



Reference P/N : 790-017
Revised : April 1989

150 Series Rudder Angle Indicator System

- 3" three color display
- Supports up to 5 extra indicators
- Waterproof front face
- 30' (10m) unterminated cable
- Flush or surface mount
- 45° Port/Starboard indicating range
- Back-lighting with dimmer optional

Wagner P/N
RAI Master ... 510-132
Follow-up 510-058

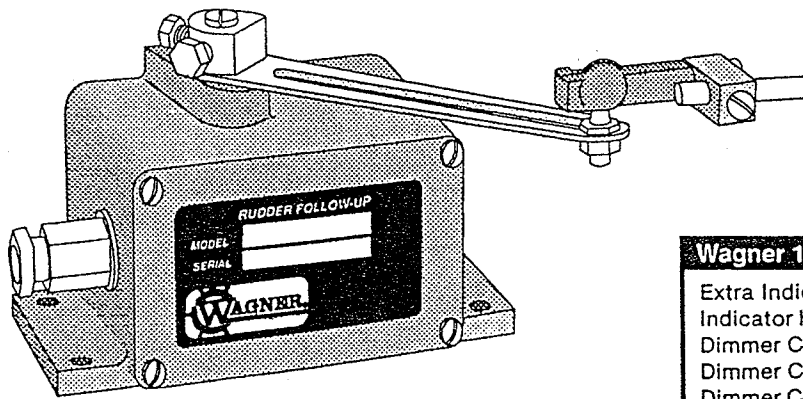
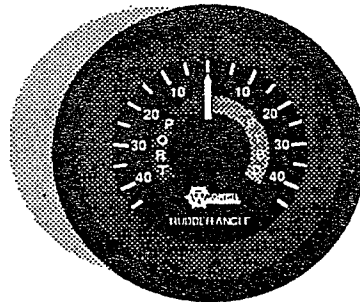
A single station Model 150 Rudder Angle Indicator System consists of:

- 1 Model 150 Master Indicator
- 1 Follow-up Unit
- 2 Ball swivels
- 1 Connecting rod
- 3 Lamps (12, 24 & 32vdc)

The 150 Indicator accurately shows the position of your rudder when dodging, power steering or course changing

on a three color 3" display. Up to five additional 'extra station' indicators may be installed with a single master indicator. The indicators may be backlite with an optional dimmer and lamp for 12,24 or 32vdc systems.

The indicators, as supplied, are waterproof on the front face only. A housing to waterproof an indicator is available as an option. The Follow-up Unit is completely waterproof. The Model 150 Rudder Angle Indicator System may be operated on any DC power supply between 10 and 40 volts.



MANUFACTURED IN CANADA BY

Wagner 150 series	P/N
Extra Indicator	510-133
Indicator Housing (Waterproof)....	510-134
Dimmer Control 12vdc	510-127
Dimmer Control 24vdc	510-128
Dimmer Control 32 vdc	510-129
Indicator Bezel Kit	510-135
Rudder Stock Clamp	510-191
Rudder Order Indicator Master	510-428



EQUIPMENT LTD.

Mounting the Follow-up Unit

Secure the rudder stock clamp as shown in fig. 2.

Attach the ball swivel (without the brass block attached) to one of the holes in the rudder stock clamp and tighten securely.

Thread the brass rod into the plastic fitting you have just mounted and tighten.

Mount the follow-up unit to a horizontal surface with the follow-up arm and rudder centered. Refer to Fig. 1. for mounting dimensions.

Feed the other end of the brass rod through the brass block mounted on the other ball swivel on the follow-up arm.

Adjust the ball swivel positions on the follow-up lever arm and the rudder stock clamp to allow the follow-up lever arm to travel through $2 \times 45^\circ$. This 45° of travel can be obtained by lining up the edge of the follow-up lever arm with the center of the limit marks (refer to fig 1 & 2 for location of these dimples). Check to see that the rudder angle indication is equal when the rudder is moved from full port to starboard. Recheck the mounting geometry as shown in Fig. 2 if port and starboard angles are different.

For final adjustment of the follow-up, steer the vessel on a fixed heading at normal speed. If the rudder angle indicator does not exactly indicate center, adjust the brass rod by loosening the setscrew on the brass block and sliding the connecting rod in or out until the indicator needle centers.

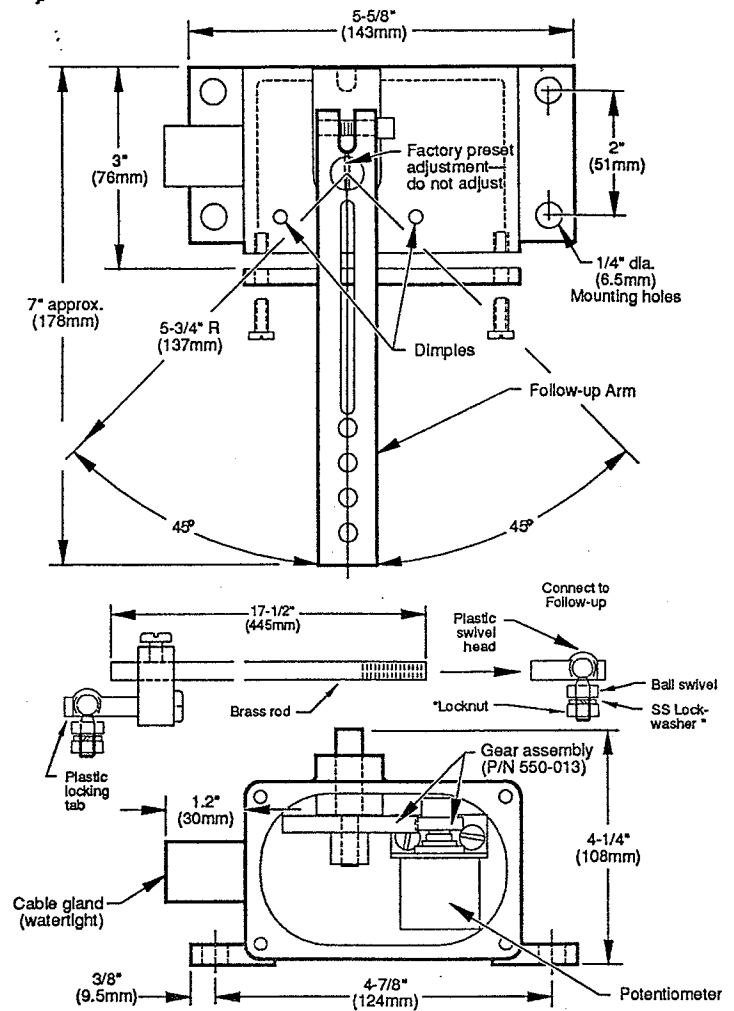


Fig. 1 - Follow-up Dimensions

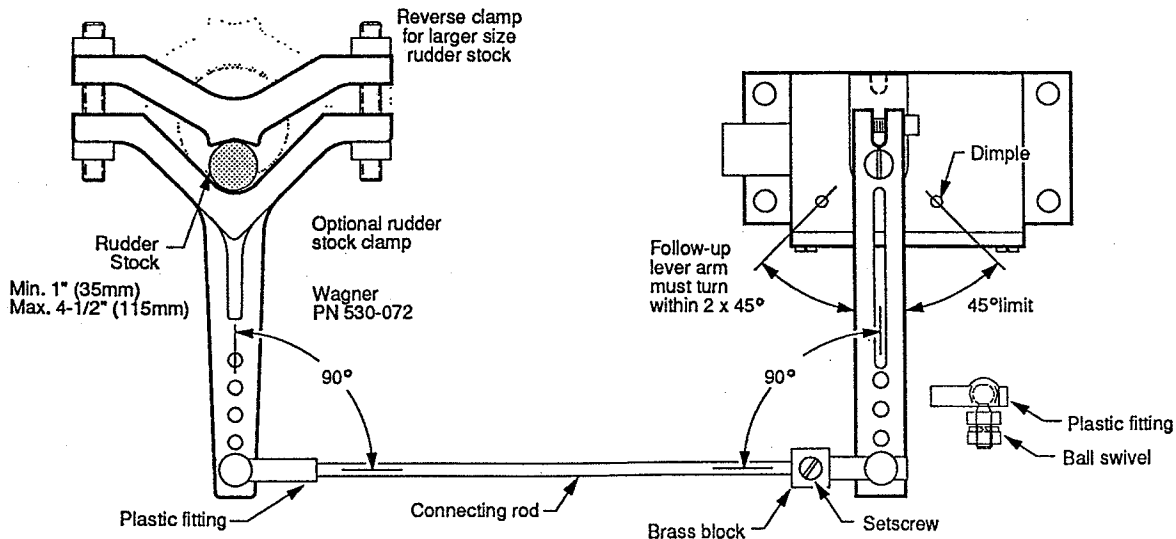


Fig. 2 - Follow-up Mounting Geometry

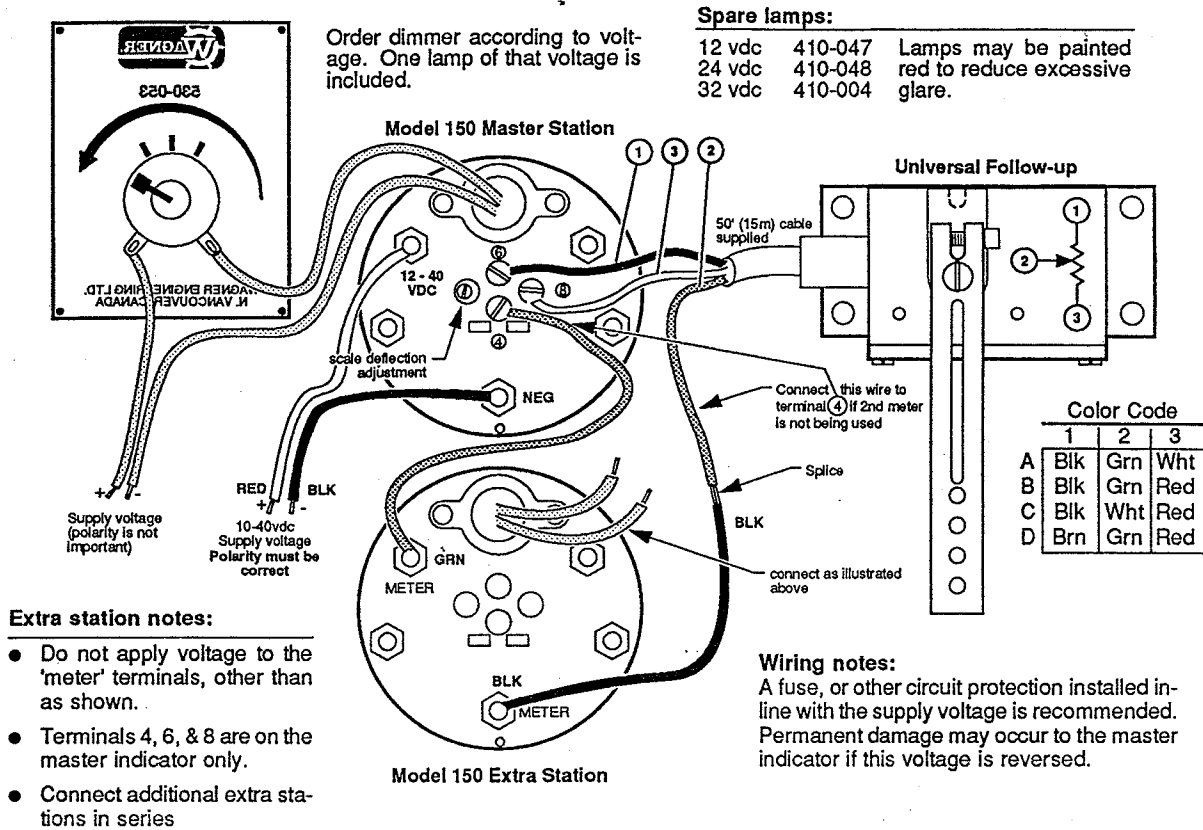


Fig. 3 - Wiring the model 150 rudder angle indicator system

Trouble Shooting

Symptom	Possible Cause	Remedy
The Master Indicator moves in the wrong direction when the rudder is turned.	Incorrect wiring at the master indicator.	Reverse wire at Master Indicator terminals 6 and 8.
Extra station indicator(s) moves in the wrong direction when the rudder is turned.	Incorrect wiring at the extra indicator.	Reverse 'METER' connections on extra station indicator(s).
System will not operate.	Power supply wired backwards.	Reverse polarity.
	No power to meter displays.	Check supply fuses and wiring.
	Master indicator damaged by reverse connection	Replace .
The port and starboard hard over positions are not equal on the indicator(s).	Geometry of the follow-up linkage not according to instructions.	Refer to Fig. 2 and correct.
Too little or too much movement of indicator(s).	Scale deflection adjustment required.	

150 Series Rudder Angle Indicator System

Installation Information

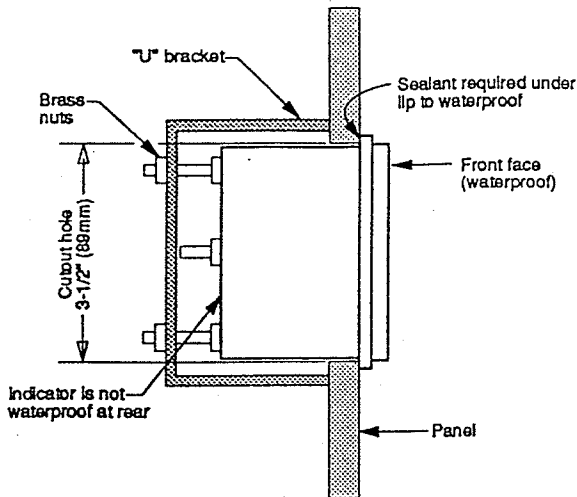


Fig. 4 - Basic indicator

Hard-over adjustment

Refer to Fig. 3 for location of the hard-over adjustment screw.

The hard-over position of the rudder should match the indication of the rudder angle indicator. If it does not, turn the scale deflection adjusting screw (fig 3) until the indicated angle matches the actual hard-over position of the rudder.

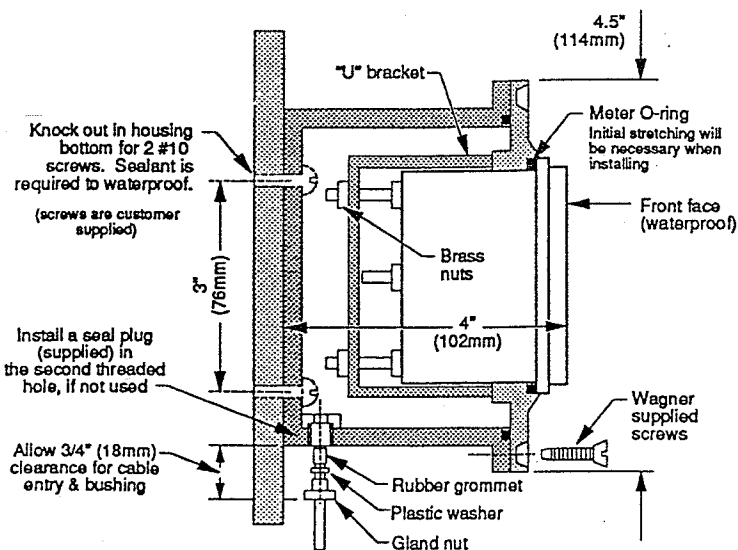
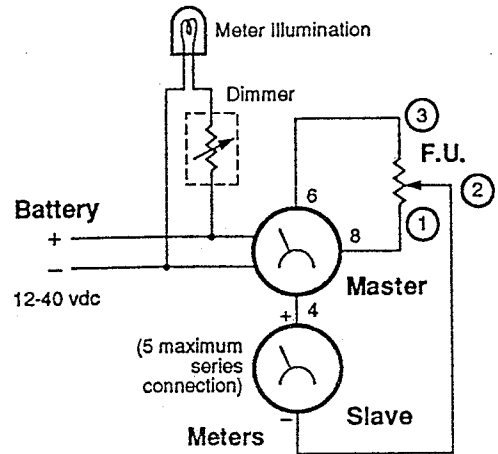


Fig. 5 - Indicator in waterproof housing

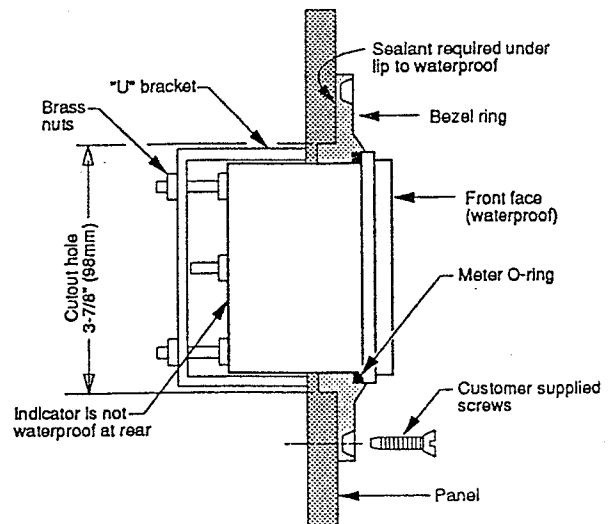


Fig. 6 - Indicator with bezel