Cyl	3.0L		231.115	
520i	E28	83-85	6 Cyl	2.0L		231.109	
520i	E34	90-96	6 Cyl	2.0L		231.115	
523i	E39	96-00	6 Cyl	2.5L		231.115	
525i	E34	88-90	6 Cyl	2.5L		231.115	
528i	E28	82-85	6 Cyl	2.8L		231.109	
528i	E39	96-00	6 Cyl	2.8L		231.115	
530i	E34	93-96	V8	3.0L		231.115	
530i	E60	03-on	6 Cyl	3.0L		231.115	
530i	E28	86-88	6 Cyl	3.4L		231.109	
535i	E28	86-88	6 Cyl	3.4L		231.109	
535i & 535iS	E34	88-91	6 Cyl	3.4L		231.115	
535i	E39	96-on	V8	3.5L		231.115	
540i	E34	94-96	V8	4.0L		231.115	
540i	E39	96-03	V8	4.0L		231.115	
545i	E39	03-on	V8	4.0L		231.115	
730i 730iL	E32	90-94	6 Cyl	3.0L		231.115	
740iL	E32, E38	92-on	V8	4.0L & 4.4L		231.115	
745iL	E66 LWB	02-on	V8	4.4L		231.115	
M3, M3R	E36, E46	94-on	6 Cyl	3.0L & 3.2L		231.115	
X3, X5, Z3	E83, E53, E36	97-on	6 Cyl, V8, 4 Cyl	1.9L 2.0L, 3.0L, 4.4L, 4.6L		231.115	
Z4	2D Convertible	03-on	6 Cyl	2.5L & 3.0L		231.115	

# Vehicle Application Listing

## VEHICLE APPLICATION LISTING

Vehicle Application Listing							
Make/Series	Model	Year	Engine	Capacity	Oil Switch	Temp Sender	Pressure Sender
<b>CHRYSLER</b>							
Valiant	All	62-81	6 Cyl, V8	All	231.083	320.002	360.001
Charger	All	62-81	6 Cyl, V8	All	231.083	320.002	360.001
Centura	KB	75-77	4 Cyl	2.0L	230.089		
Centura	KB, KC	75-78	6 Cyl	3.5L, 4.0L	231.083		
Galant	All	71-77	4 Cyl	All	231.083		
<b>DAEWOO</b>							
Lanos	All models	97-03	4 Cyl	1.5L, 1.6L	231.114		
Leganza	2.0L, 2.2L	97-04	4 Cyl	2.0L, 2.2L	231.114		
<b>DAIHATSU</b>							
Applause	A101	89-99	4 Cyl	1.6L	231.084		
Charade	G10, G11, G11 Turbo	80-87	3 Cyl	1.0L	231.084	320.040	
Charade	G100, G100 Turbo	87-93	3 Cyl	1.0L	231.084	320.040	
Charade	G102	88-93	4 Cyl	1.3L	231.084	320.040	
<b>FORD</b>							
Bronco		81-85	6 Cyl	4.1L	231.106		
Bronco		81-85	V8	5.8L	231.081		
Bronco		85-87	V8	4.9L	231.106		
Courier	PC 4WD	87-98	4 Cyl	2.6L	231.084	320.067	
Courier	PC	90-98	4 Cyl	2.6L	231.084	320.067	
Courier	PE, PG, PH	99-on	4 Cyl	2.6L	231.084	320.067	
Courier	PH	99-on	4 Cyl	2.6L	231.084	320.067	
Capri	All	74-84	4 Cyl, V6	1.6L, 3.0L	231.107	360.067	
Econovan	1.4L, 1.8L	84-97	4 Cyl	1.4L, 1.8L	231.084	320.041	
Econovan	1.6L	84-97	4 Cyl	1.6L	231.084	320.068	
Econovan	1.8L, 2.0L	03-on	4 Cyl	1.8L, 2.0L	231.089	320.067	
Econovan	Diesel	81-84	4 Cyl	2.2L	231.084	320.068	
Econovan	Diesel	84-90	4 Cyl	2.2L	231.084	320.041	
Econovan	Diesel	90-97	4 Cyl	2.2L	231.084	320.067	
Escort	All, Mk1, Mk2	68-82	4 Cyl	1.6L, 2.0L	231.107	320.003	
Fairlane	ZA, ZG	67-76	6 Cyl, V8	4.1L, 4.9L	231.081	320.003	
Fairlane	ZJ, ZK, EFI, Carb.	79-83	6 Cyl, V8	4.1L, 4.9L	231.106		
Fairlane	ZH	76-79	V8	4.9L, 5.8L	231.081		360.003
Fairlane	ZL	84-88	6 Cyl	4.1L	231.106		
Fairlane	NA, NC, NF, NL	88-99	6 Cyl	3.9L, 4.0L	231.081		
Fairlane	NU, NU II	99-02	6 Cyl	3.9L, 4.0L	231.081		
Fairlane	BA, BF, XR6, XR8, UTE	03-on	6 Cyl, V8	4.0L, 5.0L	231.100		360.001
Falcon	XK, XT, XW, XY, XP, XR, XT, XW	60-72	6 Cyl, V8	All	231.081		
Falcon	XA, XB, XC	72-79	6 Cyl, V8	All	231.081	320.003	360.003
Falcon	XD, XE, UTE	79-84	3.3L, 4.1L	3.3L, 4.1L	231.106	320.011	360.013
Falcon	XF, UTE, EFI / Carb.	84-88	6 Cyl	4.1L	231.106	320.011	360.013
Falcon	EA, EA II, EB, ED	89-94	6 Cyl, V8	3.2L, 3.9L, 4.0L, 5.0L	231.106	320.065	360.013
Falcon	EF, EL	94-98	6 Cyl, V8	4.0L, 5.0L	231.106		360.044
Falcon	AU, XR6, XR8	98-02	6 Cyl, V8	4.0L, 5.0L	231.106		360.045
Festiva	WA	91-94	4 Cyl	1.3L	231.084		
Festiva	WB, WD EFI (Kia & Mazda)	94-97	4 Cyl	1.3L	231.084		
Festiva	WD, WF EFI (Kia & Mazda)	97-02	4 Cyl	1.5L	231.084		
Fiesta	LX, Zetc, Ghia	04-on	4 Cyl	1.6L, 2.0L	231.107		
Laser	KA, KB, KC, KF, TX3, 4WD	81-91	4 Cyl	1.6L	231.084	320.067	
Laser	KC, KH, KJ, TX3	91-99	4 Cyl	1.6L	231.082		
Meteor	GA, GB, GC	82-87	4 Cyl	1.5L, 1.6L	231.084		
Mondeo	HA, HB, HC	95-98	4 Cyl	2.0L	231.107		
Probe	ST, SU, SV	94-98	V6	2.5L	231.089		
Rider	UV	91-96	4 Cyl	2.6L	231.089		
Spectron	2XLT	84-90	4 Cyl	1.8L, 2.0L	231.107		
Taurus	DN, DP	96-98	V6	3.0L	231.107		
Telstar	AR, AS, AT, TX5, EFI-Turbo	86-89	4 Cyl	2.0L, 2.2L	231.084	320.067	
Telstar	AV, EFI-Turbo	89-92	4 Cyl	2.2L	231.089		
Telstar	AX, AY	91-96	4 Cyl	2.0L	231.089		
Telstar	AX, AY	91-96	V6	2.5L	231.089		
Territory	TX, Ghia, 4X2, 4X4	04-on	6 Cyl	4.0L	231.100		
Trader	0409, 0509	79-89	4 Cyl	2.0L, 3.0L, 3.5L	231.084		
Trader	0711, 0811 Diesel	81-95	4 Cyl	4.1L	231.084		

# Vehicle Application Listing

## VEHICLE APPLICATION LISTING

Vehicle Application Listing							
Make/Series	Model	Year	Engine	Capacity	Oil Switch	Temp Sender	Pressure Sender
<b>FORD cont.</b>							
Trader	0811, 0812, Turbo Diesel	87-92	4 Cyl	3.5L	231.084		
Transit		73-81	6 Cyl	4.1L	231.081		
Transit	VF, VG	96-01	4 Cyl	2.0L	231.107		
Transit	VH	01-on	4 Cyl	2.3L	231.107		
<b>HOLDEN</b>							
Apollo	JK, Carb.	89-91	4 Cyl	2.0L	231.102		
Apollo	JP, JM	89-97	4 Cyl, V6	2.2L, 3.0L	231.104		
Astra	LB, LC, LD	84-89	4 Cyl	1.5L, 1.6L	231.087	320.039	
Astra	TR	96-98	4 Cyl	1.6L, 1.8L, 2.0L	231.114		
Astra	TS	96-04	4 Cyl	1.8L	231.114		
Astra	AH	04-on	4 Cyl	1.8L	231.114		
Barina	MB, MF, ML	85-91	4 Cyl	1.3L	231.084		
Barina	MH	91-94	4 Cyl	1.3L	231.084		
Barina	SB, Gsi	94-00	4 Cyl	1.2L, 1.4L, 1.6L	231.114		
Barina	XC, Sri, Combo	01-on	4 Cyl	1.4L, 1.6L, 2.0L	231.114		
Calibra	YE, YE95, Ecotec, Turbo	91-98	4 Cyl	2.0L, 2.5L	231.114		
Camira	JB, JD, JE	82-89	4 Cyl	1.6L, 1.8L, 2.0L	231.087	320.033	
Commodore	VC, VH	80-81	4 Cyl	1.9L	231.081	320.032	
Commodore	VB, VC, VH, VK EFI	78-86	6 Cyl	2.8L, 3.3L	231.081	320.032	360.004
Commodore	VB, VC, VH, VK EFI	78-86	8 Cyl	3.3L	231.081	320.024	
Commodore	VL	86-88	6 Cyl	3.0L	231.089		
Commodore	VN, VP, VQ, VR	88-95	V6, V8	3.8L, 5.0L	231.088	320.033	
Commodore	VS, VS Supercharged, Ute	95-00	V6, V8	3.8L, 5.0L	231.088	320.033	
Commodore	VT, VT Supercharged, GTS	97-00	V6, V8	3.8L, 5.0L 5.7L	231.088	320.033	
Commodore	Ute VG, VX, VY,	97-04	V6, V8	3.8L, 5.0L	231.088		
Crewman	VY	03-04	V6	3.8L	231.088		
Gemini	TX, TC, TE, TF, TG	75-85	4 Cyl	1.6L, 1.8L D	231.084	320.047	360.011
Gemini	RB FWD	75-85	4 Cyl	1.6L, 1.8L D	231.084	320.047	360.011
Drover	QB	85-87	4 Cyl	1.3L	231.089	320.038	
Holden	EH, HD, HR, HK, HT	53-68	6 Cyl	All	231.084	320.002	
Holden	HK, HT, HG, HQ	68-76	6 Cyl	All	231.084	320.002	360.004
Holden	HJ, HX, HZ, WB	76-85	V8	All	231.081	320.003	360.005
Frontera	UES30	98-04	4 Cyl	2.2L	231.114		
Jackaroo	UBS16, UBS17 Petrol, Diesel	85-92	4 Cyl	2.6L	231.084		
Jackaroo	UBS81, UBS521 Turbo Diesel	81-88	4 Cyl	2.2L	231.084		
Jackaroo	UBS55 Turbo Diesel	88-92	4 Cyl	2.8L	231.084		
Jackaroo	UBS69 Turbo Diesel	92-98	4 Cyl	3.1L	231.084		
Jackaroo	UBS73 Turbo Diesel	98-04	4 Cyl	3.0L	231.084		
Monaro	VX, VY, CV6 Supercharged	01-04	V6	3.8L	231.088	320.032	360.004
Nova	LE, LF, EFI	89-94	4 Cyl	1.4L, 1.6L	231.084		
Rodeo	KB25, KB26, KB40, KB41	78-82	4 Cyl	1.4L, 1.6L	231.084	320.032	
Rodeo	KB47, KB48, KB49	83-84	4 Cyl	1.8L, 1.9L, 2.3L	231.084	320.032	
Rodeo	KB43, KB49	85-88	4 Cyl	2.3L	231.084		
Rodeo	TFR54, TFS54	88-93	4 Cyl	2.5L	231.084		
Rodeo	TFR25	98-98	4 Cyl	2.3L	231.084		
Rodeo	TFR26	98-03	4 Cyl	2.2L	231.114		
Rodeo	Diesel, all 2.0L eng.	79-82	4 Cyl	2.0L	231.084		
Rodeo	KBD42, KBD43, KBD47	83-88	4 Cyl	2.0L	231.084	320.067	
Rodeo	KBD27, KBD28	83-88	4 Cyl	2.2L	231.084		
Rodeo	Diesel, all 2.8L eng.	91-01	4 Cyl	2.8L	231.084	320.042	
Rodeo	RA03	03-on	4 Cyl	3.0L	231.084		
Statesman	VQ, VR, VS, WK, HSV	91-04	6 Cyl, V8	3.8L, 5.0L, 5.7L	231.089		
Sunbird	LX, UC	76-80	4 Cyl	1.9L	231.081	320.004	
Torana	LH, LX	74-76	4 Cyl	1.9L	231.087	320.003	
Torana	LC, LH, LJ, LX, UC	69-79	6 Cyl	All	231.081		
Torana	LH, LX	69-79	V8	All	231.081		360.005
Vectra	JR, JS, ZC	97-on	4 Cyl, V6	2.0L, 2.5L, 2.6L, 3.2L	231.114		
<b>HONDA</b>							
Accord	SJD, SJFR	77-78	4 Cyl	1.6L	231.086	320.040	
Accord	SJD, SJFR	77-78	4 Cyl	1.6L	231.086	320.040	
Civic	ED, EE	87-91	4 Cyl	1.5L	231.086	320.040	
Civic	EG, EH	91-95	4 Cyl	1.5L, 1.6L	231.086	320.040	



# Vehicle Application Listing

## VEHICLE APPLICATION LISTING

Vehicle Application Listing							
Make/Series	Model	Year	Engine	Capacity	Oil Switch	Temp Sender	Pressure Sender
<b>HONDA cont.</b>							
Civic	EK4, VTi R	91-95	4 Cyl	1.5L, 1.6L	231.086	320.040	
Concerto	MA EX-I	88-93	4 Cyl	1.6L	231.086	320.040	
Legend	KA7, KA8, KA9	91-96	V6	2.7L, 3.2L	231.102	320.040	
Legend	KA9	96-05	V6	3.5L	231.102		
Odyssey	RA1	95-97	4 Cyl	2.2L	231.086	320.040	
Prelude	BA8, BB2	91-96	4 Cyl	2.2L, 2.3L	231.086	320.040	
<b>HYUNDAI</b>							
Accent		00-on	4 Cyl	1.5L	231.089	320.067	
Coupe	FX, SX, SFX	96-02	4 Cyl	1.8L, 2.0L	231.089	320.067	
Elantra	GL, GSL, Lavita, Elite	00-04	4 Cyl	1.8L, 2.0L	231.089		
Excel	X1, X2, X3,	86-00	4 Cyl	1.5L	231.089	320.067	
Getz	XL, GL, FX	02-on	4 Cyl	1.3L, 1.5L	231.089	320.067	
Lantra	KF, J2	91-95	4 Cyl	1.6L, 1.8L	231.107	320.038	
Lantra	KF, KW, J1	95-99	4 Cyl	1.8L	231.107	320.038	
Lantra	KF, J3, KW, SE, GSL	99-00	4 Cyl	1.8L	231.089	320.067	
S-Coupe	UE3	93-96	4 Cyl	1.5L	231.107		
Sonata	AF2, AF3	89-92	4 Cyl	2.4L	231.089	320.067	
Sonata	AF2, AF3	90-93	4 Cyl	2.4L	231.089	320.038	
Sonata	DF2, DF4	93-98	4 Cyl	2.0L	231.107	320.038	
Sonata	DF3, DF4	93-98	V6	3.0L	231.121	320.038	
Sonata	EN1, EN4	98-01	V6	2.5L	231.089	320.067	
Sonata	EM3, Serius II	98-01	4 Cyl	2.0L	231.102	320.067	
<b>KIA</b>							
Carnival		99-on	V6	2.5L	231.121	320.067	
Credos	GC	98-01	4 Cyl	2.0L	231.102	320.067	
Pregio Van		02-on	4 Cyl	2.7L	231.089	320.067	
Rio	BC	00-on	4 Cyl	1.5L	231.102		
Shuma	FB	99-01	4 Cyl	1.8L	231.102	320.067	
Spectra	5D Hatch	01-04	4 Cyl	1.8L	231.102		
Sportage		96-04	4 Cyl	2.0L	231.102	320.067	
<b>LAND ROVER</b>							
Defender	110 Turbo-Diesel	92-99	4 Cyl	2.5L	231.120		
Defender	90, 110, 130, TD5	99-on	5 Cyl	2.5L	231.116		
Discovery	TDi BF, MF	93-97	4 Cyl	2.5L	231.120		
Freelander	1.8L	98-03	4 Cyl	1.8L	231.115		
Freelander	1.8L, 2.5L	98-03	V6	2.5L	231.115		
Range Rover	2.4 TD4	89-90	4 Cyl	2.4L	231.120		
Range Rover	SE, HSE, TD6	02-on	6 Cyl	2.6L	231.115		
Range Rover	HSE, Vogue	02-on	V8	4.4L	231.115		
<b>LEXUS</b>							
ES300	VCV10	92-96	V6	3.0L	231.104	320.067	
ES300	MCV20R	96-on	V6	3.0L	231.104	320.088	
GS300	JZS160R	97-on	6 Cyl	3.0L	231.104		
IS200	GXE10R	99-on	6 Cyl	2.0L	231.104		
LS400	UCF10R, UCF20R	90-00	V8	4.0L	231.104		
LS430		00-on	V8	4.3L	231.104		
RX330	MCU38R	03-on	V6	3.3L	231.104		
<b>MAZDA</b>							
1.2L - 1.8L,		68-77	4 Cyl	1.5L, 1.6L, 1.8L	231.084		
B1500, B1600	Petrol	70-82	4 Cyl	1.5L, 1.6L, 1.8L	231.084		
B1800	Petrol	70-82	4 Cyl	1.5L, 1.6L, 1.8L	231.084		
B2000	Petrol	82-88	4 Cyl	2.0L	231.084		
B2200	Bravo Incl.	88-93	4 Cyl	2.2L	231.102		
B2500, B2600	RWD, 4WD, Diesel, Turbo Diesel	96-on	4 Cyl	2.5L, 2.6L	231.102		
B2600 EFI	Bravo, 4WD	90-02	4 Cyl	2.6L	231.084		
Capella		70-78	4 Cyl	1.6L	231.084		
E1300, E1400		78-86	4 Cyl	1.3L, 1.5L	231.084		
E1600		78-86	4 Cyl	1.6L	231.084		
E2000		98-on	4 Cyl	2.0L	231.102		
E2500		97-on	4 Cyl	2.5L	231.102		

# Vehicle Application Listing

## VEHICLE APPLICATION LISTING

Vehicle Application Listing							
Make/Series	Model	Year	Engine	Capacity	Oil Switch	Temp Sender	Pressure Sender
<b>MAZDA cont.</b>							
121	CD2	76-79	4 Cyl	1.8L	231.084	320.068	
121	DA	87-90	4 Cyl	1.3L	231.102	320.088	
121	DB1031,	90-97	4 Cyl	1.3L	231.102	320.088	
323	FA, BD, BF, BW, 4WD, Turbo	77-89	4 Cyl	1.3L, 1.5L, 1.6L	231.102		
323	BG, BJ, Astina, Protege`	89-04	4 Cyl	1.6L, 1.8L	231.102	320.067	
626	CB2	78-83	4 Cyl	2.0L	231.084	320.041	
626	GC Diesel, GD-Turbo	84-91	4 Cyl	2.0L, 2.2L	231.084	320.041	
626	GV10-Wagon, GE, GF	88-02	4 Cyl	2.0L, 2.2L	231.102	320.067	
626	GE	92-97	V6	2.5L	231.102	320.067	
808		72-78	4 Cyl	1.3L, 1.6L	231.084		
929	HBSHE	82-87	4 Cyl	2.0L	231.084	320.041	
929	HC10E1, HC10E2	87-91	V6	3.0L	231.084	320.041	
929	HC10E2 - 4WS	90-96	V6	3.0L	231.102	320.067	
MPV	LV, LV II	93-99	V6	3.0L	231.084	320.067	
MX5	NB	98-on	4 Cyl	1.8L	231.102	320.067	
MX6	GD Turbo, 2WD, 4WD	87-97	4 Cyl, V6	2.0L, 2.2L, 2.5L	231.102	320.067	
MX6	GE10, GE20, 2WD, 4WD	94-97	4 Cyl, V6	2.0L, 2.2L, 2.5L	231.102	320.067	
Premacy	Wagon	01-02	4 Cyl	1.8L	231.102		
R100		69-71	Rotary Eng	0.982L	231.084		
RX2, 3, 4, 5		70-79	Rotary Eng	1.1L, 1.3L	231.084		
RX7	SA22 Series 1, 2, 3	79-85	Rotary Eng	1.1L	231.084		
RX7	FC10 IV	86-89	Rotary Eng	1.3L		320.067	
T2000		81-82	4 Cyl	2.0L	231.089	320.067	
T3500, T4000	Diesel, Turbo	84-00	4 Cyl, 6 Cyl	3.5L, 4.0L	231.084	320.067	
T4100	Diesel	84-91	4 Cyl	4.0L, 4.1L	231.089	320.067	
T4600	Diesel	92-on	4 Cyl	4.6L	231.084	320.067	
Traveller	L, LX, LT, 1800, 2000	86-88	4 Cyl	1.8L	231.089		
<b>EUNOS-MAZDA</b>							
30X	EC	96-97	V6	1.8L	231.102	320.067	
500	CA	96-99	V6	2.0L	231.102	320.067	
800, 800M	TA3, TA5, TB3	96-00	V6	2.3L	231.102	320.067	
<b>MERCEDES-BENZ</b>							
190	E 1.8, E 2.0, E 2.3	82-87	4 Cyl	1.8L, 2.0L, 2.3L	231.087	320.035	360.021
190, 190D	E 1.8, E 2.0, E 2.3	88-93	4 Cyl	1.8L, 2.0L, 2.3L	231.087	320.035	360.021
200D, 220D, 240D, 140, 160	E, CE, TD, TE	74-86	4 Cyl	1.8L, 2.0L, 2.3L	231.087	320.002	360.021
<b>MG</b>							
MG, MGA		45-62	4 Cyl, 6 Cyl	1.6L, 1.8L	231.083	320.046	
MGB, MGC		61-79	6 Cyl, V8	1.8L, 3.0L, 3.5L	231.083	320.046	
MGF	TF	97-on	4 Cyl	1.8L	231.115		
<b>MITSUBISHI</b>							
3000 GT		92-96	V6	3.0L	231.102	320.038	
Fuso Canter	FC212, FC432	81-92	4 Cyl	2.6L	230.089	320.067	
Challenger		98-on	V6	3.0L, 3.5L	230.089	320.067	
Colt	RA, RB, RC	80-84	4 Cyl	1.4L, 1.5L	230.089	320.036	
Colt	RC, RD, RE	84-90	4 Cyl	1.4L, 1.5L	231.102	320.036	
Galant	HG, HH, HJ	89-96	4 Cyl	2.0L	231.102	320.038	
L200	MA, MB, MD 4WD	79-86	4 Cyl	2.0L, 2.3L	230.089		
L200	MC, MD	82-86	4 Cyl	1.6L	231.102		
L300 Express	SA, SB, SC, SD, SE 4WD	80-86	4 Cyl	1.6L, 1.8L	231.102		
Starwagon	SF, SG, SH, SJ, 4WD EFI Diesel	86-94	4 Cyl	2.0L, 2.4L	231.102		
Express	SF, SG, SH, SJ, 4WD EFI Diesel	86-94	4 Cyl	2.0L, 2.4L	231.102		
Express/Strwgn	SJ	94-04	4 Cyl	2.0L, 2.4L	231.102	320.038	
Express/Strwgn	WA, EFI	94-98	4 Cyl, V6	2.0L, 2.4L, 3.0L	231.102		320.038
Lancer	CA, CB, CC	88-96	4 Cyl	1.5L, 1.6L, 1.8L	231.102	320.038	
Lancer	CC	92-96	4 Cyl	1.8L	231.102	320.067	
Lancer	CE	96-04	4 Cyl	1.5L, 1.6L, 1.8L	231.102	320.067	
Magna	TM, TN, TP, TR	85-94	4 Cyl	2.6L	231.084	320.067	
Magna	TM, TN, TP, TR	85-94	V6	3.0L	231.102	320.067	
Magna	TS, Carb, EFI	94-97	4 Cyl	2.6L	231.084	320.038	
Magna	TS, EFI	94-97	V6	3.0L	231.102	320.038	
Magna	TE, TF, EFI	96-97	4 Cyl	2.4L	231.089	320.067	
Magna	TF, EFI	97-99	V6	3.0L	231.102	320.067	

# Vehicle Application Listing

## VEHICLE APPLICATION LISTING

Vehicle Application Listing							
Make/Series	Model	Year	Engine	Capacity	Oil Switch	Temp Sender	Pressure Sender
<b>MITSUBISHI cont.</b>							
Magna	TH, TJ	99-03	V6	3.0L, 3.5L	231.102	320.067	
Magna	TL, TW	03-04	V6	3.0L	231.102	320.067	
Mirage	CE	96-04	4 Cyl	1.5L	231.089	320.067	
Nimbus	UA, UB	84-87	4 Cyl	2.0L	231.102	320.038	
Nimbus	UC	87-92	4 Cyl	2.0L	231.089	320.038	
Nimbus	UC	87-92	4 Cyl	2.0L	231.102	320.038	
Nimbus	UF	92-98	4 Cyl	2.4L	231.102	320.038	
Nimbus	UG	98-04	4 Cyl	2.4L	231.089	320.067	
Outlander	ZE, LS-XLS	03-04	4 Cyl	2.4L	231.089	320.067	
Pajero	NA, NB, NC, ND	83-87	4 Cyl	2.6L	231.102		
Pajero	ND - Auto	86-87	4 Cyl	2.6L	231.102	320.038	
Pajero	NE, NF, NG	87-91	4 Cyl	2.6L	231.102	320.038	
Pajero	NK, NL	96-00	V6	3.0L, 3.5L	231.102	320.067	
Pajero	NJ	93-96	V6	2.8L	231.102	320.038	
Pajero	NH, Intercooler	91-93	V6	2.5L	231.102		
Pajero iO	QA	99-03	4 Cyl	1.8L	231.102		
Scorpion	GE	78-79	4 Cyl	2.0L	231.089		
Scorpion	GJ, GK, GL	80-85	4 Cyl	2.6L	231.089		
Sigma	GE, GH, GJ, GK	77-85	4 Cyl	1.6L, 2.0L	231.102		
Sigma	GK, GN	84-87	4 Cyl	1.6L, 2.0L	231.102		
Triton	ME, MF, MG, MH, MJ, Petrol	86-94	4 Cyl	2.6L	231.102		
Triton	ME, MF, MG, MH, MJ, Diesel	86-96	4 Cyl	2.5L	231.102		
Triton	ME, MF, MG, MH, MJ, Diesel	90-96	V6	3.0L	231.102		
Triton	MH, MJ, 4WD	90-96	V6	3.0L	231.102	320.038	
Triton	MK, 4WD	96-on	V6	3.0L	231.089	320.067	
Verada	KR, KS	91-94	V6	3.0L	231.102		
Verada	KE, KF, KH, KJ, KL	96-02	V6	3.0L	231.089		
<b>NISSAN</b>							
120Y	B210	74-79	4 Cyl	1.2L	231.086		
180B, 200B	610, 810	72-81	4 Cyl	1.8L	231.086		
240, 260, 280	C, K, Z, ZX	70-84	6 Cyl	2.4L, 2.6L, 2.8L	231.086		
300ZX	Z31, +Turbo	84-89	V6	3.0L	231.086		
520, 620, 720	RWD, FWD, Petrol, Diesel	71-85	4 Cyl	1.5L, 1.8L, 2.2L, 2.3L	231.086		
Bluebird	Series I & II	81-85	4 Cyl	2.0L	231.089		
Gazelle	S12	84-88	4 Cyl	2.0L	231.086		
Navara	2X4, 4X4, Petrol, Diesel	86-88	4 Cyl	2.0L, 2.4L	231.086		
Patrol	G60, MQ	65-87	6 Cyl	2.8L, 4.0L	231.086		
Patrol	G60, MQ, +Turbo	80-87	6 Cyl	3.3L	231.086	320.090	
Prairie	M10	82-86	4 Cyl	1.5L	231.084		
Pulsar	N10	80-81	4 Cyl	1.4L	231.086		
Pulsar	N12, EXA - ET	83-87	4 Cyl	1.5L	231.102		
Silvia	Imported S12 Turbo	84-88	4 Cyl	1.8L	231.089		
Skyline	C210	78-81	6 Cyl	2.4L	231.086		
Stanza	A10	78-83	4 Cyl	1.6L	231.086		
Urvan	E20, E23	74-82	4 Cyl	1.6L, 2.0L	231.086		
Urvan	E24, Diesel	87-92	4 Cyl	2.7L	231.086		
<b>PORSCHE</b>							
924, 924S, 944	+ Turbo	79-89	4 Cyl	2.0L, 2.5L, 2.7L	231.085		
928, 928S		77-85	V8	4.5L, 4.7L	231.085		
<b>SAAB</b>							
99		71-73	4 Cyl	1.9L	231.085		
900	EFI	79-88	4 Cyl	2.0L	231.085		
<b>SUBARU</b>							
Brumby		78-94	4 Cyl	1.6L, 1.8L	231.102	320.043	
DL, GL, Leone		76-95	4 Cyl	1.6L, 1.8L	231.102	320.043	
Fiori		89-92	4 Cyl	0.758L	231.102		
Forester		97-02	4 Cyl	2.0L	231.102	320.067	
Impreza	LX, GX, AWD	93-98	4 Cyl	1.6L, 1.8L	231.102	320.067	
Impreza	GX, RV, RX	00-on	4 Cyl	2.0L	231.102	320.067	
Impreza	WRX, Turbo	94-on	4 Cyl	2.0L	231.102	320.067	
Liberty	All	91-03	4 Cyl	2.0L, 2.2L, 2.5L	231.102	320.067	

# Vehicle Application Listing

## VEHICLE APPLICATION LISTING

Vehicle Application Listing							
Make/Series	Model	Year	Engine	Capacity	Oil Switch	Temp Sender	Pressure Sender
<b>SUBARU cont.</b>							
Outback		96-00	4 Cyl	2.5L	231.102	320.067	
Vortex	XT, Turbo	85-89	4 Cyl	1.8L	231.102	320.043	
<b>SUZUKI</b>							
Sierra	SJ413	84-98	4 Cyl	1.3L	231.089	320.038	
Carry	ST80, ST90	78-85	4 Cyl	0.797L	231.089	320.068	
Swift	SOHC, GTi, Carb. & EFI, 4WD	84-00	3 Cyl, 4 Cyl	All	231.089	320.038	
Vitara	SOHC, Carb. & EFI	88-98	4 Cyl	1.6L	231.089	320.038	
X90	4X4	96-98	4 Cyl	1.6L	231.089	320.067	
<b>TOYOTA</b>							
4Runner	YN60, YN63, YN130	84-90	4 Cyl (Eng 3Y-C, 4Y-C)	2.0L, 2.2L	231.089	320.044	
4Runner	YN63, RN130R	89-90	4 Cyl (Eng 22R)	2.4L	231.102	320.044	
4Runner	RN130R	90-96	4 Cyl (Eng 22R)	2.4L	231.104	320.044	
4Runner	LN60, LN61, Diesel	84-89	4 Cyl (Eng 22R)	2.4L, 2.8L	231.084	320.044	
Camry	SV11, SV20	83-89	4 Cyl	1.8L, 2.0L	231.102	320.044	
Camry	SV21, SV22	87-91	4 Cyl	2.0L	231.102	320.067	
Camry	SDV10, SXV10	93-98	4 Cyl	2.2L	231.104	320.036	
Camry	SXV20, ACV36R	97-on	4 Cyl	2.2L, 2.4L	231.104		
Camry	VZV20, VZV21	88-93	V6	2.5L	231.102		
Camry	VDV10, MCV20R, MCV36R	93-on	V6	3.0L	231.104		
Camry Avensis	ACM20R	01-on	4 Cyl	2.0L, 2.4L	231.104		
Camry Vienta	VZV20, VZV21	88-93	V6	2.5L	231.102		
Camry Vienta	VDV10R, MCV20R	93-00	V6	3.0L	231.104		
Celica	RA23, RA28, TA22, TA23	71-77	4 Cyl	1.6L, 2.0L	231.089	320.043	
Celica	RA60R, SA63	81-84	4 Cyl	2.0L	231.089	320.044	
Celica	ST184R	89-94	4 Cyl	2.2L	231.102	320.036	
Celica	ST185R	90-92	4 Cyl	2.0L	231.102	320.044	
Celica	ST204R, SX, ZR	94-99	4 Cyl	2.2L	231.104	320.088	
Celica	ST205, GT	94-94	4 Cyl	2.0L	231.089	320.036	
Corolla	KE10	66-70	4 Cyl	1.1L	231.089	320.043	
Corolla	KE20	70-74	4 Cyl	1.2L	231.102	320.043	
Corolla	KE30, KE35, KE36, KE50	74-78	4 Cyl	1.2L	231.102	320.043	
Corolla	KE38, KE55	78-79	4 Cyl	1.3L	231.102	320.043	
Corolla	KE38, KE55, KE70R	78-85	4 Cyl	1.3L	231.102	320.044	
Corolla	AE71, AE80, AE82, DOHC	78-89	4 Cyl	1.3L, 1.6L	231.102		
Corolla	AE90	89-92	4 Cyl	1.4L	231.089		
Corolla	AE92, Carb	89-92	4 Cyl	1.4L	231.084	320.067	
Corolla	AE92, AE92R, EFI, 4WD	89-94	4 Cyl	1.6L	231.084	320.067	
Corolla	AE93	92-94	4 Cyl	1.8L	231.104	320.088	
Corolla	AE95R, 4WD	88-95	4 Cyl	1.6L	231.084	320.067	
Corolla	AE101R, AE102R, AE102X, AE112	94-01	4 Cyl	1.8L	231.104	320.088	
Corolla	ZZE122R, ZZE123, Sportivo	01-on	4 Cyl	1.8L	231.104		
Corona	RT40, RT72, RT80, RT81	64-74	4 Cyl	1.5L, 1.6L, 1.9L	231.084	320.043	
Corona	MX10, MX13, MX22, MX23, RT104	72-79	4 Cyl	2.0L, 2.3L, 2.6L	231.084	320.043	
Corona	RT104, RT118, XT130	77-83	4 Cyl	2.0L, 2.3L, 2.6L	231.084	320.043	
Corona	RT132	79-82	4 Cyl	2.0L	231.089	320.044	
Corona	RT133	82-83	4 Cyl	2.0L	231.102	320.044	
Cressida	MX73R	84-85	6 Cyl	2.8L	231.084	320.044	
Cressida	MX73R-DOHC	85-88	6 Cyl	2.8L	231.084	320.044	
Cressida	MX83R	90-93	6 Cyl	3.0L	231.084	320.044	
Crown	RS56, MS65, MS83, MS85, MS111	68-80	4Cyl, 6 Cyl	2.0L, 2.8L	231.089	320.043	
Crown	MS112, MS123, MS125	80-88	6 Cyl	2.8L	231.084	320.044	
Echo	NCP10R, NCP12R, NCP13R	99-on	4 Cyl	1.3L, 1.5L	231.104		
Estima	TCR10W, TCR11W, TCR20W	93-99	4 Cyl	2.4L	231.104	320.036	
Hi-Ace	RH: 10, 11, 15, 16, 20, 30, 32	67-85	4 Cyl	1.5L, 1.6L	231.089	320.043	
Hi-Ace	YH: 50, 51, 53, 60, 61, 63, 71, 73	83-89	4 Cyl	1.8L, 2.0L, 2.2L	231.089	320.044	
Hi-Ace	RZH103, RZH113	89-98	4 Cyl	2.4L	231.104	320.036	
Hi-Ace	RZH103R, RXZH113R, EFI	98-05	4 Cyl	2.4L	231.089	320.036	
Hi-Ace - Diesel	LH: 20, 30, 50, 51, 60, 61, 70, 71	81-89	4 Cyl	2.2L, 2.4L	231.089	320.044	

# Vehicle Application Listing

## VEHICLE APPLICATION LISTING

Vehicle Application Listing							
Make/Series	Model	Year	Engine	Capacity	Oil Switch	Temp Sender	Pressure Sender
<b>TOYOTA cont.</b>							
Hi-Ace - Diesel	LH103R, LH113R, LH125R	89-00	4 Cyl	2.8L	231.084	320.036	
Hi-Ace - Diesel	LHR172R, LHR184R	99-05	4 Cyl	3.0L	231.084	320.036	
Hi-Lux	YN: 55, 56, 57, 58, 65, 67	83-88	4 Cyl	1.6L, 1.8L, 2.0L, 2.2L	231.089	320.044	
Hi-Lux	YN85R	88-97	4 Cyl	1.8L	231.104		
Hi-Lux	RN85R, RN90R, RN105R	90-92	4 Cyl	2.4L	231.102		
Hi-Lux	RN85R, RN90R, RN105R	88-97	4 Cyl	2.4L	231.104		
Hi-Lux	RN106R, RN110	88-97	4 Cyl	2.4L	231.104	320.036	
Hi-Lux	RZN147R, EFI,	97-05	4 Cyl	2.0L, 2.7L	231.104	320.036	
Hi-Lux	VZN167R, VZN172R	01-05	V6	3.4L	231.104	320.036	
Hi-Lux - Diesel	All 2.2L engines	78-83	4 Cyl	2.2L	231.089	320.036	
Hi-Lux - Diesel	All 2.4L engines	83-91	4 Cyl	2.4L	231.084	320.044	
Hi-Lux - Diesel	LN86R, LN106R, LN 107R	88-97	4 Cyl	2.8L	231.084	320.044	
Hi-Lux - Diesel	LN147R, LN167R, LN172R	97-05	4 Cyl	3.0L	231.084	320.044	
Kluger	MCU28R	03-on	V6	3.3L	231.104		
Landcruiser	FJ: 40, 45, 55, FJ60	69-84	6 Cyl	3.0L	231.089	320.043	
Landcruiser	UZJ100R	00-on	V8	4.7L	231.104		
Landcruiser Prado	RZJ95R, RZJ120R	96-04	4 Cyl	2.7L	231.104	320.088	
Landcruiser Prado	VZJ95R, GRJ120R	99-04	V6	3.4L, 4.0L	231.104		
Landcruiser Prado	KZJ95R, KZJ120R	99-04	V6	3.4L, 4.0L	231.104		
Light Ace	KM20, KM36	80-92	4 Cyl	1.3L, 1.5L	231.102	320.044	
Light Ace	YM21, YM30, YM40, YM41	84-88	4 Cyl	1.8L, 2.0L	231.102	320.044	
Light Ace Diesel	All 1C engines	83-92	4 Cyl	1.8L	231.084	320.044	
MR2	SW20R	90-94	4 Cyl	2.0L	231.102	320.044	
MR2	SW20R	95-99	4 Cyl	2.0L	231.102	320.036	
MR2	ZZW30R	00-on	4 Cyl	2.0L	231.104		
Paseo	EL44R, EL54R	91-95	4 Cyl	1.5L	231.104	320.067	
Paseo	EL44R, EL54R	95-99	4 Cyl	1.5L	231.104	320.088	
Prius	NHW11R, NHW20R	01-on	4 Cyl	1.5L	231.104		
RAV4	SX10R, SXA11R	94-00	4 Cyl	2.0L	231.104	320.036	
RAV4	ACA20R, ACA21R, ACA22R, ACA23R	94-00	4 Cyl	2.0L, 2.4L	231.104		
Soarer	JZZ30, JZZ31	91-00	6 Cyl, V6	2.5L, 3.0L	231.104		
Soarer	UZZ30, UZZ31, UZZ32	91-00	V8	2.5L, 3.0L, 4.0L	231.104		
Spacia	YR22R	93-98	4 Cyl	2.2L	231.104	320.036	
Spacia	SR40R	98-01	4 Cyl	2.0L	231.104		
Starlet	EP91R	96-99	4 Cyl	1.3L	231.104	320.067	
Tarago	YR20	83-84	4 Cyl	1.8L	231.089	320.044	
Tarago	ACR30R	00-on	4 Cyl	2.4L	231.104	320.036	
Tarago Diesel	CR21	83-88	4 Cyl	2.0L	231.084	320.044	
Tarago	TCR10R, TCR11R	90-00	4 Cyl	2.4L	231.104	320.036	
Tarago	TCR20R, TCR21R	90-03	4 Cyl	2.4L	231.102	320.044	
Toyoace Diesel	LY30, LY31	82-85	4 Cyl	2.2L, 2.4L	231.089	320.044	
<b>VOLVO</b>							
240, 242, 244, 245		81-83	4 Cyl	2.3L	231.113		
360, 740	incl.Turbo	84-91	4 Cyl	2.0L, 2.3L,	231.113		
850	incl.Turbo	92-97	4 Cyl	2.3L, 2.5L,	231.113		
940, 960		90-97	4 Cyl, 6 Cyl	2.3L, 2.5L,	231.113		
C70		99-04	5 Cyl	2.3L, 2.5L	231.113		
S40, V40	incl.Turbo	97-04	4 Cyl	1.8L	231.104		
S40, V40	incl.Turbo	97-04	4 Cyl	2.0L	231.113		
S60, S60R		02-04	5 Cyl	2.3L, 2.4L	231.113		
S70, V70	incl.Turbo	97-03	5 Cyl	2.3L, 2.4L	231.113		
S70R	Turbo	03-04	5 Cyl	2.3L	231.113		
S80	TS95, TS97	98-03	6 Cyl	2.9L	231.113		
S90, V90		97-98	6 Cyl	2.9L	231.113		
XC70, XC90,		03-on	6 Cyl	2.9L	231.113		

### Important notice:

All care has been taken in preparing and compiling this senders' application list, although if errors are detected, please report them by phone 1800 335 282 or fax (03) 9468 1502 to Siemens VDO, Customer Service department.



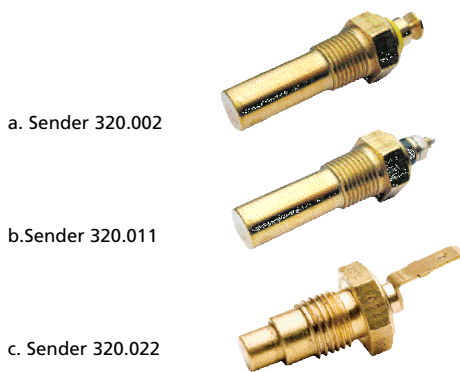
# Senders, Switches, Adaptors

## SENDERS - to suit VDO instruments

The senders listed hereunder are for use with all instruments listed in this publication.

Selection is simple: Just match the range of the instrument with the range of the sender unit.

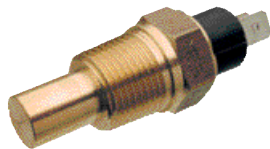
## WATER TEMPERATURE SENDERS



<i>Sender</i>					
<i>Part No.</i>	<i>Previous Part No.</i>	<i>Range</i>	<i>Thread</i>	<i>Terminal</i>	<i>Body Type</i>
320.002		40-120°C	1/8"-27NPTF	button	a
320.004		40-120°C	M16x1.5mm	button	a
320.011*		40-120°C	1/2"-14NPTF	spade	c
320.022		40-120°C	1/2"-14NPTF	spade	c
323801001006K (320.035)		40-120°C	M14x1.5mm	spade	c
320.071		40-120°C	1/8"-27NPTF	M4 thread	b
323.801/005/001		40-120°C	1/8"-27NPTF	button	a

\* Short version.

**Note:** 40-120°C = 100-250°F



Temperature sender 323805001004K

<i>Temperature Sender Unit – insulated return – 6-24V Single Station</i>				
<i>Part No.</i>	<i>Previous Part No.</i>	<i>Range</i>	<i>Thread</i>	<i>Elect. Connection</i>
323805001004K (320.715)		40-120°C	1/2"-14NPTF	spade x 2
323805001015N (320.716)		40-120°C	M18x1.5mm	spade x 2
323805001001K (320.718)		40-120°C	M14x1.5mm	spade x 2
323805001007N (320.719)		40-120°C	1/4"-18NPTF	spade x 2
323805001005N (320.720)		40-120°C	3/8"-18NPTF	spade x 2
323805001002C (320.721)		40-120°C	5/8"-18UNF	spade x 2

## TEMPERATURE SENDER DUAL STATION (2 GAUGES)



Dual station temperature sender 32580500300N

<i>Temperature Sender Unit – insulated return – 6-24V</i>				
<i>Part No.</i>	<i>Previous Part No.</i>	<i>Range</i>	<i>Thread</i>	<i>Elect. Connection</i>
32580500300N (320.709)		40-120°C	3/8"-18NPTF	spade x2
325805003002C (320.710)		40-120°C	5/8"-18UNF	spade x2
325805003001C (320.711)		40-120°C	1/4"-18NPTF	spade x2

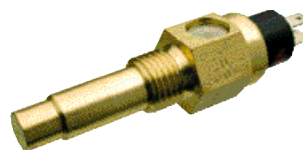
# Senders, Switches, Adaptors

## WATER TEMPERATURE SENDERS WITH SWITCH

Contact Rating 3 Watt

<i>Sender with Switch</i>					
Part No.	Previous Part No.	Range	Switch Point	Thread	Terminal
323803001002D	(320.031)	40-120°C	98°C N/O	5/8"-18UNF	spade
323803001006D	(320.725)	40-120°C	96°C N/O	M14x1.5mm	spade
323803002007D	(320.727)	50-150°C	130°C N/O	M14x1.5mm	spade
323803001008D		40-120°C	110°C N/O	M14x1.5mm	spade
323803001025		40-120°C	103°C N/O	1/2"-14NPTF	spade
323803004001		40-120°C	100°C N/O	M14x1.5mm	spade
323.803/001/032		40-120°C	108°C N//O	1/2"-14NPTF	spade

**Note:** N/O - Normally Open = contact closes at rising temperature.

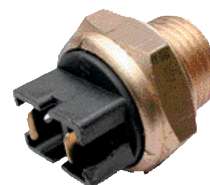


Temperature sender/ switch 323803001002D

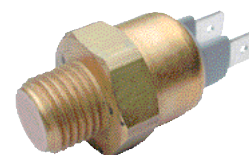
## TEMPERATURE CONTROL SWITCH

<i>Contact Rating 100W</i>				
Part No.	Switch-on	Switch-off	Thread	Terminal
230.079	95°C	90°C	1/2"-14BSP	spade x 2
230.054	100°C	95°C	M14x1.5mm	spade x 2
230.080	102°C	97°C	1/2"-14BSP	spade x 2

**Note:** This type of temperature switch is mainly used to operate auxiliary cooling fans, but can also be used to trigger a buzzer or warning light.



Two terminal control switch 230.079

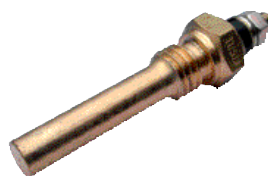


Temperature switch 230.054

## TEMPERATURE SWITCH

<i>Contact Rating 3W Non-inductive - negative to ground</i>					
Part No.	Previous Part No.	Range	Thread	Terminal	Body Type
230.046		90°C N/O	M10x1.5mm	M4 thread	a
230.051		95°C N/O	1/2"-14NPTF	spade	b
230.045		96°C N//O	1/8"-27NPTF	M4 thread	a
232.011/005/020		105°C N//O	1/8"-27NPTF	M4 thread	a
232.011/017/041		105°C N/O	1/2"-14NPTF	spade	b
232011017032D (232.011/017/032)		120°C N/O	M14x1.5mm	spade	b
230.047		145°C N/O	M10x1.5mm	M4 thread	a
230.048		170°C N/O	M10x1.5mm	M4 thread	a

**Note:** N/O - Normally Open = contact closes at rising temperature.  
More switches available on page 63, 64 & 65.



a.

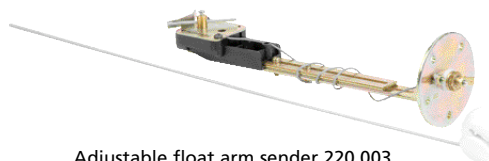


b.

## FUEL LEVEL

<i>Sender - Float Arm</i>			
Part No.	Range	Depth	Voltage
220.003	10-180 ohm	150-535mm adjustable	6-24V
220.004	0-90 ohm	150-535mm adjustable	6-24V
220.005	240-33 ohm	150-535mm adjustable	6-24V
220.734	10-180 ohm	200mm fixed	6-24V

<i>Float Arm Tank Unit - insulated return</i>			
Part No.	Range	Depth	Voltage
220.735	10-180 ohm	150-600mm	6-24V



Adjustable float arm sender 220.003



# Senders, Switches, Adaptors

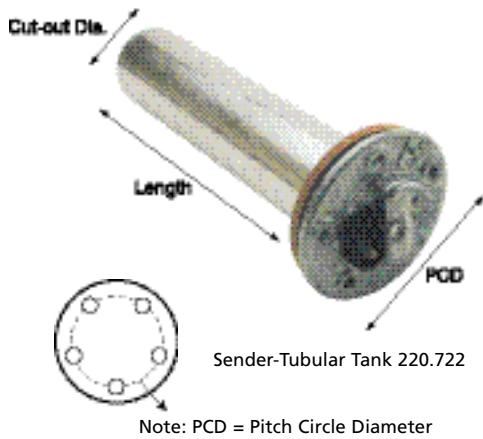


Arm Type Fuel Sender

## ARM TYPE FUEL SENDERS

Arm Type Fuel Senders		Tank depth range 145 - 400mm
Part No.	Description	Specifications
A2C59510165	Sender with low fuel warning switch	2.5 - 180 ohms
A2C59510171	Arm Type Fuel Sender	2.5 - 180 ohms
A2C59510166	Sender with low fuel warning switch	240 - 33.5 ohms
A2C59510172	Arm Type Fuel Sender	240 - 33.5 ohms
A2C59510167	Sender with low fuel warning switch	2 - 90 ohms
A2C59510173	Arm Type Fuel Sender	2 - 90 ohms

## TUBULAR SENDERS



Tubular Type Senders					
Part No.	Sender Length	PCD	Cut-out Dia	Resistance at Full	Resistance at Empty
224011000015G	150mm	54mm	41mm	4.5	69
224011000016G	160mm	54mm	41mm	4.5	74
224011000017G	170mm	54mm	41mm	4.5	79.5
224011000018G	180mm	54mm	41mm	3	64
224011000019G	190mm	54mm	41mm	3	68
224011000020G	200mm	54mm	41mm	3	68
224011000021G	210mm	54mm	41mm	3	76
224011000022G	220mm	54mm	41mm	3	80
224011000023G	230mm	54mm	41mm	3	84
224011000024G	240mm	54mm	41mm	3	65.5
224011000025G	250mm	54mm	41mm	2.5	72
224011000026G	260mm	54mm	41mm	2.5	72
224011000027G	270mm	54mm	41mm	2.5	74.5
224011000028G	280mm	54mm	41mm	2.5	75.5
224011000029G	290mm	54mm	41mm	2.5	78
224011000030G	300mm	54mm	41mm	2.5	82.8
224011000031G	310mm	54mm	41mm	2.5	84
224011000032G	320mm	54mm	41mm	2.5	69.5
224011000033G	330mm	54mm	41mm	2.5	72
224011000034G	340mm	54mm	41mm	2.5	74
224011000035G	350mm	54mm	41mm	2.5	79.6
224011000036G	360mm	54mm	41mm	2.5	69
224011000037G	370mm	54mm	41mm	2.5	71
224011000038G	380mm	54mm	41mm	2.5	73
224011000039G	390mm	54mm	41mm	2.5	75
224011000040G	400mm	54mm	41mm	2.5	74.9
224011000045G	450mm	54mm	41mm	2.5	84.3
224011000050G	500mm	54mm	41mm	2.5	75.4
224011000055G	550mm	54mm	41mm	2.5	77.6
224011000060G	600mm	54mm	41mm	2.5	85.3
224011000065G	650mm	54mm	41mm	2.5	82.2
224011000070G	700mm	54mm	41mm	2	81.6
224011000075G	750mm	54mm	41mm	2	82
224011000080G	800mm	54mm	41mm	2	68.5

# Senders, Switches, Adaptors

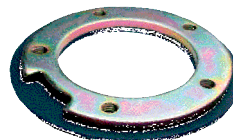
Accessories			
Part No.	Previous Part No.	Description	PCD
36373/9A		gasket-neoprene rubber	54mm
2251016		gasket	80mm
22502641141	(2250264)	welding flange	54mm
115910011401	(220.011)	welding flange	80mm
23950/9A		mounting kit	54mm
2250234		gasket-cork (dim. as per 36373/9A)	54mm



Neoprene rubber gasket  
36373/9a



Welding Flange 22502641141



Flange Mounting Kit N05801432  
Suits 220.003 / 220.004 / 220.005  
and Tubular T / U Senders

## LIGHT DUTY PRESSURE SWITCHES

Fixed Switch Point. Normally Closed Contacts			
Part No.	Range	Thread	Terminal
231.081	25kpa	1/4"-18NPTF	button
231.082	21kpa	1/8"-27NPTF	blade
231.083	55kpa	1/8"-27NPTF	button
231.084	21kpa	1/8"-28BSPT	button
231.085	25kpa	M10x1.0mm	blade
231.086	21kpa	1/8"-28BSPT	bullet
231.087	21kpa	M14x1.5mm	blade
231.088	21kpa	1/4"-18NPT	blade
231.089	21kpa	1/8"-28BSPT	blade



Switch light duty 231.081



Switch light duty 231.085

## HEAVY DUTY PRESSURE SWITCHES Contact Rating 5W

Fixed Switch Point			
Part No.	Range	Thread	Single Terminal
230.041	70kPa N/C	1/8"-27NPTF	screw x 1
230.043	70kPa N/O	1/8"-27NPTF	screw x 1
230112005006	50kPa N/C	M10x1mm	screw x 1



Switch heavy duty 230.041



Switch heavy duty 230.050

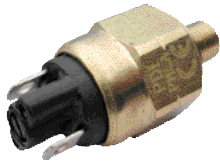
Insulated Return-Fixed Switch Point			
Part No.	Range	Thread	Two Terminal
230112005006	50kPa N/C	M10x1mm	screw x 2
230.044	50kPa N/C	1/8"-28BSPT	screw x 2
230213002004	450kPa N/C	M10x1mm	screw x 2
230213002001	750kPa N/C	1/8"-27NPTF	screw x 2
230.701	1050kPa N/C	1/8"-27NPTF	screw x 2
230.050	50kPa N/O	1/8"-27NPTF	screw x 2



Switch heavy duty 230213002004

**Note:** N/C = contact closes at falling pressure.  
N/O = contact closes at rising pressure.

# Senders, Switches, Adaptors



Switch heavy duty 230.990

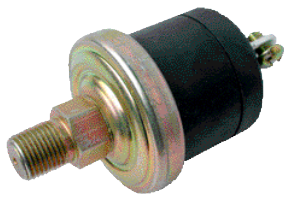
## BRASS-CASED ADJUSTABLE PRESSURE SWITCH

### Insulated Return-Contact Rating 5W

Part No.	Range	Thread	Terminal
230.990	7-25 psi	1/8"-27NPT	spade x 2
230.991	20-60 psi	1/8"-27NPT	spade x 2
230.992	50-150 psi	1/8"-27NPT	spade x 2

**Note:** NC = contact closes at falling pressure.

Not factory psi pre-set.



Two Terminal Sender 230.504

## PLASTIC-CASED ADJUSTABLE PRESSURE SWITCH

### Insulated Return-Contact Rating 5W

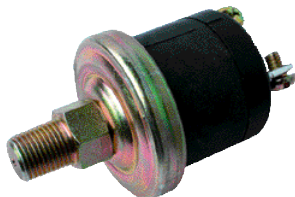
Part No.	Preset	Range	Thread	Terminal
230.504	4 psi	4 -7 psi N/C	1/8"-27NPTF	spade x 2
230.515	15 psi	14-24 psi N/C	1/8"-27NPTF	spade x 2
230.560	60 psi	51-90 psi N/C	1/8"-27NPTF	spade x 2
230.404	4 psi	4 -7 psi N/O	1/8"-27NPTF	spade x 2
230.415	15 psi	14-24 psi N/O	1/8"-27NPTF	spade x 2
230.460	60 psi	51-90 psi N/O	1/8"-27NPTF	spade x 2
230.604	4 psi	4 -7 psi NC/NO	1/8"-27NPTF	spade x 3
230.615	15 psi	14-24 psi NC/NO	1/8"-27NPTF	spade x 3
230.660	60 psi	51-90 psi NC/NO	1/8"-27NPTF	spade x 3

**Note:** N/C = contact closes at falling pressure.

N/O = contact closes at rising pressure.

NC/NO = dual circuit: contact closes at falling or rising pressure.

**Note:** Preset = Factory psi Settings.



Three Terminal Sender 230.615

## PRESSURE SWITCH SPECIFICATIONS

Type:	Direct action blade contact
Terminals:	Screw Terminals
Pressure Port:	1/8-27 NPT Pipe Thread - Steel
Base:	Zinc Plated Steel
Cover:	Glass Reinforced Polyester
Wetted Components:	Zinc plated steel, polyimide film, nitrite o-ring
Contacts:	Silver Alloy
Operating Media:	Air, motor oils, transmission oils, and similar hydrocarbon media; (fuel, water and freon are specifically not recommended).
Temperature:	-20°F to +200°F
Set Point:	Factory set from 2-150 psi
Operating Pressure:	150 psi
Proof Pressure:	300 psi
Burst Pressure:	750 psi

4 psi = 28kPa = 0.28 Bar

15 psi = 105kPa = 1.05 Bar

60 psi = 420kPa = 4.2 Bar

# Senders, Switches, Adaptors

## OIL PRESSURE SENDERS

Senders			10-180 ohms
Part No.	Range	Thread	Terminal
360.001	500kPa	1/8"-27NPTF	spade
360.004	500kPa	1/4"-18NPTF	button
360.016	500kPa	1/8"-28BSPT	button
360.018	500kPa	1/8"-28BSPT	M4 thread
360.012	700kPa	M14x1.5	M4 thread
360.017	600kPa	1/8" BSPT	M4 thread
360.042	800kPa	1/8"-27BSPT	M4 thread
360081038008C	800kPa	1/8"-27NPTF	M4 Thread



Sender 360.001

Senders			10-199 ohms
Part No.	Range	Thread	Terminal
360.002	1000kPa	1/8"-27NPTF	spade
360.019	1000kPa	1/8"-27NPTF	M4 thread
360.086	100 psi	1/8"-27NPTF	M4 thread

Refer to your engine manufacturers manual for correct oil pressure ratings.

**Note:** 500kPa = 5 Bar = 72.5 psi    700kPa = 7 Bar = 101.5 psi  
 1000kPa = 10 Bar = 145 psi    2800kPa = 28 Bar = 406 psi

Oil Pressure Sender – insulated return – 6-24V Single Station				
Part No.	Previous Part No.	Range	Thread	Elect. Connection
360081032001C	(360.720)	500kPa	1/8"-27NPTF	M4 thread
360081032014C	(360.721)	1000kPa	1/8"-27NPTF	M4 thread
360081038003C	(360.722)	2500kPa	1/8"-27NPTF	M4 thread



Sender 360081038003C

## OIL PRESSURE SENDER WITH SWITCH

Senders					
Part No.	Previous Part No.	Range	Switch Point	Thread	Terminal
360081030049K	(360.031)	500kPa	50kPa N/C	1/8"-27NPTF	M4 thread
360081030015C	(360.032)	1000kPa	80kPa N/C	1/8"-27NPTF	M4 thread



Sender 360081030049K

**Note:** N/C = contact closes at falling pressure.

Oil Pressure Sender with switch – insulated return – 6-24V					
Part No.	Previous Part No.	Range	Switch Point	Thread	Elect. Connection
360081039002C	(360.713)	500kPa	80kPa N/C	1/8"-27NPTF	M4 thread



Sender 360081039002C

Oil Pressure Sender Dual Station – insulated return – 6-24V					
Part No.	Previous Part No.	Range	Thread	Elect. Connection	
362081001001K	(360.710)	500kPa	1/8"-27NPTF	M4 thread	
362081001002K	(360.711)	1000kPa	1/8"-27NPTF	M4 thread	
362081002001K	(360.712)	2500kPa	1/8"-27NPTF	M4 thread	

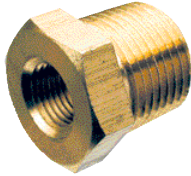


Sender 362081001001K

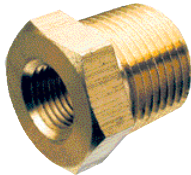
# Senders, Switches, Adaptors

## ADAPTORS, brass

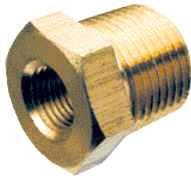
Suitable for pressure & temperature senders & switches with 1/8"-27NPTF thread. Mechanical temperature gauges with 1/8"-27NPTF thermowell (180.059). Oil line kits (230.012 & 230.013) for mechanical pressure gauges.



Adaptors Brass			
Part No.	Internal Thread	External Thread	Overall Length
320.050	1/8"-27NPTF	1/4"-18NPTF	20mm
320.051	1/8"-27NPTF	3/8"-18NPTF	20mm
320.052	1/8"-27NPTF	5/8"-18UNF	20mm
320.053	1/8"-27NPTF	1/2"-14NPTF	20mm
320.054	1/8"-27NPTF	M14x1.5	20mm
320.055	1/8"-27NPTF	M16x1.5	20mm
320.056	1/8"-27NPTF	M18x1.5	20mm



Adaptors Brass			
Part No.	Internal Thread	External Thread	Overall Length
320.058	5/8"-18UNF	1/2"-14NPTF	20mm
320.064	1/4"-18UNF	5/8"-18UNF	17mm

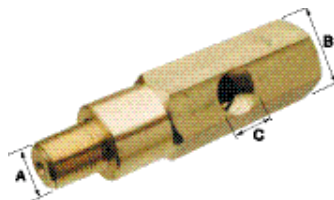


Adaptors Brass			
Part No.	Internal Thread	External Thread	Overall Length
180.052	M10x1.5	1/2"-14NPTF	20mm

Adaptors Stainless Steel			
Part No.	Internal Thread	External Thread	Overall Length
320.074	1/8"BSPT	1/8"-27NPTF	
320.075	3/8"BSPT	1/4"-18NPTF	
320.076	M12x1.25	1/8"-27NPT	

## T-PIECE ADAPTORS, brass

Suits oil line kits and oil pressure sender units with 1/8"-27NPTF male thread, while at the same time retaining the existing oil warning light switch.



Adaptors Brass				
Part No.	Thread "A"	Thread "B"	Thread "C"	Length
230.031	1/8"-27NPTF	1/8"-27NPTF	1/8"-27NPTF	66mm
230.032	1/4"-18NPTF	1/4"-18NPTF	1/8"-27NPTF	66mm
230.035	M14x1.5	M14x1.5	1/8"-27NPTF	66mm
230.036	1/8"-28BSPT	1/8"-28BSPT	1/8"-27NPTF	66mm

# Senders, Switches, Adaptors

## MERCHANDISERS

Merchandise contents consist of the following:

8 peg rack, measuring 400 x 400mm, header card, & application list.

Temperature switch merchandiser has 6 of the fastest moving numbers.

Temperature sender, Oil sender and Oil switch merchandisers have 8 of the fastest moving numbers.

T-piece and Adaptor merchandiser have 4 of each fast moving adaptors and T-piece.

## FAST MOVERS

### Fast Movers

Part No.	Description
----------	-------------

740.012	Mixed sensor & adaptors (most commonly used)
---------	--

Merchandise Contents:

Part No.	Description	Qty
231.081	Oil Pressure Switch N/C 25kPa 1/4"-18NPTF 12/24V	2
231.084	Oil Pressure Switch N/C 21kPa 1/8"-28BSPT 12/24V	3
231.086	Oil Pressure Switch N/C 21kPa 1/8"-28BSPT 12/24V	3
231.088	Oil Pressure Switch N/C 21kPa 1/4"-18NPTF 12/24V	3
320.002	Temperature Sender Water STD. 1/8"-27NPTF	2
320.003	Temperature Sender Water 73-10 OHM 1/8"-27NPTF	2
320.032	Temperature Sender Water 282-40 OHM 1/8"-27NPTF	2
320.053	Adaptor 1/2"-14NPTF TO 1/8"-27NPTF	2



## OIL PRESSURE SWITCHES

### Oil Pressure Switches

Part No.	Description
----------	-------------

740.007	Oil Pressure Switch Merchandiser
---------	----------------------------------

Merchandise Contents:

Part No.	Description	Qty
231.081	Oil Pressure Switch N/C 25kPa 1/4"-18NPTF 12/24V	3
231.082	Oil Pressure Switch N/C 21kPa 1/8"-27NPTF 12/24V	2
231.083	Oil Pressure Switch N/C 55kPa 1/8"-27NPTF 12/24V	2
231.084	Oil Pressure Switch N/C 21kPa 1/8"-28BSPT 12/24V	3
231.086	Oil Pressure Switch N/C 21kPa 1/8"-28BSPT 12/24V	3
231.087	Oil Pressure Switch N/C 21kPa M14 x 1.5 12/24V	2
231.088	Oil Pressure Switch N/C 21kPa 1/4"-18NPTF 12/24V	3
231.089	Oil Pressure Switch N/C 21kPa 1/8"-28BSPT 12/24V	2



## WATER TEMPERATURE SWITCHES

### Temperature Switches

Part No.	Description
----------	-------------

740.003	Temperature Switch Merchandiser
---------	---------------------------------

Merchandise Contents:

Part No.	Description	Qty
230.045	Temperature Switch N/O 96°C 1/8"-27NPTF	4
230.046	Temperature Switch N/O 90°C M10x1.5	1
230.047	Temperature Switch N/O 145°C M10x1.5	4
230.048	Temperature Switch N/O 170°C M10x1.5	1
230.051	Temperature Switch N/O 95°C 1/2"-14NPTF	1



# Senders, Switches, Adaptors



## OIL PRESSURE SENDERS

### Oil Pressure Senders

#### Part No. Description

740.009	Oil Pressure Sender Merchandiser
---------	----------------------------------

Merchandiser Contents:		Qty
360.001	Oil Pressure Sender 10-180 OHM 500kPa 1/8" 27NPTF	2
360.002	Oil Pressure Sender 10-180 OHM 1000kPa 1/8" 27NPTF	2
360.003	Oil Pressure Sender 73-10 OHM 700kPa 1/4" 18NPTF	2
360.004	Oil Pressure Sender 10-180 OHM 500kPa 1/4" 18NPTF	2
360.005	Oil Pressure Sender 73-10 OHM 500kPa 1/4" 18NPTF	1
360.013	Oil Pressure Sender 10-180 OHM 700kPa 1/4" 18NPTF	1
360.014	Oil Pressure Sender 10-180 OHM 600kPa 1/8" 27NPTF	1
360.032	Oil Pressure Sender 10-180 OHM 1000kPa 1/8" 27NPTF	1

## WATER TEMPERATURE SENDERS

### Water Temperature Senders

#### Part No. Description

740.005	Water Temperature Sender Merchandiser
---------	---------------------------------------

Merchandiser Contents:		Qty
320.002	Temperature Sender Water STD. 1/8"-27NPTF	2
320.003	Temperature Sender Water 73-10 OHM 1/8"-27NPTF	2
320.011	Temperature Sender Water STD. 1/8"-27NPTF Short	2
320.032	Temperature Sender Water 282-40 OHM 1/8"-27NPTF	2
320.033	Temperature Sender Water 282-40 OHM 1/8"-27 NPTF	2
320.043	Temperature Sender Water 184-17 OHM M16x1.5	2
320.044	Temperature Sender Water 313-22 OHM M16x1.5	2
320.067	Temperature Sender Water 232-22 OHM M8x0.75	2



## T-PIECE & ADAPTORS

### T-Piece & Adaptors

#### Part No. Description

740.011	T-Piece & Adaptor Merchandiser
---------	--------------------------------

Merchandiser Contents:		Qty
230.031	T-Piece 1/8"-27NPTF(M&F)-1/8"-27NPTF	2
230.032	T-Piece 1/4"-18NPTF(M&F)-1/8"-27NPTF	2
230.035	T-Piece M14x1.5 (M&F) -1/8"-27NPTF	2
230.036	T-Piece 1/8" -28BSPT(M&F) -1/8"-27NPTF	2
320.050	Adaptor 1/4" -18NPTF TO 1/8"-27NPTF	3
320.051	Adaptor 3/8"-18NPTF TO 1/8"-27NPTF	3
320.053	Adaptor 1/2"-14NPTF TO 1/8"-27NPTF	3
320.055	Adaptor M16x1.5 TO 1/8"-27NPTF	1



# Senders, Switches, Adaptors

## OIL PRESSURE SENDER SPECIFICATIONS

<i>Oil Pressure Sender Specifications</i>				
<b>Part No</b>	<b>Range</b>	<b>Ohms</b>	<b>Thread</b>	<b>Type</b>
360.001	500 kPa	10-180Ω	1/8" - 27 NPTF	E
360.002	1000 kPa	10-199Ω	1/8" - 27 NPTF	E
360.003	700 kPa	73-10Ω	1/4" - 18 NPTF	E
360.004	500 kPa	10-180Ω	1/4" - 18 NPTF	A
360.005	500 kPa	73-13Ω	1/4" - 18 NPTF	A
360.006	600 kPa	292-39Ω	1/8" - 28 BSPT	E
360.007	600 kPa	10-184Ω	1/8" - 28 BSPT	F
360.008	800 kPa	0-90Ω	1/8" - 27 NPTF	B
360.010	500 kPa	0-88Ω	1/8" - 27 NPTF	B
360.013	700 kPa	20-183Ω	1/4" x 18 NPTF	A
360.014	600 kPa	10-184Ω	1/8" - 27 NPTF	E
360.016	500 kPa	10-180Ω	1/8" - 28 BSPT	A
360.017	600 kPa/ 7 psi	10-180Ω	1/8" - 28 BSPT	D
360.018	500 kPa	10-183Ω	1/8" - 27 NPTF	A
360.019	1000 kPa	10-199Ω	1/8" - 27 NPTF	B
360.020	600 kPa	10-184Ω	1/8" - 27 NPTF	B
360.031	500 kPa/ 7 psi	10-180Ω	1/8" - 27 NPTF	C
360.032	1000 kPa/ 12 psi	10-180Ω	1/8" - 27 NPTF	C
360.041	1000 kPa	110-7Ω	1/8" - 28 BSPT	E
360.042	800 kPa	10-180Ω	1/8" - 28 BSPT	D
360.044	600 kPa	0-73Ω	1/4" - 18 NPTF	G
360.086	100 psi	10-180Ω	1/8" - 28 BSPT	B
360.406	400 psi	10-180Ω	1/8" - 28 BSPT	B

For connector types, refer page 66.

**Note:** kPa/psi = Switch Point.



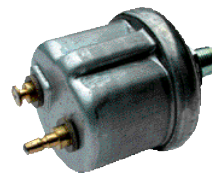
Type A



Type B



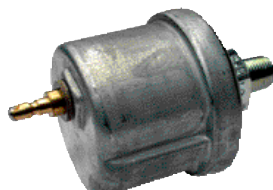
Type C



Type D



Type E



Type F



Type G

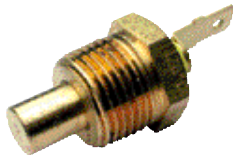


# Senders, Switches, Adaptors

## TEMPERATURE SENDER SPECIFICATIONS



Sender 320.002



Sender 320.023



Sender 323803001002D



Sender 320.071



Sender 320.028



Sender 320.039

<i>Temperature Senders</i>					
<b>Part No.</b>	<b>Range</b>	<b>Ohms</b>	<b>Thread</b>	<b>Insulator</b>	<b>Terminal</b>
320.002	40-120°C	287-23	1/8"-27 NPTF	white	button
320.003	40-120°C	73-10	1/8"-27 NPTF	blue	button
320.004	40-120°C	287-23	M16x1.5	white	button
320.006	60-200°C	550-14	1/8"- 27 NPTF	red	button
320.007	50-150°C	323-18	M14x1.5	white	spade
320.009	40-120°C	282-40	5/8"-18 UNF	white	spade
320.010	50-150°C	323-18	M12x1.5		button
320.011	40-120°C	287-23	1/8"-27 NPTF	yellow	thread
320.012	40-120°C	282-40	M16x1.5	black	spade
320.016	50-150°C	323-18	1/2" UNF	white	spade
320.020	60-200°C	550-14	1/8"-27 NPTF	black	button
320.021	50-150°C	323-18	1/8"-27 NPTF	yellow	button
320.022	40-120°C	287-23	1/2"-14 NPTF	white	spade
320.023	50-150°C	323-18	3/8" 16 UNF	yellow	spade
320.024	40-120°C	282-40	M12x1.25	black	spade
320.026	40-120°C	323-18	M16x1.5	black	spade
320.028	50-150°C	323-18	1/8"-27 NPTF	yellow	button
320.030	-25-40°C	5780-371	M10x1.0	black	thread
* 323803001002D	-25-40°C	5780-371	M10x1.0	black	thread
320.032	40-120°C	282-40	1/8"-27 NPTF	black	button
320.033	40-120°C	282-40	1/8"-27 NPTF	white	button
** 323801001006K	40-120°C	287-23	M14x1.5	white	spade
320.036	40-120°C	287-23	M16x1.5	black	button
320.038	40-120°C	313-22	M16x1.5	black	spade
320.039	40-120°C	145-17	use old nut	black	bullet
320.040	40-120°C	175-20	M16x1.5	black	bullet
320.041	40-120°C	495-38	M16x1.5	black	bullet
320.042	40-120°C	395-40	M8x0.75	black	bullet
320.043	40-120°C	184-17	M16x1.5	black	spade
320.044	40-120°C	313-22	M16x1.5	black	spade
320.045	40-120°C	380-30	5/8"-18 UNF	red	spade
320.046	40-120°C	380-30	5/8"-18 UNF	red	spade
320.047	40-120°C	353-24	M16x1.5	black	bullet
320.048	40-120°C	432-30	5/8"-18 UNF	black	spade
320.049	40-120°C	375-29	1/2"-14 NPTF	black	spade
320.060	40-120°C	341-24	1/8"-27 NPTF	black	bullet
320.061	40-120°C	157-24	5/8"-18 UNF	white	spade
320.062	40-120°C	208-18	M16x1.5	black	spade
320.065	40-120°C	282-40	1/8"-27 NPTF	yellow	spade
320.067	40-120°C	232-22	M8x0.75	black	bullet
320.068	40-120°C	175-20	M16x1.5	black	bullet
320.071	40-120°C	175-20	1/8"-27NPTF	black	thread
323.011	Short Version				

\* **Note:** Part No. 323803001002D replaces 320.031

\*\* **Note:** Part No. 323801001006K replaces 320.035

**Note:** Not all the above temperature senders are suitable for the cockpit gauges. Some temp senders are used in OEM applications.

# Senders, Switches, Adaptors

## OIL LINE KITS and related components

Suitable for mechanical pressure gauges

### Oil Line Kits & Accessories

Part No.	Description	Size
230.008	Nut and cone for 3/16" PVC	Tubing
230.025	Adaptor, nut and cone for gauge	1/8"-27NPTF
230.024	Adaptor for oil line kit	1/8"-27NPTF
230.012	Oil line kit 1.8m	
230.013	Oil line kit 5.0m	

**Note:** An oil line kit consists of a length (1.6 or 5.0m) of 3/16" PVC tubing and the engine side fitting 230.024.

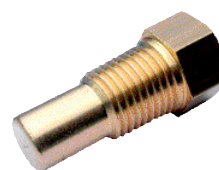


Oil line kit 230.012

### Accessories

Part No.	Description	Note
180.059	Thermowell 1/8"-27NPTF	Suits adaptors #320.xxx

**Note:** Refer page 66 for adaptors.



Thermowell 180.059

## HOUSINGS, metal

Steel mounting cups with smooth black or polished chrome finish.

### Instrument Housing

Part No.	Finish	Suitable For
240.018	black	85mm instruments with max. installation depth of 80mm
240.019	chrome	85mm instruments with max. installation depth of 80mm



Gauge housing 240.018

## HOUSINGS, plastic

Plastic mounting cups with adjustable clip-on pedestal.

### Instrument Housing

Part No.	Suitable For
230.028	52mm instruments with max. installation depth of 62mm
230.029	52mm instruments with max. installation depth of 97mm
230.030	80mm instruments with max. installation depth of 90mm



Gauge housing 230.028



Single gauge panel 230.005

## INSTRUMENT PANELS, metal black

Suitable for all 52mm instruments.

### Instrument Panels

Part No.	Configuration
230.005	single
230.006	double
230.007	triple



Twin gauge panel 230.006

# Senders, Switches, Adaptors



Globe holder 240.733



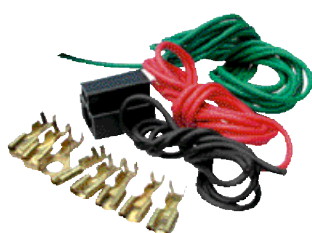
Globe holder 800005002



Wedge globe 240.050



Bayonet globe 240.055



Wiring Kit 240.030

## GLOBE HOLDERS & GLOBES

<i>Globe Holders &amp; Globes</i>			
<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>	
240.001	BA 7s style J	12V 2W	
240.002	BA 7s style J	24V 2W	
240.003	BA 9s style H	12V 2W	
240.004	BA 9s style H	24V 3W	
240.009	W2.0 x 4.6 mini wedge W5	12V 1.2W	
240.011	W2.0 x 4.6 mini wedge W5	24V 1.2W	
240.712	BA 9S style H insulated	12V 2W	
240.713	BA 9S style H insulated	24V 3W	
800005002	Vision range globe holder & globe	12V 2W	
240.733	7mm 12V wedge red globe	12V 2W	
240.734	7mm 24V wedge red globe	24V 2W	
800005003	International range globe holder & globe	24V 3W	

## GLOBES

<i>Globes</i>			
<b>Part No.</b>	<b>Description</b>	<b>To Suit</b>	<b>Specifications</b>
240.050	Mini wedge globe	240.009/733	12V 1.2W
240.051	Mini wedge globe	240.011/734	24V 1.2W
240.052	Wedge globe	800005002	12V 2W
240.053	Wedge globe	800005003	24V 3W
240.054	Bayonet globe 7mm	240.001/012	12V 2W
240.055	Bayonet globe 7mm	240.002/013	24V 3W
240.056	Bayonet globe 9mm	240.003/712	12V 2W
240.057	Bayonet globe 9mm	240.004/010/713	24V 3W

**Note:** WWG gauges use light globe Part no. 240.052 (12V 2W) or

Part no. 240.053 (12V 3W) Suitable for speedo, tacho or all 52mm gauges

## LIGHT COVER

<i>Light Cover</i>		
<b>Part No.</b>	<b>Description</b>	<b>To Suit</b>
240.068	10mm green	240.052/053
240.069	5mm green	240.050/051
240.070	10mm red	240.052/053
240.071	5mm red	240.050/051
240.072	10mm blue	240.052/053
240.073	5mm blue	240.050/051

## WIRING KIT

<i>Wiring Kits</i>		
<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>
240.030	3 wire kit - oil - temp - fuel	3mm wire
240.031	2 wire kit - volts - clock	3mm wire
240.032	2 wire kit - ammeters	6mm wire
340.824	8 Pin plug kit for speedo's Tachometers / Tachourmeters	Plug + 8 terminals

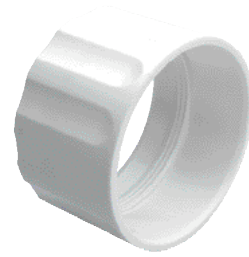
# Senders, Switches, Adaptors

## CLAMP RINGS & STUD KITS

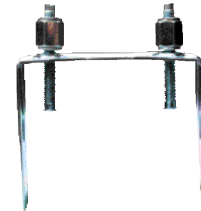
Suitable for Vision range of instruments

### Clamp Rings & Stud Kits

Part No.	Description
800.005.015	Spin lock clamp ring for 52mm instruments
800.005.005	Spin lock clamp ring for 80mm instruments
800.005.006	Spin lock clamp ring for 85mm instruments
800.005.007	Spin lock clamp ring for 100mm instruments
800.005.001	Stud kit for 80-100mm inst. & 52mm speedo tacho & pyro



Spin lock clamp 800.005.015



Stud kit 600.402

## BRACKETS, metal black

Suitable for single instrument mounting.

### Brackets-Metal Black

Part No.	Description
230.001	52mm instruments
230.003	80mm instruments
230.020	85mm instruments
230.021	100mm instruments



Bracket 230.003

## ANGLED SPACER RING, rubber

Suitable to align a 52mm panel-mounted instrument at a 15° angle.

### Angled Spacer Ring-Plastic Black

Part No.	Description
230.037	Angled instrument adaptor



Spacer 230.037

## INSTRUMENT BLANK, plastic black

Suitable to plug a 52mm cut-out.

### Instrument Blank

Part No.	Description
230.038	Instrument blank



Blank 230.038

## REDUCTION RINGS, metal black

Used for mounting 52mm and 80mm instruments in 60mm and 85mm cut-outs.

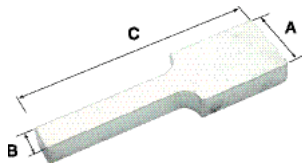
### Reduction Rings

Part No.	Dimensions
230.004	60mm – 52mm
230.019	85mm – 80mm

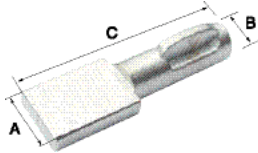


Reduction ring 230.004

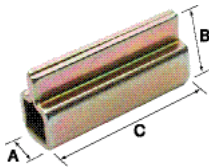
# Senders, Switches, Adaptors



Drive key 230.061



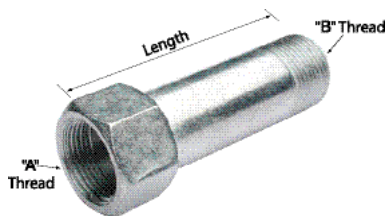
Drive key 230.064



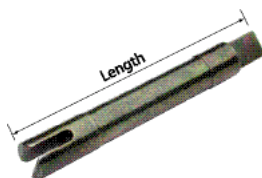
Drive key 72143



Double sided nut 230.069



Extension K72136



Drive key K72130

## DRIVE KEYS

Suitable for tacho and speedo generators, Hall-effect senders etc.

<i>Drive Keys</i>			
<i>Part No.</i>	<i>Dimension A</i>	<i>Dimension B</i>	<i>Dimension C</i>
K72103	2.6 x 8mm	2.6mm	26mm
230.061	3.0 x 8mm	3.0mm	28mm
230.076	2.6 x 8mm	3.8mm	27mm
230.062	2.6 x 8mm	Ø3.8mm	26mm
230.063	2.6 x 8mm	Ø4.7mm	26mm
230.064	2.6 x 8mm	Ø5.0mm	26mm
230.065	2.6 x 8mm	Ø5.1mm	30mm
K72113	2.6 x 8mm	Ø5.2mm	26mm

## DRIVE KEY SLEEVES

To convert square key K72103 or a 2.6mm cable end to suit 4.7mm or Ø4.7mm female connection.

<i>Drive Key Sleeves</i>			
<i>Part No.</i>	<i>Dimension A</i>	<i>Dimension B</i>	<i>Dimension C</i>
K72143	2.7mm <sup>2</sup>	Ø4.7mm <sup>2</sup>	13mm
K72145	2.7mm <sup>2</sup>	Ø4.7mm <sup>2</sup>	35mm

## DOUBLE SIDED NUTS

Suitable for ratio boxes, angle drives, Hall-effect sender units etc. with M22x1.5mmLH male connections.

<i>Double Sided Nuts</i>	
<i>Part No.</i>	<i>Description</i>
230.070	M22x1.5mmLH to 7/8"-18UNF
230.071	M22x1.5mmLH to 3/4" x 26UNF

## EXTENSIONS, without key fixation

Suitable for ratio boxes, angle drives, Hall-effect sender units etc.

<i>Extensions-Without Key Fixture</i>			
<i>Part No.</i>	<i>Thread A</i>	<i>Thread B</i>	<i>Length</i>
K72136	7/8"-18UNF	M22x1.5mm	78mm
K72137	7/8"-18UNF	M22x1.5mm	98mm
K72126	7/8"-18UNF	M22x1.5mm	118mm

<i>Keys to suit above extensions</i>		
<i>Part No.</i>	<i>Configuration</i>	<i>Length</i>
K72130	3 x 8mm tongue/slot	76mm
K72131	3 x 8mm tongue/slot	96mm
K72187	3 x 8mm tongue/slot	118mm

# Senders, Switches, Adaptors

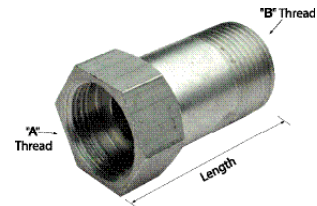
## EXTENSIONS, with key fixation

Suitable for ratio boxes, angle drives, Hall-effect sender units etc.

### Extensions-With Key Fixture

Part No.	Thread A	Thread B	Length
K72127	M22x1.5mm	7/8"-18UNF	44mm
K72139	7/8"-18UNF	M22x1.5mm	44mm

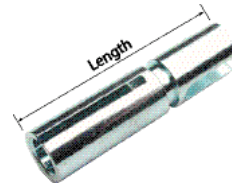
Keys and retaining clip to suit extensions K72127 & K72139.



Extension K72139

### Key Retaining Clips

Part No.	Description	Length
K72153	3 x 8mm slot/Ø5.2mm female	34mm
K72154	3 x 8mm slot/2.7mm female	37mm
K72241	3 x 8mm slot/3.8mm female	37mm
K72155	Retaining clip (not included)	



Drive key K72153



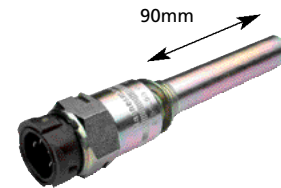
C clip K72155

## PROXIMITY SENDERS

### Proximity Senders - 4 Blade Bayonet Type

Part No.	Imp/rpm	Connection	Voltage
K70452	2 X 8 (180 out of Phase)	M18 x 1.5	12 V
K70453	2 X 8 (180 out of Phase)	M18 X 1.5 (Volvo Type)	12 V
340 216 001 024	2 X 8 (180 out of Phase)	M18 X 1.5 (Volvo Type)	12 V

Suits 1318 tachograph. Square wave.

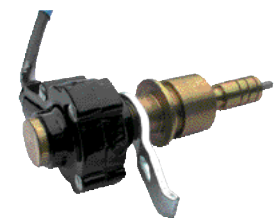


Proximity Sender K70452 (Speed & RPM)

## SPEEDOMETER SENDERS

### Speedometer Senders

Part No.	Description	Drive Key	Pulses Per Rev	Nut Size
340.808	In line suits various vehicles with M22 nut size	3x8mm blade	8	M22 x 1.5mm Inc 5mmØ lug drive key
340.011	In line suits G.M U.S.A	2.7mm square	16	7/8"-18UNF
340.013	Snap fit suits Ford U.S.A (C4 transmission)	2.7mm square	16	Snap fit
340.22M	In line fits most Japanese	2.7mm square	2	M22 x 1.5mm
412.009	Universal cut cable	2.7mm square	8	



Speed sensor 340.013



Speed sensor 340.808



Speed sensor 412.009

# Senders, Switches, Adaptors



Hall effect speed sender K70451



Hall effect speed sender K46004

**Note:** Mechanical Drive input.



Hall effect speed sender K46005

**Note:** Mechanical Drive input / output.



Inductive sender 340.007

## SPEED / RPM SENDERS

### Hall Effect Type – 3-wire Bayonet closed style

Part No.	Imp/rpm	Connection	Voltage
K46003	8 square wave	M22x1.5mmLH male* 8x3mm slot	12V
K46004	8 square wave	7/8"-18UNF female 8x3mm slot	12V
K70450	8 square wave	M22x1.5mmLH female 8x3mm slot, 4 terminals	12V
K70451	8 square wave	7/8"-18UNF female 8x3mm slot, 4 terminals	12V

\* = Nuts to suit are optional  
 #230.069 M18x1.5mm - M22x1.5LH  
 #230.070 7/8"-18UNF - M22x1.5LH  
 #230.071 M22x1.5LH - 3/4-26UNF

**Note:** K46004 Electrical plug kit part no. K72221

## SPEED / RPM SENDERS

### Hall Effect Type – 3-wire Bayonet closed style

Part No.	Imp/rpm	Connection	Voltage
K46005	8 imp	7/8" – 18 UNF female	12 V

Similar to K46002, but with mechanical take off point.

Not suitable for 1318 tachograph.

**Note:** Mechanical take off connection – M22 x 1.5 male.

K46005 Electrical plug kit part no. K72221

### Inductive Type – 2-wire set-up

Part No.	Imp/rpm*	Connection	Thread Length
340.007	variable sine wave	M18x1.5mm	25mm
340.008	variable sine wave	3/4" x 16 UNF	44mm
340.009	variable sine wave	M18x1.5	84mm
340 804 006 007	variable sine wave	M18x1.5	35mm

\* = Impulse rate is determined by number of teeth or sprockets.

**Note:** Use twisted pair or shielded cable between inductive sensor and device requiring signal to eliminate possible electrical interference.

# Senders, Switches, Adaptors

## Push Button Switch

Part No.	Description	Specification	Size
170.713	Push button N/O	10 amp	15mm hole
170.714	Push button N/C	10 amp	15mm hole

**Note:** N/O = Normally Open Contact.

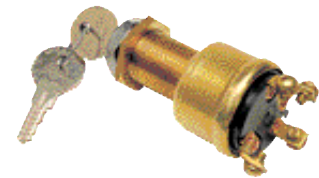
N/C = Normally Closed Contact.



Push button switch 170.713

## Key Switches

Part No.	Description	Specifications
170.706	Brass key switch	Off - On - Start
850.009	Plastic marine key switch with rubber boot	



Brass switch 170.706



Plastic switch 850.009

## 1310 Tachograph Harness & Connector Kits

Part No.	Description
K72225	0.5m Speed or RPM harness (terminated)
K72226	2.5m Speed or RPM harness (terminated)
K72227	5.0m Speed or RPM harness (terminated)
53787004F	Connector kit power, speed & sender
53787001F	Connector kit power, speed, sender & 15m cable (not terminated)
K72221	Sender plug kit

## 1318 Tachograph Connectors

Part No.	Description
215992022F	Connector kit power, speed & sender
215992021F	Connector kit power, speed, sender & 15m cable (not terminated)
K70735	White power connector
K70710	Yellow speed connector
K70711	Red RPM connector
K70712	Brown Aux connector
K70524	Terminal to suit 1318 connectors



53787004F





# Marine Catalogue

With many years of extensive experience in the development and manufacture of precision, high quality instruments, VDO has been able to develop an extensive range of marine products that have exceeded worldwide expectations.

The success of VDO Marine product ranges can be attributed to leading edge technology, easy operation and reliability.

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# Speedboat Gauges



## Cockpit Pitot Speedometer

<i>Cockpit - Pitot Speedometer</i>		<b>85mm</b>
<b>Part No.</b>	<b>Description</b>	<b>Voltage</b>
260.111	50mph gauge Black	12V
260.101	80mph gauge Black	12V
170.701	Cockpit White - Pitot Speedo 75mph	12V
170.702	pitot tube assembly Black	

## Cockpit Tachometer

<i>Ignition or Alternator Signal</i>		<b>85mm</b>
<b>Part No.</b>	<b>Description</b>	<b>Voltage</b>
333015033	7,000 rpm tacho black	12V
333.255	7,000 rpm Cockpit White tacho	12V

Suitable for 4,6 or 8 cylinder four stroke inboard petrol engines with coil pickup. Also suitable for all diesel and outboard engines using alternator signal pickup.

## Cockpit Fuel Gauge

<i>Black Cockpit Vision Fuel Gauge</i>		<b>52mm</b>	
<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>	<b>Voltage</b>
301010011	fuel gauge - petrol	10-180 ohms	12V
301010010	fuel gauge - LPG	0-90 ohms	12V
301010009	fuel gauge - tubular		12V

<i>White Cockpit Vision Fuel Gauge</i>		<b>52mm</b>	
<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>	<b>Voltage</b>
301.216	fuel gauge	10-180 ohms	12V

## Cockpit Pressure Gauge

<i>Cockpit Vision Pressure Gauge</i>		<b>52mm</b>	
<b>Part No.</b>	<b>Description</b>	<b>Specifications</b>	<b>Voltage</b>
350010003	100 psi	10-180 ohms	12V
350010001	400 psi	10-180 ohms	12V
350010016	500 kPa	10-180 ohms	12V
350.240	80 psi Cockpit white	10-180 ohms	12V
350010017	1000 kPa	10-180 ohms	12V

**Note:** 500 kPa = 80 psi, 100 psi = 700 kPa, 1000 kPa = 150 psi, 400 = 2800 kPa.

# Speedboat Gauges

## Cockpit Temperature Gauge-Water

<i>Electric</i>			<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Specifications</i>	<i>Voltage</i>
310010014	40-120°C Black	287-23 ohms	12V
310.239	100- 250°F White	287-23 ohms	12V

## Cockpit Voltmeter Gauge

<i>Cockpit Voltmeter Gauge</i>			<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Voltage</i>	
332.241	White Voltmeter	8-16V	
332010004	Black Voltmeter	8-16V	

## Cockpit Pyrometer

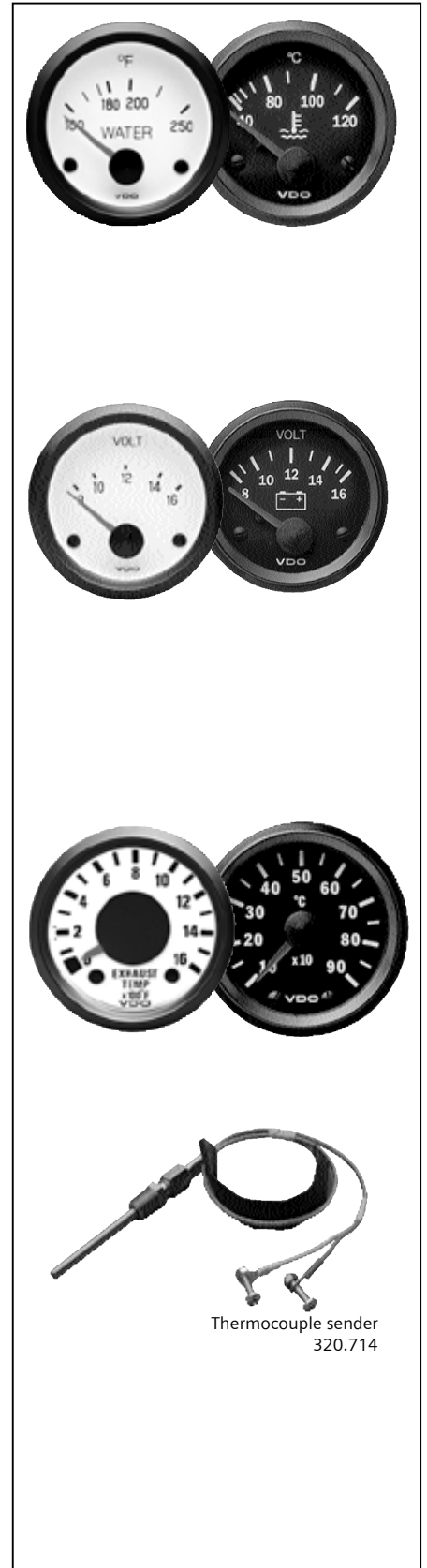
<i>Electric</i>			<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Voltage</i>	
310.159	900°C pyrometer kit black	12V	
310.240	250- 1600°F pyrometer kit white	12V	

Kit includes: Loom and thermocouple sender.

### *Components*

240.701	Dropping resistor for 24V use		
320.714	Thermocouple sender	non bonded junction	1/4" NPTF Male
240.035	loom 5m		
320.059	weld boss adaptor		1/4" NPTF Female
310 015 009	Instrument Black		

**Note:** 900°C gauge has a 12V connection.



Thermocouple sender  
320.714

# Marine Accessories



## BATTMAN III Battery Monitor

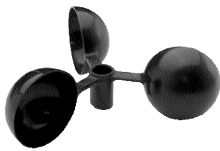
It's like a fuel gauge for your battery. The Battman II lets you know everything that is essential to know about your battery.

- battery voltage 8-30 volts
- battery capacity used in amhours
- battery capacity regained in amhours
- charging and discharging current in amps

### Battery Monitor

<i>Complete Kit</i>			<i>52mm</i>
<i>Part No.</i>	<i>Description</i>	<i>Specifications</i>	<i>Voltage</i>
190.725	Battman including gauge, loom shunt, push button switch	liquid crystal readout	8-30V
190.727	shunt		

- measuring range, current : +0.1 -200A
- accuracy, voltage : better than 1%
- accuracy, current : +5%
- measuring range : amhours 0-999AH
- measuring range voltage : 8-30V
- accuracy : +0.5%



N05 800 306



N05 800 308



N05 800 356



N05 801 448

## Sumlog and Logic Spares

### *Wind System Components*

<i>Part Number</i>	<i>Description</i>
N01 340 402	logic wind mast head unit complete
N05 800 356	mast head vane - new style
N05 801 448	mast head wind cups - new style
N05 800 308	mast head vane - old style
N05 800 306	mast head wind cups - old style
N05 800 236	logic wind mast head cable 30m

# Marine Accessories

## Spares for Sumlog - Electronic

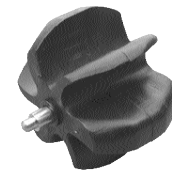
<i>Transducers</i>			<i>12/24V</i>
<i>Part No.</i>	<i>Description</i>	<i>Specifications</i>	<i>Size</i>
270 023 001 002	8/12/18 kn – SL	markings - 270/23/1/1/2	128mm long
270 023 004 002	30 kn – SL & 12-50 kn – Logic	markings - 270/23/4/1/2	120mm long
270 023 005 002	50 kn range – SL	markings - 270/23/5/1 or 5/2	120mm long

### *Paddle Wheels & Axles*

<i>Part No.</i>	<i>Description</i>
270 023 005 003	8/12/18 kn, wide wheel, 6 blades
270 023 005 004	30 kn, narrow wheel, 6 blades
270 023 005 005	50 kn, narrow wheel, 4 blades



Transducer 270.737



Wide Paddle Wheel  
270 023 005 003



Narrow Paddle Wheel  
270 023 005 004



Narrow Paddle  
Wheel  
270 023 005 005

# 1.1 VDO Chart Plotters



MAP 11csE

## MAP 11

MAP 11csE (sunlight) with Engine Data  
(incl. Smart GPS Sensor)

X10-719-002-053



MAP 7w

## MAP 7

MAP 7w (sunlight)  
Transflective TFT colour display  
(incl. GPS Smart Sensor)

X10-719-002-050

MAP 7wi (sunlight)  
Transflective TFT colour display  
(integrated GPS receiver)

X10-719-002-051

MAP 7v  
Transflective TFT colour display (integrated GPS receiver)

X10-719-002-055



MAP 7v



MAP 7v

For further information see Catalogue Chart Plotters

Accessories see Page 111

Technical Data see Page 115

## 1.2 VDO Ocean Line Navigation, black

### VDO Ocean Line Combi (Log/Depth) Ø 85 mm

#### VDO Ocean Line Combi System

Including: Indicator, NMEA Sensor system, adapter cable  
12-24 V

Transom Mount sensor:	X11 719 000 067
Thru-Hull Mount sensor:	X11 719 000 065

#### Components

Indicator	12-24 V	N01 612 002
Triducer <sup>®</sup> NMEA Sensor kit, Transom Mount		X11 719 000 053
Triducer <sup>®</sup> NMEA Sensor kit, Thru-Hull Mount		X11 719 000 058

Triducer<sup>®</sup> is registered trade mark of the Airmar Technology Corporation

### VDO Ocean Line Sumlog<sup>®</sup> Ø 85 mm

#### VDO Ocean Line Sumlog<sup>®</sup> complete system,

Including: Indicator, Sensor, 10 m Cable, Illumination 12 V

12 (kn, km/h, mph)	12-24 V	N01 100 858
30 (kn, km/h, mph)	12-24 V	N01 100 860
50 (kn, km/h, mph)	12-24 V	N01 100 862
50 (kn, mph); Double scale	12-24 V	N01 100 864

#### Components

Indicator 12 (kn, km/h, mph)	12-24 V	N01 113 022
Indicator 30 (kn, km/h, mph)	12-24 V	N01 113 026
Indicator 50 (kn, km/h, mph)	12-24 V	N01 113 030
Indicator 50 (kn, mph); Double scale	12-24 V	N01 113 034
10 m Sensor cable		N05 801 842
20 m Sensor cable		N05 801 848
Sensor System		N01 140 302
Thru-Hull fitting (30 kn)		270 023 005 010 X

Technical Data see Page 117



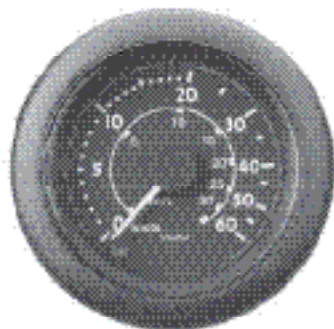
Triducer<sup>®</sup> NMEA



Sumlog Sensor  
with Thru-Hull Mount and Nut



## 1.2 VDO Ocean Line Navigation, black



Ocean Line Compass Sensor

### VDO Ocean Line Wind Measuring System Ø 85 mm

VDO Ocean Line Wind Measuring System, complete system  
Including: Indicator, Sensor, 30 m Cable

System	12-24 V	N01 300 208
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#### Components

Wind direction indicator	12-24 V	N01 320 712
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Wind speed indicator  
(only in combination  
with Wind direction indicator)

12-24 V	N01 310 612
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Mast head unit	N01 340 602
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Cable 30 m	N05 801 542
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### VDO Ocean Line Fluxgate Compass Ø 85 mm

VDO Ocean Line Fluxgate Compass complete system  
Including: Indicator, Sensor, 10 m Cable

System	12-24 V	N01 500 116
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#### Components

Sensor	12-24 V	N01 530 302
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10 m Sensor cable	N05 801 844
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Accessories see Page 112

Technical Data see Page 117

## 1.3 VDO Ocean Line Navigation, white

### VDO Ocean Line Combi (Log/Echolot) Ø 85 mm

VDO Ocean Line Combi System

Including: Indicator, NMEA Sensor system, adapter cable  
12-24 V

Transom Mount sensor: X11 719 000 068

Thru-Hull Mount sensor: X11 719 000 066

#### Components

Indicator 12-24 V N01 612 006

Triducer\* NMEA Sensor kit, Transom Mount X11 719 000 053

Triducer\* NMEA Sensor kit, Thru-Hull Mount X11 719 000 058

Triducer\* is registered trade mark of the Airmer Technology Corporation

### VDO Ocean Line Sumlog\* Ø 85 mm

VDO Ocean Line Sumlog\* complete system

Including: Indicator, Sensor, 10 m Cable, Illumination 12 V

12 (kn, km/h, mph) 12-24 V N01 100 828

30 (kn, km/h, mph) 12-24 V N01 100 830

50 (kn, km/h, mph) 12-24 V N01 100 832

50 (kn, mph); Double scale 12-24 V N01 100 834

#### Components

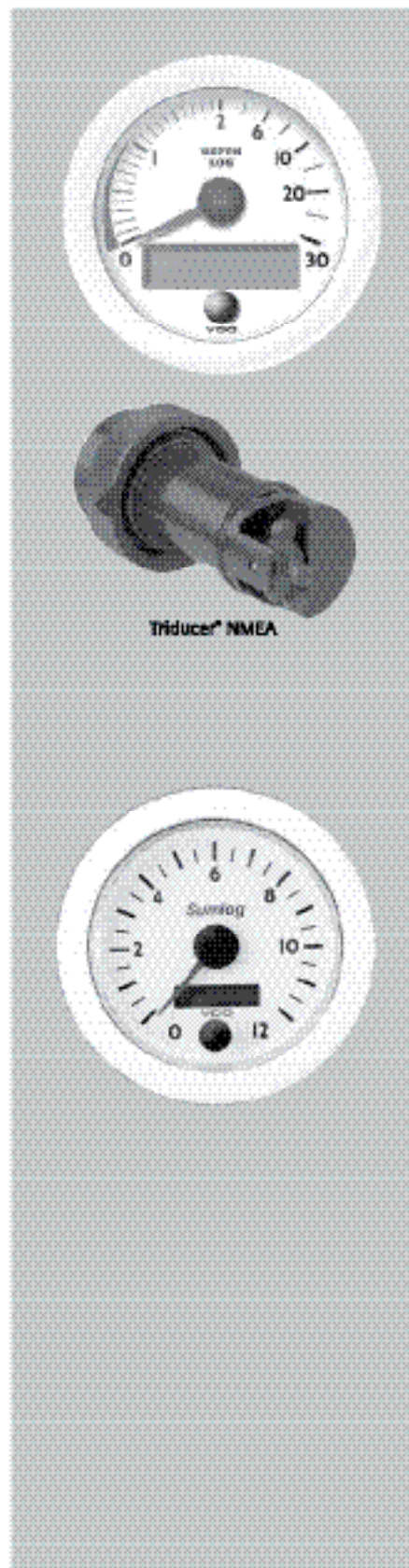
Indicator 50 (kn, mph); Double scale 12-24 V N01 113 014

Sensorcable 10 m N05 801 842

Sensorcable 20 m N05 801 848

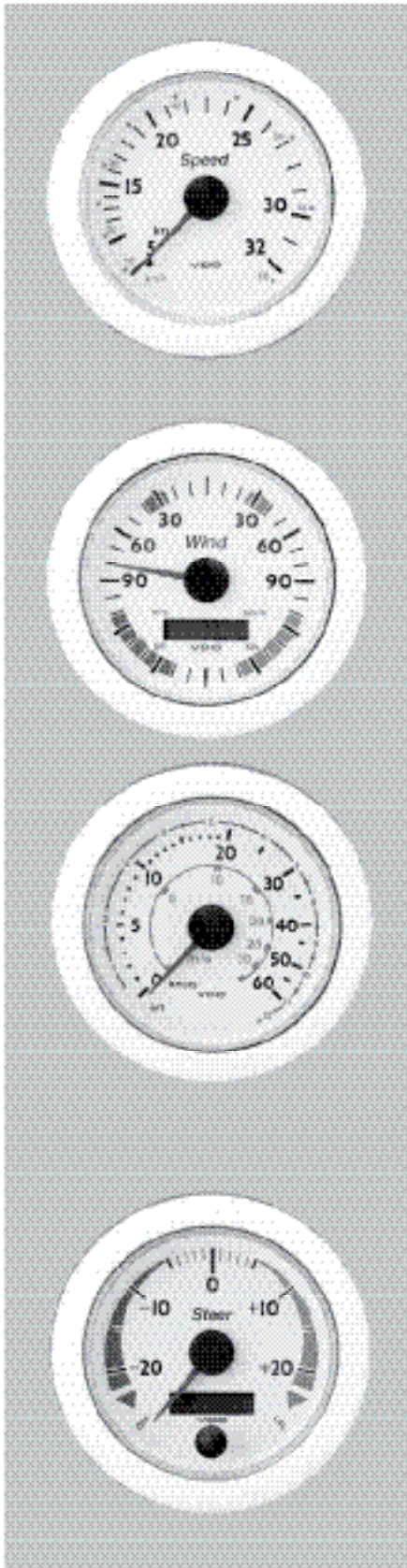
Sensor System N01 140 302

Thru-Hull fitting 270 023 005 010



Technical Data see Page 117

## 1.3 VDO Ocean Line Navigation, white



### VDO Ocean Line White Pitot-Tube Speedometer Ø 85 mm

VDO Ocean Line White Pitot-Tube Speedometer complete system,  
Including: Indicator, Sensor, 6 m Tube, 12 V Illumination

32 kn, 60 km/h	N01 100 866
43 kn, 80 km/h	N01 100 868
65 kn, 120 km/h	N01 100 870
65 kn, 75 mph	N01 100 872

#### Components

Indicator 32 kn, 60 km/h	N01 114 102
Indicator 65 kn, 75 mph	N01 114 114

### VDO Ocean Line White Wind Measuring System Ø 85 mm

VDO Ocean Line White Wind Measuring System, complete system  
Including: Indicator, Sensor, 30 m Cable

System	12-24 V	N01 300 206
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Wind direction indicator	12-24 V	N01 320 702
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Wind speed indicator (only in Combination with Wind direction indicator)	12-24 V	N01 310 602
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Mast head unit	N01 340 602
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Cable 30 m	N05 801 542
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### VDO Ocean Line White Fluxgate Compass Ø 85 mm

VDO Ocean Line White Fluxgate Compass, complete system  
Including: Indicator, Sensor, 10 m Cable

	12-24 V	N01 500 112
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#### Components

Indicator	12-24 V	N01 512 202
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Sensor	12-24 V	N01 530 302
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Sensorcable 10 m	N05 801 844
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Accessories see Page 112

Technical Data see Page 117

## 2.1 VDO Ocean Line Engine Monitoring, black

### VDO Ocean Line Tachometer Ø 85 mm

#### VDO Ocean Line Tachometer Ø 85 mm

0-1800 rpm	●	12 V	N02 012 422
0-1800 rpm	●	24 V	N02 012 722
0-3000 rpm	●	12 V	N02 012 426
0-3000 rpm	●	24 V	N02 012 726
0-4000 rpm	●	12 V	N02 012 430
0-4000 rpm	●	24 V	N02 012 730
0-6000 rpm	■	12 V	N02 012 434
0-6000 rpm	■	24 V	N02 012 734
0-1800 rpm, EBZ	●/▲	12-24 V	N02 012 142
0-3000 rpm, EBZ	●/▲	12-24 V	N02 012 146
0-4000 rpm, EBZ	●/▲	12-24 V	N02 012 150
0-5000 rpm, EBZ	●/▲	12-24 V	N02 012 154
0-5000 rpm, EBZ	■	12-24 V	N02 012 158
0-6000 rpm, EBZ	■	12-24 V	N02 012 162

*EHM – electronic engine hourmeter,  
Tachometer with 12-24 V with 12 V illumination*

Connection:

● Terminal W, ■ Terminal 1, ▲ Inductive (specification upon request)

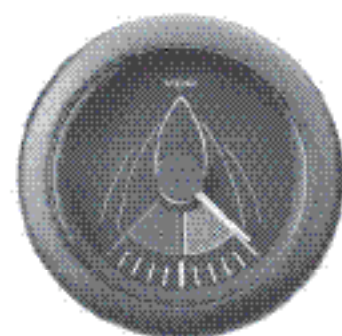
### VDO Ocean Line Rudder Angle Indicator Ø 85 mm

VDO Ocean Line Rudder Angle Indicator Ø 85 mm, system complete,  
including: Indicator, Sensor, Illumination 12 V

System	12-24 V	N03 200 620
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#### Components

Indicator	12-24 V	N03 211 206
Sensor	12-24 V	440 102 001 001 D
Sensor for Dual-station readings	12-24 V	440 102 002 001 D



Rudder-angle Sensor

Technical Data see Page 120

## 2.1 VDO Ocean Line Engine Monitoring, black



### VDO Ocean Line Tachometer Ø 52 mm

VDO Ocean Line Tachometer Ø 52 mm

0-1800 rpm	●	12 V	N02 011 112
0-3000 rpm	●/■	12 V	N02 011 114
0-4000 rpm	●/■	12 V	N02 011 116
0-6000 rpm	●/■	12 V	N02 011 118

Connection:

● Terminal W, ■ Terminal 1



### VDO Ocean Line Rudder Angle Indicator Ø 52 mm

VDO Ocean Line Rudder Angle Indicator Ø 52 mm, complete system, Including: Indicator, Sensor

System	12 V	N03 200 514
System	24 V	N03 200 414

Components

Indicator	12 V	N03 211 412
Indicator	24 V	N03 211 512
Sensor	12-24 V	440 102 001 001 D
Sensor for Dual-station readings	12-24 V	440 102 002 001 D



Rudder-angle sensor



### VDO Ocean Line Trim Gauge Ø 52 mm

VDO Ocean Line Trim Gauge Ø 52 mm, Including: Indicator

For Mercury Trimsensor (Bravo Drive)	12 V	N01 211 022
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Technical Data see Page 119

## 2.1 VDO Ocean Line Engine Monitoring, black

### VDO Ocean Line Pyrometer Ø 52 mm

VDO Ocean Line Pyrometer (Exhaust-gas temperature)

Indicator 100-900°C	12 V	N02 340 712
System 100-900°C	12 V	N02 300 616
Indicator 250-1650°F	12 V	N02 340 714
System 250-1650°F	12 V	N02 300 618
Sensor		N03 320 264
Sensorcable 4 m		N03 320 268
Weld boss		N03 320 266

### VDO Ocean Line Thermometers Ø 52 mm

VDO Ocean Line Thermometers

Indicator	120°C/250°F	12 V	N02 321 612
Indicator	120°C/250°F	24 V	N02 321 712
Indicator	150°C/300°F	12 V	N02 321 616
Indicator	150°C/300°F	24 V	N02 321 716
Indicator	120°C/250°F	4-20 mA	N02 321 812
Indicator	150°C/300°F	4-20 mA	N02 321 816

Sensor: Page 106

### VDO Ocean Line Outside Temp. Ø 52 mm

VDO Ocean Line Outside temperature

Indicator -25°C to +60°C	12 V	N02 321 512
Sensor		323 809 010 005 C

### VDO Ocean Line Quarz clock Ø 52 mm

VDO Ocean Line Quarz clock

electr. adjustable	12-24 V	N03 270 612
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Technical Data see Page 119

## 2.1 VDO Ocean Line Engine Monitoring, black



Fresh water Sensor  
Capacitive

Black water Sensor

### VDO Ocean Line Engine Hours Counter Ø 52 mm

VDO Ocean Line Electronic engine hours counter	12-24 V	N03 110 412
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### VDO Ocean Line Level gauges Ø 52 mm

#### VDO Ocean Line Fuel Gauge

Indicator Lever 0-4/4	12 V	N02 222 112
Indicator Lever 0-4/4	24 V	N02 222 312
Indicator Tubular sensor 0-4/4	12 V	N02 222 512
Indicator Tubular sensor 0-4/4	24 V	N02 222 712

Sensor: Page 108

#### VDO Ocean Line Fresh water gauge

Indicator, capacitive 0-4/4	4-20 mA	N02 230 612
System (80-600 mm), capacitive	4-20 mA	N02 200 320
System (600-1200 mm), capacitive	4-20 mA	N02 200 322
System (1200-1500 mm), capacitive	4-20 mA	N02 200 324
Indicator (Reedcontact Sensor)	12 V	N02 230 712
Indicator (Reedcontact Sensor)	24 V	N02 230 812

Sensor: Page 109

#### Note Sensor capacitive:

- Sensor can be cut individually
- Sensor not for alluminic tank
- Sensor recommended for freshwater only

### VDO Ocean Line Blackwater System Ø 52 mm

Usage in different tank materials like, steel, aluminium, plastic with galvanic separation and for all conductive liquids like water, greywater, wastewater with adjustable make point

System	12-24 V	N02 200 524
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#### Components

Indicator, 0-4/4	12-24 V	N02 230 626
Sensor, with galvanic separation, 2 adjustable make point		
Sensor	200-600 mm	N02 240 902
Sensor	600-1200 mm	N02 240 904
Sensor	1200-1500 mm	N02 240 906

Technical Data see Page 119

## 2.1 VDO Ocean Line Engine Monitoring, black

### VDO Ocean Line Pressure gauge Ø 52 mm

#### VDO Ocean Line Pressure gauge

Indicator	2 bar/28 psi	12 V	N02 124 122
Indicator	2 bar/28 psi	24 V	N02 124 522
Indicator	5 bar/72 psi	12 V	N02 124 126
Indicator	5 bar/72 psi	24 V	N02 124 526
Indicator	10 bar/145 psi	12 V	N02 124 130
Indicator	10 bar/145 psi	24 V	N02 124 530
Indicator	25 bar/360 psi	12 V	N02 124 134
Indicator	25 bar/360 psi	24 V	N02 124 534
Indicator	30 bar/435 psi	12 V	N02 124 138
Indicator	30 bar/435 psi	24 V	N02 124 538
Indicator	2 bar/28 psi	4-20 mA	N02 124 732
Indicator	2,5 bar/35 psi	4-20 mA	N02 124 736
Indicator	5 bar/72 psi	4-20 mA	N02 124 740
Indicator	10 bar/145 psi	4-20 mA	N02 124 744
Indicator	25 bar/360 psi	4-20 mA	N02 124 748
Indicator	30 bar/435 psi	4-20 mA	N02 124 75

Note: - The 30 bar Pressure gauge (12 V, 24 V) has to be used with a VDO 25 bar Pressure sensor.

### VDO Ocean Line Buzzer Ø 52 mm

VDO Ocean Line Buzzer	12-24 V	N03 230 702
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### VDO Ocean Line Voltmeter Ø 52 mm

#### VDO Ocean Line Voltmeter

Indicator	Range: 8-16 V	12 V	N02 410 812
Indicator	Range: 18-32 V	24 V	N02 410 912

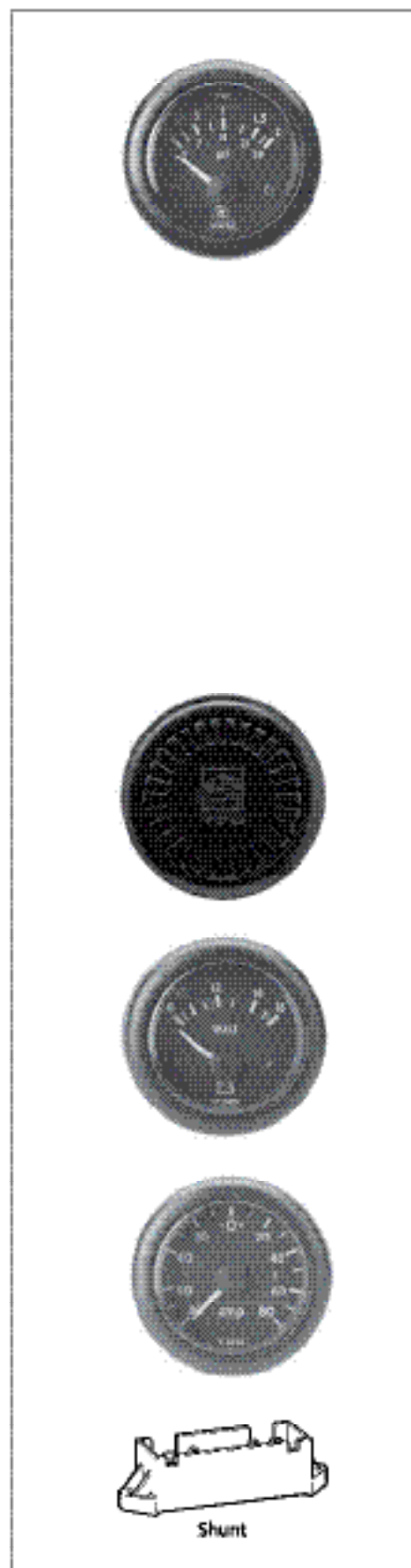
### VDO Ocean Line Ammeter Ø 52 mm

#### VDO Ocean Line Ammeter

System with Shunt	80-0-80 A	12 V	N02 400 310
Indicator	80-0-80 A	12 V	N02 420 712
Shunt	80 A		N03 330 116
System with Shunt	140-0-140 A	12 V	N02 400 312
Indicator	140-0-140 A	12 V	N02 420 714

Accessories see Page 112

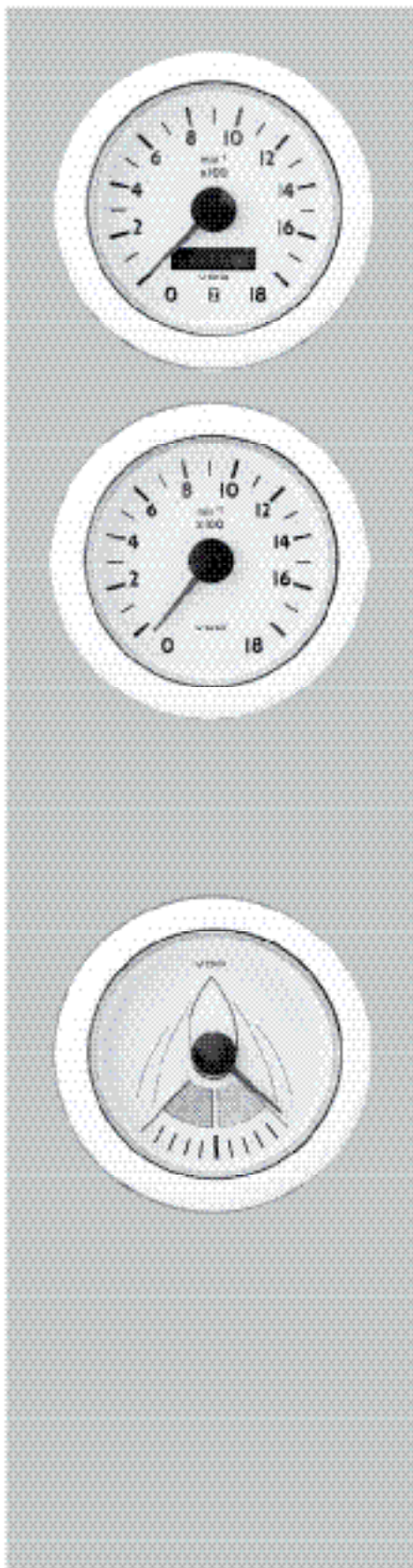
Technical Data see Page 119



Shunt



## 2.2 VDO Ocean Line Engine Monitoring, white



### VDO Ocean Line Tachometer Ø 85 mm

#### VDO Ocean Line Tachometer Ø 85 mm

0-1800 rpm	●	12 V	N02 012 402
0-1800 rpm	●	24 V	N02 012 702
0-3000 rpm	●	12 V	N02 012 406
0-3000 rpm	●	24 V	N02 012 706
0-4000 rpm	●	12 V	N02 012 410
0-4000 rpm	●	24 V	N02 012 710
0-6000 rpm	■	12 V	N02 012 414
0-6000 rpm	●	24 V	N02 012 714
0-1800 rpm, EBZ	●/▲	12-24 V	N02 012 102
0-3000 rpm, EBZ	●/▲	12-24 V	N02 012 106
0-4000 rpm, EBZ	●/▲	12-24 V	N02 012 110
0-5000 rpm, EBZ	●/▲	12-24 V	N02 012 114
0-5000 rpm, EBZ	■	12-24 V	N02 012 118
0-6000 rpm, EBZ	■	12-24 V	N02 012 122

EHM – electronic engine hourmeter,  
Tachometer 12-24 V with 12 V illumination

Connection:

● Terminal W, ■ Terminal 1, ▲ Inductive (specification upon request)

### VDO Ocean Line Rudder Angle Indicator Ø 85 mm

VDO Ocean Line Rudder Angle Indicator Ø 85 mm, complete system

Including: Indicator, Sensor, Illumination 12 V

System	12-24 V	N03 200 616
--------	---------	-------------

#### Components

Indicator	12-24 V	N03 211 202
Sensor	12-24 V	440 102 001 001 D
Sensor for Dual-station readings	12-24 V	440 102 002 001 D

Technical Data see Page 120

## 2.2 VDO Ocean Line Engine Monitoring, white

### VDO Ocean Line Rudder Angle Indicator Ø 52 mm

VDO Ocean Line Rudder Angle Indicator Ø 52 mm, complete system  
Including: Indicator, Sensor

System	12 V	N03 200 510
System	24 V	N03 200 410

#### Components

Indicator	12 V	N03 211 402
Indicator	24 V	N03 211 502
Sensor	12-24 V	440 102 001 001 K
Sensor for Dual-station readings	12-24 V	440 102 002 001 K

### VDO Ocean Line Trim gauge Ø 52 mm

VDO Ocean Line Trim gauge Ø 52 mm  
Including: Indicator

For Mercury Trimsensor (Bravo Drive)	12 V	N01 211 002
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### VDO Ocean Line Pyrometer (Exhaust-gas temperature) Ø 52 mm

VDO Ocean Line Pyrometer

Indicator 100-900°C	12 V	N02 340 702
System 100-900°C	12 V	N02 300 608
Sensor		N03 320 264
Sensor cable 4 m		N03 320 268
Weld boss		N03 320 266

### VDO Ocean Line Thermometers Ø 52 mm

VDO Ocean Line Thermometers

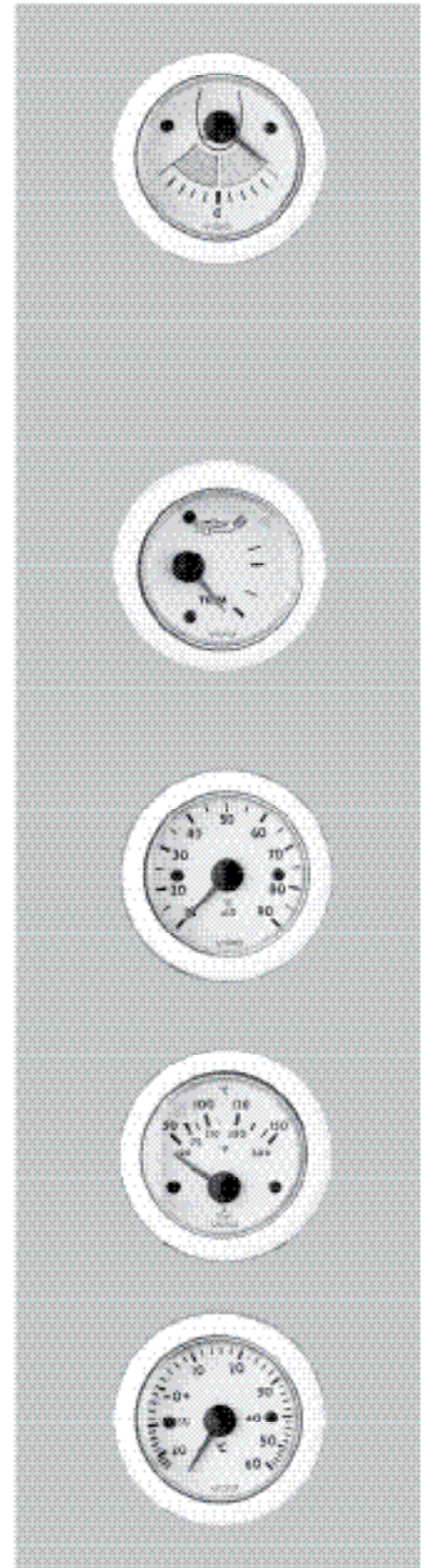
Indicator	120°C / 250°F	12 V	N02 321 602
Indicator	120°C / 250°F	24 V	N02 321 702
Indicator	150°C / 300°F	12 V	N02 321 606
Indicator	150°C / 300°F	24 V	N02 321 706
Indicator	120°C / 250°F	4-20 mA	N02 321 80

### VDO Ocean Line Outside Temp. Ø 52 mm

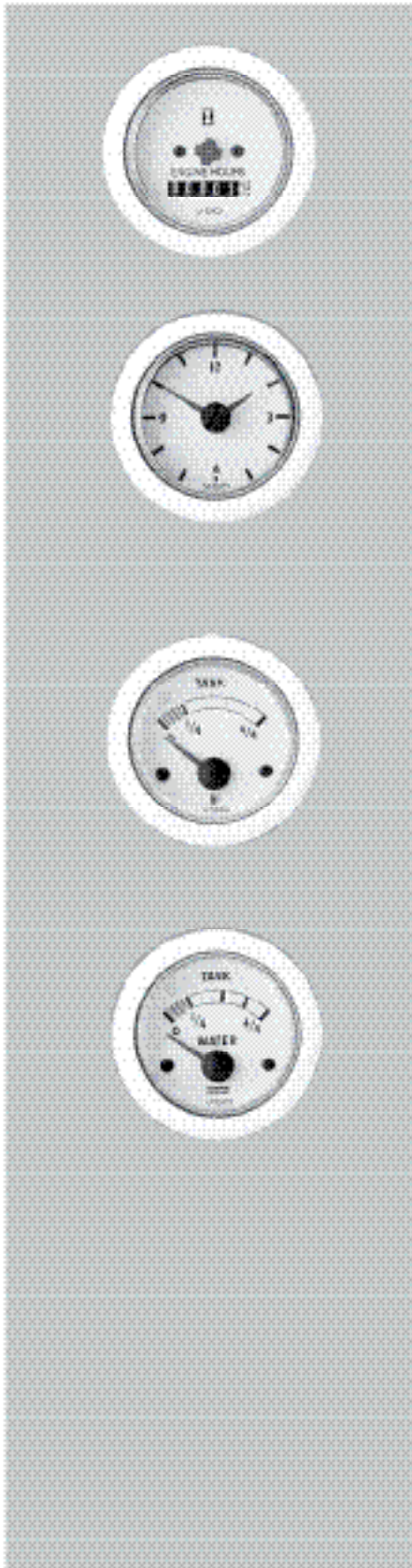
VDO Ocean Line Outside Temperature

Indicator -25°C to +60°C	12 V	N02 321 502
Sensor		323 809 010 005 C

Technical Data see Page 119



## 2.2 VDO Ocean Line Engine Monitoring, white



### VDO Ocean Line Engine Hours Counter Ø 52 mm

VDO Ocean Line Engine Hours counter	12-24 V	N03 110 402
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### VDO Ocean Line Quarz Clock Ø 52 mm

VDO Ocean Line Quarz clock electr. adjustable	12-24 V	N03 270 602
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### VDO Ocean Line Level gauges Ø 52 mm

VDO Ocean Line Fresh Water gauge		
Indicator Lever 0-4/4	12 V	N02 222 102
Indicator Lever 0-4/4	24 V	N02 222 302
Indicator Tubular sensor 0-4/4	12 V	N02 222 502
Indicator Tubular sensor 0-4/4	24 V	N02 222 702

VDO Ocean Line Fresh Water gauge		
Indicator, capacitive 0-4/4	4-20 mA	N02 230 602
System (80-600 mm), capacitive	4-20 mA	N02 200 308
System (600-1200 mm), capacitive	4-20 mA	N02 200 310
Indicator (Reedcontact Sensor)	12 V	N02 230 702
Indicator (Reedcontact Sensor)	24 V	N02 230 802

- Note Sensor capacitive:
- Sensor can be cut individually
  - Sensor not for alluminic tank
  - Sensor recommended for freshwater only

Technical Data see Page 119

## 2.2 VDO Ocean Line Engine Monitoring, white

### VDO Ocean Line Black water System Ø 52 mm

Usage in different tank materials like, steel, aluminium, plastic with galvanic separation and for all conductive liquids like water, greywater, wastewater with adjustable make point

Including: Indicator, Sensor (600 mm)

System	12-24 V	N02 200 520
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#### Components

Indicator, 0-4/4	12-24 V	N02 230 622
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Sensor, with galvanic separation,  
2 adjustable make point

Sensor	200-600 mm	N02 240 902
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Sensor	600-1200 mm	N02 240 904
--------	-------------	-------------

Sensor	1200-1500 mm	N02 240 906
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### VDO Ocean Line Pressure gauge Ø 52 mm

#### VDO Ocean Line Pressure gauge

Indicator	2 bar/28 psi	12 V	N02 124 102
Indicator	2 bar/28 psi	24 V	N02 124 502
Indicator	5 bar/72 psi	12 V	N02 124 106
Indicator	5 bar/72 psi	24 V	N02 124 506
Indicator	10 bar/145 psi	12 V	N02 124 110
Indicator	10 bar/145 psi	24 V	N02 124 510
Indicator	25 bar/360 psi	12 V	N02 124 114
Indicator	25 bar/360 psi	24 V	N02 124 514
Indicator	30 bar/435 psi	12 V	N02 124 118
Indicator	30 bar/435 psi	24 V	N02 124 518
Indicator	30 bar/435 psi	4-20 mA	N02 124 722

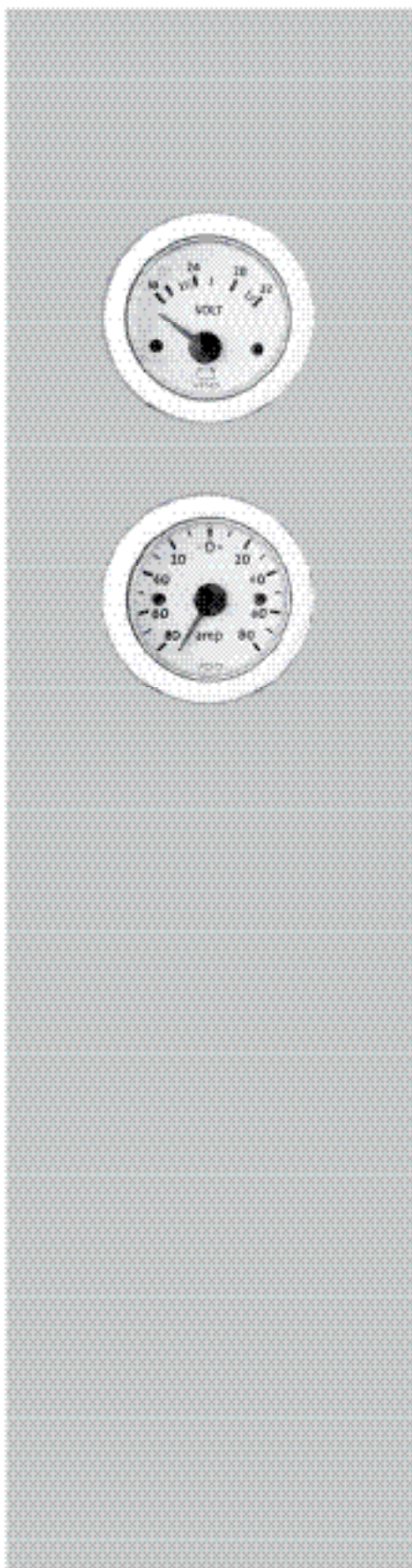
Sensors: Page 104

**Note:** - The 30 bar Pressure gauge (12 V, 24 V) has to be used with a VDO 25 bar sensor.

Technical Data see page 119



## 2.2 VDO Ocean Line Engine Monitoring, white



### VDO Ocean Line Buzzer Ø 52 mm

VDO Ocean Line Buzzer	12-24 V	N03 230 704
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### VDO Ocean Line Voltmeter Ø 52 mm

#### VDO Ocean Line Voltmeter

Indicator	Range: 8-16 V	12 V	N02 410 802
Indicator	Range: 18-32 V	24 V	N02 410 902

### VDO Ocean Line Ammeter Ø 52 mm

#### VDO Ocean Line Ammeter

System with Shunt	80-0-80 A	12 V	N02 400 306
Indicator	80-0-80 A	12 V	N02 420 702
Shunt	80 A		N03 330 116

Accessories see page 112

Technical Data see page 119

## 2.3 VDO Ocean Line Engine Monitoring, chrome

### VDO Ocean Line Tachometer Ø 85 mm

VDO Ocean Line Tachometer Ø 85 mm

0-3000 rpm	●	12 V	N02 012 506
0-3000 rpm	●	24 V	N02 012 806
0-4000 rpm	●	12 V	N02 012 510
0-4000 rpm	●	24 V	N02 012 810
0-6000 rpm	■	12 V	N02 012 514
0-3000 rpm, EBZ	●/▲	12-24 V	N02 012 206
0-4000 rpm, EBZ	●/▲	12-24 V	N02 012 210
0-6000 rpm, EBZ	■	12-24 V	N02 012 222
0-5000 rpm, EBZ	●/▲	12-24 V	N02 012 214

EHM = electronic engine hourmeter,  
Tachometer 12-24 V with 12 V Illumination

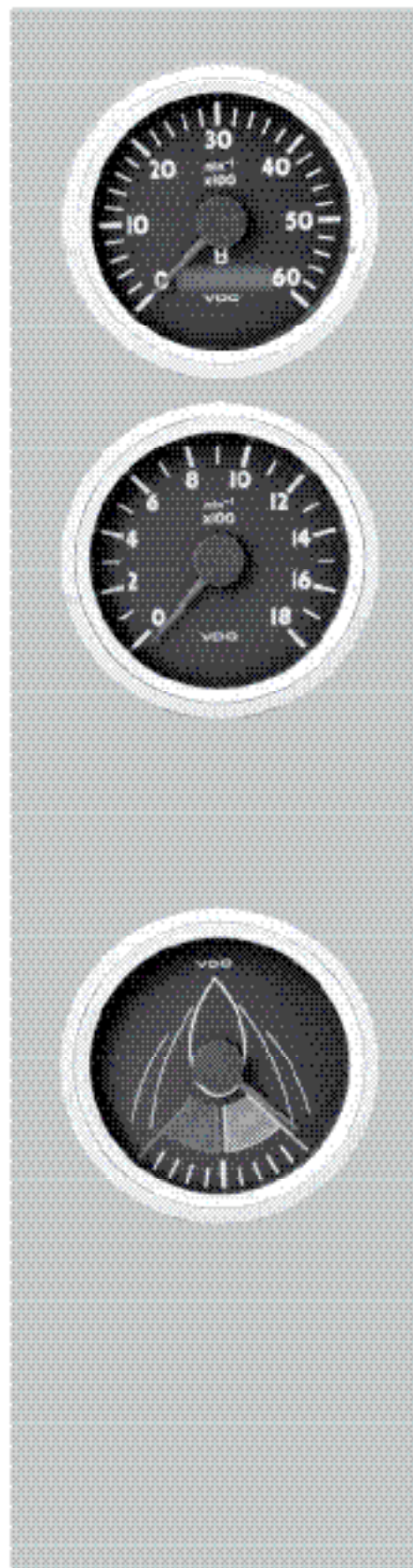
Connection:

● Terminal W, ■ Terminal 1, ▲ Inductive (specification upon request)

### VDO Ocean Line Rudder Angle Indicator Ø 85 mm

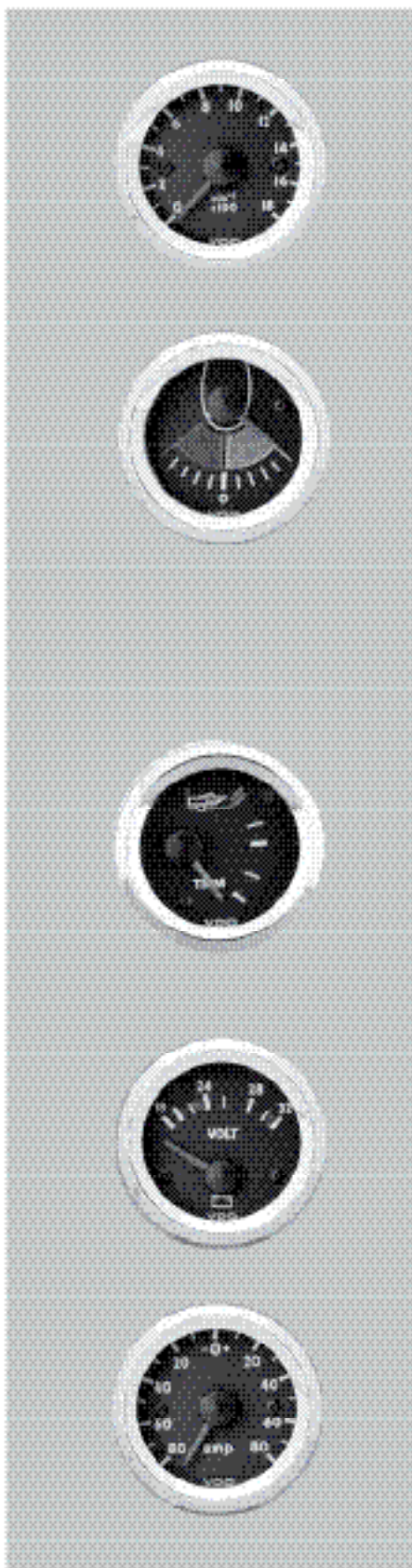
VDO Ocean Line Rudder Angle Indicator Ø 85 mm, complete system  
Including: Indicator, Sensor, 12 V Illumination

System	12-24 V	N03 200 618
Components		
Indicator	12-24 V	N03 211 302
Sensor	12-24 V	440 102 001 001 K
Sensor for Dual-station readings	12-24 V	440 102 002 001 K



Technical Data see Page 120

## 2.3 VDO Ocean Line Engine Monitoring chrome



### VDO Ocean Line Tachometer Ø 52 mm

VDO Ocean Line Tachometer Ø 52 mm

0-4000 rpm	●/■	12 V	N02 011 206
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Connection:

● Terminal W, ■ Terminal 1

### VDO Ocean Line Rudder Angle Indicator Ø 52 mm

VDO Ocean Line Rudder Angle Indicator Ø 52 mm, complete system,  
Including: Indicator, Sensor

System	12 V	N03 200 512
System	24 V	N03 200 412

Components

Indicator	12 V	N03 211 602
Indicator	24 V	N03 211 702
Sensor	12-24 V	440 102 001 001 K
Sensor for Dual-station readings	12-24 V	440 102 002 001 K

### VDO Ocean Line Trim gauge Ø 52 mm

VDO Ocean Line Trim gauge Ø 52 mm  
Including: Indicator

For Mercury Trimsensor (Bravo Drive)	12 V	N01 211 102
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### VDO Ocean Line Voltmeter Ø 52 mm

VDO Ocean Line Voltmeter

Indicator	Range: 8-16 V	12 V	N02 411 202
Indicator	Range: 18-32 V	24 V	N02 411 302

### VDO Ocean Line Ammeter Ø 52 mm

VDO Ocean Line Ammeter

System with Shunt	80-0-80 A	12 V	N02 400 308
Indicator	80-0-80 A	12 V	N02 420 802
Shunt	80 A		N03 330 116

Accessories see page 112

Technical Data see page 119

## 2.3 VDO Ocean Line Engine Monitoring, chrome

### VDO Ocean Line Pyrometer Ø 52 mm

VDO Ocean Line Pyrometer (Exhaust-gas temperature)

Indicator 100-900°C	12 V	N02 340 802
System 100-900°C	12 V	N02 300 612
Sensor cable 4m		N03 320 268
Weld boss		N03 320 266

### VDO Ocean Line Thermometers Ø 52 mm

VDO Ocean Line Thermometers

Indicator	120°C/250°F	12 V	N02 322 302
Indicator	120°C/250°F	24 V	N02 322 402
Indicator	150°C/300°F	12 V	N02 322 306

### VDO Ocean Line Engine hours counter Ø 52 mm

VDO Ocean Line Engine hours counter	12-24 V	N03 110 502
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### VDO Ocean Line Level Gauges Ø 52 mm

VDO Ocean Line Fuel Gauge

Indicator Lever 0-4/4	12 V	N02 222 802
Indicator Lever 0-4/4	24 V	N02 222 902
Indicator Tubular sensor 0-4/4	12 V	N02 223 202
Indicator Tubular sensor 0-4/4	24 V	N02 223 302

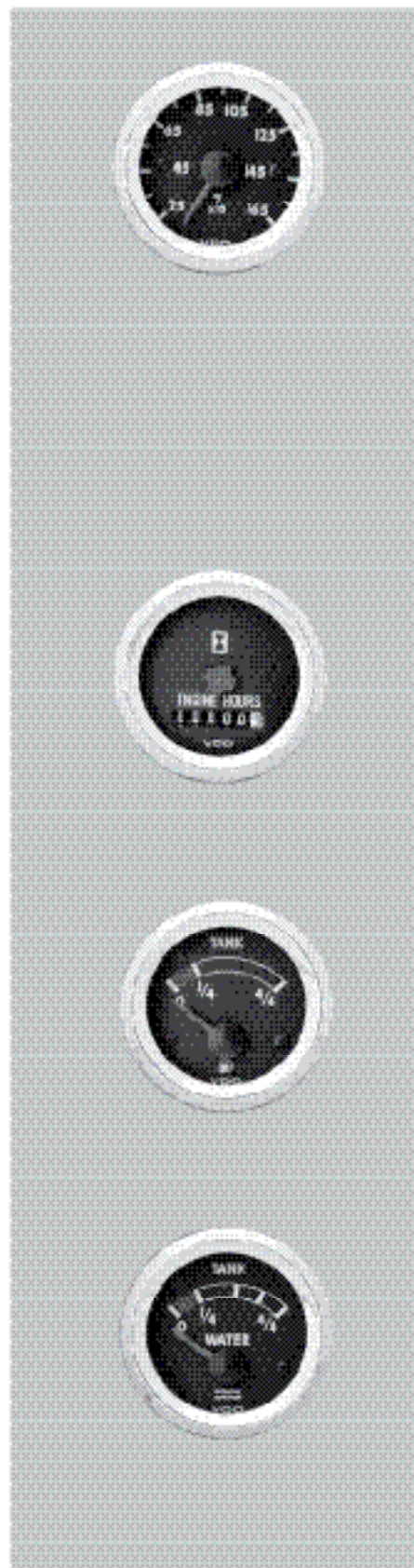
VDO Ocean Line Fresh Water Gauges

Indicator, capacitive 0-4/4	4-20 mA	N02 230 902
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Note Sensor capacitive:

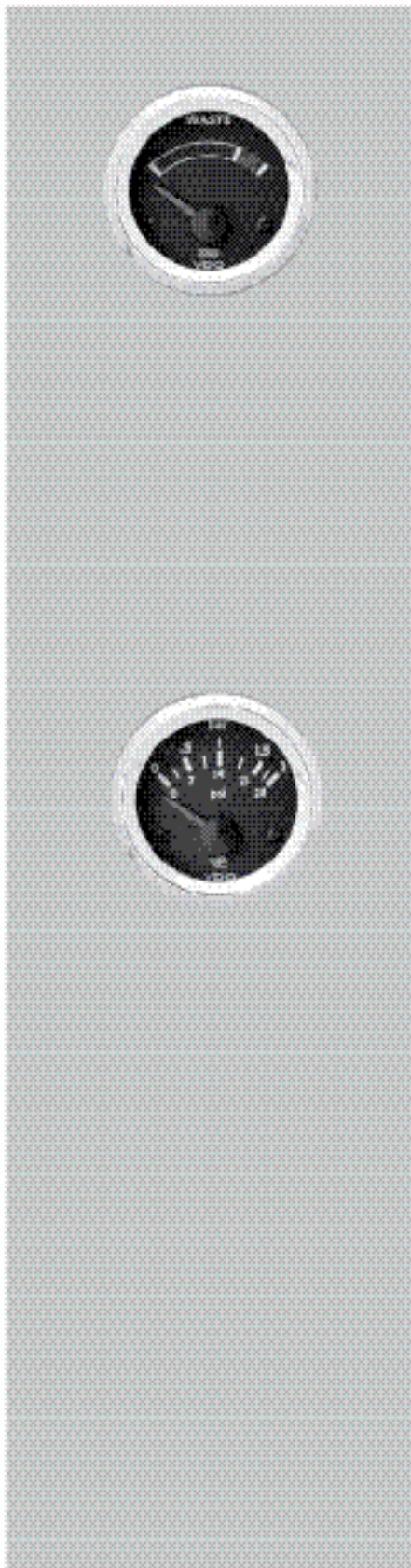
- Sensor can be cut individually
- Sensor not for alluminic tank
- Sensor recommended for freshwater only

Technical Data see page 119





## 2.3 VDO Ocean Line Engine Monitoring, chrome



### VDO Ocean Line Blackwater System Ø 52 mm

Usage in different tank materials like:  
steel, aluminium, plastic with galvanic separation and  
for all conductive liquids like water, greywater,  
wastewater with adjustable make point

Including: Indicator, Sensor (600 mm)

System	12-24 V	N02 200 522
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#### Components

Indicator, 0-4/4	12-24 V	N02 230 912
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Sensor, with galvanic separation,  
2 adjustable make point

Sensor	200-600 mm	N02 240 902
Sensor	600-1200 mm	N02 240 904
Sensor	1200-1500 mm	N02 240 906

### VDO Ocean Line Pressure Gauge Ø 52 mm

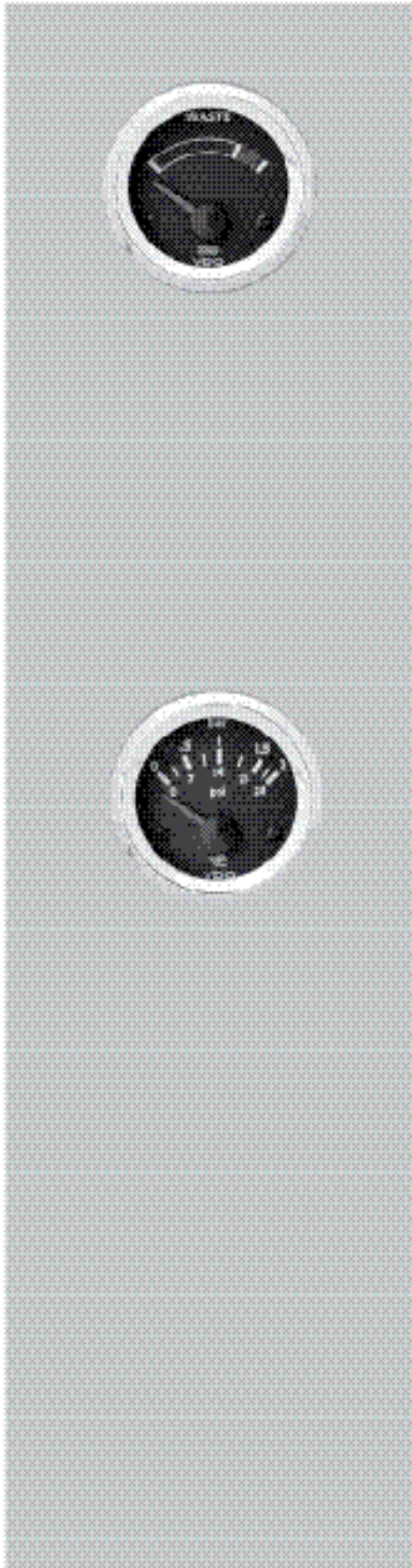
#### VDO Ocean Line Pressure Gauge

Indicator	5 bar/72 psi	12 V	N02 125 406
Indicator	10 bar/145 psi	12 V	N02 125 410
Indicator	10 bar/145 psi	24 V	N02 125 510
Indicator	25 bar/360 psi	12 V	N02 125 414
Indicator	25 bar/360 psi	24 V	N02 125 514
Indicator	30 bar/435 psi	12 V	N02 125 418

Note: - The 30 bar Pressure gauge (12 V, 24 V) has to be used with a  
VDO 25 bar Pressure sensor

Technical Data see page 119

## 2.3 VDO Ocean Line Engine Monitoring, chrome



### VDO Ocean Line Blackwater System Ø 52 mm

Usage in different tank materials like:  
steel, aluminium, plastic with galvanic separation and  
for all conductive liquids like water, greywater,  
wastewater with adjustable make point

Including: Indicator, Sensor (600 mm)

System	12-24 V	N02 200 522
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#### Components

Indicator, 0-4/4	12-24 V	N02 230 912
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Sensor, with galvanic separation,  
2 adjustable make point

Sensor	200-600 mm	N02 240 902
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Sensor	600-1200 mm	N02 240 904
--------	-------------	-------------

Sensor	1200-1500 mm	N02 240 906
--------	--------------	-------------

### VDO Ocean Line Pressure Gauge Ø 52 mm

#### VDO Ocean Line Pressure Gauge

Indicator	5 bar/72 psi	12 V	N02 125 406
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Indicator	10 bar/145 psi	12 V	N02 125 410
-----------	----------------	------	-------------

Indicator	10 bar/145 psi	24 V	N02 125 510
-----------	----------------	------	-------------

Indicator	25 bar/360 psi	12 V	N02 125 414
-----------	----------------	------	-------------

Indicator	25 bar/360 psi	24 V	N02 125 514
-----------	----------------	------	-------------

Indicator	30 bar/435 psi	12 V	N02 125 418
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Note: - The 30 bar Pressure gauge (12 V, 24 V) has to be used with a  
VDO 25 bar Pressure sensor

Technical Data see page 119

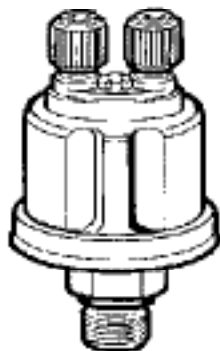
## 3.1 VDO Pressure Sensors



Pressure sensor Earth Return,  
without switch



Pressure sensor insulated return



Pressure sensor Earth Return,  
with switch

### VDO Pressure sensor

Pressure sensor Type- 1  
(not for Water pressure) Earth Return

Range	5 bar,	75 psi	1/8-27 NPTF	360 081 029 004 C
Range	10 bar,	150 psi	M 10x1 k	360 081 029 010 K
Range	10 bar,	150 psi	1/8-27 NPTF	360 081 029 012 K

Pressure sensor Type- 2  
(not for Water pressure) insulated return

Range	2 bar,	30 psi	M 12x1,5 k	360 081 032 011 C
Range	2 bar,	30 psi	1/8-27 NPTF	360 081 032 025 C
Range	5 bar,	75 psi	M 10x1 k	360 081 032 002 C
Range	5 bar,	75 psi	1/8-27 NPTF	360 081 032 001 C
Range	10 bar,	150 psi	M 10x1 k	360 081 032 003 C
Range	10 bar,	150 psi	M 14x1,5	360 081 032 006 C
Range	10 bar,	150 psi	1/8-27 NPTF	360 081 032 014 C
Range	25 bar,	350 psi	M 14x1,5	360 081 038 001 C
Range	25 bar,	350 psi	1/8-27 NPTF	360 081 038 003 C
Range	25 bar,	350 psi	3/8-18 NPTF	360 081 038 002 C

Pressure sensor Type- 3, Earth Return, with switch  
(not for Water pressure)

Range 5 bar, 75 psi

Make point	0,25 bar,	3,5 psi	M10x1 k	360 081 030 001 K
Make point	0,5 bar,	7,0 psi	M10x1 k	360 081 030 002 K
Make point	0,5 bar,	7,0 psi	M14x1,5	360 081 030 028 K
Make point	0,5 bar,	7,0 psi	1/8-27 NPTF	360 081 030 049 K
Make point	0,6 bar,	8,5 psi	M10x1 k	360 081 030 014 C
Make point	1,4 bar	11,5 psi	1/8-27 NPTF	360 081 030 010 C

Pressure sensor Type- 3, Earth Return, with switch  
(not for Water pressure) Range 80 psi

Make point	7 psi		1/8-27 NPTF	360 081 030 023 C
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## 3.1 VDO Pressure Sensors

Pressure sensor Type- 3, with switch,  
Earth Return (not for Water pressure)  
Range 10 bar, 150 psi

Make point	0,5 bar,	7,0 psi	M10x1 k	360 081 030 009 K
Make point	0,5 bar,	7,0 psi	M12x1,5	360 081 030 022 C
Make point	0,5 bar,	7,0 psi	1/8-27 NPTF	360 081 030 052 C
Make point	0,75 bar,	10,7 psi	M10x1 k	360 081 030 039 C
Make point	0,8 bar,	11,5 psi	1/8-27 NPTF	360 081 030 015 C
Make point	0,9 bar,	12,0 psi	M10x1 k	360 081 030 017 C

Pressure sensor Type- 4 for Dual-Station Reading  
(not for Water pressure)

Range (insulated return)	5 bar, 1/8-27 NPTF	75 psi		362 081 001 001 K
Range (insulated return)	10 bar, K1/8-27 NPTF	150 psi		362 081 001 002 K
Range (Earth Return)	10 bar, 1/8-27 NPTF	150 psi		362 081 003 002 K
Range (insulated return)	25 bar, 1/8-27 NPTF	350 psi		362 081 002 001 K
Range (Earth Return)	25 bar, 1/8-27 NPTF	350 psi		362 081 004 001 C

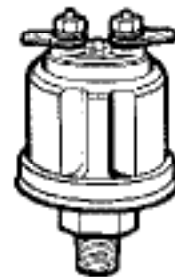
Pressure sensor Type- 5 with switch  
(not for Water pressure) insulated return,  
3 Connections, Thread 1/8-27 NPTF

Range Make point	5 bar, 0,8 bar,	75 psi, 11,5 psi		360 081 039 002 C
Range Make point	5 bar, 10,0 psi	80 psi, 10,0 psi		360 081 039 004 C
Range Make point	10 bar, 0,8 bar,	150 psi, 11,5 psi		360 081 039 003 C

### VDO Generator senders

Generator senders for elek. Tachometer and Engine Synchronizer (Diesel)  
insulated return

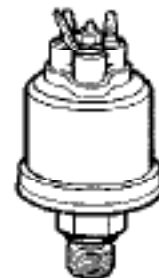
3000 min <sup>-1</sup>	M22x1,5	340 808 001 002 C
3000 min <sup>-1</sup>	7/8-18	340 808 001 004 G



Pressure sensor earth return  
for Dual-Station Readings



Pressure sensor  
earth return for  
Dual-Station Readings



Pressure sensor with switch,  
insulated return 3 Connections



Generator senders  
insulated return

## 3.2 VDO Temperature Sensors



Temperature sensors  
earth return



Temperature sensors, insulated return  
for Dual-Station Readings



Temperature sensors,  
insulated return



Temperature sensors  
earth return

### VDO Temperature sensors

Temperature sensors Type- 1, Earth Return  
70-120°C and 158-250° F, Terminal Type: Flat plug

Thread M14x1,5	323 801 001 006 K
Thread M16x1,5	323 801 001 040 N
Thread M18x1,5	323 801 001 022 K
Thread 1/2-14 NPTF	323 801 001 010 K
Thread 1/4-18 NPTF	323 801 001 009 N
Thread 3/8-18 NPTF	323 801 001 007 N
Thread 5/8-18 UNF - 3A	323 801 001 008 N

Temperature sensors Type- 2, Earth Return  
140-160°C and 284-320°F

Thread M10	323 801 010 001 D
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Temperature sensors Type- 3, insulated return  
70-120°C and 158-250°F, Terminal Type: Flat plug

Thread M14x1,5	323 805 001 001 K
Thread M18x1,5	323 805 001 015 N
Thread 1/2-14 NPTF	323 805 001 004 K
Thread 1/4-18 NPTF/Dryseal	323 805 001 007 N
Thread 3/8-18 NPTF/Dryseal	323 805 001 005 N
Thread 5/8-18 UNF - 2A taper seat	323 805 001 002 C

Temperature switch, 6-24 V, switching load 3 W,  
terminal thread M4

Thread M10x1 keg	110±3°C	232 011 005 024 D
Thread M10x1,5	125±5°C	232 011 005 011 D
Thread M10x1,5	150±5°C	232 011 005 017 D
Thread M10x1,5	170±5°C	232 011 005 004 D

Temperature sensors Type- 6, Earth Return,  
for Dual-Station Readings 70-120°C and 158-255°F,  
Terminal: Flat plug, marking "D"

Thread M18x1,5, Earth Return	325 801 002 002 D
Thread 1/4-18 NPTF, insulated return	325 805 003 001 C
Thread 5/8-18 UNF-2A, Taperseat, insulated return	325 805 003 002 C

## 3.2 VDO Temperature Sensors

Temperature sensors Type- 5, Earth Return,  
with switch sensor 70-120°C, Terminal Type: Flat plug

Thread M14x1,5	90±3°C	323 803 001 004 D
Thread M14x1,5	96±3°C	323 803 001 006 D
Thread M14x1,5	110±3°C	323 803 001 008 D
Thread 5/8-18 NF 3	95±3°C	323 803 001 011 D
Thread 5/8-18 NF3	98±3°C	323 803 001 002 D
Thread 5/8-18 NF3	100±3°C	323 803 001 012 D
Thread 1/2-14 NPTF	95±3°C	323 803 001 019 D

Temperature switch, 6-24 V, switching load 3 W,  
Flatplug 6,3 x 0,8 mm

Thread M14x1,5	55±3°C	232 011 017 038 D
Thread M14x1,5 keg	60±3°C	232 011 017 015 D
Thread M14x1,5	85±3°C	232 011 017 017 D
Thread M14x1,5	90±3°C	232 011 017 009 D
Thread M14x1,5	95±3°C	232 011 017 016 D
Thread M14x1,5	100±3°C	232 011 017 034 D
Thread M14x1,5	110±3°C	232 011 017 010 D
Thread M14x1,5	120±3°C	232 011 017 032 D
Thread M14x1,5	130±3°C	232 011 017 103 D

Temperature sensors Type- 4, insulated return 140-160°C,  
Terminal Type: Flat plug

Thread M14x1,5	323 805 003 001 N
Thread 1/4-18 NPTF	323 805 003 002 N

Temperatureswitch, 6-24 V, insulated return, switching load 100 W,  
2 Flat plug 6,3 x 0,8 mm

Thread M14x1,5	64±3°C	X10 232 001 001
Thread M18x1,5	82±3°C	X10 232 001 002
Thread M18x1,5	86±3°C	X10 232 001 003
Thread M18x1,5	92±3°C	X10 232 001 004
Thread M18x1,5	96±3°C	X10 232 001 005
Thread 1/2-14 NPTF	96±3°C	X10 232 001 006
Thread M14x1,5	96±3°C	X10 232 001 007
Thread M22x1,5	96±3°C	X10 232 001 008
Thread M18x1,5	100±3°C	X10 232 001 009
Thread M18x1,5	105±3°C	X10 232 001 010



Temperature sensors with switch,  
flat plug connector



Temperature sensors

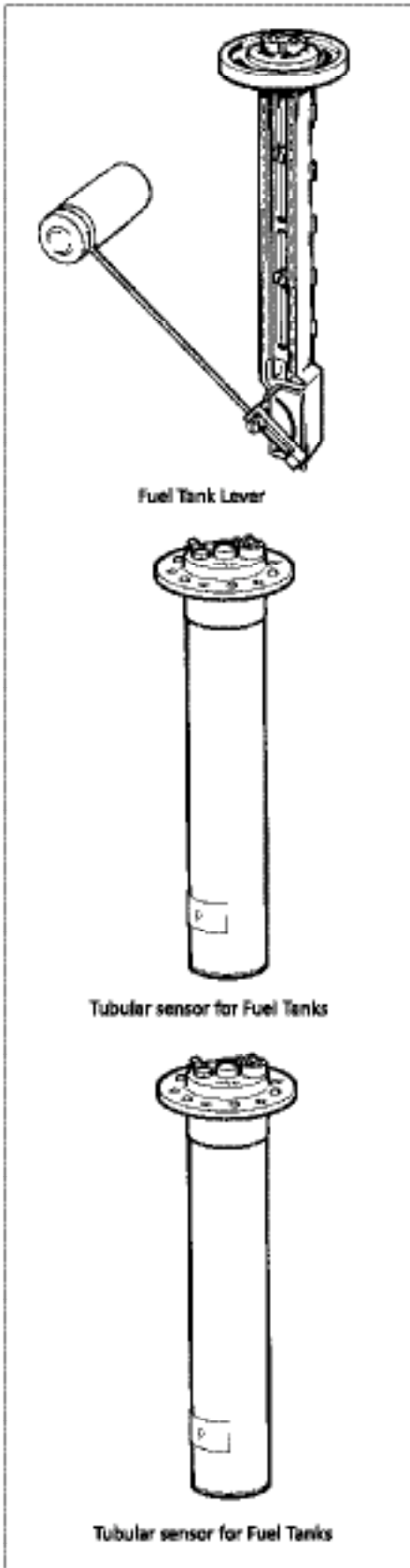


Temperature sensors  
flat plug connector



Temperature sensors, Insulated  
return flat plug connector

## 3.2 VDO Fuel Tank Sensors



### VDO Fuel Tank Sensors

#### Fuel Lever-Type

For fuel, insulated return, with flange	6-24 V	226 801 015 001 C
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For dual-station readings, with insulated return, marked "D"	6-24 V	N02 240 106
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Note:- Lever are adjustable from 200 to 600 mm

#### Tubular sensor for Fuel Tanks, Earth Return Flange/Bolt Circle Dia Ø 80 mm

Instal. depth	536,0 mm	224 082 009 037 R
Instal. depth	596,0 mm	224 082 009 039 R
Instal. depth	686,0 mm	224 082 014 002 R
Instal. depth	741,0 mm	224 082 009 029 R
Instal. depth	781,0 mm	224 082 009 019 R
Instal. depth	831,0 mm	224 082 009 026 R
Instal. depth	881,0 mm	224 082 014 003 R
Instal. depth	916,0 mm	224 082 014 011 R
Instal. depth	996,0 mm	224 082 014 015 R

#### Tubular Type Sensors

See complete listing of Tubular type senders on page 62.

## 3.2 VDO Tank Sensors

### Capacitive Sensors for Fresh watertank, with flange

for tank depths of 80-600 mm	6-24 V	N02 240 402
for tank depths of 600-1200 mm	6-24 V	N02 240 404
for tank depths of 1200-1500 mm	6-24 V	N02 240 406

#### Note Sensor capacitive:

- Sensor can be cut individually
- Sensor not for alluminic tank
- Sensor recommended for freshwater only

### Seal for Tankflange

Bolt circle dia Ø 54 mm cork seal	2 250 234
Bolt circle dia Ø 54 mm rubber seal	2 251 243
Bolt circle dia Ø 80 mm cork seal	2 251 006
Bolt circle dia Ø 80 mm rubber seal	2 251 016

### Bolt-on Tankflange for Fuel- and Fresh water sensor

Bolt circle dia Ø 54 mm	N05 801 432
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### Weld-on Tankflange for Fuel- and Fresh water sensor

Bolt circle dia Ø 54 mm (Capacitive)	2 250 264 1141
Bolt circle dia Ø 80 mm	11 591 001 1401

### Tankflange with Sealing for Blackwater sensor and Reedcontact Sensor

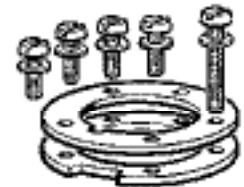
X10 224 000 007

Capacitive Tank Sensor for Blackwater, usage in different tank materials like, steel, alluminium, plastic with galvanic separation and for all conductive liquids like water, greywater, wastewater with adjustable make point

Sensor	200-600 mm	N02 240 902
Sensor	600-1200 mm	N02 240 904
Sensor	1200-1500 mm	N02 240 906



Fresh watersensor capacitive



Bolt-on Tankflange



Weld-on Tankflange




Weld-on Tankflange



Black water sensor



## 4.1 VDO Marine Accessories, general

VDO Marine Accessories			
 <b>Lightbulb</b>	<b>Lightbulb</b> for old Engine monitoring equipment, old/new-type ammeter, pyrometer, Speedometer Ø 85 mm, Ø 100 mm, compass Adis I, depth sounder, Sumlog SL, Sumlog HS, old-type wind ind. system, white <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; width: 60%;">12 V/2 W</td> <td style="text-align: right;">4 124 122</td> </tr> </table>	12 V/2 W	4 124 122
	12 V/2 W	4 124 122	
for old-type engine monitoring equipment, old/new type ammeter, pyrometer, speedometer Ø 85 mm, Ø 100 mm, compass Adis I, depth sounder, Sumlog SL, Sumlog HS, old-type wind ind. system, white <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; width: 60%;">24 V/3 W</td> <td style="text-align: right;">N05 800 296</td> </tr> </table>	24 V/3 W	N05 800 296	
24 V/3 W	N05 800 296		
<b>Bulbholder</b> 29 133 005 Engine monitoring Standard	For new-type engine monitoring, type "Powerboat-Serie": Twinline, Pitot-Speedometer, new-type wind ind. system, red <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; width: 60%;">12 V/1,2 W</td> <td style="text-align: right;">N05 800 552</td> </tr> </table>	12 V/1,2 W	N05 800 552
	12 V/1,2 W	N05 800 552	
For new-type engine monitoring, Typ "Powerboat-Serie": Twinline, Pitot-Speedometer, new-type wind ind. system, red <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; width: 60%;">24 V/1,2 W</td> <td style="text-align: right;">N05 800 550</td> </tr> </table>	24 V/1,2 W	N05 800 550	
24 V/1,2 W	N05 800 550		
<b>Bulbholder</b> N05 800 218 Powerboat Serie	For Typ "Powerboat-Serie": Speedometer, Sumlog S, red <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; width: 60%;">12 V/2 W</td> <td style="text-align: right;">N05 800 540</td> </tr> </table>	12 V/2 W	N05 800 540
	12 V/2 W	N05 800 540	
For Typ "Powerboat-Serie": Speedometer, Sumlog S, red <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; width: 60%;">24 V/1,2 W</td> <td style="text-align: right;">N05 800 550</td> </tr> </table>	24 V/1,2 W	N05 800 550	
24 V/1,2 W	N05 800 550		
Dropping resistor 24 V Standard Serie, for adapting 12 V. Instruments for 25 V use			
For temperature-, pressure-, tank gauges, Rudderangle indicator, complete with lightbulb <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">N05 801 180</td> </tr> </table>			N05 801 180
	N05 801 180		
Note:- Dropping resistor for VDO Standard Serie only.			
<b>Front lenses Standard Serie</b>			
Cover lens Ø 52 mm <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">N05 801 336</td> </tr> </table>			N05 801 336
	N05 801 336		
Cover lens Ø 100 mm <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">N05 800 286</td> </tr> </table>			N05 800 286
	N05 800 286		
<b>Bezel Standard Serie</b>			
Bezel, black Ø 120 mm <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">N05 800 264</td> </tr> </table>			N05 800 264
	N05 800 264		
Bezel, black 125 x 125 mm <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">N05 800 262</td> </tr> </table>			N05 800 262
	N05 800 262		
Bezel, black Ø 62,5 mm <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">N05 801 110</td> </tr> </table>			N05 801 110
	N05 801 110		
Bezel, black 62,5 x 62,5 mm <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">N05 800 222</td> </tr> </table>			N05 800 222
	N05 800 222		
<b>Autopilot Accessories</b>			
Kompass sensor <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">X10 719 002 049</td> </tr> </table>			X10 719 002 049
	X10 719 002 049		
Buzzer <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">N03 230 702</td> </tr> </table>			N03 230 702
	N03 230 702		

## 4.2 VDO Chart Plotter Accessories

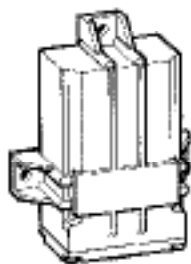
### Chart Plotter Accessories

Fishcam	X10 719 002 044
Antenna Cable 10m für MAP 7 c, cc and MAP 11 (until 2002)	X11 719 000 018
Through-hull for Fishcam	X11 719 000 020
GPS Antenna MAP 7 and MAP 11 (until 2002)	X11 719 000 017
Bracket for GPS Antenna, Sail.	X11 719 000 005
Bracket for MAP 7	X11 719 000 016
Camera switch MAP 7 + MAP 11	X11 719 000 019
Camera connector für MAP 7 cc + MAP 11	X11 719 000 021
GPS-Sensor MAP 11 and MAP 7w without cable (from 2003)	X11 719 000 048
Cable for Sensor MAP 11 and MAP 7w (from 2003)	X11 719 000 047
Bracket MAP 11	X11 719 000 032
Power cable MAP 11	X11 719 000 033
Adapter cable Video	X11 719 000 056
Bracket MAP 7v	X11 719 000 079



Fishcam

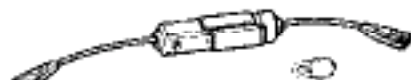
## 4.3 VDO Ocean Line Accessories



Make point switch



Lightbulb



Dropping resistor and Lightbulb

Ocean Line NMEA interface for Compass, Log, Wind, Depth	10,8-30 V	N01 610 506
--	-----------	-------------

Ocean Line Makepoint switch Makepoint switch Ocean Line for Pressure-, Temperature- and Fuel level gauges	12-24 V	X10 719 002 037
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### Lightbulb

Lightbulb 1,2 W red; for Ø 52, Ø 85 mm Instruments	12 V	N05 800 552
---	------	-------------

Lightbulb 1,2 W red; for Ø 52, Ø 85 mm Instruments	24 V	N05 800 550
---	------	-------------

Lightbulb 1,2 W white; for Ø 52, Ø 85 mm Instruments	12 V	N05 801 532
---	------	-------------

Lightbulb 1,2 W white; for Ø 52, Ø 85 mm Instruments	24 V	N05 800 588
---	------	-------------

Bulbholder Ø 85 mm		N05 801 564
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Bulbholder Ø 52 mm		N05 800 218
--------------------	--	-------------

### Dropping resistor for 12 V Ocean Line Pyrometer, Ammeter, and outside temperature, Tachometer Ø 52 mm on 24 V

with red, 24 V Lightbulb	24 V/1,2 W	N05 800 786
--------------------------	------------	-------------

with white, 24 V Lightbulb	24 V/1,2 W	N05 800 596
----------------------------	------------	-------------

### Warning lamp

Warning lamp with socket, red	12 V/1,2 W	N05 800 762
-------------------------------	------------	-------------

Warning lamp with socket, red	24 V/1,2 W	N05 800 764
-------------------------------	------------	-------------

Spade connector for warning lamp		25 199 014
----------------------------------	--	------------

### Connecting Accessories:

3-pole connector with spade connectors for Ø 52 mm Instruments		X39 000 000 002
---	--	-----------------

8-pole connector housing for Ø 85 mm Instruments		999 115 016
--	--	-------------

Spade connector 6,3 mm for connector housing		X11 000 002 021
--	--	-----------------

Delphi connector OL Combi, 14 pins (without cable)		X11 719 002 037
--	--	-----------------

Adaptercable for OL Combi (with connector for NMEA sensor and Easy Link)		X11 719 000 073
---	--	-----------------

10 m sensor cable for Ocean Line Depth		N05 801 851
--	--	-------------

20 m sensor cable for Ocean Line Depth		N05 801 852
--	--	-------------

### Lens Ocean Line

Lens for Ø 52 mm Indicator		N05 801 336
----------------------------	--	-------------

Lens for Ø 85 mm Indicator with reset button		N05 801 832
--	--	-------------

Lens for Ø 85 mm Indicator without reset button		N05 801 834
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## 4.3 VDO Ocean Line Accessories

### Bezel

Ocean Line, black; for Ø 85 mm Instruments	N05 801 562
Ocean Line, white; for Ø 85 mm Instruments	N05 801 790
Ocean Line, black; for Ø 52 mm Instruments	N05 800 774
Ocean Line, white; for Ø 52 mm Instruments	N05 801 788
Ocean Line, chrome; for Ø 52 mm Instruments	X11 719 000 022
Ocean Line, chrome; for Ø 85 mm Instruments	X11 719 000 023
Ocean Line, aluminium; for Ø 52 mm Instruments	X11 719 000 027
Ocean Line, aluminium; for Ø 85 mm Instruments	X11 719 000 026
Ocean Line, anthrazit; for Ø 52 mm Instruments	X11 719 000 031
Ocean Line, anthrazit; for Ø 85 mm Instruments	X11 719 000 030
Ocean Line, brass; for Ø 52 mm Instruments	X11 719 000 029
Ocean Line, brass; for Ø 85 mm Instruments	X11 719 000 028
Ocean Line, gold, for Ø 85 mm Instruments	X11 719 000 041
Ocean Line, gold; for Ø 52 mm Instruments	X11 719 000 046

### Mounting Kit

(Incl. Bracket, bolts and nuts)

For 85 mm Ø Indicator with Ocean Line Plastic Bezel	N05 800 792
For Pressure- Temperatur- Fuel- Fresh water- and voltmeter 52 mm Ø with Ocean Line Plastic Bezel	N05 800 766
For Pressure- Temperatur- Fuel- Fresh water- and voltmeter 52 mm Ø with Metal-Chrome Bezel	N05 800 696
For Pyrometer, Ammeter, Speedometer, Electronic engine hourmeter 52 mm Ø with Ocean Line Plastic Bezel	N05 800 782
Ocean Line Spin Lock nut Ø 85 mm	N06 027 480
Ocean Line Spin Lock nut Ø 52 mm	999 072 001
Ocean Line Flush mounting ring 85 mm	X11 719 000 064
Ocean Line Flush mounting ring 52 mm	X11 719 000 062

### Spare parts

Thru-Hull fitting 12-50 kn, 80 km/h (Ocean Line Sumlog)	270 023 005 010
Paddle wheel with axle 12 kn, 20 kn (Ocean Line Sumlog)	270 023 005 003
Paddle wheel with axle 30 kn (Ocean Line Sumlog)	270 023 005 004
Paddle wheel with axle 50 kn, 80 km/h	270 023 005 005
Sensor with Thru-Hull fitting 12-50 kn, 80 km/h	N01 140 302
Wind vane from production date 8/93	N05 800 356
Wind vane cups with boss whole	N05 801 448
Blind Plug for NMEA sensor and Fishcam	X11 719 000 061
Thru-Hull fitting for NMEA sensor	X11 719 000 060
NMEA Sensor (Thru-Hull)	X11 719 000 059
Sumlog sensor until 50 kn (without Thru-Hull fitting)	270 023 005 002K
Float valve	N05 800 258
Blind Plug for Sumlog	N05 801 478
Thru-Hull, Blind Plug, Fixing Nut for Ocean Line Depth	N05 801 416

## 4.4 VDO Sound Accessories

### VDO Ocean Line Radio Remote Control

without Front Bezel and Cable	N01-660-206
with Front Bezel (black) and Cable	X11 719 000 069
with Front Bezel (white) and Cable	X11 719 000 070

Radio Cover	X11 719 000 034
-------------	-----------------

### Marine Loudspeaker

Loudspeaker Set, broad band, 130 mm, RAL 9010	X11 719 000 057
Loudspeaker Set, dual cone, 165 mm, RAL 9003	X11 719 000 071
Loudspeaker Set, dual cone, 130 mm, RAL 9003, without Logo	X11 719 000 072
Loudspeaker Set, broad band, 130 mm, RAL 9003, without Logo	X11 719 000 072

Technical Data see page 122



## 5.1 Technical Data Chart Plotters

### VDO MAP 7 GPS, 11csE, VDO GPS Receiver

**Dimensions:**

MAP 7 v (L x D x H)	140mm x 60mm x 140mm
MAP 7 w (L x D x H)	241mm x 151mm x 44,5mm
MAP 7 wi (L x D x H)	241mm x 151mm x 88,5mm
MAP 11 csE (L x D x H)	329mm x 230,5mm x 50(90)mm

Voltage: 10-35 V DC

**Power consumption:**

MAP 7 v, w, wi	7,5 Watt
MAP 11 csE	15 Watt

**Display diagonal:**

MAP 7 v	142 mm
MAP 7 w, wi	176mm
MAP 11csE	262 mm

**Display resolution:**

MAP 7 v	240 x 320 Pixel
MAP 7 w, wi	480 x 234 Pixel
MAP 11 csE	640 x 480 Pixel
MAP 11 csE	256 colours
MAP 7 v, w, wi	256 colours

Map format: C-Map, high-resolution, CF 95, NT+ MAX

Storage medium: non-volatile, battery-back-up

Keyboard: backlit silicon keyboard with track-pad

Operating temperatures: -0°C to +55°C

Protection: Splashproof, IP 54, CE-EN 60945

Weight: 950 gr.(Map 7 v),  
1,1 kg. (MAP 7 w, wi), 1,6 kg (MAP 11 csE)

Serial Input/output: NMEA 0182/0183

NMEA output autopilot: NMEA 0183, 0180/CDX, 0183 Vers. 2.0

WAAS ready: MAP 7 v, w, wi  
MAP 11 csE

### GPS Sensor, 12 Channel Parallel

Receiver: WAAS/EGNOS compatible

Operating temperature: -30°C to +75°C

Protection: IP 65, waterproof, CE-EN 60945

Receiving frequency: L1 CIA Code

## 5.2 Technical Data Ocean Line Navigation

### VDO Ocean Line

#### NMEA Interface

Voltage supply:	10,8–30 V DC
Current consumption:	< 60 mA
Operating temperature:	–25°C to +70°C
Input:	Ocean Line Log, Ocean Line Depth, Ocean Line Wind, Ocean Line Compass
Output:	Interface according to NMEA 0183 Output rate: 1 Data set/Sec. A maximum of 2 devices can be connected to the data output
Data sets transmitted:	DPT            Depth from the water surface, distance between sensor and keel
	DBK            Depth below keel
	DBT            Depth below sensor
	HDG            Magnetic heading, variation
	HDM            Magnetic heading
	HDT            True heading
	MWV            Wind speed, wind direction
	VPW            VMG (Velocity made good)
	VWR            Apparent wind direction, apparent wind speed
	VWT            True wind direction, true wind speed
	VHW            True Heading, magnetic Heading, Boatspeed in kn

## 5.2 Technical Data Ocean Line Navigation

### VDO Ocean Line

#### NMEA Interface

Voltage supply:	10,8–30 V DC
Current consumption:	< 60 mA
Operating temperature:	–25°C to +70°C
Input:	Ocean Line Log, Ocean Line Depth, Ocean Line Wind, Ocean Line Compass
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	DBK            Depth below keel
	DBT            Depth below sensor
	HDG            Magnetic heading, variation
	HDM            Magnetic heading
	HDT            True heading
	MWV            Wind speed, wind direction
	VPW            VMG (Velocity made good)
	VWR            Apparent wind direction, apparent wind speed
	VWT            True wind direction, true wind speed
	VHW            True Heading, magnetic Heading, Boatspeed in kn



## 5.2 Technical Data Ocean Line Navigation

### VDO Ocean Line Combi

	Ocean Line, black	Ocean Line, white
Dial:	Translucent, black	Translucent, white
Pointer:	Translucent, white	Translucent, black
Bezel:	Plastic, black	Plastic, white
Cover lens:	Double lens, plastic	Double lens, plastic
Illumination:	LED red, dimmable, LCD amber	
Housing:	Plastic, flame resistant	
Connectors:	Delphi connector GT150 sealed	
Fixing:	Spinlock Housing nut, Option: Bracket Mounting Kit	
Voltage:	10 to 32 V	
Current consumption:	max. 120 mA without illumination max. 140 mA with illumination	
Nominal position:	0-90°	
Operating temperature:	-20°C to +70°C (at operating voltage)	
Storage temperature:	-30°C to +85°C	
EMC:	Reference standards EN 50082-1, EN 50081-1, complies with CE	
Vibration resistance:	max. 1g eff. 25 Hz-500 Hz (for 8 hour period)	
Shock:	15 g, 1,5 ms Semi Sinus	
Protection:	IP 65 from the front, as per IEC 60529 in an installed position	
Installation diameter:	Ø 85,5 mm	
Installation depth:	73 mm (incl. connector and cable)	
Input	VDO Ocean Line Log Sensor VDO Ocean Line Depth Sensor Airmar transom mount Sensor P66 Airmar Retractable Triducer Sensor	
Output	Easy Link Bus	

## 5.3 Technical Data Ocean Line Engine Monitoring

### VDO Ocean Line, Ø 52 mm

Ammeter, Outside Temperature, Engine hours counter, Speedometer,  
Pressure gauge, Pyrometer, Quartz clock, Rudder-angle indicator, Blackwater system,  
Thermometers, Fuel gauges, Fresh water gauges, Voltmeter

	Ocean Line, black	Ocean Line, white	Ocean Line, chrome
Dial:	Translucent, black	Translucent, white	Translucent, black
Pointer:	Translucent, white	Translucent, red	Frontlighting, red
Bezel:	Plastic, black	Plastic, white	Chrome-plated brass
Cover lens:	Double lens system	Double lens system	Single lens system
Illumination:	red, 1,2 W, Socket W5/2	white	red
Housing:	Plastic, flame resistant		
Connections:	Flat plug 6,3 x 0,8 mm		
Attachment:	Spinlock Housing nut, Locking height 0–15 mm, Option: Bracket Mounting kit (see Accessories), Locking height 0–12 mm		
Operating Voltage:	12 or 24 V, (earth returned)		
Current consumption indicator:	max. 130 mA		
Nominal position:	0–90°		
Operating temperature:	–20°C to +70°C (at operating voltage)		
Storage temperature:	–30°C to +85°C		
EMC:	Reference standards EN 50082-1, EN 50081-1, complies with EMC guideline 89/336/EWG		
Vibration resistance:	max. 1g eff. 25 Hz–500 Hz (for 8 hour period)		
Shock:	15 g, 1,5 ms Semi-sinus		
Protection:	IP 65 on the front, as per IEC 60529 in an installed position		
Option:	Warning lamp (see Accessories)		
Installation diameter:	Ø 52,5 mm borehole		
Germanic Lloyd:	Certificate no.: 12-276-98 H		



## 5.3 Technical Data Ocean Line Engine Monitoring

### VDO Ocean Line, Ø 85 mm

Tachometer, Rudder-angle

	Ocean Line, black	Ocean Line, white	Ocean Line, chrome
Dial:	Translucent, black	Translucent, white	Translucent, black
Pointer:	Translucent, white	Translucent, red	Frontlighting, red
Bezel:	Plastic, black	Plastic, white	Chrome-plated brass
Cover lens:	Double lens system	Double lens system	Single lens system
Illumination:	2x Lightbulb 1,2 W, red coloured, LCD permanent illuminated (green)	2x Lightbulb 1,2 W, red coloured, LCD permanent illuminated (green)	2x Lightbulb 1,2 W, red coloured, LCD permanent illuminated (green)
Housing:	Plastic, flame resistant		
Connections:	Flat plug 6,3 x 0,8 mm		
Attachment:	Spinlock Housing nut, Locking height 0–16,5 mm, Option: Bracket Mounting kit (see Accessories)		
Operating Voltage:	12 or 24 V		
Current consumption indicator:	max. 90 mA (without illumination)		
Nominal position:	0–90°		
Operating temperature:	–20°C to +70°C (at operating Voltage)		
Storage temperature:	–30°C to +85°C		
EMC:	Reference standards EN 50082-1, EN 50081-1, complies with CE		
Vibration resistance:	max. 1g eff. 25 Hz–500 Hz (for 8 hour period)		
Shock:	15 g, 1,5 ms Semi-sinus		
Protection:	IP 65 on the front, as per IEC 60529 in an installed position		
Installation diameter:	Ø 85,5 mm Borehole		
Germanic Lloyd:	Certificate no.: 12-276-98 H		

### VDO Ocean Line, Makepoint switch

Voltage supply:	10,8–32 Volt
Current consumption:	< 10 mA (warning lamp off)
Operating temperature:	–25°C to +70°C
Input:	Resistor sensor (Pressure, Temperatur, supply levels)
Output:	Switch output, max. 300 mA (not short-circuit-protected)



## 5.4 Technical Data Ocean Link

### Technical Data Ocean Link Master

Operating voltage	10,5 ... 32 V DC
Current consumption	~ 120 mA w/o illumination ~ 140 mA with illumination
Illumination	Dial: red backlight dimmable; display: amber
Operating temperature	-20 ...+ 70°C at nominal voltage
Protection	IP65 from the front, Din 40050
EMC	CE according 89/336/EWG
Inputs	CAN 2.0B; SAE J1339 Analog 4 - 20 mA Analog 0 - 200 Ohm
Output	VDO Serial Bus
Dimensions	85 mm diameter 73 mm high incl. wiring harness
Connection	Delphi, GT150 sealed

### Technical Data Ocean Link Slave

Operating voltage	10 ... 30 V DC
Current consumption	< 70 mA incl. illumination
Illumination	Red, backlight, dimmable via master
Operating temperature	-20 ...+ 70°C at nominal voltage (master)
Protection	IP65 from the front
EMC	CE according 89/336/EWG
Inputs	VDO Serial Bus
Dimensions	52 mm diameter 35 mm high incl. wiring harness
Connection	AMP Superseal 1.5

## 5.4 Technical Data Ocean Link

### Technical Data Ocean Link Master

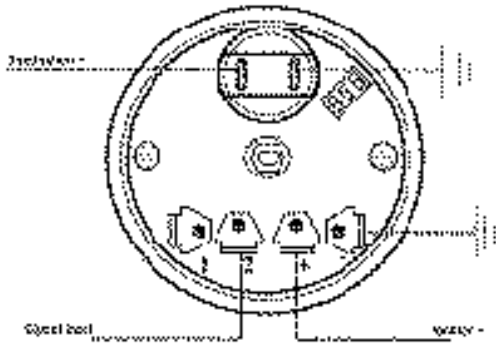
Operating voltage	10,5 ... 32 V DC
Current consumption	~ 120 mA w/o illumination ~ 140 mA with illumination
Illumination	Dial: red backlight dimmable; display: amber
Operating temperature	-20 ...+ 70°C at nominal voltage
Protection	IP65 from the front, Din 40050
EMC	CE according 89/336/EWG
Inputs	CAN 2.0B; SAE J1339 Analog 4 - 20 mA Analog 0 - 200 Ohm
Output	VDO Serial Bus
Dimensions	85 mm diameter 73 mm high incl. wiring harness
Connection	Delphi, GT150 sealed

### Technical Data Ocean Link Slave

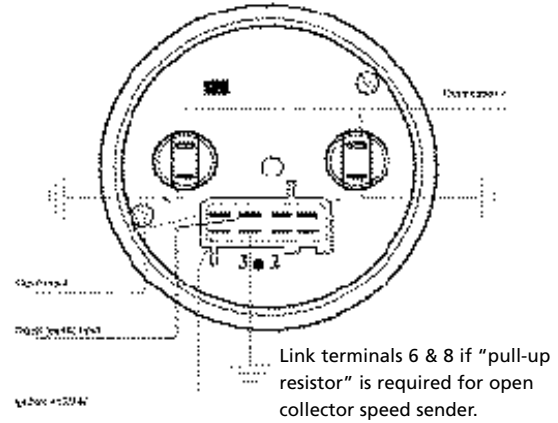
Operating voltage	10 ... 30 V DC
Current consumption	< 70 mA incl. illumination
Illumination	Red, backlight, dimmable via master
Operating temperature	-20 ...+ 70°C at nominal voltage (master)
Protection	IP65 from the front
EMC	CE according 89/336/EWG
Inputs	VDO Serial Bus
Dimensions	52 mm diameter 35 mm high incl. wiring harness
Connection	AMP Superseal 1.5

# Wiring Diagrams

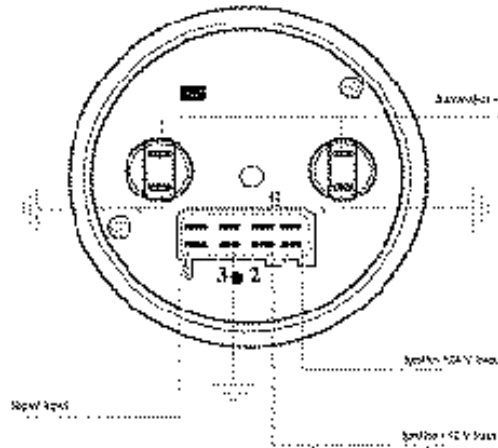
Vision & International Tachometer 52mm



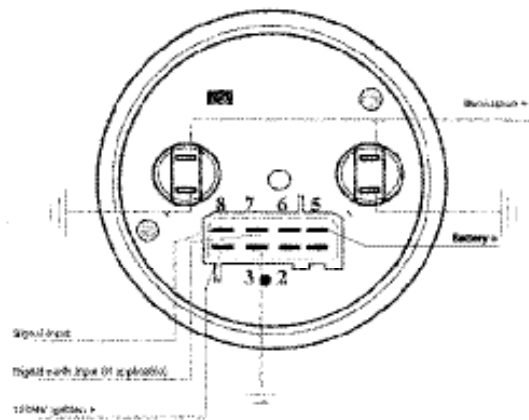
Vision & International Speedometer



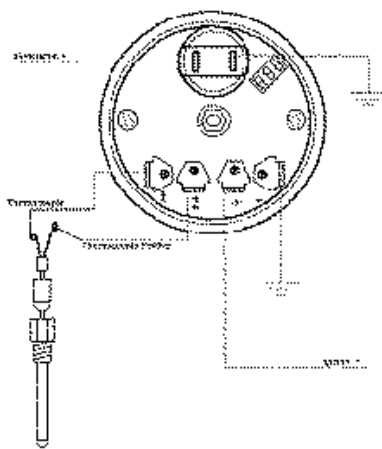
Vision & International Tachometer 80, 85, 100mm



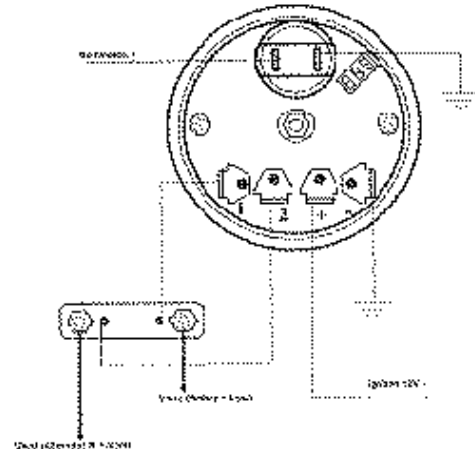
Vision & International Tachourmeter 80, 85, 100mm



Vision & International Pyrometer



Vision & International Ammeter with External Shunt



- + = Ignition Power
- ≡ = Earth
- S = Sender

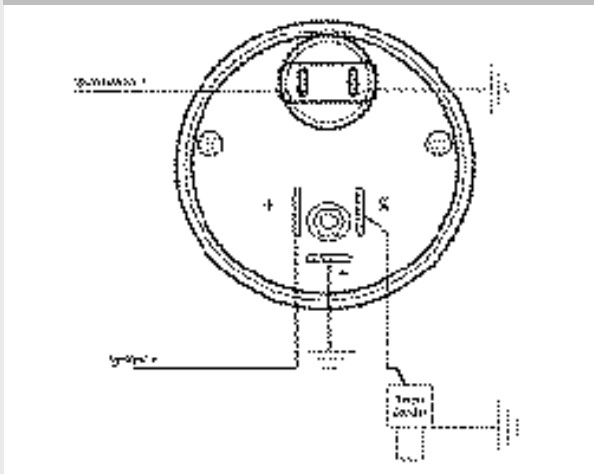
Note: Wiring diagrams are generalised installation instructions intended to indicate the basics of mounting popular instruments.

Please check the instructions provided with the packaged instrument for more details.

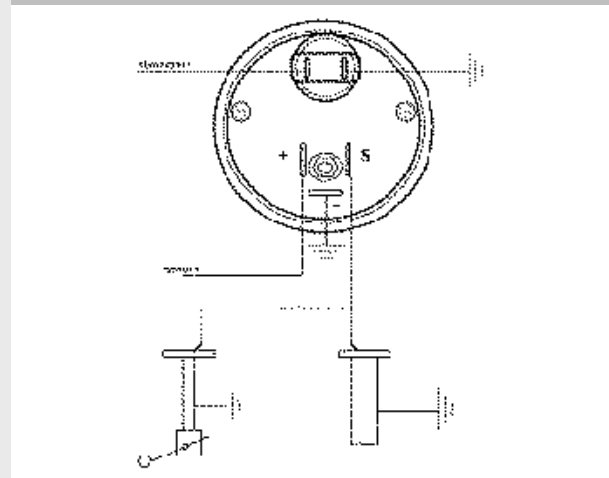
Some instruments may require additional adaptors or hardware to complete the installation.

# Wiring Diagrams

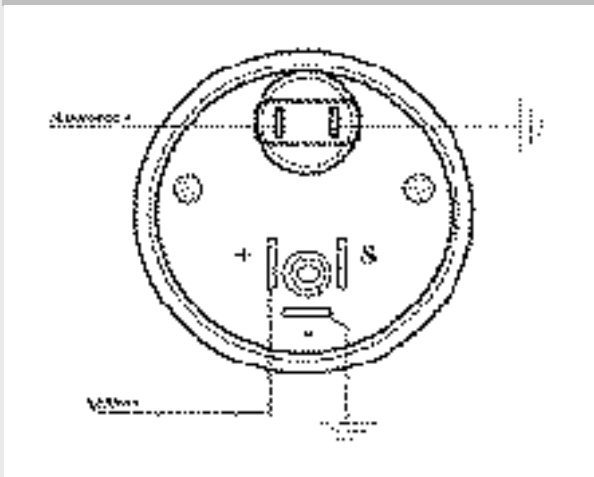
*Vision & International Temperature Gauge*



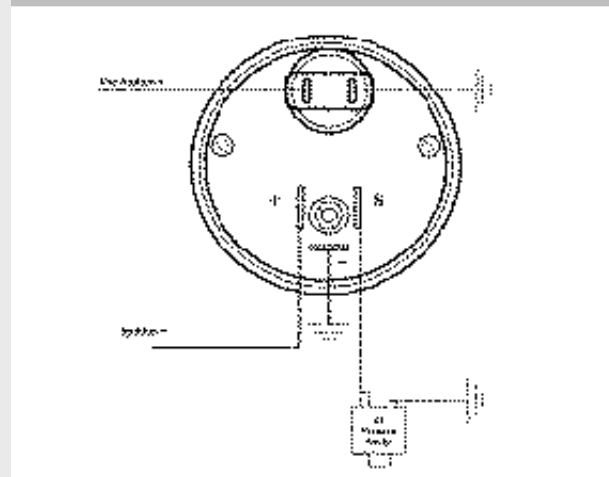
*Vision & International Fuel Gauge*



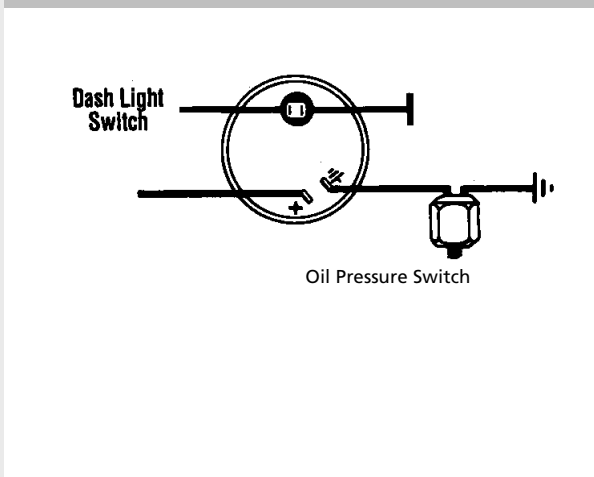
*Vision & International Voltmeter*



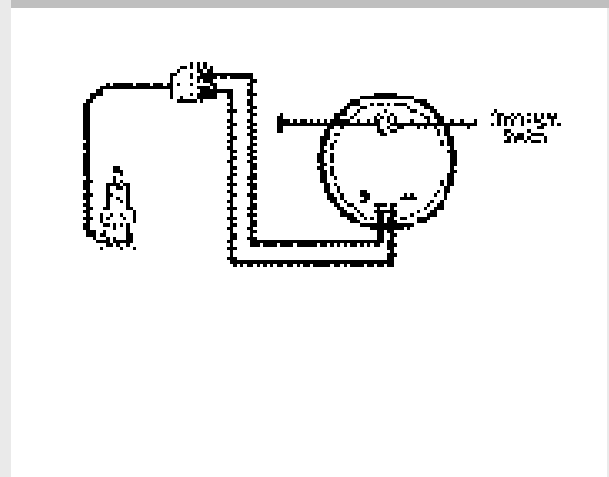
*Vision & International Pressure Gauge*



*Vision & International Hourmeter*



*Cylinder head Gauge*



- + = Ignition Power
- ≡ = Earth
- S = Sender

Note: Wiring diagrams are generalised installation instructions intended to indicate the basics of mounting popular instruments.

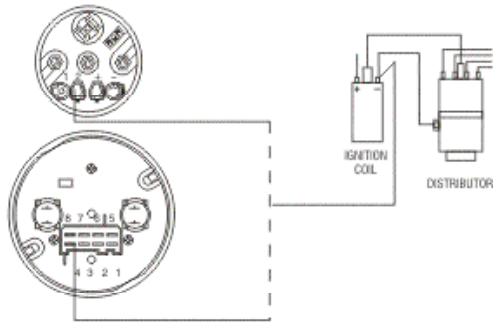
Please check the instructions provided with the packaged instrument for more details.

Some instruments may require additional adaptors or hardware to complete the installation.

# Tachometer Connection Examples

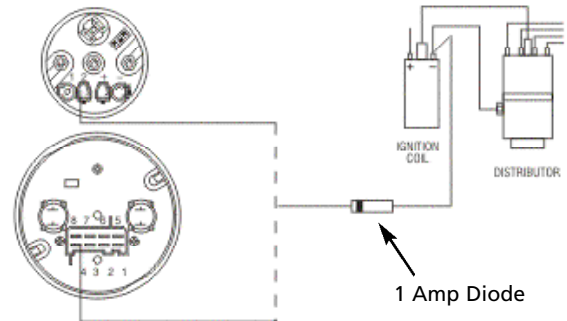
## Electronic ignition system:

Use negative side of ignition coil.



## Standard points ignition system:

Add 1 Amp diode (eg: IN4004) in-line with wire to negative side of ignition coil.



## Alternator signal pick-up:

Connect to "W" point, single phase, see diagram 1 or 2, for tacho connection.

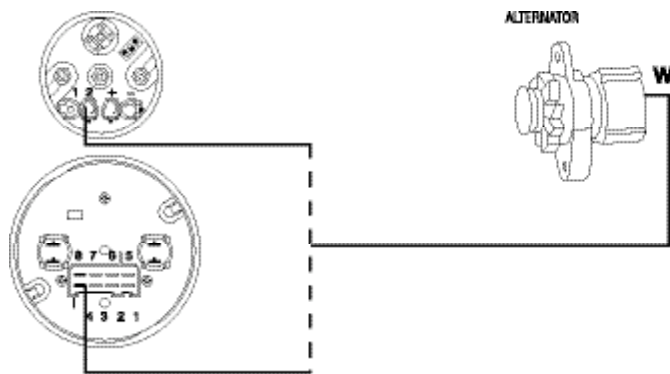


Diagram 1  
Star winding, single phase

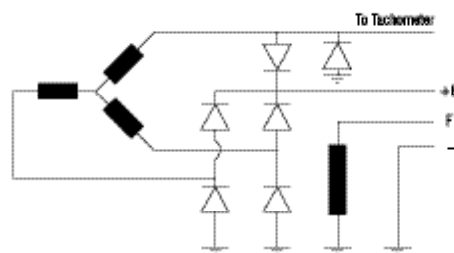


Diagram 2 Delta winding

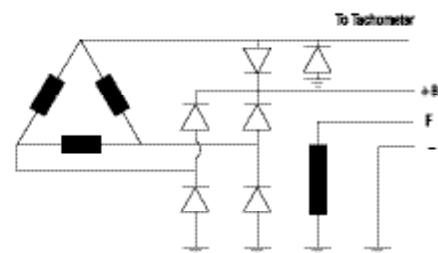
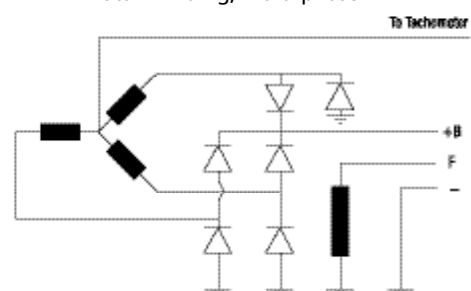


Diagram 3  
Star winding, multi phase



"Star Winding" See diagram 3, will only work on a Tachourmeter, not a tachometer due to a greater calibration range.



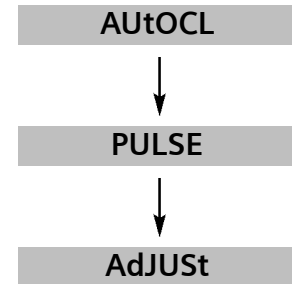
# Electronic Speedometer

## Calibration Instructions

Three alternatives can be used to calibrate the speedometer but only AutoCal & Pulse are recommended.

1. Function "AUtOCL" - automatic calibration by driving a measured distance of 1km.
2. Function "PULSE" - for entering a known pulse per km ratio.
3. Function "AdJUSt" - for calibration using a reference speed indication (eg. Roller test bench.)

Push button in front lens and hold, switch on the ignition and start the engine. The display will alternate between AUtOCL, PULSE and AdJUSt at 2 second intervals. Select function required by releasing the button when this function is displayed.



### AUtOCL

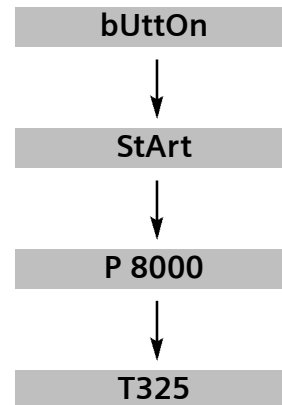
After selecting the AUtOCL function, the display changes to "bUttOn" after 3 seconds.

Drive the vehicle over a measured 1km track. At the beginning of the track, push the button once. The display will now flash "StArt".

Drive the vehicle to the end of the track and push the button once.

The display will now show the measured pulse per km ratio. Shortly after, the display will change to the odometer or trip reading. This is an indication that the calibration was successful.

If the display flashes "FOO" at the end of the procedure, it is an indication of no speed signal. Check the speed sensor wiring and try the calibration again.

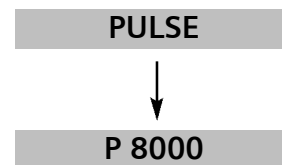


### PULSE

After selecting the "PULSE" function, the display will show the stored pulse per km setting, after 3 seconds. (eg. P 8000)

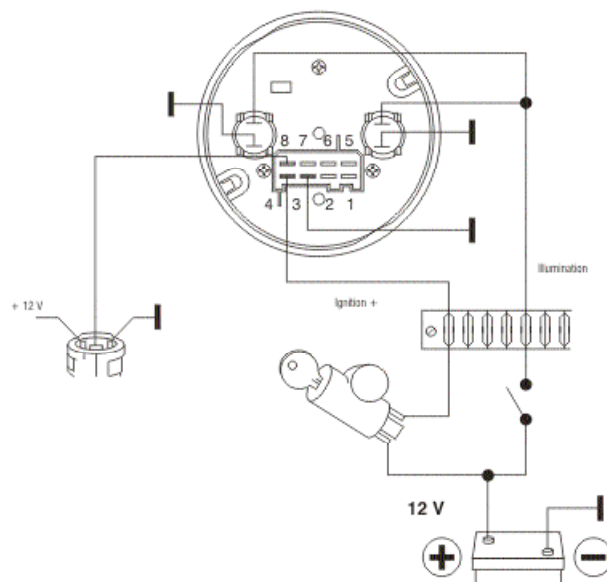
The second last digit will be flashing.

Start entering the pulse ratio immediately. The flashing digit can be changed by pushing the button. Shortly after that digit is set, the next digit will flash and will be able to be set. This will continue until all digits have been set, at which point the display will change to the odometer or the trip meter reading.



Flashes

Note: Link terminals 6 & 8 when the Hall Effect senders needs a pull-up resistor.



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150.202	15	230.031	68	240.037	26	320.042	70
150.206	16	230.032	66	240.039	10	320.043	70
150.316	24	230.032	68	240.039	18	320.044	70
170.708	44	230.035	66	240.039	26	320.045	70
170.708	46	230.035	68	240.051	72	320.046	70
170.709	46	230.036	66	240.052	72	320.047	70
170.712	46	230.036	68	240.053	72	320.048	70
170.713	77	230.037	73	240.054	72	320.049	70
170.714	77	230.038	73	240.055	72	320.051	66
180.052	66	230.041	63	240.056	46	320.052	66
180.059	10	230.043	28	240.056	72	320.053	66
180.059	26	230.043	63	240.057	46	320.054	66
180.059	71	230.044	63	240.057	72	320.055	66
180.204	17	230.045	61	240.068	72	320.056	66
190.504	11	230.045	67	240.069	72	320.058	66
190.505	27	230.046	61	240.071	72	320.059	10
190.888	11	230.046	67	240.072	72	320.061	70
190.888	27	230.047	61	240.073	72	320.062	70
220.003	5	230.047	67	240.712	72	320.064	66
220.003	14	230.048	67	240.713	72	320.065	70
220.003	21	230.051	61	240.733	72	320.067	70
220.003	30	230.054	67	240.734	72	320.068	70
220.003	34	230.056	44	301.216	14	320.071	9
220.004	5	230.057	44	310.239	16	320.071	16
220.004	21	230.058	44	310.239	81	320.071	24
220.004	61	230.059	18	310.901	12	320.072	9
220.005	5	230.059	26	320.002	9	320.072	25
220.005	52	230.061	74	320.002	16	320.714	10
229.054	61	230.062	74	320.002	24	320.714	18
230.001	73	230.063	74	320.002	30	320.714	26
230.003	73	230.064	74	320.002	52	320.715	60
230.004	73	230.065	74	320.002	60	320.716	60
230.005	71	230.071	74	320.003	67	320.718	60
230.006	71	230.076	74	320.004	9	320.719	60
230.007	71	230.079	61	320.004	16	320.721	60
230.008	7	230.404	64	320.004	24	320.725	60
230.008	8	230.415	64	320.006	25	320.727	60
230.008	15	230.504	64	320.006	70	323.011	70
230.008	16	230.515	64	320.007	9	331.302	28
230.008	24	230.604	64	320.007	25	331.413	28
230.008	71	230.615	64	320.007	70	331.423	28
230.012	7	230.701	53	320.009	70	331.534	28
230.012	8	230.991	64	320.011	50	332.241	18
230.012	15	230.992	64	320.011	70	332.501	36
230.012	16	231.051	67	320.012	70	333.255	14
230.012	24	231.083	67	320.016	9	333.501	34
230.012	66	231.084	63	320.016	25	333.801	34
230.013	7	231.085	63	320.016	70	340.007	76
230.013	8	231.086	63	320.021	9	340.008	76
230.013	15	231.087	63	320.021	25	340.009	76
230.013	16	231.088	63	320.021	70	340.011	75
230.013	24	231.089	63	320.022	9	340.013	75
230.013	71	231.089	67	320.022	16	340.808	75
230.016	44	240.002	72	320.022	24	340.824	62
230.017	44	240.003	72	320.022	30	350.501	35
230.019	73	240.004	72	320.023	9	360.001	6
230.021	73	240.009	72	320.023	25	360.001	15
230.024	7	240.011	72	320.023	70	360.001	23
230.024	8	240.018	71	320.024	70	360.002	6
230.024	15	240.019	71	320.026	70	360.002	23
230.024	16	240.021	44	320.028	9	360.002	65
230.024	24	240.021	46	320.028	25	360.003	52
230.024	71	240.022	44	320.028	70	360.004	6
230.025	7	240.022	46	320.031	50	360.004	15
230.025	8	240.031	28	320.031	70	360.004	23
230.025	15	240.031	72	320.032	67	360.005	69
230.025	16	240.032	72	320.033	68	360.006	69
230.025	24	240.035	10	320.035	70	360.007	69
230.025	71	240.035	18	320.036	70	360.008	69
230.028	71	240.035	26	320.038	70	360.013	69
230.029	71	240.037	10	320.039	70	360.014	69

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360.041	69	180077023	10	22502641141	5	301030001	21
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370.311	45	150.050S	45	230.070	74	310.159	10
410.006	44	150035019	24	230.080	61	310.159	81
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411.089	40	150035022	24	230.460	64	310.240	18
411.096	47	170.701	80	230.560	64	310.240	81
411.101	47	170.702	80	230.660	64	310.501	35
411.105	47	180.207	17	230.990	64	310.800	35
437.202	14	180077019	10	231.081	63	310.900	30
437.752	34	190.080	11	231.081	67	310010014	9
437.754	34	190.725	82	231.082	63	310010015	9
437.852	34	190.727	82	231.082	67	320.010	9
437.854	34	190075004	11	231.083	63	320.010	25
740.003	67	190077006	11	231.084	67	320.010	70
740.005	68	190077007	11	231.085	67	320.020	25
740.007	67	2 250 234	109	231.086	67	320.020	70
740.009	68	2 250 264 1141	109	231.087	67	320.030	70
740.011	68	2 251 006	109	231.088	67	320.040	70
740.102	37	2 251 016	109	232 011 005 004 D	106	320.050	66
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740.106	38	215992021F	77	232 011 005 017 D	106	320.070	9
880.003	43	215992022F	77	232 011 005 024 D	106	320.070	25
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880.007	43	224 082 009 037 R	108	232 011 017 016 D	107	323 801 001 008 N	106
880.008	43	224 082 009 039 R	108	232 011 017 017 D	107	323 801 001 009 N	106
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333015034	4	360081032014C	65	N01 100 832	87	N02 012 514	99
333015035	4	360081038003C	7	N01 100 834	87	N02 012 702	94
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333035017	20	370012001	11	N01 113 030	85	N02 124 102	97
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333045001	20	405040001001	46	N01 114 102	88	N02 124 110	97
333045002	20	410.060	46	N01 114 114	88	N02 124 114	97
333055001	20	410.061	46	N01 140 302	85	N02 124 118	97
333055002	20	411.095	47	N01 140 302	87	N02 124 122	93
333055011	20	412.006	40	N01 140 302	113	N02 124 126	93
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350.010016	6	437015025	4	N01 310 602	88	N02 124 510	97
350.010017	6	437015028	4	N01 310 612	86	N02 124 514	97
350.010021	7	437015029	4	N01 320 702	88	N02 124 518	97
350.240	15	437015038	21	N01 320 712	86	N02 124 522	93
350.800	35	437025002	21	N01 340 402	82	N02 124 526	93
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350040016	23	440 102 002 001 D	89	N01 530 302	88	N02 124 740	93
350040017	23	440 102 002 001 D	90	N01 612 002	85	N02 124 744	93
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360 081 030 009 K	105	740.022	32	N02 011 116	90	N02 125 418	102
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360 081 030 022 C	105	800.005.005	73	N02 012 110	94	N02 140 158	103
360 081 030 023 C	104	800.005.006	73	N02 012 114	94	N02 140 160	103
360 081 030 028 K	104	800.005.007	73	N02 012 118	94	N02 140 508	103
360 081 030 039 C	105	800.005.015	73	N02 012 122	94	N02 140 512	103
360 081 030 049 K	104	850.009	77	N02 012 142	89	N02 140 516	103
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N02 222 112	92	N02 322 302	101	N05 800 356	82	X11 719 000 005	111
N02 222 302	96	N02 322 306	101	N05 800 356	113	X11 719 000 016	111
N02 222 312	92	N02 322 402	101	N05 800 540	110	X11 719 000 017	111
N02 222 502	96	N02 340 702	95	N05 800 550	110	X11 719 000 018	111
N02 222 512	92	N02 340 712	91	N05 800 550	110	X11 719 000 019	111
N02 222 702	96	N02 340 714	91	N05 800 550	112	X11 719 000 020	111
N02 222 712	92	N02 340 802	101	N05 800 552	110	X11 719 000 021	111
N02 222 802	101	N02 400 306	98	N05 800 552	112	X11 719 000 022	113
N02 222 902	101	N02 400 308	100	N05 800 588	112	X11 719 000 023	113
N02 223 202	101	N02 400 310	93	N05 800 596	112	X11 719 000 026	113
N02 223 302	101	N02 400 312	93	N05 800 696	113	X11 719 000 027	113
N02 224 080	103	N02 410 802	98	N05 800 762	112	X11 719 000 028	113
N02 224 082	103	N02 410 812	93	N05 800 764	112	X11 719 000 029	113
N02 226 002	103	N02 410 902	98	N05 800 766	113	X11 719 000 030	113
N02 230 602	96	N02 410 912	93	N05 800 774	113	X11 719 000 031	113
N02 230 612	92	N02 411 202	100	N05 800 782	113	X11 719 000 032	111
N02 230 622	97	N02 411 302	100	N05 800 786	112	X11 719 000 033	111
N02 230 626	92	N02 413 058	103	N05 800 792	113	X11 719 000 034	114
N02 230 702	96	N02 413 060	103	N05 801 110	110	X11 719 000 041	113
N02 230 712	92	N02 413 066	103	N05 801 180	110	X11 719 000 046	113
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N02 230 912	102	N02 420 714	93	N05 801 432	109	X11 719 000 053	87
N02 240 106	108	N02 420 802	100	N05 801 448	82	X11 719 000 056	111
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N02 240 406	109	N03 110 502	101	N05 801 532	112	X11 719 000 058	87
N02 240 902	92	N03 200 410	95	N05 801 542	86	X11 719 000 059	113
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N02 240 902	109	N03 200 510	95	N05 801 564	112	X11 719 000 062	113
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N02 311 060	103	N03 230 704	98	n05801432	5	X39397106171	40
N02 311 536	103	N03 270 602	96	N05801448	82	X39397106179	40
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N02 321 502	95	N03 330 116	93	X10 232 001 008	107		
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N02 321 606	95	N05 800 218	112	X10 719 002 037	112		
N02 321 612	91	N05 800 222	110	X10 719 002 044	111		
N02 321 616	91	N05 800 236	82	X10 719 002 049	110		





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