

SUZUKI MARINE PRECISION CONTROL GAUGES

Installation Guide & Operating Manual



SUZUKI MOTOR CORPORATION

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GENERAL INFORMATION

IMPORTANT

▲ WARNING/CAUTION/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol ▲ and the words **WARNING**, **CAUTION** and **NOTE** have special meanings. Pay special attention to the messages highlighted by these signal words.

▲ WARNING

Indicates a potential hazard that could result in death or injury.

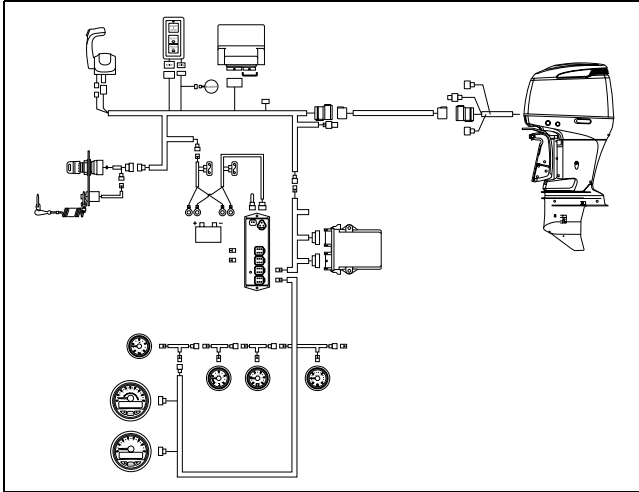
CAUTION

Indicates a potential hazard that could result in engine damage.

NOTE:

Indicates special information to make operation easier or handling clearer.

SYSTEM DESCRIPTION



The Suzuki Precision Control Gauge System employs a communications buss network to provide a path for the flow of information between the outboard motor and the boat operator.

This system is a serial data plug-and-play network operating at 250 kbits/second utilizing a Controller Area Network (CAN) integrated circuit (IC) with plug-and-play technology. This allows multiple electronic devices to be connected together on a common channel for the purpose of easily sharing data, commands, and status on the same cable.

Suzuki Precision Control Gauges were designed for and operate with the engine control system. The tachometer normally displays specific engine data, but warnings regarding abnormal engine operating conditions will take precedence and be immediately displayed.

Suzuki Precision Control Gauges provide an easy-to-see display of vital engine and boat performance data. These easily-programmed gauges display engine rpm and boat speed in an analog readout with all other information presented on the digital screen.

The systems' plug-and-play capability allows for easy addition of other gauges, components and accessories by providing simple connection to the system at almost any point along its route.

GAUGE DATA DISPLAYS

Data	Tachometer	Speedometer	Unit	Note
Engine rpm	Yes	N/A	rpm	The Tachometer is required for all installations. As the Precision Control Gauge System's "Primary Instrument", all information carried by the common channel is routed through the tachometer before distribution to another display.
Cylinder temperature	Yes		°C or °F	
Engine Operating Hrs	Yes		Hours	
Atmospheric pressure	Yes		kPa or lhg	
Fuel flow amount	Yes		Lit/hour or Gal/hour	Requires commercially-available NMEA 2000 Fuel Level Converter.
Cooling water pressure (DF300, DF70A/80A/90A)	Yes		kPa or psi	Requires cooling water pressure sensor kit 34970-98J00.
Intake manifold pressure	Yes		kPa or psi	
Trim angle	Yes		%	
Battery voltage	Yes		Vdc	
Speed over the water	N/A	Yes	mph, knots or kph	Requires commercially available transducer with speed input for DF40 to DF250.
Speed over ground		Yes	mph, knots or kph	Requires commercially-available NMEA 2000 GPS receiver/antenna connection.
Remaining fuel		Yes	%	Requires commercially-available NMEA 2000 Fuel Level Converter.
Fuel flow rate		Yes	Liter or US Gallon	
Fuel consumption		Yes	km/lit or miles/gal	
Fuel used		Yes	Liter or US Gallon	
Trip log		Yes	km or miles	
Water depth		Yes	meter/feet	Requires commercially-available NMEA 2000 transducer with depth input.
Sea Water temperature		Yes	°C or °F	Requires commercially-available NMEA 2000 transducer with temperature input.

Basic Function	Tachometer	Speedometer
Gauge brightness	Yes	Yes
Split Screen	Yes	Yes
RPM synch	Yes	N/A
Trim synch	Yes	
Boost synch*	Yes	
Alarm	Yes	

* Boost means Manifold Absolute Pressure.

APPLICATION LIST (DF300)

		# OF ENGINE	1		2		3	
		# OF STATION	1	2	1	2	1	2
		TRANSMISSION METHOD	NMEA 2000					

Ref.	PART #	PART NAME	QUANTITY OF PARTS TO BE USED PER BOAT					
1	34100-98J01	SPEEDOMETER ASSY	(1)	(2)	(1)	(2)	(1)	(2)
1	34100-98J11	SPEEDOMETER ASSY	(1)	(2)	(1)	(2)	(1)	(2)
1	34100-98J21	SPEEDOMETER ASSY	(1)	(2)	(1)	(2)	(1)	(2)
1	34100-98J31	SPEEDOMETER ASSY	(1)	(2)	(1)	(2)	(1)	(2)
1	34100-98J41	SPEEDOMETER ASSY	(1)	(2)	(1)	(2)	(1)	(2)
2	34200-98J03	TACHOMETER ASSY	1	2	2	4	3	6
2	34200-98J13	TACHOMETER ASSY	1	2	2	4	3	6
3	34300-98J00	GAUGE ASSY, FUEL	(1 or 2)	(1 or 2)	(1 or 2)	(1 or 2)	(1 or 2)	(1 or 2)
3	34300-98J10	GAUGE ASSY, FUEL	(1 or 2)	(1 or 2)	(1 or 2)	(1 or 2)	(1 or 2)	(1 or 2)
4	34600-98J00	METER ASSY, VOLTAGE	(1 to 2)	(1 to 2)	(2 to 4)	(2 to 4)	(3 to 6)	(3 to 6)
4	34600-98J10	METER ASSY, VOLTAGE	(1 to 2)	(1 to 2)	(2 to 4)	(2 to 4)	(3 to 6)	(3 to 6)
5	34650-98J00	GAUGE ASSY, WATER PRESSURE	(1)	(2)	(2)	(4)	(3)	(6)
5	34650-98J10	GAUGE ASSY, WATER PRESSURE	(1)	(2)	(2)	(4)	(3)	(6)
6	34800-98J00	METER ASSY, TRIM	(1)	(2)	(2)	(4)	(3)	(6)
6	34800-98J10	METER ASSY, TRIM	(1)	(2)	(2)	(4)	(3)	(6)
7	34921-98J00	UNIT COMP, ACTIVE HUB	1	1	1	1	1	1
8	34921-98J10	UNIT COMP, PASSIVE HUB	0	0	0	1	0	2
9	34922-98J02	UNIT COMP, INTERFACE	1	1	1	1	1	1
10	36661-98J00	HARNESS ASSY, INTERFACE UNIT	1	1	1	1	1	1
11	36662-98J00	HARNESS ASSY, HUB	0	0	0	0	0	1
12	36662-98J10	HARNESS ASSY, HUB	0	1	0	1	0	1
13	36663-98J00	HARNESS ASSY, ACTIVE HUB PWR 2.5 m	1	1	1	1	1	1
14	36663-98J10	HARNESS ASSY, ACTIVE HUB PWR 6.0 m						
15	36664-98J00	HARNESS ASSY, 3" GAUGE	1	2	2	4	3	6
16	36664-98J10	HARNESS ASSY, 2" GAUGE	(0 to 4)	(0 to 5)	(0 to 5)	(0 to 7)	(0 to 6)	(0 to 9)
17	36665-98J00	WIRE COMP, JUMPER	1	0	1	1	1	1
18	36666-98J00	CAP, 8 PIN CONNECTOR	(1)	(2)	(2)	(4)	(3)	(6)
19	36666-98J10	CAP, 6 PIN CONNECTOR	2	1	1	1	0	1
20	36667-98J00	CAP, 2 PIN CONNECTOR	0	1	0	1	0	2
22	36668-98J00	HARNESS ASSY, RESISTOR	0	1	0	0	0	0
N/A	34970-98J00	KIT, COOLING WATER PRESSURE SENSOR	(1)	(2)	(2)	(2)	(3)	(3)
N/A	34120-98J00	SENDER ASSY, SPEEDOMETER	(1)	(1)	(1)	(1)	(1)	(1)

- NOTE:
1. The numbers between parentheses mean elective.
 2. Quantity listed in the chart means total number of parts necessary for rigging a boat.
 3. All signals go through the tachometer and are distributed to an appropriate gauge. It is essential to use the tachometer to bring the other gauges active.

APPLICATION LIST (DF300)

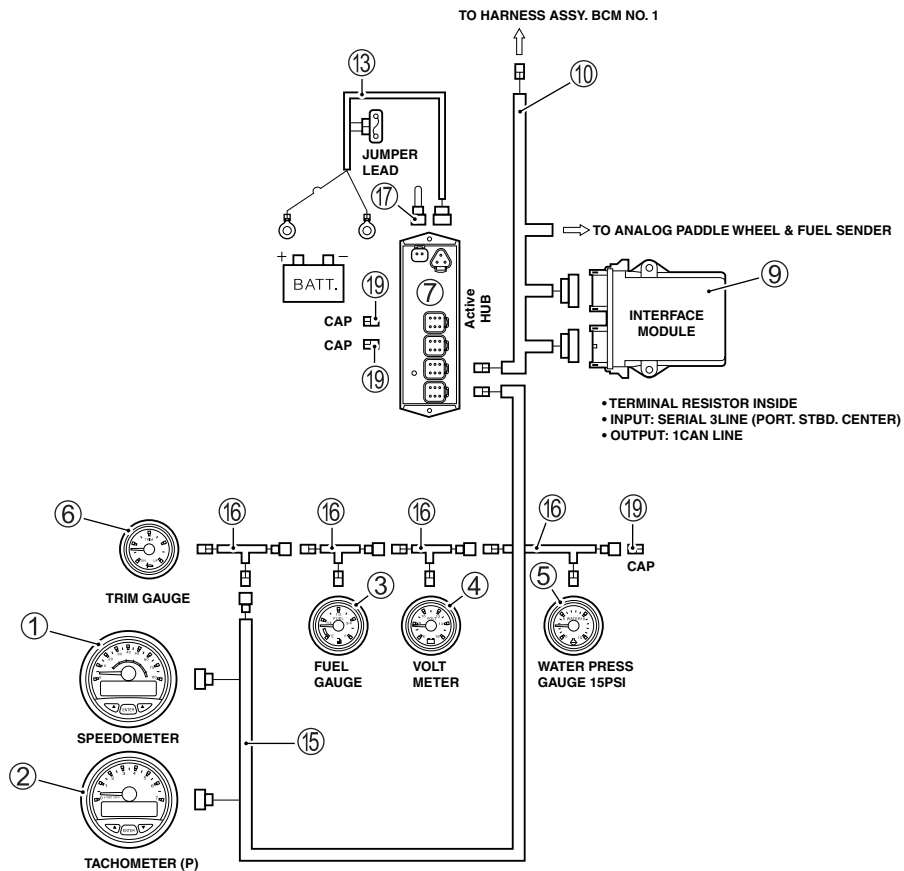
Ref.	PART #	REMARKS
1	34100-98J01	BLK, 80 MPH/120 Km
1	34100-98J11	WHT, 80 MPH/120 Km
1	34100-98J21	BLK, 50 MPH/80 Km
1	34100-98J31	WHT, 50 MPH/80 Km
1	34100-98J41	WHT, 60 KNOTS/110 Km
2	34200-98J03	BLK
2	34200-98J13	WHT
3	34300-98J00	BLK
3	34300-98J10	WHT
4	34600-98J00	BLK
4	34600-98J10	WHT
5	34650-98J00	BLK
5	34650-98J10	WHT
6	34800-98J00	BLK
6	34800-98J10	WHT
7	34921-98J00	
8	34921-98J10	
9	34922-98J02	
10	36661-98J00	
11	36662-98J00	1.0 m
12	36662-98J10	6.5 m
13	36663-98J00	
14	36663-98J10	Select one of them according to location of your battery.
15	36664-98J00	A 6-pin connector cap (36666-98J10) is supplied together with the harness.
16	36664-98J10	Use this harness with a 2" gauge.
17	36665-98J00	
18	36666-98J00	Connect this cap alternatively in case no speedometer is used.
19	36666-98J10	
20	36667-98J00	
22	36668-98J00	
N/A	34970-98J00	Use this kit together with a water pressure gauge.
N/A	34120-98J00	Use this sender incase the integrated sender can not detect proper boat speed.

4. The reference numbers correspond to the numbers in the rigging diagrams.

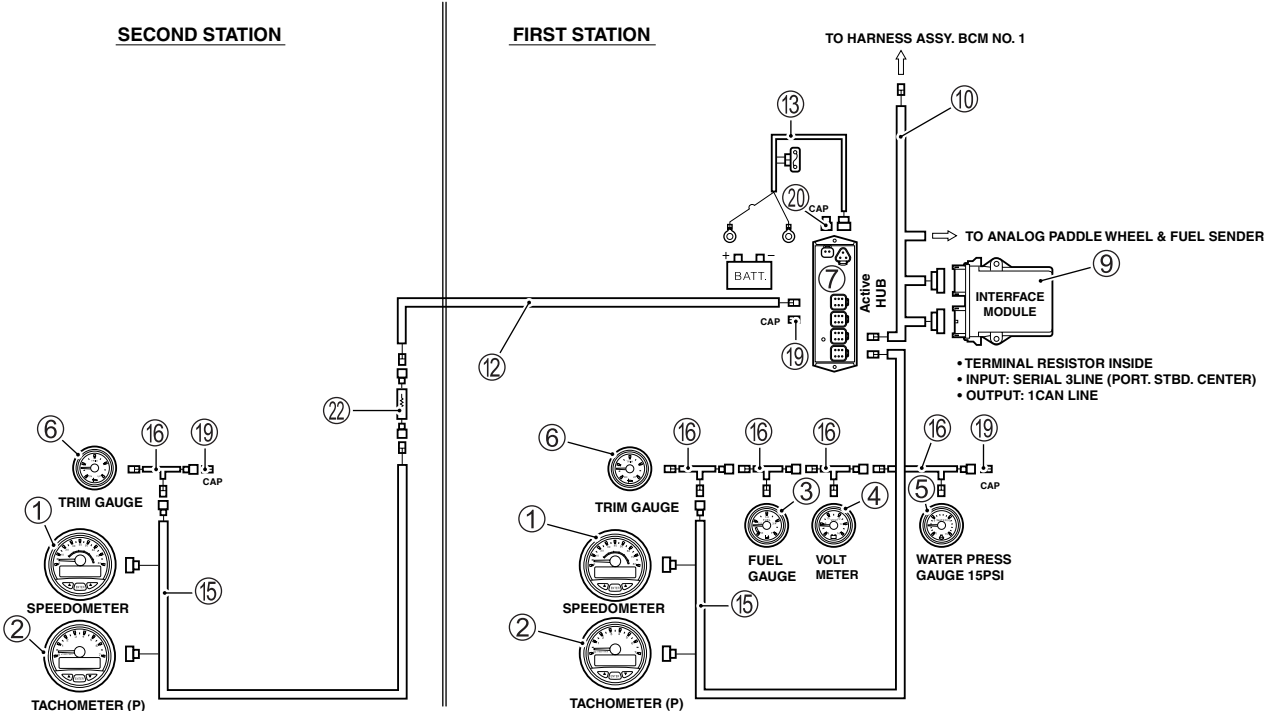
5. The items shaded are supplied as a kit with part number 34011-98J02.

NETWORK DIAGRAM (DF300)

1 Engine & 1 Station

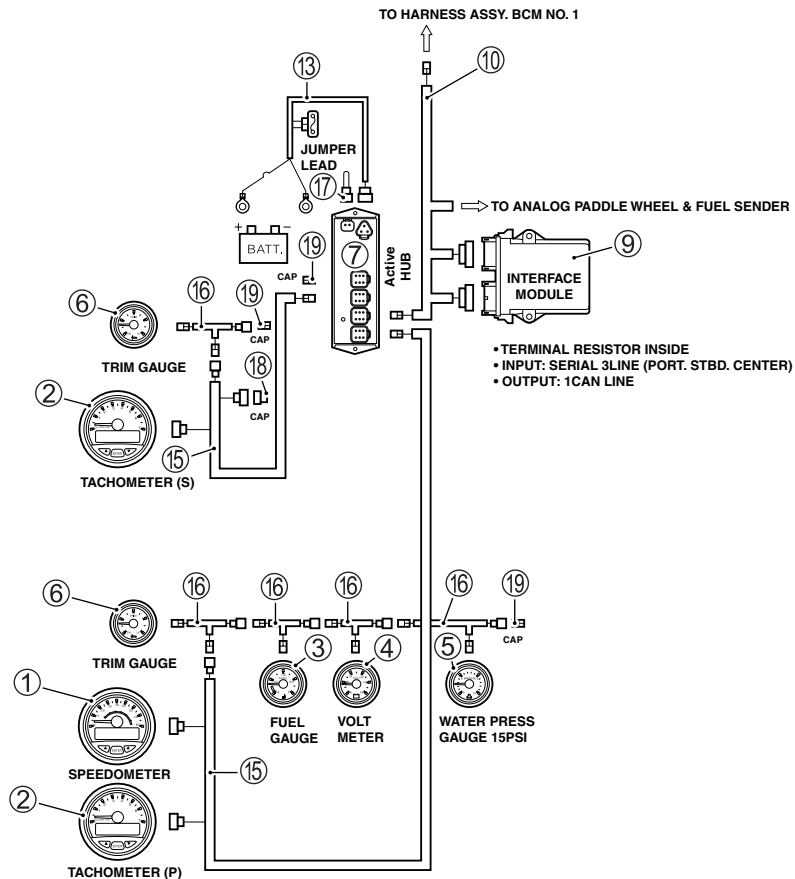


1 Engine & 2 Stations

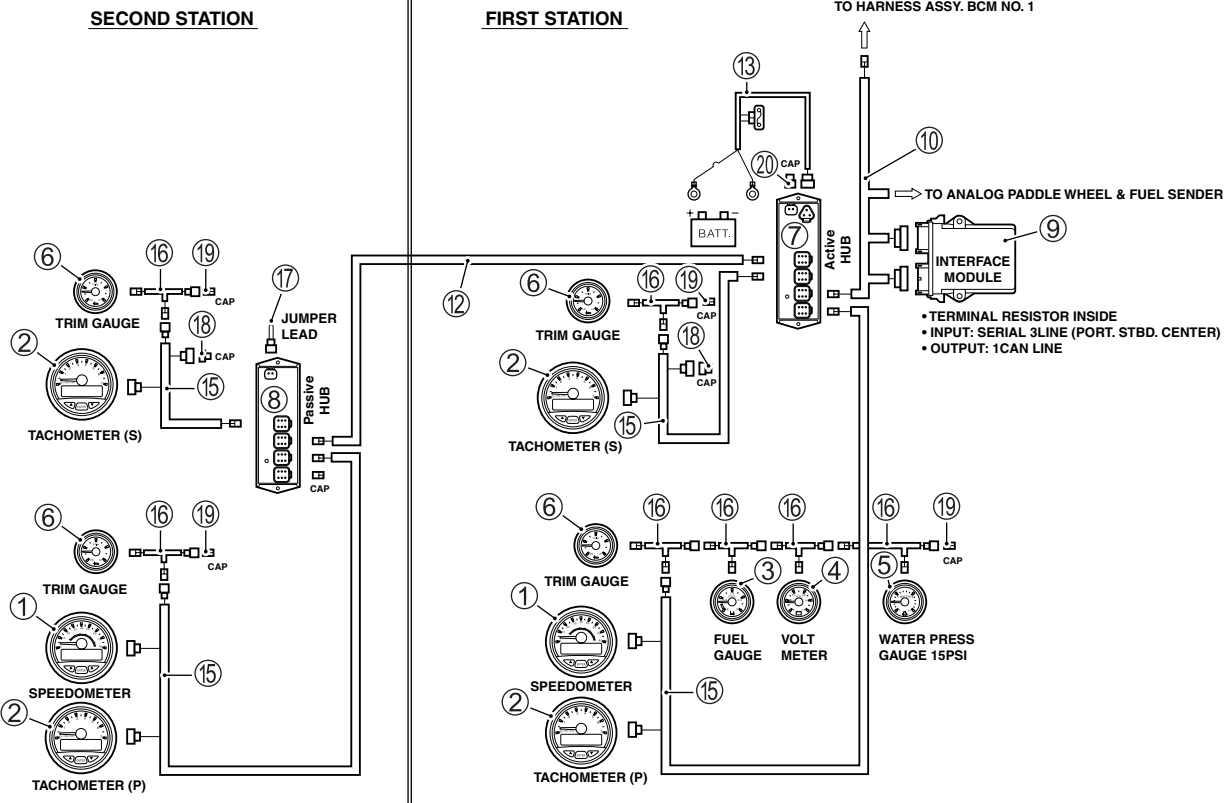


NETWORK DIAGRAM (DF300)

2 Engines & 1 Station

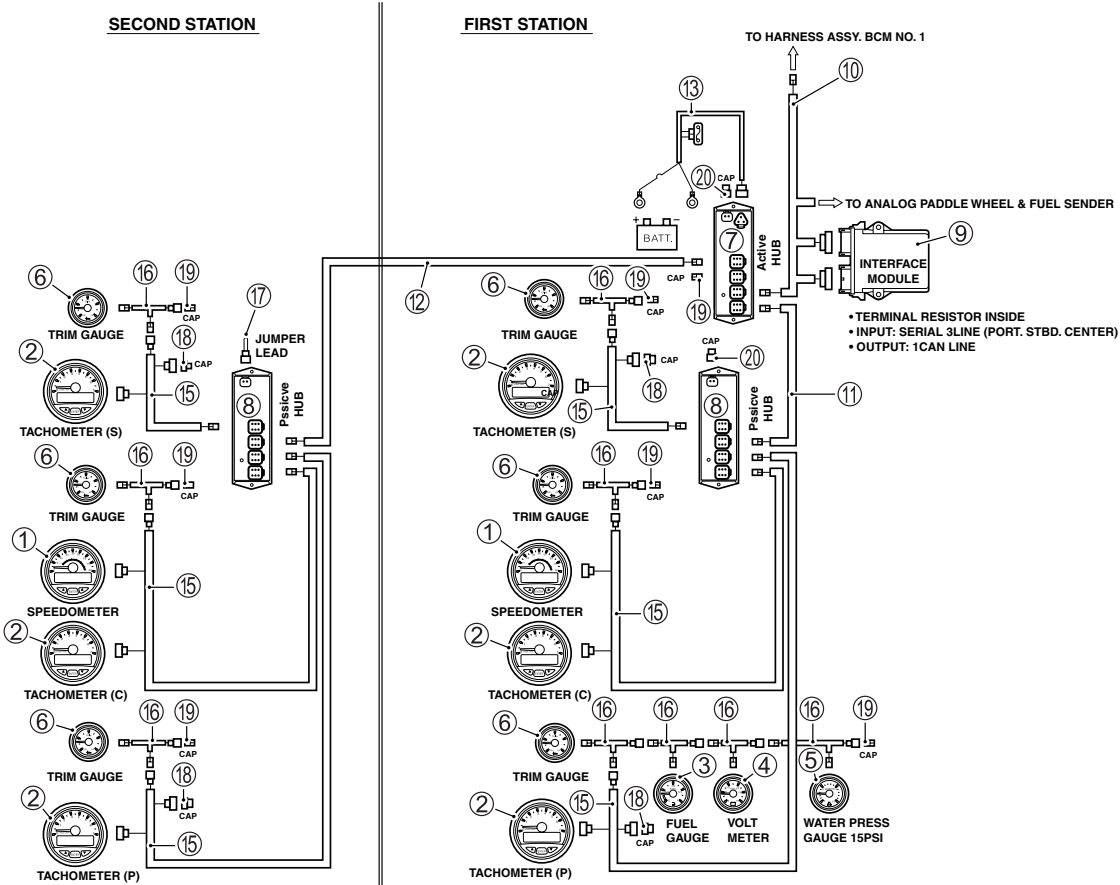


2 Engines & 2 Stations



NETWORK DIAGRAM (DF300)

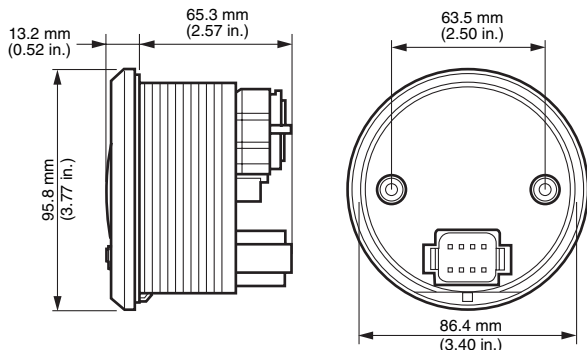
3 Engines & 2 Stations



INSTRUMENT DIMENSIONS & MOUNTINGS

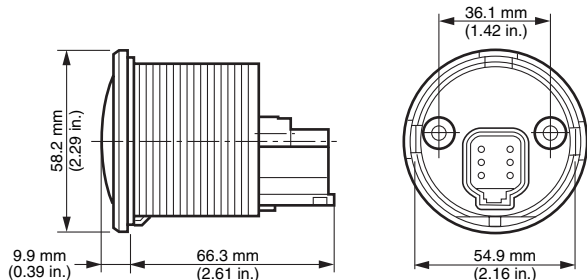
3 1/2 in. Multifunction Gauges

Tachometer/Speedometer



2 in. Gauges

Battery Voltage, Fuel Tank Level, Engine Trim Angle, Engine Water Pressure



Spacing of Instruments

For proper panel clearances please observe these minimum center to center distance specifications when installing gauges.

- 97 mm (3 13/16 in.) center to center for 3 1/2 in. instruments
- 83 mm (3 1/4 in.) center to center for 3 1/2 in. instruments to 2 in. instruments
- 67 mm (2 5/8 in.) center to center for 2 in. instruments

Hole Sizes

CAUTION

Check area behind panel to be sure there is adequate clearance for installing instruments and wires and to make sure that other components will not be contacted when cutting holes.

3 1/2 in. Multifunction Gauge

Installation, 3 1/2 in. Gauge:

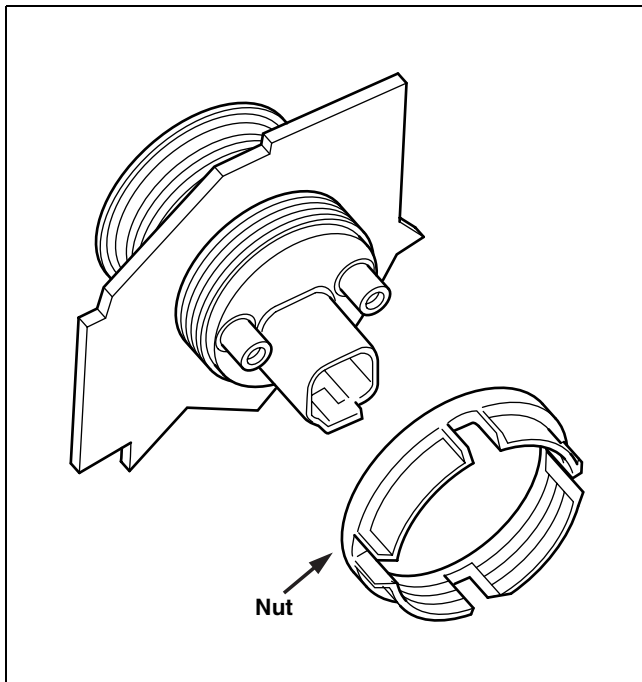
- Panel cut-out, 86 mm (3 3/8 in.) hole saw
- Gauge mounting, nut

2 in. Gauge

Installation, 2 in. Gauge:

- Panel cut-out, 52 mm (2 1/16 in.) hole saw
- Gauge mounting, nut

INSTRUMENT DIMENSIONS & MOUNTINGS



Components (All 3 in. & 2 in. Gauges)

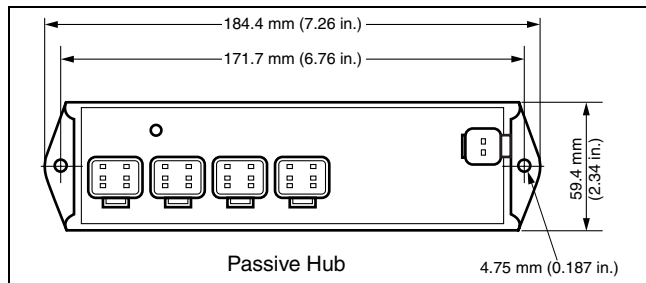
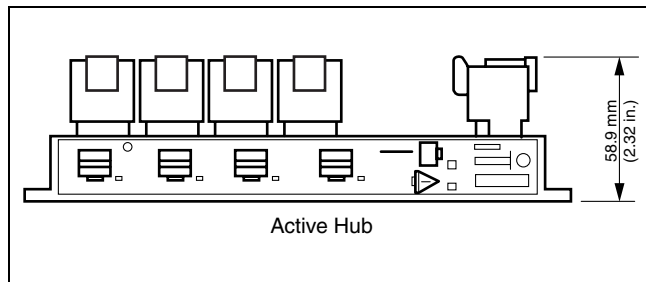
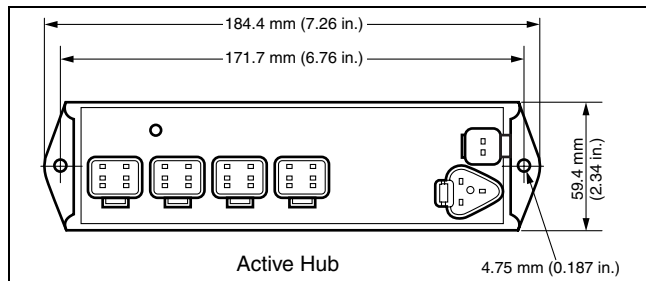
Part Name	Qty
1. Gauge	1
2. Mounting Nut	1

Fastening to Panel

Insert instrument into panel hole. Thread nut onto threaded housing of instrument and tighten to back of panel. DO NOT exceed 1.1 N·m (10 in. lbs.) tightening force.

HUBS AND INTERFACE DIMENSIONS

Active Hub/Passive Hub



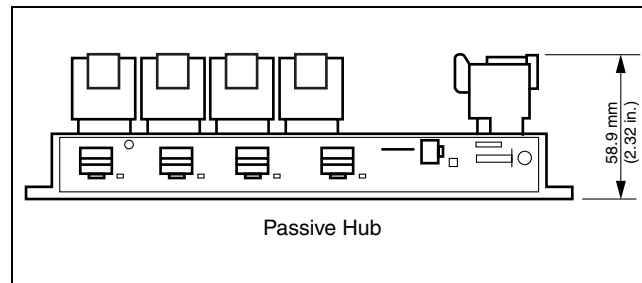
The following conditions must be observed when installing hubs.

- Install in a dry protected area
- Area selected for installation must not exceed 75 °C (167 °F)
- Anchor hubs to a flat solid surface
- Anchor hubs with 4.5 mm (#10) pan head screws
 - Do not allow hub distortion to exceed 1 mm (0.04 in)
- Support (clamp/tie wrap) wire harness at 30 cm (12 in) from hub connector.

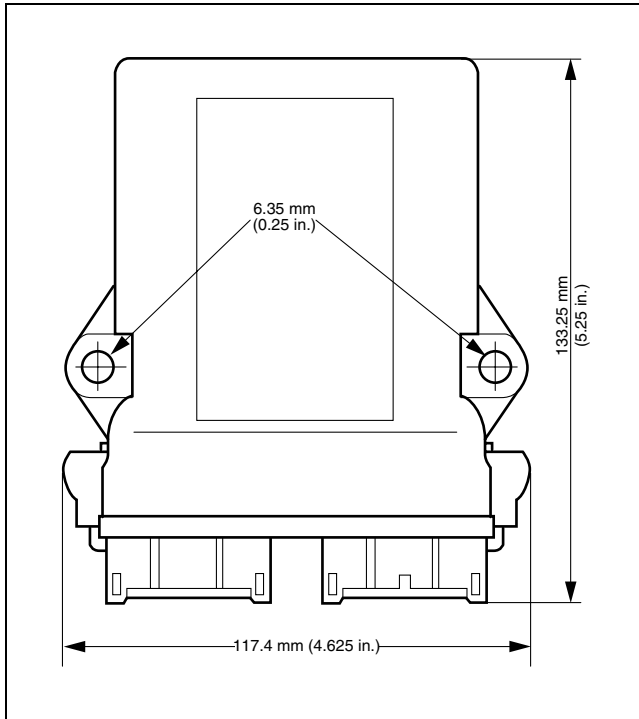
NOTE:

* *Mounting screws for Active Hub/Passive Hub are not included in the packages.*

* *Use commercially-available screws.*



Interface Unit



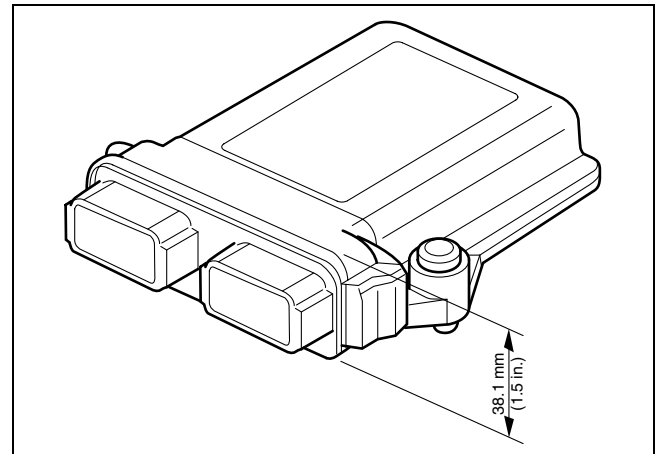
The following conditions must be observed when installing interface unit.

- Install in a dry protected area

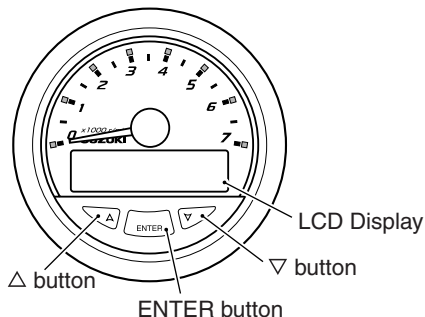
- Area selected for installation must not exceed 75 °C (167 °F)
- Anchor unit to a flat solid surface
- Anchor unit with 4.5 mm (#10) pan head screws
 - Do not allow unit distortion to exceed 1 mm (0.04 in)
- Support (clamp/tie wrap) wire harness at 30 cm (12 in) from unit connector.

NOTE:

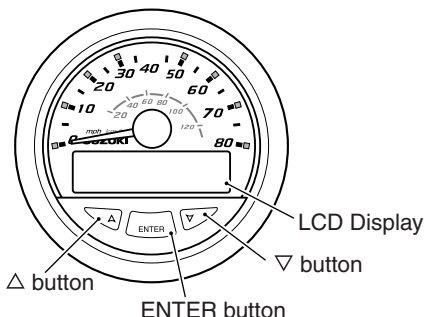
- * *Mounting screws for Interface Unit are not included in this package.*
- * *Use commercially-available screws.*



OPERATION



Tachometer



Speedometer

Power

When the main switch is turned ON and minimum operating voltage is supplied, the network will supply power to the instruments. At this time the tachometer and speedometer will briefly display a welcome screen.

The welcome screen also displays the program version number. Once powered up, the system self-checks by positioning all instrument pointers to maximum, then returning them to zero.

When the main switch is turned OFF the flow of engine data on the network ceases. All instrument pointers will return to zero and all alarms will no longer function. Power to the network will cease after a few moments.

Exit Function

When an exit screen displays on a sub-menu, press ENTER to exit and return to the previous menu.



To exit the sub-menu completely, press ENTER and hold for three seconds to return to the main menu.

“ENTER” Button

Press ENTER button to access information on gauge LCD screen.

Press and release ENTER button once to view LCD screen data. Provides access to sub-menus, data entry and alarms.



“Δ”, “▽” Arrow Button

Press UP and DOWN arrow buttons to scroll through menu displays.

Press UP/DOWN arrow buttons within a menu to scroll available user settings.

The arrow button scroll rate is one line per second.

If the arrow button is pressed and held for more than five seconds the scroll rate will increase.

Alarm

Alarms alert the user of an operating condition that requires action. If an alarm occurs, the LCD screen will display the active alarm screen immediately.

NOTE: *Alarm activation automatically replaces the current data display with the alarm screen display.*

Once active, the alarm screen will toggle between standard and reverse screen color. In addition, two warning LEDs in the tachometer (one on each side of the LCD screen) will illuminate red, and the alarm buzzer will sound.

Acknowledge the alarm by pressing ENTER on the tachometer. After one alarm is acknowledged, if there is a second alarm, it will also display.

Acknowledge the second alarm (if necessary) by pressing ENTER.

Once all alarms have been acknowledged, the alarm buzzer will cease, and the LCD screen will clear.

The warning LEDs will remain illuminated until the operating condition causing the alarm is corrected.

If there is a loss of instrument communications, the pointers of all affected gauges will return to zero.

The LCD screens will show a blank or zero value for data. Monitoring data will not function until instrument communication is corrected.

Refer to the owner's manual received with your outboard motor for detail of Diagnostic Codes.

Instrument Backlighting

Each instrument has red backlighting for increased low- light visibility. Backlighting can be turned ON or OFF. Backlighting brightness is also adjustable.

To turn ON/OFF – Press the UP and DOWN arrow buttons at the same time.

To adjust – With backlighting ON, press the UP or DOWN arrow buttons to adjust brightness.

Once desired brightness is selected, press the UP and DOWN arrow buttons at the same time to turn the backlighting OFF.

NOTE: *Backlighting adjustments affect the tachometer and all gauges connected to that system. Multiple tachometers require each tachometer and connected gauge system to be adjusted separately.*

TACHOMETER LCD DISPLAY SETUP

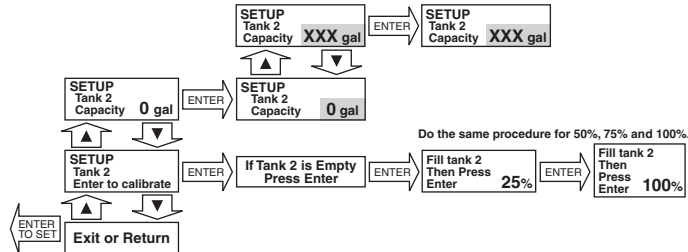
The System Set-up menu allows the user to set screen display options and configure the system based on their preference.

Main Menu	Sub Menu	Set Up	Notes	
System Setup	SETUP Contrast 5 (Current setting displayed)	ENTER → SETUP Contrast 6 ▲ ▼ SETUP Contrast 5 ▲ ▼ SETUP Contrast 4 ▲ ▼ ← ENTER TO SET	Contrast Range: 0 to 10 Use arrow buttons to change contrast.	
	▲ ▼ SETUP Eng Position 0 (Default setting "0", single engine)	ENTER → SETUP Eng Position 0 ▲ ▼ SETUP Eng Position 1 ▲ ▼ SETUP Eng Position 2 ▲ ▼ ← ENTER TO SET	Each Tachometer needs to be set to correspond to the appropriate engine. Use arrow buttons to change engine position. Single Outboard: Set "Instance 0" Twin Outboards: Set the PORT outboard and Tachometer to "Instance 0". Set the STBD outboard and Tachometer to "Instance 1". Triple Outboards: Set the PORT outboard and Tachometer to "Instance 0". Set the CENTER outboard and Tachometer to "Instance 1". Set the STBD outboard and Tachometer to "Instance 2".	
	▲ ▼ SETUP Units English	ENTER → SETUP Units English ▲ ▼ SETUP Units Metric ← ENTER TO SET	Use arrow buttons to change units of measure. Choices are English (gallons, °F) and metric (liter, °C)	
	▲ ▼ SETUP Fuel Tanks	EXIT (Press ENTER Button and hold for 3 sec) ENTER → SETUP Tank Capacity XXX gal ▲ ▼ SETUP Tank Capacity 0 gal ▲ ▼ SETUP Tank 1 Enter to calibrate ← ENTER TO SET ▲ ▼	ENTER → SETUP Tank Capacity XXX gal ▲ ▼ SETUP Tank Capacity 0 gal ▲ ▼ If Tank 1 is Empty Press Enter ENTER → Fill tank 1 Then Press Enter 25% ENTER → Fill tank 1 Then Press Enter 100% Do the same procedure for 50%, 75% and 100%.	Use arrow buttons to change sub menus.
				Use arrow buttons to change sub menus.

▲ WARNING
 This fuel monitoring system is dependent on operator data entry for accuracy. Inaccurate data entry may cause an incorrect estimation of fuel remaining and therefore an inaccurate estimation of how far you can travel before fuel is depleted. Relying solely on the fuel data display to determine fuel amount remaining on board may cause you to be stranded.

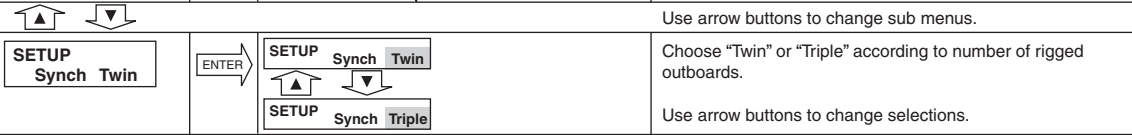
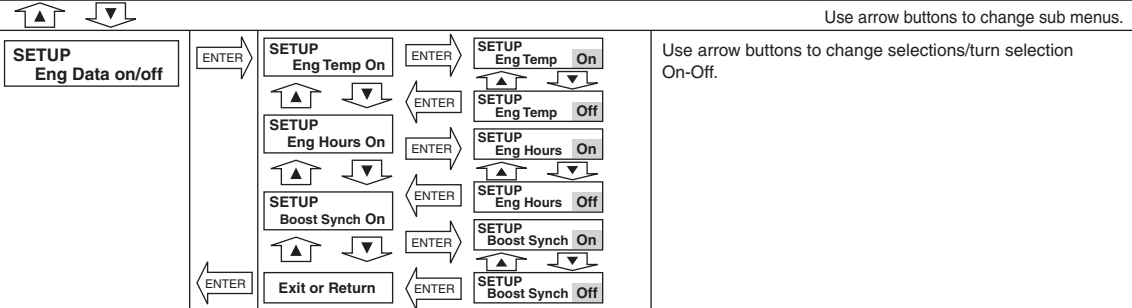
Use arrow buttons to change fuel tanks.

TACHOMETER LCD DISPLAY SETUP



Use arrow buttons to change capacity and calibrate.
 If entering a fuel tank capacity, enter a volume 10% less than actual to provide a reserve.
 Press ENTER on appropriate display to reset or clear calibration.

NOTE: To reset or clear calibration, use the Utilities menu. (See Page 26.)



TACHOMETER LCD DISPLAY MENU

	Main Menu		Sub Menu	Notes
Engine Data	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> ENG DATA Rpm 3000 rpm </div>	ENTER →	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ENG DATA RPM 3000 rpm ▲ ▼ </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ENG DATA Engine Temp 80 °C ▲ ▼ </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ENG DATA Eng Hrs 0302.2 hr ▲ ▼ </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ENG DATA Baro Press 98.1 kPa ▲ ▼ </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ENG DATA Fuel Rate 30.1 l/h ▲ ▼ </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ENG DATA Water Press 30 kPa ▲ ▼ </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ENG DATA Boost Press 32 kPa ▲ ▼ </div> <div style="border: 1px solid black; padding: 5px;"> ENG DATA Exit or Return </div>	<p>Return to “System Set-up” to change measurement units on a sub menu.</p> <p>Use arrow buttons to change sub menus.</p> <p>Engine hours displayed in full hours and tenths of hours.</p> <p>NOTE: Water pressure display requires installation of optional Cooling Water Pressure sensor kit 34970-98J00. Turn water pressure screen OFF if sensor is not installed. (DF300 only)</p> <p>NOTE: Boost means manifold Absolute Pressure.</p>
	▲ ▼	EXIT (Press ENTER Button and hold for 3 sec)		
		← ENTER		
				Use arrow buttons to change menu selection.
Power Trim Angle	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Trim 25% </div>			Trim range: 0 – 100% in 1% increments Displays power trim % only. Power tilt display is not available
	▲ ▼			Use arrow buttons to change menu selection.
Synch Functions	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> RPM PRT STB SYNCH </div>	or	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> RPM PRT CTR STB SYNCH </div>	In case of twin-motor installation, differences in engine RPM, trim angle and intake manifold pressure of the two motors are displayed by bar graph on the basis of the PORT side motor.

TACHOMETER LCD DISPLAY MENU

<p>▲ ▼</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> PRT STB TRIM SYNCH </div> or <div style="border: 1px solid black; padding: 5px; text-align: center;"> PRT CTR STB TRIM SYNCH </div> </div> <p>▲ ▼</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> PRT STB BOOST SYNCH </div> or <div style="border: 1px solid black; padding: 5px; text-align: center;"> PRT CTR STB BOOST SYNCH </div> </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;"> RPM of STBD Engine is higher PRT STB RPM SYNCH </td> <td style="width: 50%; text-align: center;"> RPM of STBD Engine is lower PRT STB RPM SYNCH </td> </tr> </table> <p>In case of triple-motor installation, differences in engine RPM, trim angle and intake manifold pressure of the PORT and the STBD motors are displayed by bar graph on the basis of CTR motor.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;"> In case trim angle of PORT Engine is bigger and trim angle of STBD Engine is smaller. </td> <td style="width: 50%; text-align: center;"> PRT CTR STB TRIM SYNCH </td> </tr> </table>	RPM of STBD Engine is higher PRT STB RPM SYNCH	RPM of STBD Engine is lower PRT STB RPM SYNCH	In case trim angle of PORT Engine is bigger and trim angle of STBD Engine is smaller.	PRT CTR STB TRIM SYNCH
RPM of STBD Engine is higher PRT STB RPM SYNCH	RPM of STBD Engine is lower PRT STB RPM SYNCH				
In case trim angle of PORT Engine is bigger and trim angle of STBD Engine is smaller.	PRT CTR STB TRIM SYNCH				

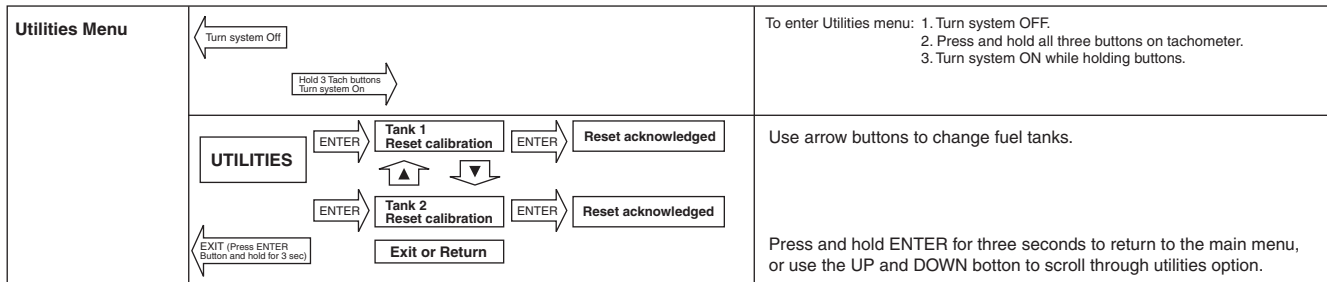
<p>▲ ▼</p> Engine Status	<p>▲ ▼</p> <div style="border: 1px solid black; padding: 5px;"> ENG STATUS Active Alarms 4 </div>	<p>ENTER</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> EXIT (Press ENTER Button and hold for 3 sec) </div> <p>ENTER</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1 of 4</td> <td style="text-align: center;">Over Heat</td> </tr> <tr> <td style="text-align: center;">▲ ▼</td> <td></td> </tr> <tr> <td style="text-align: center;">2 of 4</td> <td style="text-align: center;">Over Rev</td> </tr> <tr> <td style="text-align: center;">▲ ▼</td> <td></td> </tr> <tr> <td style="text-align: center;">3 of 4</td> <td style="text-align: center;">Engine Oil Pressure</td> </tr> <tr> <td style="text-align: center;">▲ ▼</td> <td></td> </tr> <tr> <td style="text-align: center;">4 of 4</td> <td style="text-align: center;">Change Oil</td> </tr> <tr> <td style="text-align: center;">▲ ▼</td> <td></td> </tr> <tr> <td style="text-align: center;">EXIT</td> <td style="text-align: center;">Exit or Return</td> </tr> </table>	1 of 4	Over Heat	▲ ▼		2 of 4	Over Rev	▲ ▼		3 of 4	Engine Oil Pressure	▲ ▼		4 of 4	Change Oil	▲ ▼		EXIT	Exit or Return	<p>RPM reduction and alarm buzzer. See owner's manual.</p> <p>RPM reduction after 10 seconds. See owner's manual.</p> <p>RPM reduction and alarm buzzer. See owner's manual.</p> <p>Alarm buzzer and indicator flash. See owner's manual.</p> <p>NOTE: Please refer to the Owner's Manual for details of warning messages.</p>
1 of 4	Over Heat																					
▲ ▼																						
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▲ ▼																						
EXIT	Exit or Return																					

<p>▲ ▼</p> Battery Voltage	<p>▲ ▼</p> <div style="border: 1px solid black; padding: 5px;"> BATT VOLT Battery 14.5 Vdc </div>	<p>Display range: 0 – 18 volts in 0.1 volt increments. Dual/Triple engine: each tachometer displays assigned engine system voltage.</p>
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<p>▲ ▼</p> Split Screen	<p>▲ ▼</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">RPM</td> <td style="text-align: center;">TRIM</td> </tr> <tr> <td style="text-align: center;">3000</td> <td style="text-align: center;">25%</td> </tr> </table>	RPM	TRIM	3000	25%	<p>ENTER</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> EXIT </div> <p>ENTER</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">ENG Temp</td> <td style="text-align: center;">TRIM</td> </tr> <tr> <td style="text-align: center;">80 °c</td> <td style="text-align: center;">25%</td> </tr> <tr> <td style="text-align: center;">▲ ▼</td> <td></td> </tr> <tr> <td style="text-align: center;">RPM</td> <td style="text-align: center;">TRIM</td> </tr> <tr> <td style="text-align: center;">3000</td> <td style="text-align: center;">25%</td> </tr> <tr> <td style="text-align: center;">▲ ▼</td> <td></td> </tr> <tr> <td style="text-align: center;">RPM</td> <td style="text-align: center;">ENG Temp</td> </tr> <tr> <td style="text-align: center;">3000</td> <td style="text-align: center;">80 °c</td> </tr> </table>	ENG Temp	TRIM	80 °c	25%	▲ ▼		RPM	TRIM	3000	25%	▲ ▼		RPM	ENG Temp	3000	80 °c	<p>This screen allows the operation to view two data displays at the same time. Using the UP and DOWN buttons, select the desired displays. The UP button will scroll the left side of the screen and the DOWN button will scroll the right side of the screen. Press ENTER to change display combinations. Use arrow buttons to select data desired. Press ENTER to set changes.</p> <p>Data available for split screen:</p> <table style="width: 100%;"> <tr> <td>RPM</td> <td>Trim Angle</td> <td>Fuel Rate</td> </tr> <tr> <td>Water Press</td> <td>Engine Temp</td> <td></td> </tr> <tr> <td>Baro Press</td> <td>Volts</td> <td></td> </tr> </table>	RPM	Trim Angle	Fuel Rate	Water Press	Engine Temp		Baro Press	Volts	
RPM	TRIM																																
3000	25%																																
ENG Temp	TRIM																																
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<p>▲ ▼</p> Setup	<p>▲ ▼</p> <div style="border: 1px solid black; padding: 5px;"> System Setup </div>	
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UTILITIES MENU





























SPEEDOMETER LCD DISPLAY SETUP



















The speedometer displays the boat's speed over the water or speed over ground through the instrument's analog meter. Additional system information is displayed on the LCD screen in digital form.

Main Menu		Sub Menu		Set Up	Notes
System Setup	ENTER →	SETUP Contrast 5	ENTER → ENTER TO SET ←	SETUP Contrast 6 ▲ ▼ SETUP Contrast 5 ▲ ▼ SETUP Contrast 4	Use arrow buttons to change contrast. Contrast Range: 0 to 10
		▲ ▼			Use arrow buttons to change sub menus.
	EXIT (Press ENTER Button and hold for 3 sec)	SETUP Speed units kph	ENTER → ENTER TO SET ←	SETUP Speed units kph ▲ ▼ SETUP Speed units kn ▲ ▼ SETUP Speed units mph	Use arrow buttons to change measurement units. mph: miles per hour kn: knots kph: kilometers per hour
		▲ ▼			Use arrow buttons to change sub menus.
		SETUP Units English	ENTER → ENTER TO SET ←	SETUP Units English ▲ ▼ SETUP Units Metric	Use arrow buttons to change measurement units. Choices are English (gallons, °F) and Metric (liter, °C).
		▲ ▼			Use arrow buttons to change sub menus.
		SETUP Network KLine	ENTER → ENTER TO SET ←	SETUP Network KLine ▲ ▼ SETUP Network NMEA	Use arrow buttons to change measurement units. Always choose "NMEA".
	▲ ▼				Use arrow buttons to change sub menus.
	ENTER ←	Exit or Return			

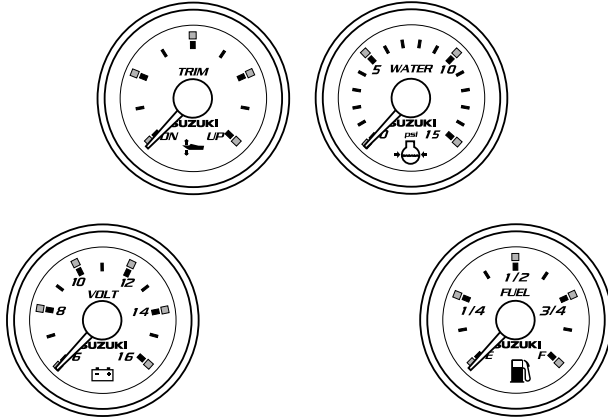
SPEEDOMETER LCD DISPLAY MENU

	Main Menu		Sub Menu	Notes
Speed	  Over SPEED Water 60 kph	  	SPEED Over Water 60 kph   SPEED Over Ground 80 kph   SPEED Exit or Return	Use arrow buttons to change sub menus. Use of NMEA 2000 GPS receiver provides speed over ground. If GPS is used, instrument needle displays speed over ground. Set measurement units during previous Speedometer setup. mph: miles per hour kn: knots kph: kilometers per hour
Fuel Tank Level	  Tank 1 FUEL 80% kph	  	FUEL LEVEL Tank 1 80%   FUEL LEVEL Tank 2 100%   FUEL LEVEL Exit or Return	Use arrow buttons to change menu selection. Use arrow buttons to change sub menus. Requires commercially-available NMEA 2000 Fuel Level Converter. Fuel tank level display should be setup during the "Tachometer, System Setup" process.
Fuel Management	  Fuel FUEL MGMT Rate 30.2 l/h kph	 	FUEL MGMT Fuel Rate 30.2 l/h   FUEL MGMT Fuel Econ 5.2 km   FUEL MGMT Fuel Used 32 liter	Combines fuel rate for multiple engine installations Requires NMEA 2000 GPS receiver.

SPEEDOMETER LCD DISPLAY MENU

		← ENTER	  FUEL MGMT Exit or Return	
	 			Use arrow buttons to change menu selection.
Trip Log	  Trip Dist TRIP LOG kph 50 km	→ ENTER ← ENTER	TRIP LOG Enter to Reset   TRIP LOG Exit or Return	Use arrow buttons to change sub menus. (Resets odometer and fuel used.)
	 			Use arrow buttons to change menu selection.
Depth	DEPTH 25 m			Requires commercially-available NMEA 2000 transducer with depth input.
	 			Use arrow buttons to change menu selection.
Water Temp	WATER TEMP 20 °C			Requires commercially-available NMEA 2000 transducer with temperature input.
	 			Use arrow buttons to change menu selection.
Split Screen	Depth Tank 1 25 m 75%	→ ENTER ← ENTER	Tank 2 Tank 1 90% 75%  Depth Tank 1 25m 75%  Depth Tank 2 25m 90%	This screen allows the operator to view two data displays at the same time. Using the UP and DOWN buttons, select the desired displays. The UP button will scroll the left side of the screen and the DOWN button will scroll the right side of the screen. Water Temp Depth Fuel Rate Fuel Economy Fuel Tank 1 Fuel Tank 2 Speed
	 			Use arrow buttons to change menu selection.
Setup	System Setup			

2-IN GAUGE SPECIFICATION



Optional 2 in. instruments provide full time analog displays for:

- Battery voltage
- Trim angle
- Cooling water pressure
- Fuel tank level

These Suzuki Precision Control Gauges connect with tachometer harness using the 2 in. gauge harness, P/N 36664-98J10.

Instrument descriptions:

- Volt-Displays battery voltage, 6 to 16 volts in 1 volt increments.
- Water Pressure-Displays 0 to 15 PSI. Requires installation of optional cooling water pressure sensor kit 34970-98J00.
- Fuel Level-Displays fuel level in fuel tank, divided in graduated increments (1/8) beginning at E (empty) and ending at F (full).
- Trim Angle-Displays engine trim angle, divided in graduated increments (1/8) beginning at DN (down) and ending at UP.

TROUBLE SHOOTING CHART

DESCRIPTION	POSSIBLE CAUSE/PROCEDURE
Suzuki Precision Control Gauges do not work.	<ul style="list-style-type: none"> • Tachometer must be installed (primary instrument). • Check power harness, fuses and switched B+ “wake-up” from ignition harness. • Check if power indicator LEDs on active and passive hubs are illuminated. • Check all connections. See “NETWORK DIAGRAMS” on page 10 –. • Check engine position setting on tachometer.
Suzuki Precision Control Gauge display is erratic.	<ul style="list-style-type: none"> • Check for installation of terminator in system. • Check harness connections. • Check if power indicator LEDs on active and passive hubs are constant ON. • Check engine position setting on tachometer.
Speedometer display is erratic.	<ul style="list-style-type: none"> • The speedometer water entry port built into the gear case may not detect correct speed because of water turbulence caused by bottom of your boat. • Use the Speedometer sender kit 34120-98J00 or commercially-available paddle sensor as a replacement of the built-in detector.
2 in. instruments do not work	<ul style="list-style-type: none"> • Tachometer must be installed (primary instrument). • Check for installation of appropriate senders or sensor for specific instrument operation. • Check engine position on tachometer.
Speed-Over-Ground (SOG) does not display	Requires input from NMEA 2000 GPS receiver.
Water depth does not display	Requires input from NMEA 2000 depth transducer.
Sea water temperature does not display	Requires input from NMEA 2000 temperature transducer.
Fuel tank level does not display	Requires input from fuel tank sensor.
Engine water pressure does not display	Requires input from water pressure sensor. See “APPLICATION LIST” on page 8.
How is the speed/depth/sea temperature transducer connection wired?	Connect the transducer to HUB. Refer to manufacturer’s Rigging manual.
How is the GPS receiver connection wired?	Connect the GPS receiver to HUB. Refer to manufacturer’s Rigging manual.
“Comm Failure” displayed on LCD	<ul style="list-style-type: none"> • Check engine position setting on tachometer. See “Engine Position” on page 22. • Check all connections. See “NETWORK DIAGRAMS” on page 10 –.
Blown 5 A fuse for Active Hub power harness	Check all connections and wiring. Disconnect accessory connections to Network. Isolate possible overloads or shorted accessories or instruments. Instruments: 3 in.-350 – 400 mA, 2 in.-100 – 120 mA.
Fuel gauge does not work.	Check connection of fuel level sender ground lead wire. Fuel level sender must be connected to the negative battery terminal.

SUZUKI MARINE PRECISION CONTROL GAUGES

Supplemental Installation Instruction

For Models

DF40 through DF250

ON AND AFTER '08 YEAR MODELS

SUZUKI MOTOR CORPORATION

TABLE OF CONTENTS

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NETWORK DIAGRAM (DF40 THROUGH DF250)	
1 Outboard/1 Station	38
2 Outboards/1 Station	39
CONNECTION OF NMEA 2000 ACCESSORIES	40

APPLICATION LIST

		# OF ENGINE	1	2
		TRANSMISSION METHOD	NMEA	NMEA
		# OF STATION	1	1

Ref.#	PART #	PART NAME	QUANTITY/BOAT	
1	34100-98J01	SPEEDOMETER ASSY, Max. 130 km/h (Black)	(1)	(1)
1	34100-98J11	SPEEDOMETER ASSY, Max. 130 km/h (White)	(1)	(1)
1	34100-98J21	SPEEDOMETER ASSY, Max. 80 km/h (Black)	(1)	(1)
1	34100-98J31	SPEEDOMETER ASSY, Max. 80 km/h (White)	(1)	(1)
1	34100-98J41	SPEEDOMETER ASSY, Max. 60 knots/h (White)	(1)	(1)
2	34200-98J03	TACHOMETER ASSY (Black)	1	2
2	34200-98J13	TACHOMETER ASSY (White)	1	2
3	34300-98J00	GAUGE ASSY, FUEL (Black)	(1)	(1)
3	34300-98J10	GAUGE ASSY, FUEL (White)	(1)	(1)
4	34600-98J00	METER ASSY, VOLTAGE (Black)	(1)	(1)
4	34600-98J10	METER ASSY, VOLTAGE (White)	(1)	(1)
5	34800-98J00	METER ASSY, TRIM (Black)	(1)	(2)
5	34800-98J10	METER ASSY, TRIM (White)	(1)	(2)
6	36661-93J00	ADAPTOR, INTERFACE MODULE HARNESS	1	1
7	34921-98J00	UNIT COMP, ACTIVE HUB	1	1
8	34922-98J02	UNIT COMP, INTERFACE	1	1
9	36661-98J00	HARNESS ASSY, INTERFACE UNIT	1	1
10	36663-98J00	HARNESS ASSY, ACTIVE HUB PWR 2.5 m	1	1
10	36663-98J10	HARNESS ASSY, ACTIVE HUB PWR 6.0 m		
11	36664-98J00	HARNESS ASSY, 3" GAUGE	1	2
12	36664-98J10	HARNESS ASSY, 2" GAUGE	(0 - 3)	(0 - 4)
13	36665-98J00	WIRE COMP, JUMPER	1	1
14	36666-98J00	CAP, 8 PIN CONNECTOR	(1)	(1)
15	36666-98J10	CAP, 6 PIN CONNECTOR	2	1
16	36646-87L00	LEAD, INTERFACE MODULE ADAPTOR	(1)	(1)
	N/A	SENDER ASSY, SPEEDOMETER	(1)	(1)

- NOTE:
1. The numbers between parentheses mean elective.
 2. Quantity listed in the chart shows total number of parts necessary for rigging a boat.
 3. All signals go through the tachometer and are distributed to an appropriate gauge. It is essential to use the tachometer to bring the other gauges active.

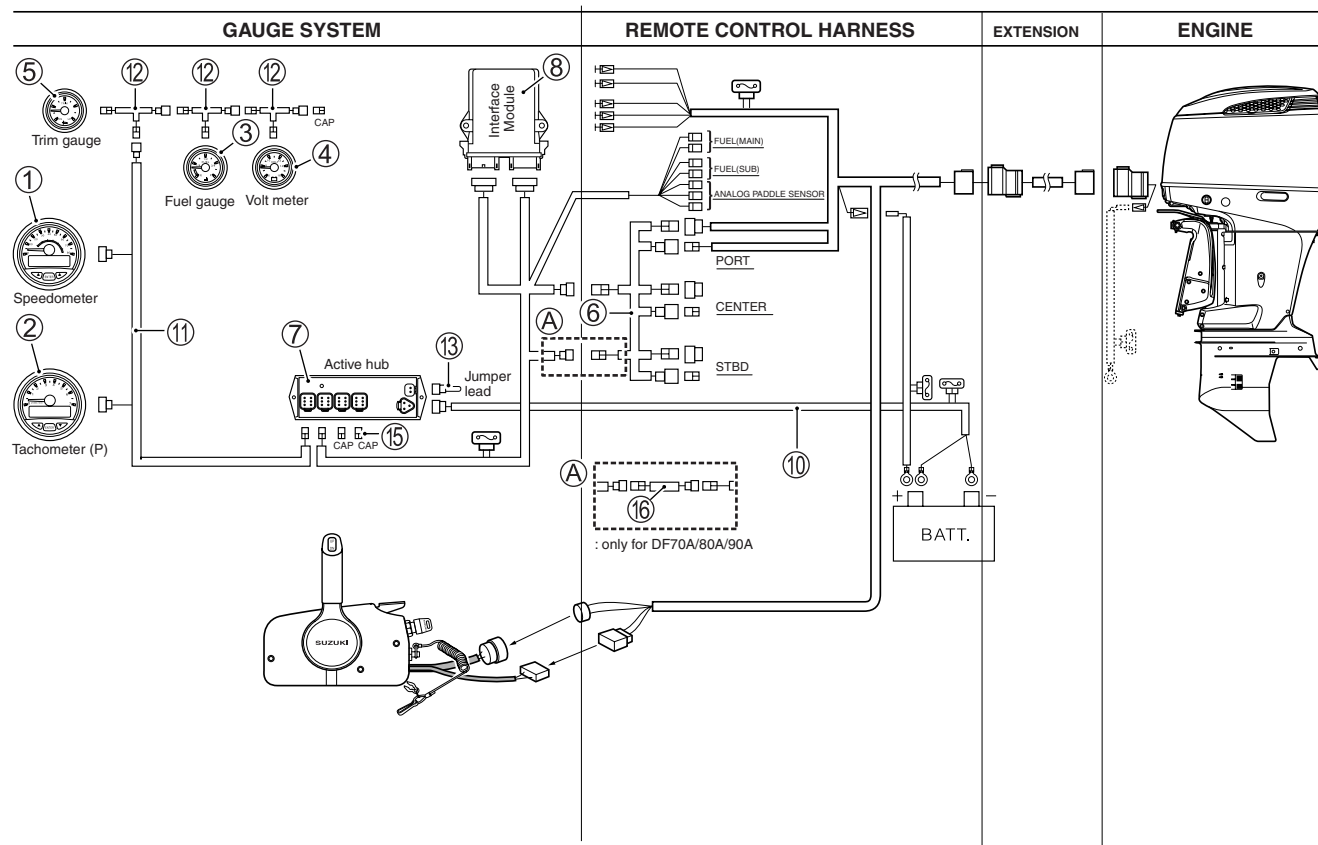
APPLICATION LIST

Ref.#	PART #	REMARKS
1	34100-98J01	Requires NMEA 2000 transducer with speed input or a NMEA 2000 GPS receiver/antenna.
1	34100-98J11	Requires NMEA 2000 transducer with speed input or a NMEA 2000 GPS receiver/antenna.
1	34100-98J21	Requires NMEA 2000 transducer with speed input or a NMEA 2000 GPS receiver/antenna.
1	34100-98J31	Requires NMEA 2000 transducer with speed input or a NMEA 2000 GPS receiver/antenna.
1	34100-98J41	Requires NMEA 2000 transducer with speed input or a NMEA 2000 GPS receiver/antenna.
2	34200-98J03	
2	34200-98J13	
3	34300-98J00	Requires input from a commercially available potentiometer type fuel level sensor.
3	34300-98J10	Requires input from a commercially available potentiometer type fuel level sensor.
4	34600-98J00	
4	34600-98J10	
5	34800-98J00	
5	34800-98J10	
6	36661-93J00	
7	34921-98J00	
8	34922-98J02	
9	36661-98J00	
10	36663-98J00	Select one of them according to location of a battery.
10	36663-98J10	
11	36664-98J00	A 6-pin connector cap (36666-98J10) is supplied together with the harness.
12	36664-98J10	It is necessary to use one harness per one 2" gauge.
13	36665-98J00	
14	36666-98J00	Connect this cap alternatively in case no speedometer is used.
15	36666-98J10	
16	36646-87L00	Connect this Lead for DF70A/80A/90A.
	N/A	Either a NMEA 2000 certified paddle sensor or an analog-type paddle sensor available in the market can be used.

4. The water pressure gauges are not applicable to models DF40 – DF250 except DF70A/80A/90A.
5. Cooling water pressure cannot be used for DF40 – DF250 except DF70A/80A/90A..
6. The items shaded are supplied as a kit with part number 34011-90J02.

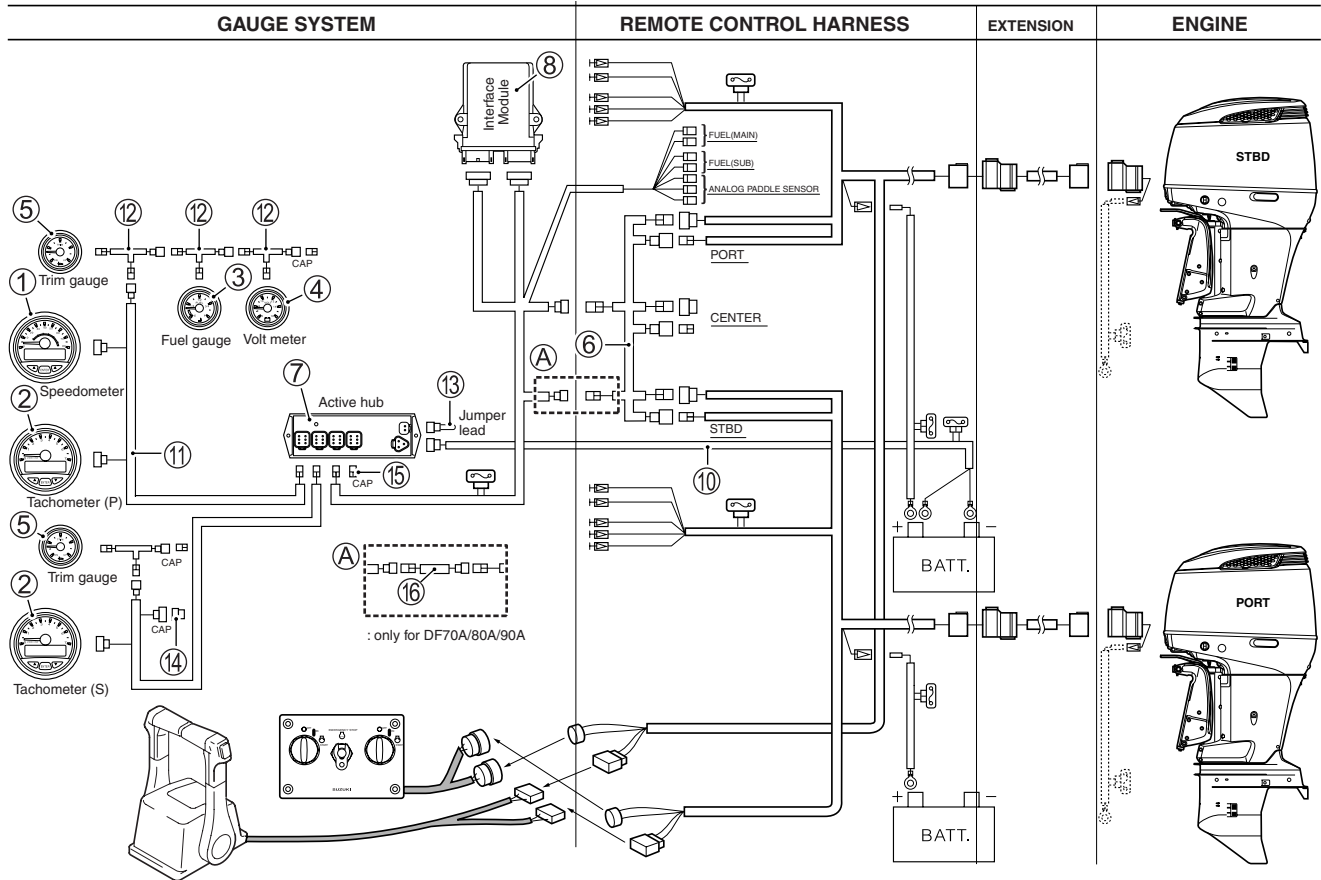
NETWORK DIAGRAM (DF40 THROUGH DF250)

1 Outboard/1 Station



NETWORK DIAGRAM (DF40 THROUGH DF250)

2 Outboards/1 Station



CONNECTION OF NMEA 2000 ACCESSORIES

