



TRANS ATLANTIC DIESELS INC.

INSTRUMENT PANEL TECH TIPS

Installing Senders & Switches

In the case of single terminal senders & switches, (as used in standard ground installations), do not use Teflon tape or paste when installing, the threads provide the necessary ground connection. Tape or paste can cause poor connections causing gauge or alarm to register erratically or not register. If you wish to check your sender/switch is making a good ground connection, temporarily connect an independent ground wire. Make contact from the engines main ground to the threaded outside case of the sender. Compare gauge readings with and without the extra connection, they should be the same. If so, this will confirm your sender/switch is making a good ground.

Guidance in Replacing Senders and Gauges in Your Existing Panel

It is important to match the sender to the gauge and likewise the gauge to the sender. Not all gauge manufacturers function on the same variable resistance. A mismatched gauge or sender will produce an inaccurate temp or pressure reading. If your vessel has an upper and a lower operating station with 2 sets of gauge panels per engine, then special dual station senders are required. Please be careful to state this when ordering.

To order either a loose gauge or sender for an instrument panel not supplied by TAD Inc. it is important to give us as much information as possible, the brand name of the gauge and the NPT (National Pipe Thread) size of the sender see chart below, If you are uncertain and cannot check your NPT size it is recommended that you select the smaller NPT size. A reducer bush may then be used to adapt to a larger NPT size if required. Indicate if the sender has 1 or 2 terminals. 1 terminal is normally for a Standard Ground sender, a 2-terminal sender is normally for a floating (isolated) Ground system.

Ordering a Replacement Gauge

The scale of the gauge is important. Example 0psi – 80psi (1bar -5bar) for the oil pressure and 100 deg. f – 250 deg. f (38c – 120c) for the water temperature. Diameter of hole gauge removed from. If we are not able to identify your old unit, we can usually supply you with an alternative new matching gauge and sender. Some of the popular manufacturers are: VDO – Faria – Datcon – Stewart Warner – Teleflex – AC (Not all currently available).

Ordering Alarm Switches

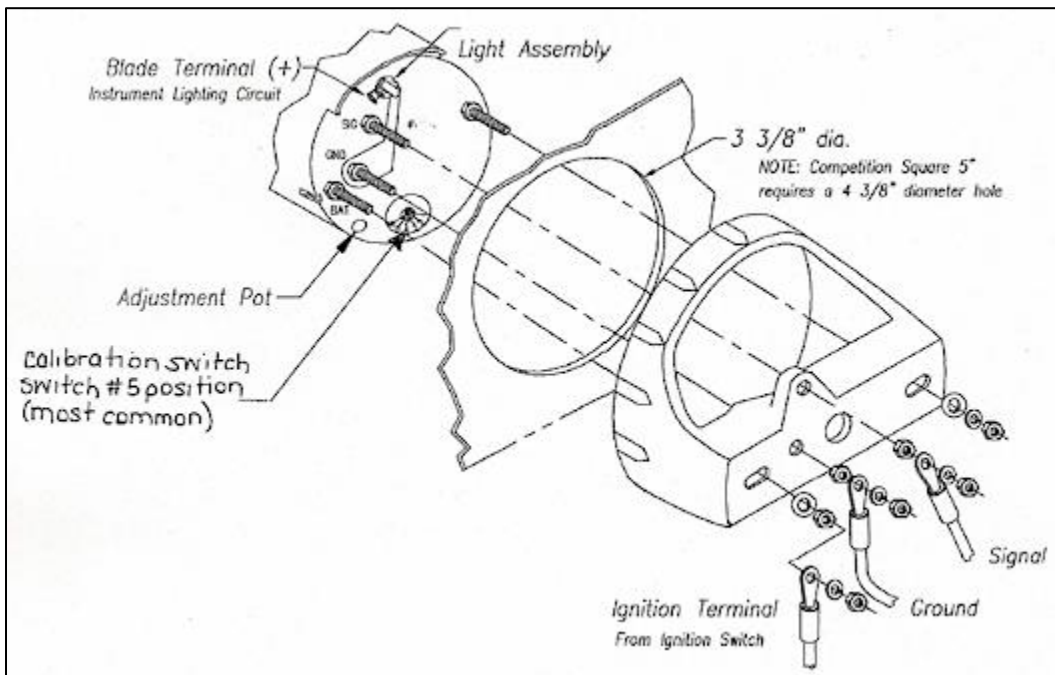
When ordering alarm sensors these are referred to as switches. (They make and brake contact sending a warning signal to the alarm device) These switches are more generically similar. The variation is usually in the setting at which the contact is made and alarm will sound. In most cases there are 2 switches on the engine one indicating high water temp and the other, low oil pressure.

In order to supply a replacement alarm switch, we will need to know location on engine and purpose of switch, the thread size and # of terminals. See NPT thread size chart below.










Ordering Tachometers

Most modern tachometers operate off of the AC connection on the engine's battery charging alternator. As the engine speed increases and decreases it varies the AC output reading to the tachometer. These units offer a stable reading, are reliable and virtually maintenance free, unlike the old cable drive units. It is however important to ensure correct alternator belt tension is maintained. Belt slippage will result in a low erratic reading.


Illustration of Typical Faria Tachometer - Fits hole size 3 3/8"



WIRING COLOR CODE CONNECTIONS FOR TAD INC. INSTRUMENT PANEL

	BLACK #10	Ground - Connect to ground post on alternator, starter or engine block.
	RED #10	Positive Feed to Panel - Connect to positive + main large terminal on starter (some earlier models had blue strip on red wire).
	YELLOW & RED #14	Starter Solenoid - Connect to solenoid starter engage terminal on starter (small terminal). Should connect through neutral safety switch on transmission where applicable.
	GRAY #16	Tachometer - Connect to tachometer output terminal on alternator.
	WHITE & BLUE #16	Exciter - Connect to alternator excitation terminal on back of alternator. This provides 12v excitation from the key switch.
	LIGHT BLUE #16	Oil Pressure - Connect to oil pressure gauge sender.
	LIGHT BROWN #16	Water Temperature - Connect to water temperature gauge sender.
	ORANGE #16	Alarms - Connect to low oil pressure alarm switch sensor and link to high water temp alarm switch sensor. Both must be linked to same orange wire.
	PINK #12	Extra Wire - Cold start or electric stop as applicable. Perkins 4.108 pink is for cold start.

THE FOLLOWING IS NOT SUPPLIED WHEN PURCHASED SEPARATELY FROM ENGINE:

	RED #10	Main Alternator Output Terminal to Battery/s - For standard alternator, 65 Amp or less, connect to positive + main large terminal on starter motor to main output terminal of alternator. Read note below when utilizing a high output alternator (over 65 Amp).
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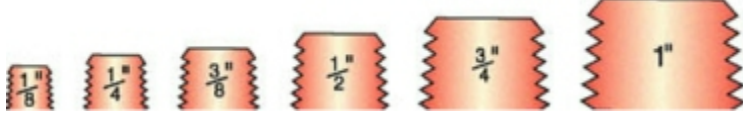
IMPORTANT FOR HIGH OUTPUT ALTERNATOR (ABOVE 65 amps)

Customer should supply and fit a larger wire from the output terminal on the alternator to the battery/s directly or via main Positive terminal on starter motor. Wire sized according to output and length of wire. If the alternator is isolated ground, then the size of the ground wire should also be increased. Contact alternator manufacturer for recommendations on wire size. Standard #10 Red wire in harness is only suitable for standard 65-amp alternator.

IMPORTANT: Using too undersized or incorrect wire could cause a fire hazard.

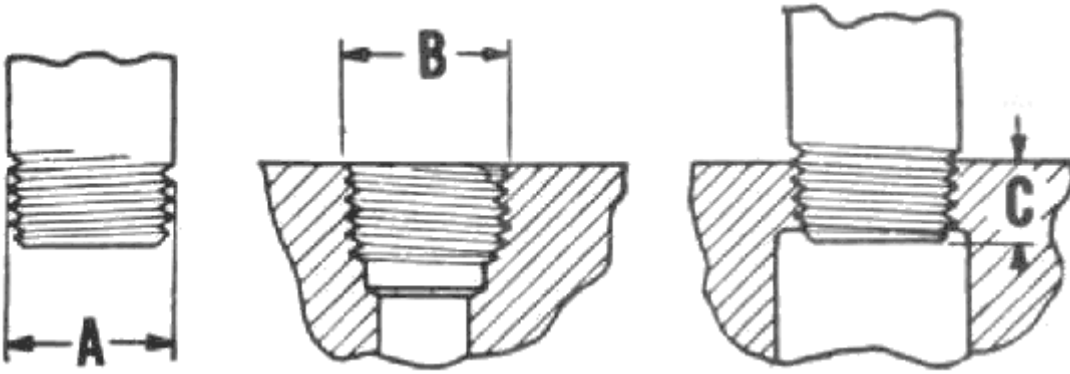
PIPE and PIPE THREAD DIMENSIONS

National Pipe Thread (NPT) sizes do not refer to physical dimensions. The Outside Diameter (O.D.) of each pipe or fitting must be measured and compared with the table shown for size identification.

			
N.P.T. PIPE THREAD SIZE	THREADS PER INCH	MALE THREAD O.D.	FEMALE THREAD I.D.
1/8"	27	13/32"	11/32"
1/4"	18	9/16"	15/32"
3/8"	18	11/16"	19/32"
1/2"	14	27/32"	23/32"
3/4"	14	1 1/16"	15/16"
1"	11 1/2	1 5/16"	1 3/16"
1 1/4"	11 1/2	1 11/16"	1 17/32"

Nominal Pipe sizes do not match any of its actual physical dimensions. The OD of pipe or a fitting must be measured & compared to the table for identification.

For example, a 3/4" NPT pipe thread has an outside diameter of 1.050 inches and 14 threads per inch. Each thread size has a defined number of threads per inch (TPI), but several sizes have the same TPI; because of this, both the TPI and OD of the thread are required for positive identification of thread size.



Male Threads

Measure the outside diameter of the large portion of the thread at "A"; Find figure nearest this dimension in column 1 or 2 of chart. The dimension in column 3 will be your nominal pipe thread size.

Female Threads

Measure top diameter of thread at "B"; Find figure nearest this dimension in column 1 or 2 of chart. The dimension in column 3 will be your nominal pipe thread size.

OD Fraction Inch Only for quick reference	Actual Decimal Inch	Pipe Size Nominal	TPI Threads per Inch	Normal Engagement for a tight joint (dimension "C")
5/16"	0.3125"	1/16"	27	0.2611
13/32"	0.405"	1/8"	27	0.2639
35/64"	0.540"	1/4"	18	0.4018
43/64"	0.675"	3/8"	18	0.4078
27/32"	0.840"	1/2"	14	0.5337
1-3/64"	1.050"	3/4"	14	0.5457
1-5/16"	1.315"	1"	11-1/2	0.6828
1-21/32"	1.660"	1- 1/4"	11-1/2	0.7068
1-29/32"	1.900"	1-1/2"	11-1/2	0.7235
2-3/8"	2.375"	2"	11-1/2	0.7565
2-7/8"	2.875"	2-1/2"	8	1.1375
3-1/2"	3.500"	3"	8	1.2000
4"	4.000"	3-1/2"	8	1.2500
4-1/2"	4.500"	4"	8	1.3000

- Two common pipe thread sizes exist, the tapered National Pipe Thread (NPT) and the straight National Standard Free-Fitting Straight Mechanical Pipe Thread (NPSM).
- The tapered threads are for joining and sealing, the straight threads are only for joining.
- Dry-seal thread (NPTF) allows for joining without sealants.
- Female NPT threads may be designated as "FPT"
- Male NPT threads may be designated as "MPT."
- The pipe size is often written such as this 1/8"-27, with a hyphen between size & thread per inch, and pronounced as "one eighth twenty-seven"
- Three less common threads exist, the Garden Hose Thread (GHT)
- Fire Hose Coupling (NST) and British Standard Taper Pipe Thread (BSPT)
- The NPT and NPTF threads are interchangeable with sealants such as PTFE tape.
- None of the other thread standards are interchangeable.

PLEASE NOTE:

These instructions are for installation guidance only.

All normal safety precautions should be followed.

IF YOU HAVE ANY DOUBTS OR QUESTIONS PLEASE CONTACT US

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