

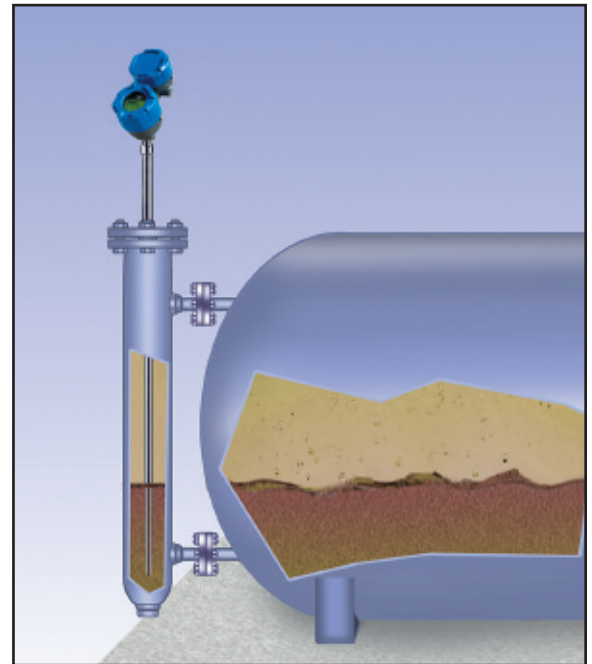
DESCRIPTION

Magnetrol's Torque Tube Chamber Flange options facilitate retrofitting Eclipse® Guided Wave Radar transmitters to torque tube chambers with Side/Side or Side/Bottom process connections. Eclipse features no moving parts to wear and lose tolerance over time. Unlike large, bulky and expensive torque tube transmitters, Eclipse is small, easy to handle/configure, and has an exceptionally low cost of ownership.

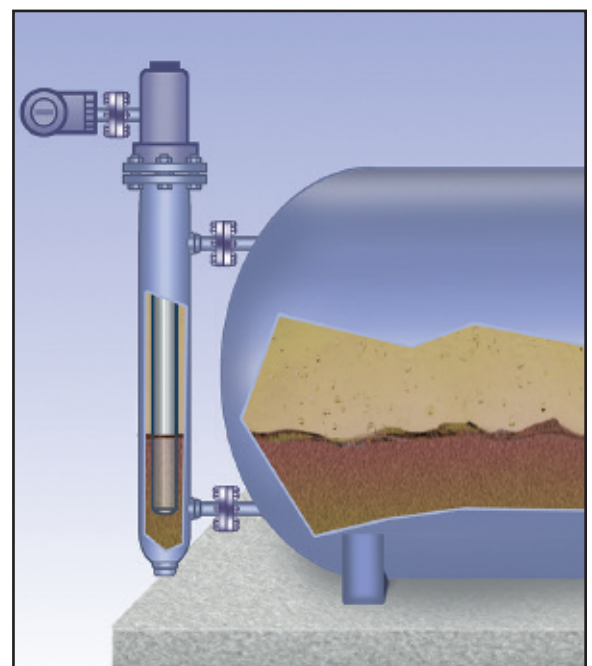
After removal of the torque tube topworks assembly (transmitter/controller), Eclipse Guided Wave Radar may then be installed in the existing chamber through the use of the non-ANSI proprietary flange. Several models are available to suit the bolt circle, pattern, diameter, pressure class and material types of several major torque tube displacer transmitter manufacturers. Whether in steam drums, boiler feedwater heaters, preheaters, crackers, reactors, or other process applications, Eclipse has proven it can reliably and continuously measure and transmit accurate level information. See Sales Bulletin 57-106 for complete information.

FEATURES & BENEFITS

- Eclipse has no moving parts; nothing to wear or lose tolerance.
- Eclipse is not affected by changes in specific gravity or vapor density.
- No calibration necessary; can be configured in minutes on instrument bench.
- Eclipse caged single rod probes are designed for use in viscous, dirty applications.
- Proprietary flanges available.
- Eclipse Model 706 is SIL 2/3 certified.
- The flexibility of Eclipse allows for either the retrofit of existing chambers with “side-side” or “side-bottom” connection or the replacement of existing chambers in “top in-bottom/side out” flow through applications.
- WIB/Evaluation International (SIREP/EXERA) performance report available.



Eclipse Guided Wave Radar Transmitter



**Typical Torque Tube Transmitter
(with Side/Side process connections)**

REPLACEMENT OF DISPLACER TRANSMITTERS

ECLIPSE has proven to be the ideal replacement for existing torque tube transmitters. In numerous applications worldwide, customers have found the performance of ECLIPSE Guided Wave Radar transmitters to be superior to that of antiquated torque tube transmitters.

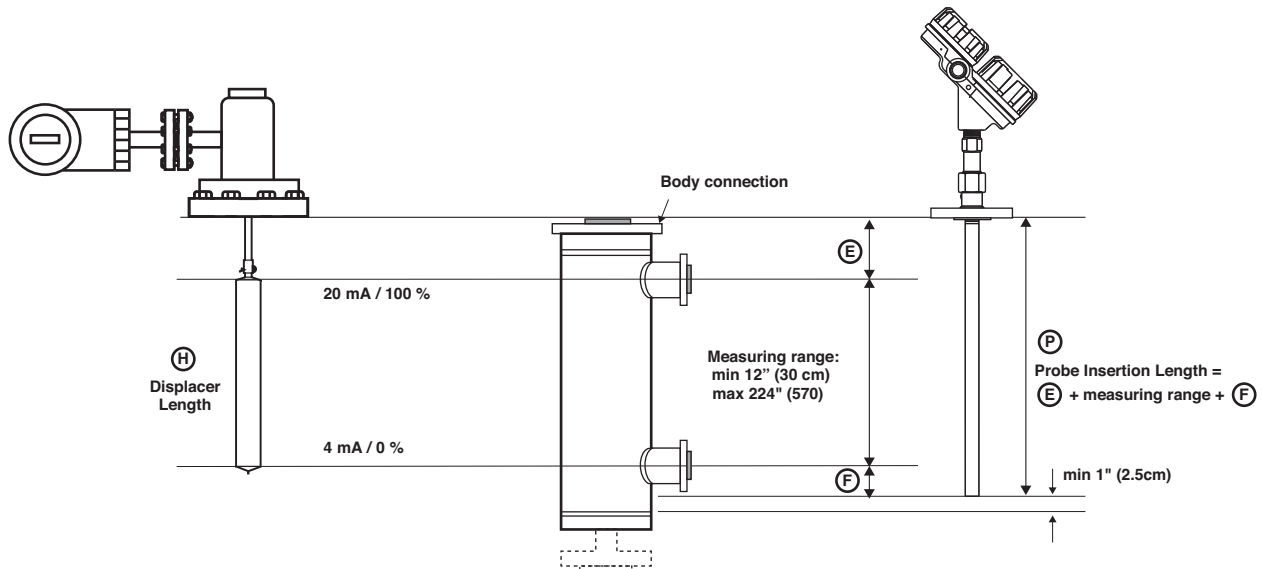
There are several benefits to using the ECLIPSE Model 706 as a replacement for torque tube transmitters:

- **Cost:**
The cost of a new Model 706 transmitter cost is comparable to rebuilding an aging torque tube.
- **Installation:**
No field calibration is necessary. The Model 706 transmitter can be configured in minutes with no level movement. (Complete factory pre-configuration is available, which can further decrease the installation effort.)
- **Performance:**
The ECLIPSE Model 706 is unaffected by changes in specific gravity and has no moving parts that can wear and lose tolerance.

- **Ease of replacement:**
Proprietary and standard ASME flanges are offered on all ECLIPSE Model 706 probes so existing chamber/cages can be used.

In order to match the proper ECLIPSE transmitter with the proper external cage, consider the following:

- **Type of application:**
Use the proper GWR probe for the application. Refer to bulletin 57-106.
- **Overfill proof:**
For optimum performance, use an overfill-safe probe in all chamber applications.
Note: "Overfill" occurs when the level rises above the maximum range of operation. *Some GWR probes may provide erroneous output in this zone unless an optimal, impedance-matched design is used.*
- **Minimum Cage Size:**
 - Coaxial or Caged Coaxial probes: 2" minimum
 - Enlarged Coaxial probes: 3" minimum



Recommended probe length for replacing displacer transmitters

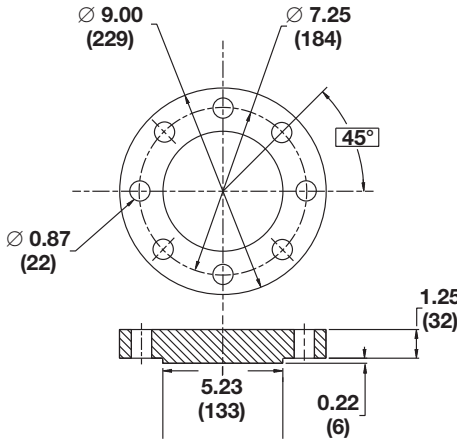
The table below helps to define the GWR probe length for the most common displacer transmitters. Refer to the proprietary flange selection guide.

Manufacturer	Type	Process Connection	Displacer Length inches (mm)	Probe Length ① inches (mm)
MAGNETROL	EZ & PN Modulevel®	ASME/EN flange	≥ 14" (356)	Displacer + 7 (178)
Masoneilan®	Series 1200	Proprietary flange	≥ 14" (356)	Displacer + 8 (203)
		ASME/EN flange	≥ 16" (406)	Displacer + 8 (203)
Fisher® series 2300 & 2500	249B, 259B, 249C cages	Proprietary flange	≥ 14" (356)	Displacer + 10 (254)
	other cages	ASME flange	≥ 14" (356)	consult factory
Eckardt®	Series 134, 144	ASME/EN flange	≥ 14" (356)	consult factory
Tokyo Keiso®	FST-3000	ASME/EN flange	H = 11.8" (300)	Displacer + 9 (229)
		ASME/EN flange	≥ H = 19.7" (500)	Displacer + 9 (229)

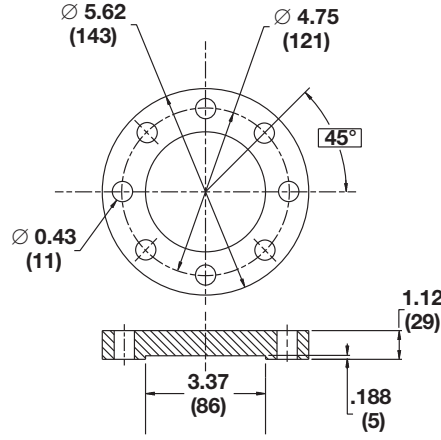
① Round down resulting calculation to the nearest inch.

PROPRIETARY FLANGES

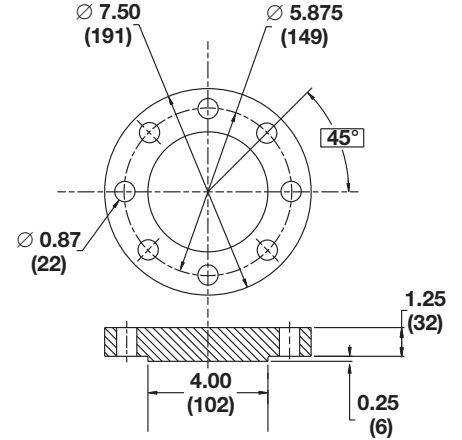
INCHES (m m)



Fisher 249B/259B (600 lb.), carbon steel



Fisher 249C (600 lb.), 316 stainless steel



Masoneilan (600 lb.), carbon steel

MAGNETROL CHAMBERS

A brief description of the MAGNETROL chamber offering follows. For more details, refer to bulletin 41-140.

MAGNETROL has a long tradition in offering cost-effective chambers. The MAGNETROL external chamber is a self-contained cage designed for use with our top mounting level transmitters or switches. Quality construction and a wide selection of configurations make this cage an ideal means of utilizing the power of Guided Wave Radar without mounting directly into the process vessel.



MAGNETROL chambers are available with a wide variety of options, and can be manufactured to comply with various regulations such as:

- Commercial Design
- ASME B31.1 Design Code
- ASME B31.3 Design Code
- NACE Design Code
- PED

Some Model 706 probes can be installed into chambers as small as 2". When a new chamber is required, it can be

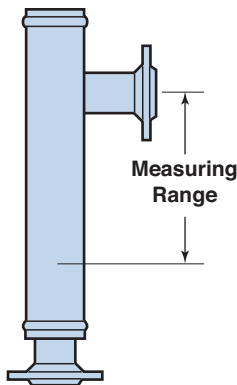
ordered together with a factory pre-configured Model 706 for a true "plug and play" installation.

For example:

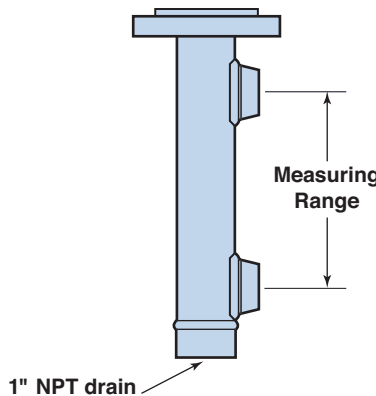
A standard Model 706-511A-310 explosion-proof transmitter with a Model 7AG-4300-A10-00-021 Caged probe can be used in a 2" chamber. An example of a typical chamber model number is:

F21-4A2D-014

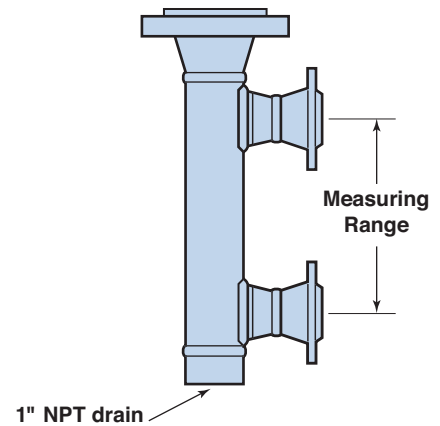
Refer to bulletin 41-140 for details on chamber model numbers and additional options.



Sealed Chamber



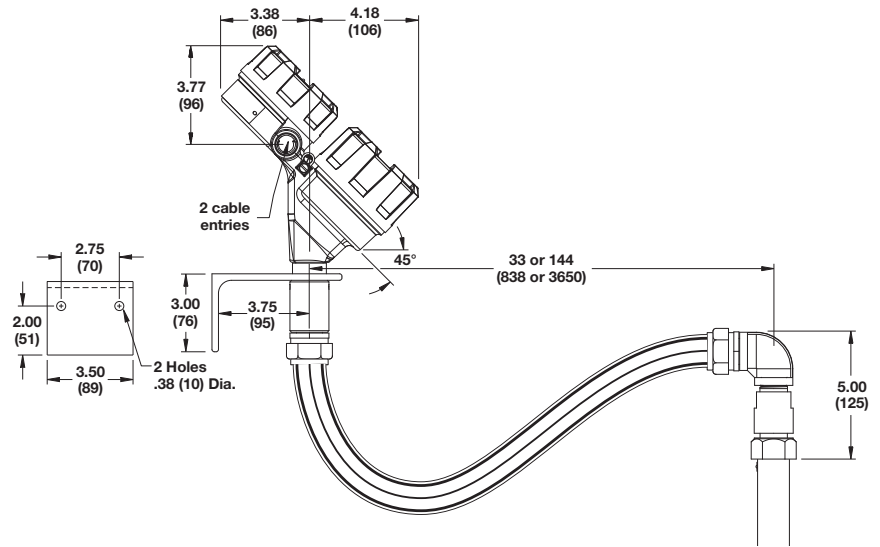
Slip-on head flange



Weld neck head flange

REMOTE ASSEMBLY

The Remote assembly is meant to be a simple and cost-effective way to remove the transmitter electronics and locate it a short distance away from the probe. The assembly allows a remote distance of up to 12 feet (3.6m) which offers a greater degree of flexibility during installation. It is supplied with a remote bracket and flexible armor as a complete assembly.



ECLIPSE PROBE

1 | TECHNOLOGY

2 | MEASUREMENT SYSTEM

3 | CONFIGURATION/STYLE (RIGID)

4 5 | PROCESS CONNECTION – SIZE/TYPE (consult factory for other process connections)

Torque Tube Mating Flanges

T T	600# Fisher (249B/259B) in carbon steel – as per dimensions on page 3
T U	600# Fisher (249C) in stainless steel – as per dimensions on page 3
U T	600# Masoneilan flange in carbon steel – as per dimensions on page 3
U U	600# Masoneilan flange in stainless steel – as per dimensions on page 3

6 | CONSTRUCTION CODES

7 | FLANGE OPTIONS

8 | MATERIAL OF CONSTRUCTION - MFG/NUT/ROD/INSULATION

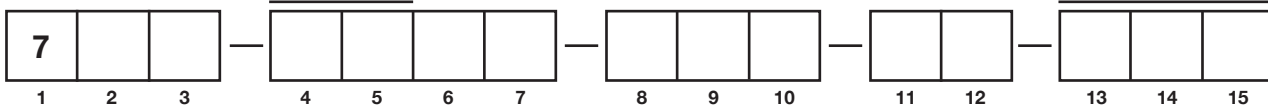
9 | SPACER MATERIAL

10 | O-RING MATERIALS/SEAL OPTIONS

11 | PROBE SIZE/ELEMENT TYPE/ FLUSHING CONNECTION

12 | SPECIAL OPTIONS

13 14 15 | INSERTION LENGTH



705 Enterprise Street • Aurora, Illinois 60504-8149 • 630.969.4000
info@magnetrol.com • magnetrol.com

Copyright © 2020 Magnetrol International, Incorporated.

Performance specifications are effective with date of issue and are subject to change without notice.

BULLETIN: 57-150.4

EFFECTIVE: April 2019

SUPERSEDES: November 2006