

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Designed to provide protection for on-site instrumentation against the effects of climate, dust and dirt, accidental damage, corrosion and tampering, using an integrated enclosure arrangement

General Application

Enclosure Systems are used to protect process instrument manifolds and transmitters, solenoid valves, general field instrumentation and remote chemical sealed instruments from the effects of cold temperature, water deluge, physical damage, environmental conditions and tampering.



TECHNICAL DATA

Materials

Glass reinforced polyester (GRP)

Sizes(W, H, D):

5L:

13" x 16.9" x 15.8"
(330 x 428 x 400 mm)

15L:

19.7" x 23.6" x 19.5"
(500 x 600 x 495 mm)

24L:

31.5" x 23.6" x 19.5"
(800 x 600 x 495 mm)

Manifolds:

2, 3, 5 valve

Temperature (min/max):

-94°F to 176°F
(-70°C to 80°C)

Classification:

IP66

Features

- Body and lid in tough glass-filled sheet molded polyester for maximum resistance to extreme temperatures and environmental conditions.
- Optional viewing window allows instrument inspection without opening the enclosure.
- Sealing strip ensures the enclosure is completely weatherproof to IP66.
- Optional 20 mm molded isocyanurate foam insulation provides instrument protection down to -94°F (-70°C).
- Enclosure manifolds designed to mount in the base or back of the enclosure, eliminating the need for internal mounting brackets or pipe stands.
- Process and vent connections made on the outside directly into the manifold, remove the need for internal pipework, compression fittings and bulkheads.
- 2" NB (50 mm) mounting collar with fixing bolt enables easy mounting directly onto a pipe stand.
- Steam or electric heating systems can be custom designed. Precise enclosure temperature can be maintained with a wide range of heating accessories.
- 316 stainless steel fasteners and fittings prevent corrosion in harsh environments.
- Anti static enclosures available to suit specific applications.
- Choice of low or high back-mounted manifold mounting options for instruments above (for liquid applications) or below the manifold (for gas applications)

OVERVIEW

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

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TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Product Overview

TESCOM™ Anderson Greenwood Instrumentation instrument protection systems provide a strong weatherproof barrier for every type of instrument installation, both on and offshore, and have been installed in some of the harshest industrial climates in the world. Instrument enclosures prevent exposure to harmful UV rays and can be supplied for temperatures from -70°F to +176°F (-57°C to +80°C). With a range of three standard sizes of enclosures and a purpose designed range of integrated manifolds, heaters and accessories, this unique system sets the standard in instrument protection.

Enclosures

Manufactured from tough fire retardant GRP, weatherproof to IP66, anti-static and insulated options available.

Manifolds

A complete range of integral base and back-mounted 2, 3, and 5 valve manifolds suitable for liquid and gas services. They allow direct instrument mounting, which eliminates the need for extra bracketing, cuts installation costs and reduces potential leak points.

Markets Served

- Oil and gas offshore platforms
- Oil and gas onshore terminals
- Chemical and petrochemical plants
- Steel plants
- Water treatment
- Power generation
- Food and beverage processing
- Paper mills
- OEMs
- Gas metering skid manufacturers

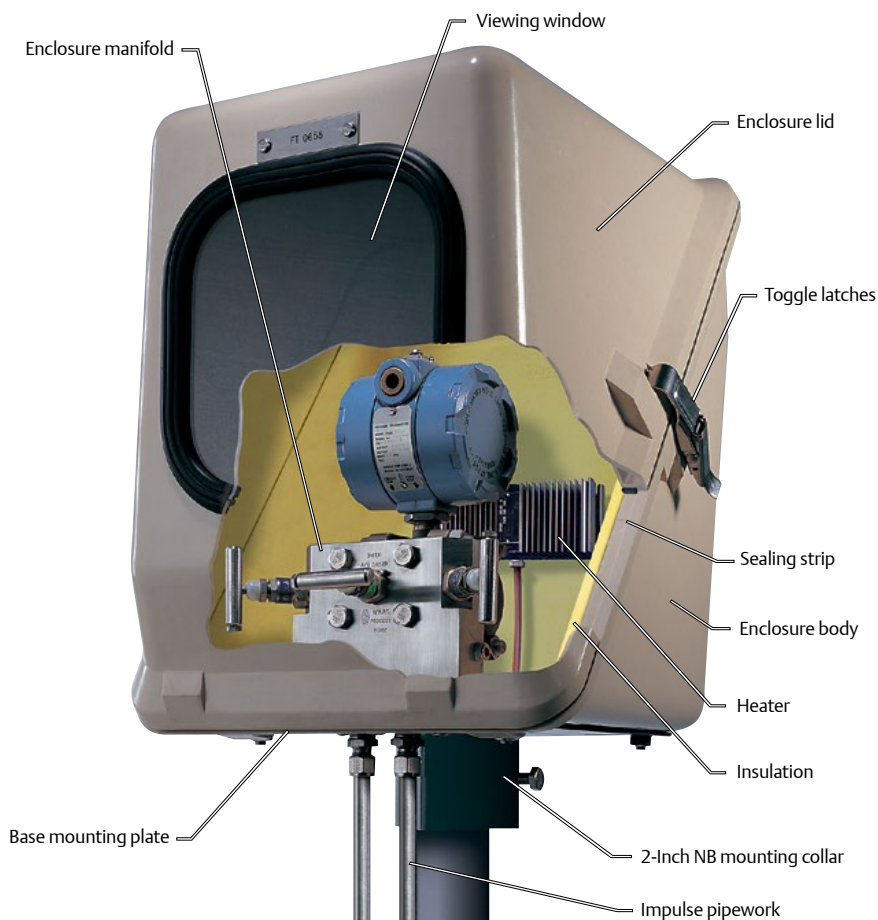
TECHNICAL SPECIFICATION

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

L type enclosure systems are available in a wide range of sizes to protect single or multiple instrument applications. Produced from fire retardant GRP, they feature a neoprene sealing strip and stainless steel toggle latches to keep the enclosure tightly sealed in all environment conditions. 316 stainless steel propstays hold the lid securely in place when open.

With a choice of specifications offered as standard, L type enclosure systems can be fitted with a variety of accessories and options in addition to the range of two, three and five-valve enclosure manifolds.

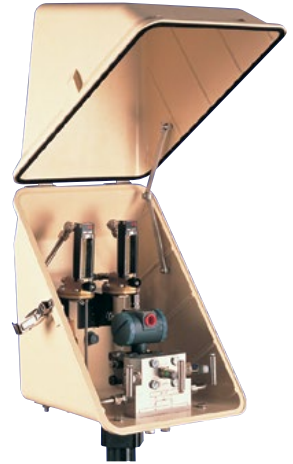
Enclosures are provided as standard in beige and black (anti-static option). Contact factory for any other color requirements.



TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Fire Retardancy

All enclosures are fire retardant to UL94 (for moulding compounds).



Brackets

Systems are supplied as standard with epoxy coated carbon steel base plates and brackets for mounting to 2" NB pipe stand. Stainless steel base plates and brackets are also available.



Anti-static

Enclosure Systems are available in materials suitable for hazardous areas, to protect fully certified equipment from the risk of static build-up. Color is black as standard.



L TYPE

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

5L Enclosure

The 5L enclosure is ideal for protecting single instrument installations, such as static pressure and differential pressure transmitters, pressure switches and indicators, indicating controllers and solenoid valves.

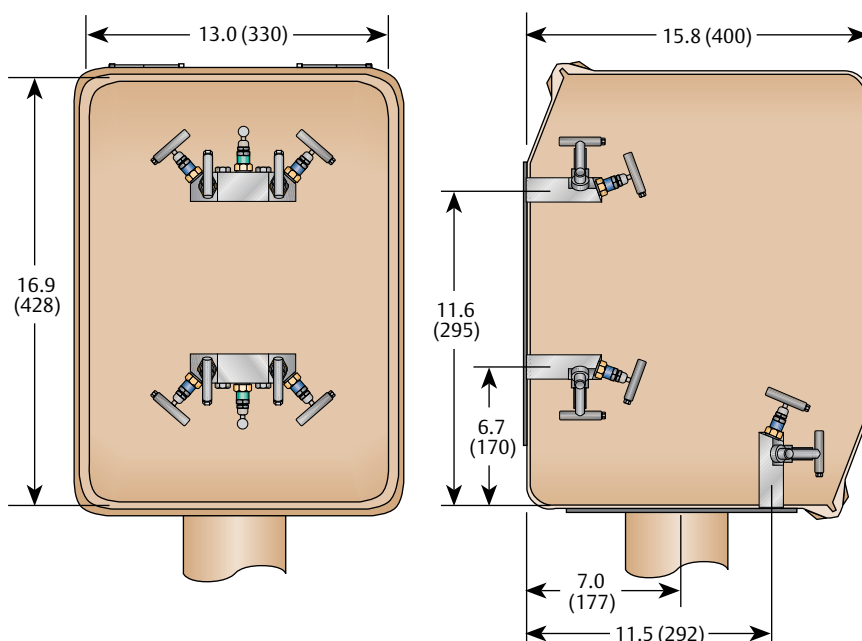
Approximate weight: 26.5 lb (12.0 kg).



5L



Dimensions, inches (mm)



TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

15L Enclosure

The 15L enclosure is particularly suitable for large case transmitters, process recorders and controllers or multiple instrument applications.

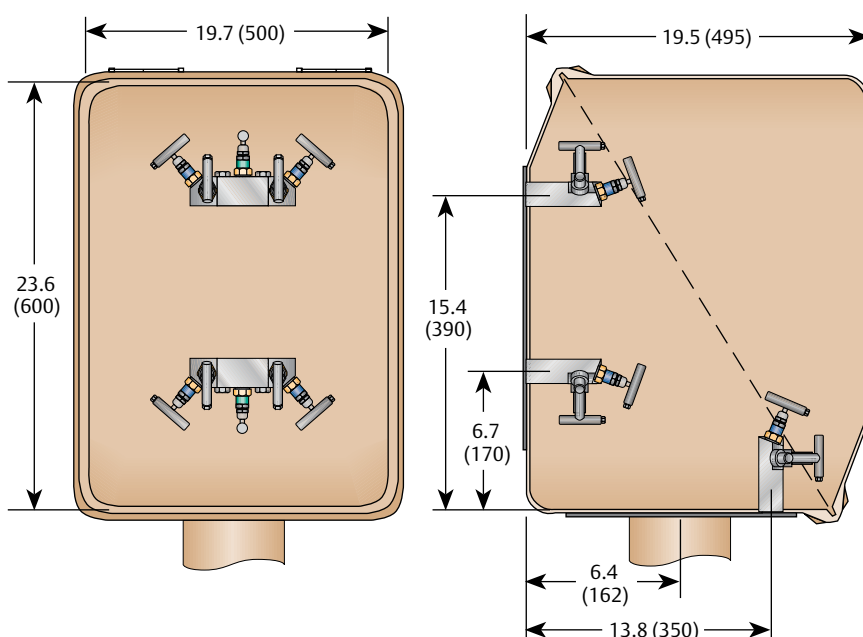
Approximate weight: 44.1 lb (20.0 kg).



15L



Dimensions, inches (mm)



L TYPE

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

24L Enclosure

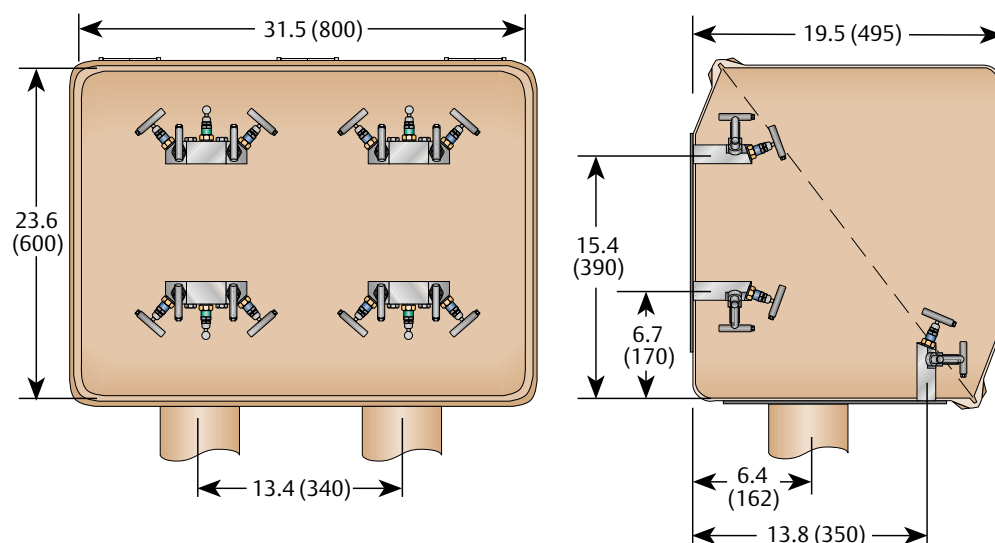
Designed for multi-instrument assemblies the 24L is suitable for multiple transmitters, control systems, and analyzers.

Approximate weight: 72.8 lb (33.0 kg).

24L



Dimensions, inches (mm)



TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

A Series Needle Valve

The A series needle valve is incorporated into enclosure manifolds for isolate, equalize and vent functions at pressures up to 10000 psig (690 barg).

TECHNICAL DATA

Materials

316 SS

Seat

Metal

Orifice size:

0.2" (5 mm)

Pressure (max):

6000 psig (414 barg) standard

10000 psig (690 barg) optional

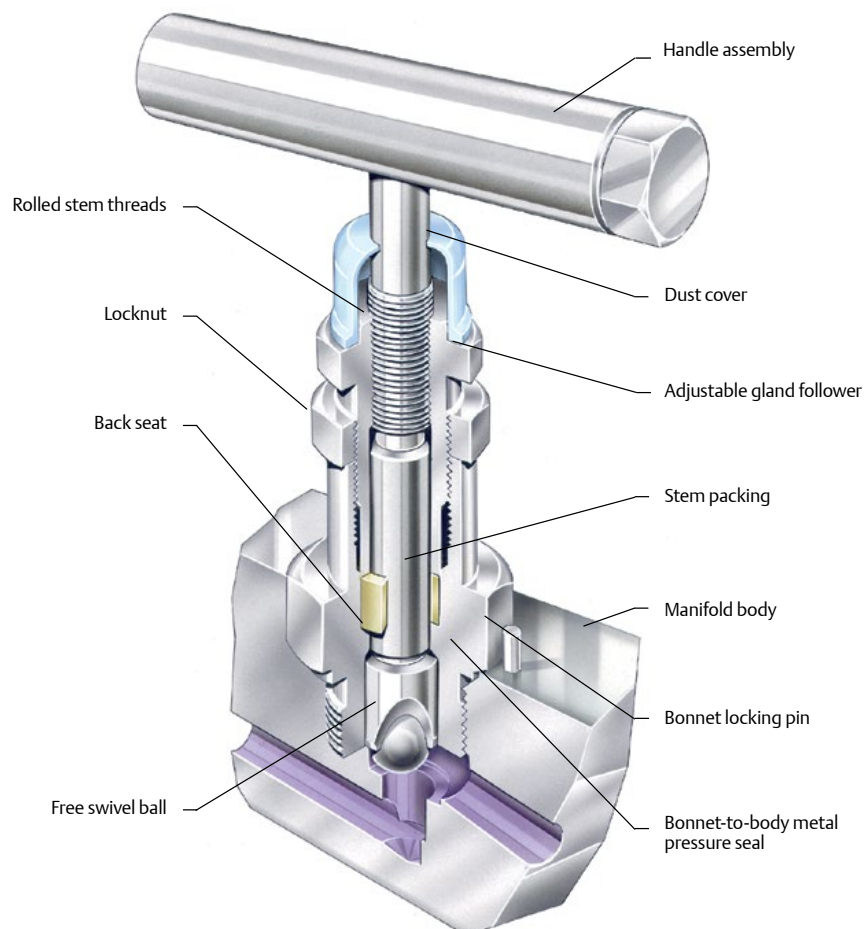
Temperature (min/max):

-71°F to 1000°F

(-57°C to 537°C)

Features

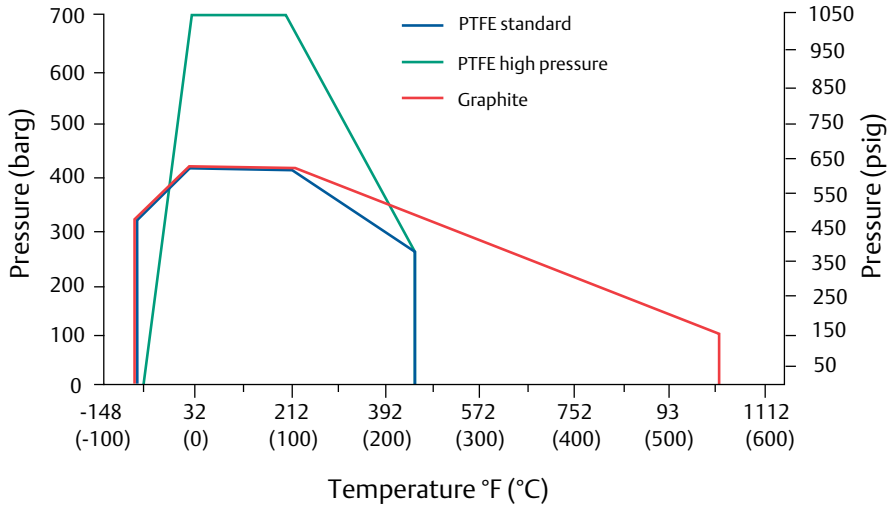
- Rolled stem threads for low operating torque and long cycle life, located above the spindle packing and completely isolated from the process.
- Graphite or PTFE stem packing for bubble tight sealing.
- Dust cap protects spindle threads from contamination and is color coded to identify packing material.
- Free swivel ball end stem for repetitive bubble-tight shut-off.
- Backseat design provides secondary stem sealing and prevents stem blowout.
- Adjustable gland follower and locknut allow easy access to adjust the packing gland.
- 0.2" (5 mm) bore



EM MANIFOLDS

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Pressure and Temperature Ratings



Standard Materials

Valve	Body	Bonnet	Stem	Ball seat	Non-wetted parts
316 SS	316 SS	316 SS	316 SS	316 SS	Austenitic SS
SG ¹	316 SS	316 SS	Alloy 400	Alloy K500	Austenitic SS

Special Materials

For severe service, manifolds are available in the following materials:

Duplex UNS S31803

Hastelloy® C276

Incoloy® 625

6MO UNS S31254

Please consult factory for availability.

Material Traceability

Standard material traceability to EN10204- 3.1 manifold body only.

NOTES

1. SG (sour gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103-2009.
2. Incoloy® and Monel® are registered trademarks of Special Metals Corporation.
3. Hastelloy® is a registered trademark of Haynes International.

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Connections

Process

EM style manifolds are threaded ½” NPT female to ANSI/ASME B1.20.1.

EMF style manifolds are flanged and complete with 7/16” UNF tapped holes to accept a bolted kidney flange.

Instrument

Flanged for direct mounting to pressure and differential pressure transmitters.

Valve Bonnet Identification

Dust cap coding

The valve bonnet dust caps are color coded to identify the gland packing/stem:

White: Standard bonnet assembly PTFE packing

Green: Sour gas service PTFE packing

Blue: High pressure service PTFE packing

Function ring label

Each valve bonnet is identified with a colored stainless steel ring label:

Blue: Isolate

Green: Equalize

Red: Vent

Manifold and Transmitter Bolting^[1]

7/16” UNF high tensile steel mounting bolts are supplied as standard. Stainless steel bolts are available on request.

Valve Packings and Seal Rings

The instrument connection is flanged for direct mounted instruments. PTFE seal rings are supplied with the standard PTFE packed bonnet.

Maximum pressure - 6000 psig (413 barg)

Maximum temperature - 500°F (260 °C)

Graphite seal rings are supplied with graphite gland packings for high temperature service.

Maximum pressure - 6000 psig (413 barg)

Maximum temperature - 1000°F (537°C)

NOTES

1. When mounting Rosemount® 3051 series transmitters with Coplanar flange, longer bolts are required. Please see ordering code for details.



All EM manifold bonnets are identified with colored dust caps and ring labels

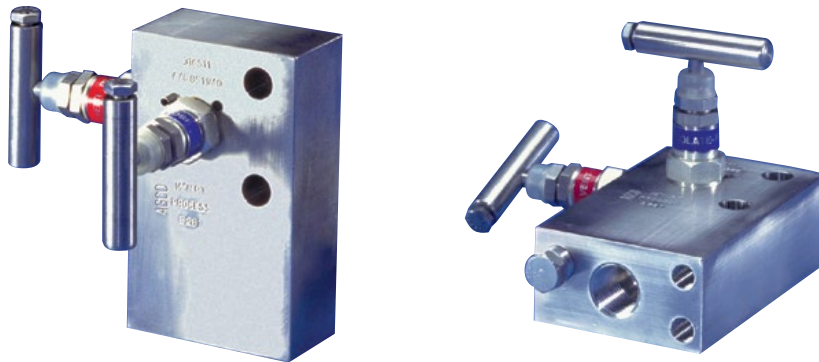
EM2/EM2T MANIFOLDS

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

EM2 / EM2T Manifold

EM2 two-valve (block and bleed) manifold with ½" NPT female process connection and flanged instrument connection for direct mounting. The EM2T also has ½" NPT female process connection with ½" NPT female instrument connection for threaded pressure / gauge devices. The manifold allows for isolating, calibrating and venting functions in a single compact unit and is suitable for static and gauge pressure applications.

- Threaded ¼" NPT female vent port, plugged as standard.
- Process and vent connections located in manifold base for easy installation.
- Liquid and vapor service.
- Optional integral steam heating ports.



EM2 Manifold

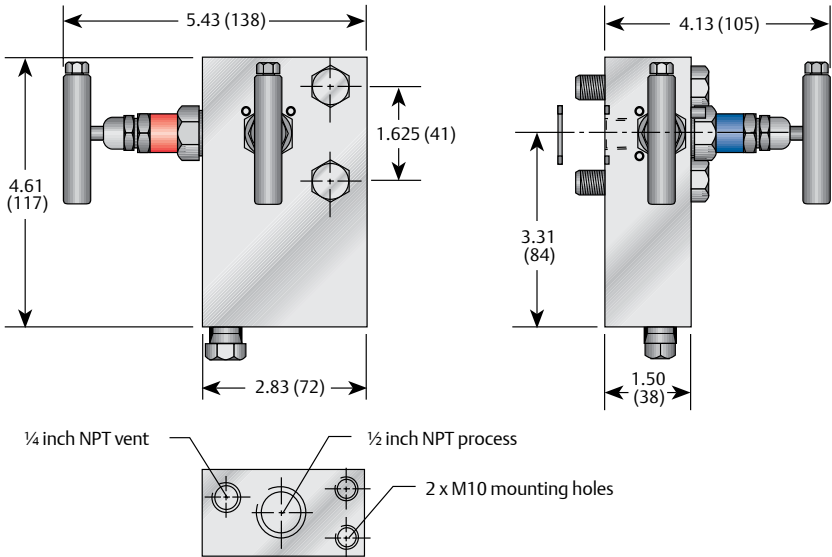
NOTE

Approximate weight: 5.5 lb (2.5 kg).

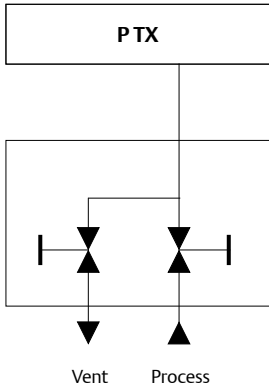
TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Dimensions

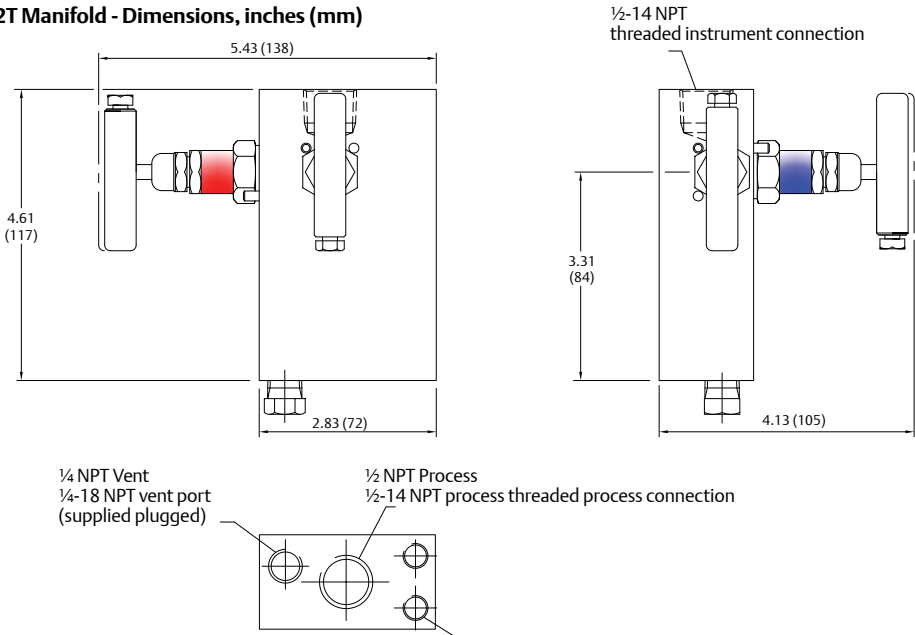
EM2 Manifold - Dimensions, inches (mm)



Valve schematic



EM2T Manifold - Dimensions, inches (mm)



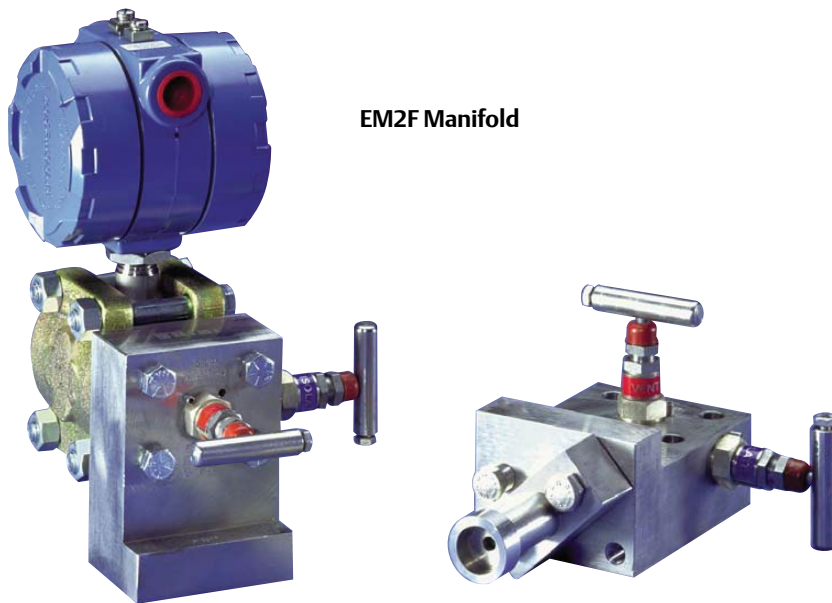
EM2F MANIFOLDS

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EM2F Manifold

A direct mounting two-valve block and bleed manifold with flanged process and instrument connections. The EM2F allows process connections to be made with a process/kidney flange which is bolted onto the manifold and is suitable for static and gauge pressure applications which allow isolating, calibrating and venting functions in a single compact unit. The unit is also supplied as standard with ¼" NPT female process tappings allowing the additional use of tube fittings for remote mounted process lines and instruments.

- Threaded ¼" NPT female vent port, plugged as standard.
- Process and vent connections located in manifold base for easy installation.
- Liquid and vapor service.
- Optional integral steam heating ports.
- Integral process/kidney flange breakaway joint for easy maintenance.
- Reduced leak paths.
- Process/kidney flange connection options include:
 - Female threaded connections.
 - Socket weld connections.
 - Butt weld connections.



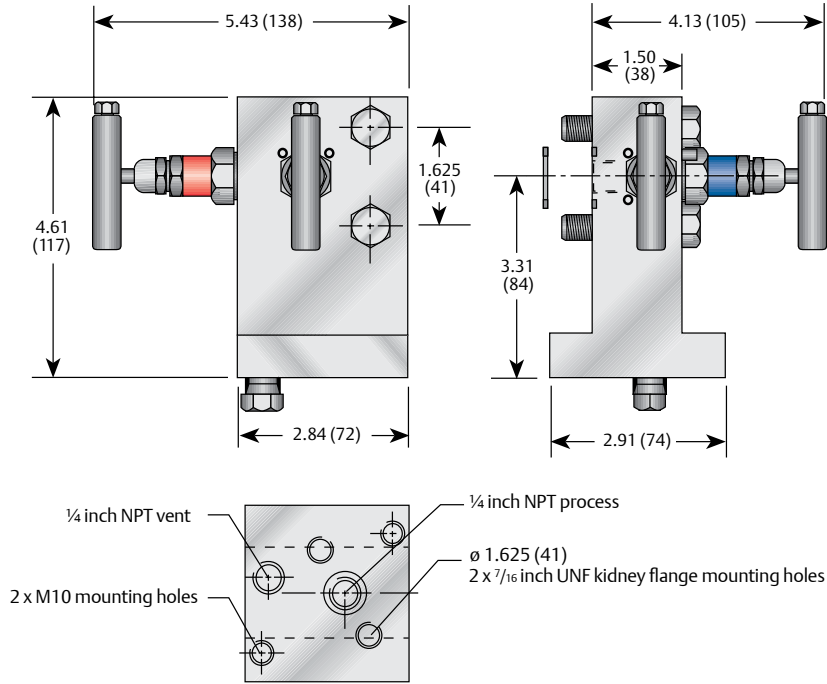
EM2F Manifold

NOTE

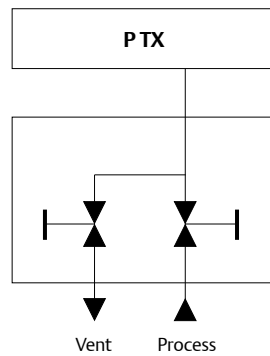
1. Approximate weight: 6.6 lb (3.0 kg).

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Dimensions, inches (mm)



Valve schematic



EM3 MANIFOLDS

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EM3 Manifold

A direct mounting double isolate and equalize three-valve manifold with ½” NPT female process connections and flanged instrument connections suitable for direct mounting to a differential pressure transmitter with standard 2 1/8” (54 mm) centers. The manifold is suitable for differential pressure applications which allow isolating and equalizing functions in a single compact unit.

- Process connections located in manifold base for easy installation.
- Liquid and vapor service.
- Optional integral steam heating ports.



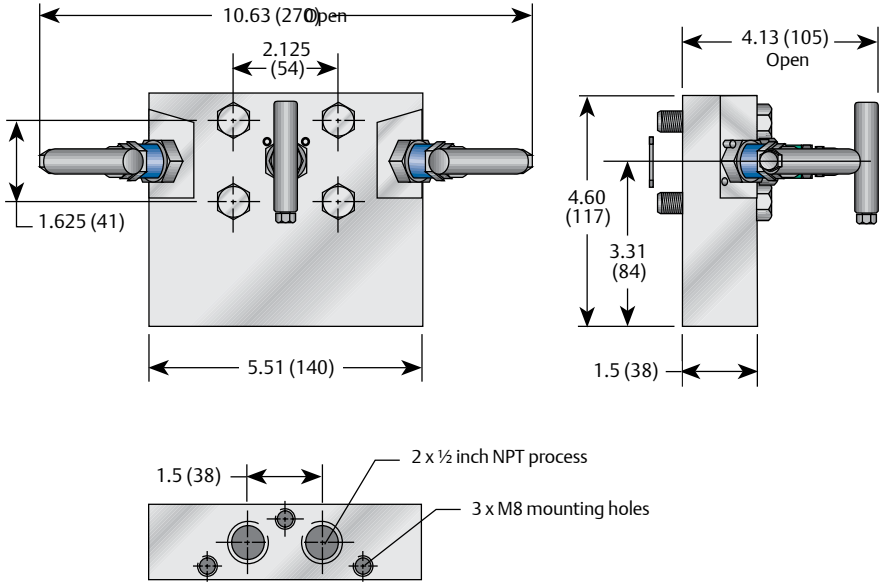
EM3 Manifold

NOTE

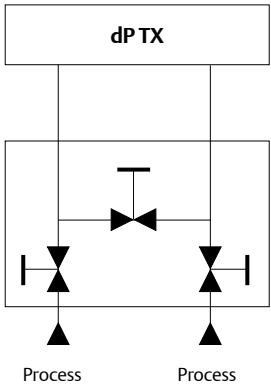
1. Approximate weight: 9.9 lb (4.5 kg).

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Dimensions, inches (mm)



Valve schematic



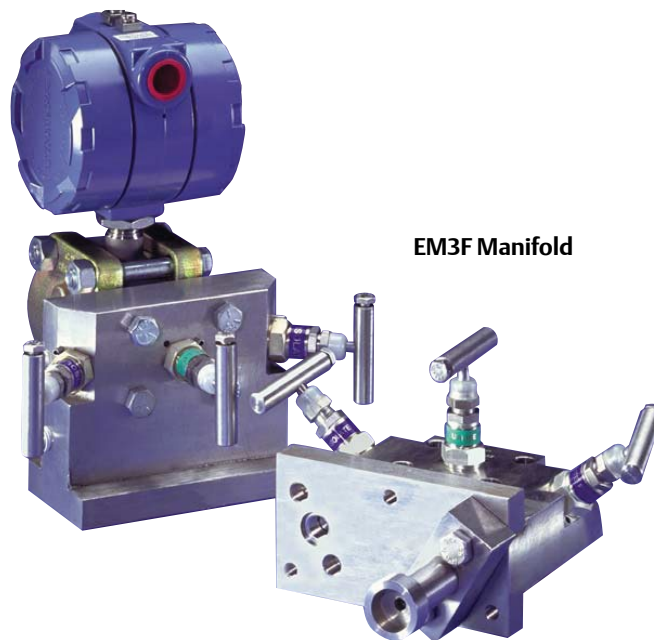
EM3F MANIFOLDS

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

EM3F Manifold

A direct mounting three-valve double isolate and equalize manifold with flanged process and instrument connections to suit standard 2¹/₈" (54 mm) centers. The EM3F allows process connections to be made with process/kidney flanges which are bolted on to the manifold and is suitable for differential pressure applications which allow isolating and equalizing functions in a single compact unit. The unit is also supplied as standard with ¼" NPT female process tapings, allowing the additional use of tube fittings for remote mounted process lines and instruments.

- Process connections located in manifold base for easy installation.
- Liquid and vapor service.
- Optional integral steam heating port.
- Integral process/kidney flange breakaway joint for easy maintenance.
- Reduced leak paths.
- Process/kidney flange connection options include:
 - Female threaded connections.
 - Socket weld connections.
 - Butt weld connections.



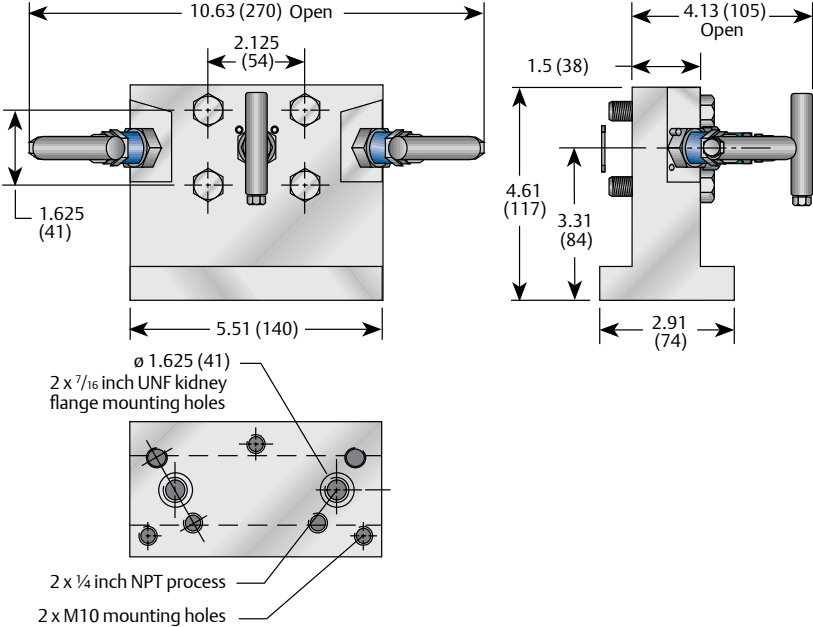
EM3F Manifold

NOTE

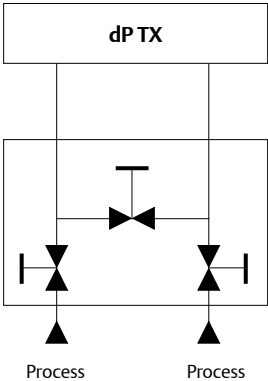
1. Approximate weight: 11.0 lb (5.0 kg).

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Dimensions, inches (mm)



Valve schematic



EM5 MANIFOLDS

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

EM5 Manifold

A direct mounting five-valve double isolate, equalize and double vent manifold with ½" NPT female process connections and flanged instrument connections suitable for direct mounting to a differential pressure transmitter with standard 2^{1/8}" (54 mm) centers. The manifold is suitable for differential pressure applications which allow isolating, equalizing and venting functions in a single compact unit.

- Threaded ¼" NPT female vent ports, plugged as standard.
- Process and vent connections located in manifold base for easy installation.
- Liquid and vapor service.
- Optional integral steam heating ports.



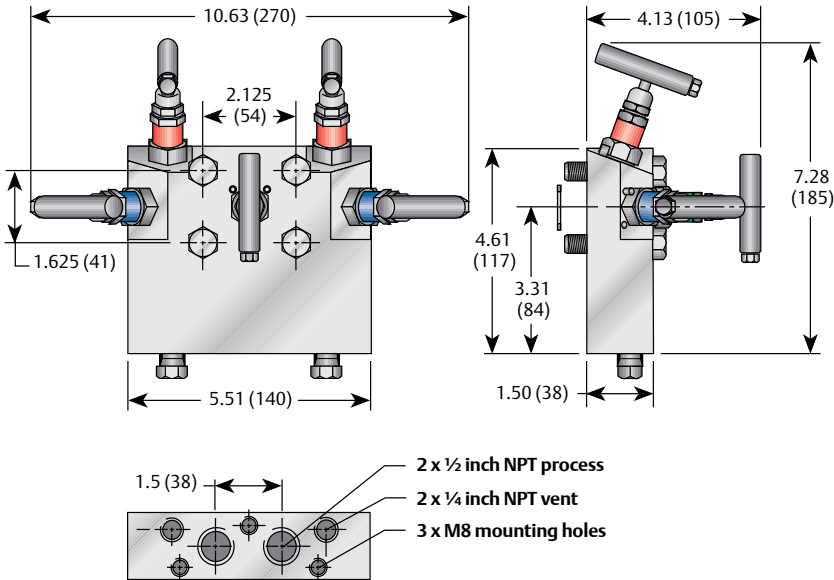
EM5 Manifold

NOTE

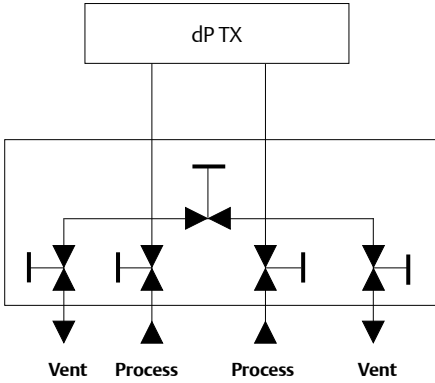
1. Approximate weight: 11.0 lb (5.0 kg)

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Dimensions, inches (mm)



Valve schematic



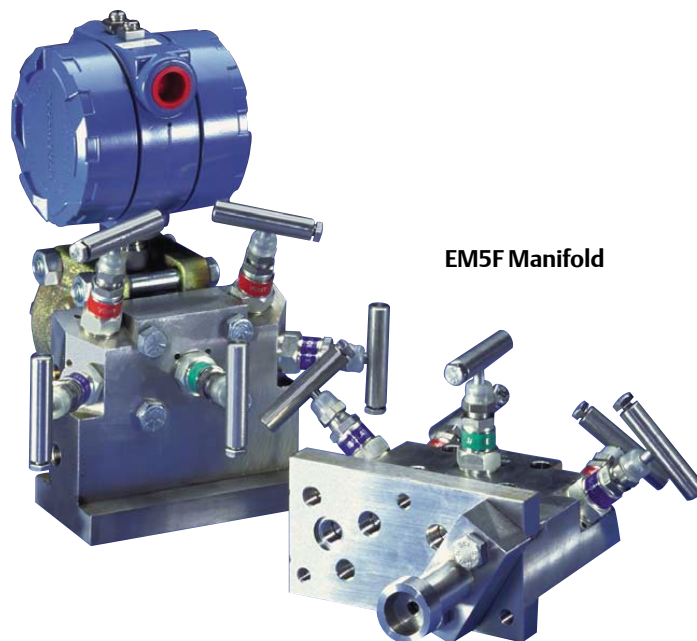
EM5F MANIFOLDS

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

EM5F Manifold

A direct mounting five-valve double isolate, equalize and double vent manifold with flanged process and instrumentation connections to suit standard 2^{1/8}" (54 mm) centers. The EM5F allows process connections to be made with process/kidney flanges which are bolted onto the manifold and is suitable for differential pressure applications which allow isolating, equalizing and venting facilities in a single compact unit. The unit is also supplied as standard with 1/4" NPT female process tapplings, allowing the additional use of tube fittings for remote mounted process lines and instruments.

- Threaded 1/4" NPT female vent ports, plugged as standard.
- Process and vent connections located in manifold base for easy installation.
- Liquid and vapor service.
- Optional integral steam heating ports.
- Integral process/kidney flange breakaway joint for easy maintenance.
- Reduced leak paths.
- Process kidney flange connection options include:
 - Female threaded connections.
 - Socket weld connections.
 - Butt weld connections.

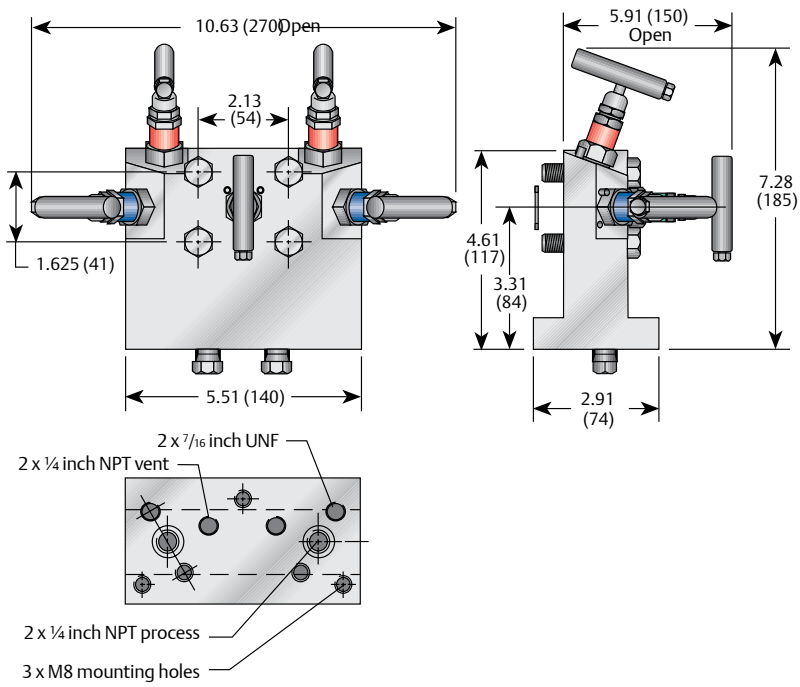


NOTE

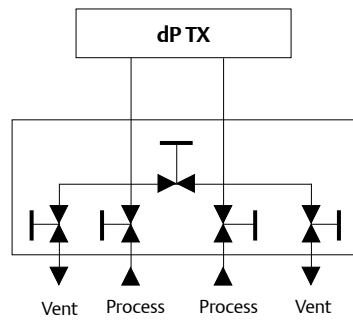
Approximate weight: 12.1 lb (5.5 kg).

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Dimensions, inches (mm)



Valve schematic



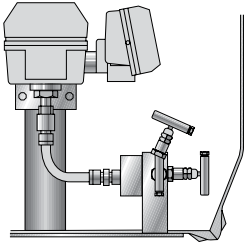
EM MANIFOLDS

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

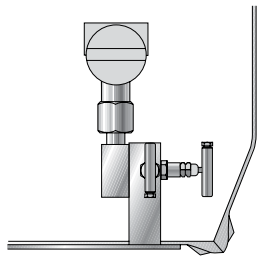
Enclosure Manifold Accessories

Manifold adaptors

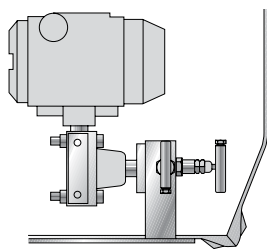
There are three adaptors available to enable instruments with screwed process ports to be connected to EM manifolds:



-MA - Horizontal adaptor - ½" connection.



-MA* -4V - Vertical adaptor - ½" NPT female connection (EM2 only).



-MA* -4M - Horizontal adaptor - ½" NPT male connection.

Materials

Manifold accessories are available in 316 stainless steel. For other materials please consult factory.

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

EM Manifold Options

- AT - Anti-tamper bonnet
Valve bonnets are available with a removable T-bar key to prevent unauthorized operation.
- K - Key for anti-tamper bonnet
- LAT - Lockable anti-tamper bonnet
Valves with lockable anti-tamper bonnets can be supplied for padlocking, providing added security.
- PD - Padlock for LAT
- ISH - Integral steam heating ports (¼" NPT female) - consult factory.
- Optional ball end stems
 - CB Ceramic ball
 - ST Stellite ball
 Specially hardened materials suitable for particularly corrosive or erosive duties.
- R3V - Bolt installation kit for Rosemount® 3051/3095 (with Coplanar® flange)
- HB - High back mounted manifold in enclosure
- LB - Low back mounted manifold in enclosure
- SG - Sour gas service^[1]
Valves are available in materials which comply with the NACE MR0175 standard.
- SSB - ASTM A192 B8M CL2
Stainless steel bolts (316)
- SSC - ASTM A193 B8M
Stainless steel bolts (316)
Maximum pressure 4500 psig (306 barg)



Valve bonnet anti-tamper facility

NOTES

1. SG (sour gas) meets the requirements of NACE MR0175/ISO 15156-3 Corrigendum 2 (for chloride conditions ≤ 50 mg/l [ppm]) and NACE MR0103-2009.
2. Coplanar® is a registered trademark of Emerson.

EM MANIFOLDS

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Manifold Accessories

Process/Kidney Flanges

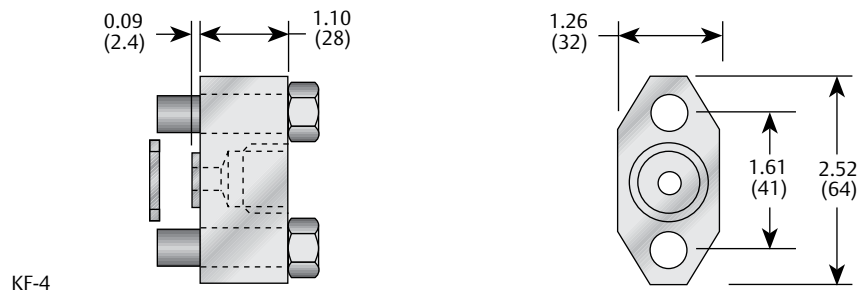
Concentric kidney flanges are available for bolting to the process side of EMF flanged manifolds. Suitable for use in a close couple instrument loop, kidney flanges also provide the ideal solution to welded connection requirements, allowing the process/kidney flange to be welded to the process piping whilst keeping the flexibility to remove the manifold by releasing the bolts. Each kidney flange is supplied with two $\frac{7}{16}$ " UNF HT steel mounting bolts, and a PTFE gasket.

Graphite gaskets are available for applications over 500°F (260°C).

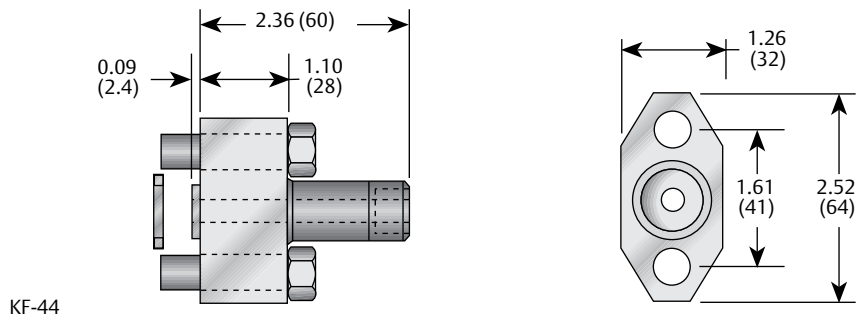
Maximum pressure rating: 6000 psig (413 barg)

Process/Kidney Flange Dimensions, inches (mm)

$\frac{1}{2}$ inch NPT female



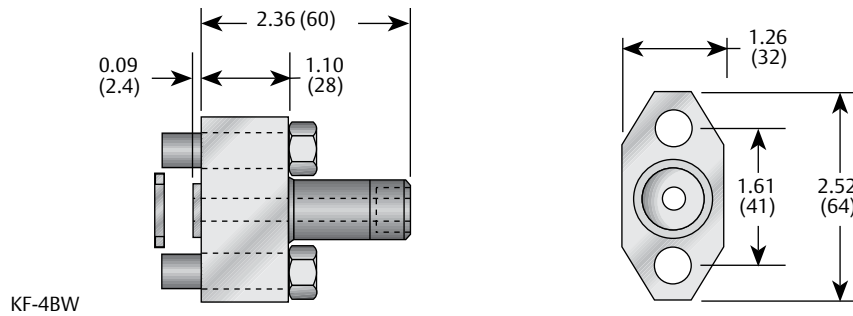
$\frac{1}{2}$ inch NPT male



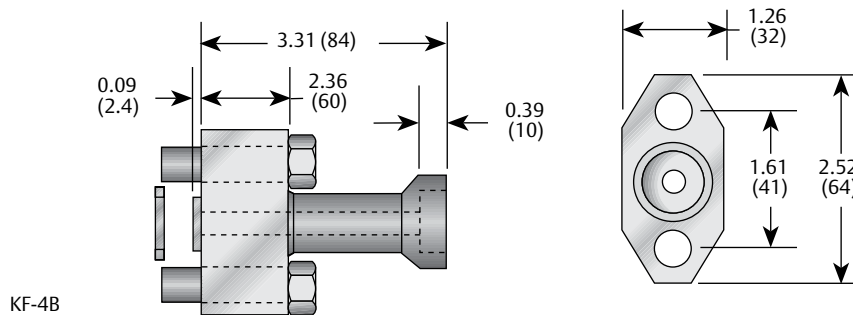
TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Process/Kidney Flange Dimensions, inches (mm)

½ inch NB butt weld



½ inch NB socket weld



Ordering Information

Connection	CS	316 SS
½" NPT F	KFC-4	KFS-4
½" NPT M	KFC-44	KFS-44
½" Butt weld	KFC-4BW	KFS-4BW
½" Socket weld	KFC-4B	KFS-4B

NOTES

- For stainless steel bolts, please suffix part number:
 -SSB (ASTM A193 B8M CL2) maximum pressure 6000 psig (413 barg);
 -SSC (ASTM A193 B8M) maximum pressure 4500 psig (306 barg), e.g. KFS-4-SSB.
- For butt weld end, please specify pipe schedule, e.g. KFS-4BW080.

ACCESSORIES - ELECTRICAL HEATING

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Complete Heating Systems

A complete range of electrical heaters is available, suitable for a variety of plant conditions. Five main types offer a variety of configurations with a choice of thermostats, hazardous or non-hazardous area heaters and plastic junction boxes. All heating circuits are pre-assembled to the required power rating.

Product features

- Heating systems purpose-designed to plant and environmental conditions.
- Choice of hazardous or non-hazardous area heaters.
- Hazardous area heaters with ATEX specification approval.
- Heater outputs from 100W to 500W.
- Choice of self limiting or fixed output heaters.
- Choice of junction boxes.
- Choice of fixed or adjustable thermostats.
- Heaters are installed to take up the minimum space inside the enclosure.
- Insulated enclosures available to reduce system heat loss and heater wattage.

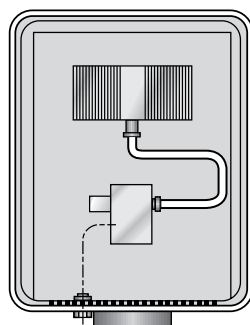
Site Installation Assessments

The enclosure assembly offered incorporates a 'space' heater arrangement, which is designed to provide temperature support of the internal air environment.

Ambient and/or reduced temperature environmental conditions acting on impulse line connections may have a significant effect on the temperature of components within the enclosure (i.e. manifold(s), transmitter(s)). Therefore, it is recommended that insulation/heat trace of impulse lines (and connections) up to the enclosure assembly is part of the site installation assessment.

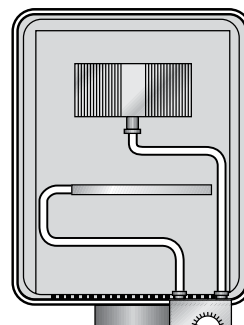
Please advise if there are any specific considerations that need to be taken into account relating to the site installation/application conditions, to enable further review and confirmation on the suitability of temperature protection offered for equipment contained within the enclosure.

Heating System Configurations



Type 'A'

Type A: finned panel heater with plastic junction box and pre-set thermostat. Suitable for hazardous areas.

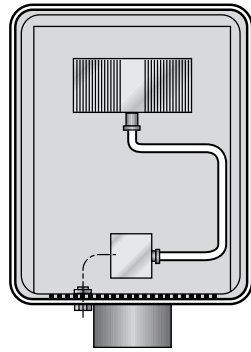


Type 'E'

Type E: finned panel heater with plastic junction box and fitted adjustable thermostat, with liquid filled capillary sensor. Suitable for hazardous areas where precise control is required. Consult factory.

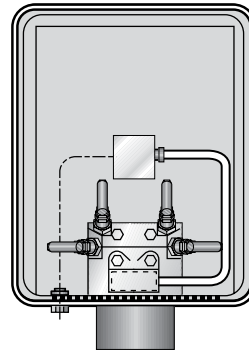
TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Heating System Configurations



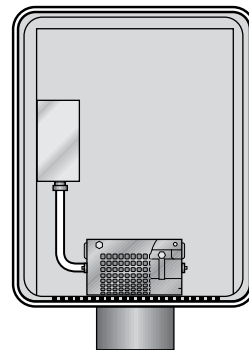
Type 'D'

Type D: finned panel heater with plastic junction box. Suitable for hazardous areas.



Type 'F'

Type F: direct mounting manifold heater with plastic junction box. Suitable for hazardous areas.



Type 'G'

Type G: adjustable heater with adjustable thermostat. Suitable for non-hazardous areas.

ACCESSORIES - ELECTRICAL HEATING

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Hazardous Areas

FHA - Self limiting finned panel heater - EExd rated

The FHA heater is produced from a self limiting semi-conductor heater element, so the heater can be used without a thermostat. It is provided with a finned aluminum body to ensure maximum thermal efficiency and also varies its output as ambient temperature rises, making it more efficient than conventional heaters. The FHA heater is available in 100, 200 and 500 Watt units and features a 3-core wire cable.



MH - Direct mounting manifold heater

The MH heater is designed to mount directly onto the enclosure manifold, which becomes the heat sink. It ensures constant manifold temperatures with power consumption of 100 Watts. Self-limiting heating element to prevent over-heating and providing power consumption savings.

The MH heater is fitted to the EM manifolds with bolts and features a 3-core silicon cable.



Non-Hazardous Areas

EH - Industrial heater^[1]

A compact air heater which can be used for frost protection and is suitable for use on all non-hazardous areas. The self limiting semi-conductor heating element is suitable for use with 240V AC or 110V AC.

The 100 Watt heater can be supplied for site fitting or factory fitted and wired to an adjustable +50°F to +86°F (+10°C to +30°C) air sensing thermostat.



NOTES

1. 500W non-hazardous area heater is also available: Type EH-500.
2. All heaters are supplied as standard with 240 volt AC power supply. 110 volt AC is also available, please specify where required.

ACCESSORIES - THERMOSTATS & JUNCTION BOXES

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

FFT thermostat - EExd rated

The FFT is a fixed flameproof thermal switch suitable for hazardous areas. It is explosion protected and suitable for use inside enclosures to control temperatures or as an alarm monitor. Standard units are supplied set at 68°F (20°C).

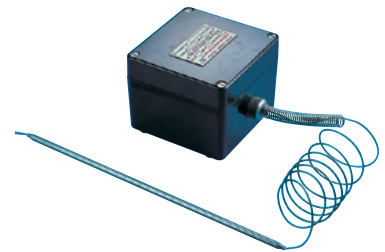
The thermostat can be supplied either on its own or fitted to a PJB1 junction box and can be supplied with an ATEX certificate of conformity.



BST thermostat/junction box - EExde rated

The BST is an adjustable surface temperature thermostat /junction box suitable for use in hazardous areas. Consult factory for this option.

Standard units are supplied with the setting range: +32°F to +122°F (0°C to +50°C) and can be supplied with an ATEX EExd certificate.



PJB plastic junction box - EExe rated

The PJB is a flame-retardant plastic junction box suitable for hazardous area installations and uses Exe terminals. It is available in two sizes, either as a mini terminal box (PJB2) with two entries, or as a larger three port box (PJB1), which is available fitted with an FFT thermostat and heater connections. The boxes are explosion protected to EExe and ATEX certified. They have a removable lid and include a terminal rail and earthing studs.



IT - thermostat - non-hazardous

The IT is an adjustable air sensing surface mounted thermostat in a plastic junction box suitable for non-hazardous areas. Setting range: +32°F to +86°F (+10°C to +30°C).



ACCESSORIES

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Technical Specifications

Heaters

Model no.	Power output (watts)	Power supply (volts AC)	Heater type	Electrical approval	Dimensions, inches (mm)		
					Width	Height	Depth
MH-B3	100	240	EM manifold	Non hazardous	3.07 (78)	1.18 (30)	1.34 (34)
FHA-100	100	240	Finned	ATEX II 2G Exd IIc T3	3.94 (100)	2.13 (54)	2.13 (54)
FHA-200	200	240	Finned	ATEX II 2G Exd IIc T3	3.94 (100)	2.13 (54)	2.13 (54)
FHA-500	500	240	Finned	ATEX II 2G Exd IIc T3	6.46 (164)	2.13 (54)	2.13 (54)
EH-500	500	240	Finned	None approved (none certified)	6.46 (164)	2.13 (54)	2.13 (54)
EH5	100	240	Finned	None approved (none certified)	3.94 (100)	2.13 (54)	2.13 (54)

Thermostats

Model no.	Range	Switching tolerance on set temperature	Electrical approval	Dimensions, inches (mm)				
				Width	Box Height	Depth	Width	Probe Height/length
FFT	Fixed + 68°F (20°C)	23°F to 41°F (-5° to 5°C)	ATEX EExd IIc T6	-	-	-	1.18 (30)	1.77 (45)
BST	Adjustable surface thermostat Consult factory							
IT	+50°F to +86°F (+10°C to +30°C)		None approved (none certified)	3.31 (84)	3.31 (84)	1.46 (37)	-	-

Junction Boxes

Model no.	Electrical approval	Dimensions, inches (mm)		
		Width	Height	Depth
PJB1	ATEX EExe II T6	4.33 (110)	2.80 (71)	5.39 (137)
PJB2	ATEX EExe II T6	3.15 (80)	2.95 (75)	2.16 (55)

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Selection Guide

To order individual components please use the model numbers on page 32.
To order combinations please use the coding below.

FS		A		5	
HEATER TYPE		CONFIGURATION		HEATER SIZE	
FS	Finned heater	A	PJB1 Junction box fitted with FFT Thermostat	0	FHA - 500, EH - 500
MH	Manifold heater	D	PJB2 Junction box (panel heater)	5	FHA - 100, EH5 - 100
E5	Industrial heaters 100 Watt	F	PJB2 Junction box (manifold heater)	7	FHA - 200
E500	Industrial heaters 500 Watt	G	IT Thermostat (non-hazardous)	9	MH - B3 (100W)
TS	Tape heater (Consult factory)	E	BST Thermostat/junction box (consult factory)	Note: for any of the following selection codes please consult factory 4 TS - 50W 5 TS - 100W 6 TS - 200W 8 MH - 50 W	

ACCESSORIES - STEAM HEATING

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Where steam is available on site, enclosure systems can be heated directly through the EM manifold block or, if necessary, via a separate copper or stainless steel steam coil.

Steam heating integral with manifolds

EM manifolds can be manufactured with an optional integral steam channel which allows efficient heating of the process through the manifold. This type of heating is ideal for maintaining high process temperatures as it provides heat in the manifold and transmitter body where it is most effective.

The EM3 and EM5 can have optional steam entry and exit connections located in the base of the manifold adjacent to the process connections. The EM2 has optional steam entry and exit connections located in the sides of the manifold and requires a standard copper or stainless steel steam coil, which terminates in bulkhead fittings.

Connections

All steam connections are threaded 1/4" NPT as standard.

Performance

Typical performance of an integral steam heated manifold in an insulated and uninsulated enclosure for a number of steam pressures is shown in the graph, based on independent laboratory tests in simulated outdoor conditions. Please consult the factory for specific details.

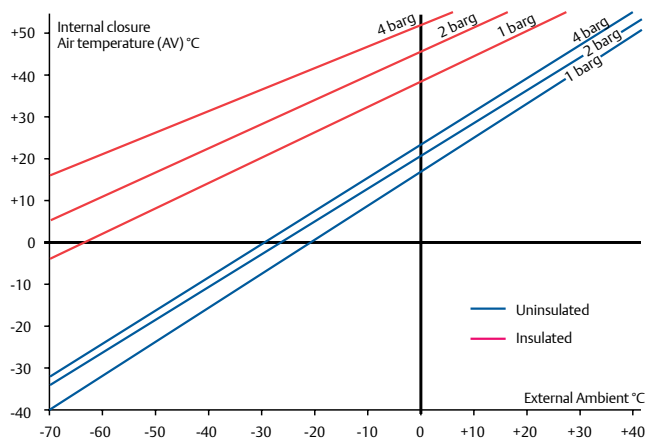
Ordering information

ISH must be added to the model number of the relevant EM manifold i.e. EM3VIS-4-ISH.

Steam coils

Coils are standard in stainless steel or copper and terminate in a bulkhead fitting. Heat output can be boosted by passing the steam coil through a heat exchanger block.

5L Enclosure - Steam Heated Manifold Assembly

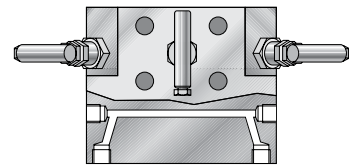


Ordering information

Coil size	Copper	Stainless steel
1/4"	XS.Cu.25	XS.S.25
3/8"	XS.Cu.38	XS.S.38



EM2
Steam heating



EM3/5
Steam heating



Steam coil

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

W - Windows

Windows for all enclosures are square shaped and made from toughened glass with a windscreen type rubber seal.



BS - 316 Stainless Steel baseplate.

L - Locks

To prevent unauthorized access, stainless steel padlock brackets and brass padlocks can be fitted to the enclosure on request.



UD - 'U' drain in base of enclosure

LH - 316 Stainless Steel lifting handle on enclosure lid (two on 24L)

CG - Cable glands

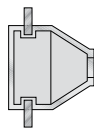
Cable Glands are available in nylon (plastic), brass or 316 SS as required. Glands for use in hazardous areas are also available.

G - Grommets

Grommets made from ethylene propylene are available for all enclosures. Please consult the factory for other sizes.

Grommets

Part no.	Grommet size (mm)
G1	5 - 7
G2	7 - 10
G3	10 - 14
G4	14 - 20
G5	20 - 26
G6	26 - 35



ACCESSORIES - ENCLOSURE OPTIONS

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

GPB - Gland plate 7.9" x 3.0" (200 x 77 mm)

GRP gland plate is available either factory fitted or with a drilling template for site fitting. Supplied either blank, pre-drilled or fitted with grommets, electrical glands or bulkhead fittings to customers' requirements. Available on the full range of enclosures.



-GP with CG

SGP - Split gland plates

Made from austenitic stainless steel, the split gland plate allows exit of a sealed capillary on instruments having remote sensing devices. Made to individual specification and available on the full range of enclosures.



Ventilation

Enclosures can be supplied with louvers or ventilators to allow 'breathing' when the enclosures are closed. A single unit will prevent the build-up of air pressure or excessive heat. When fitted in pairs the vents give through ventilation to prevent condensation inside the enclosure or the build up of gases.

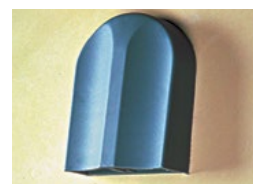
LR - Louvers

Made from austenitic stainless steel, the standard size is 5.9" x 3.9" (150 x 100 mm), available on the full range of enclosures.



VR - Ventilators

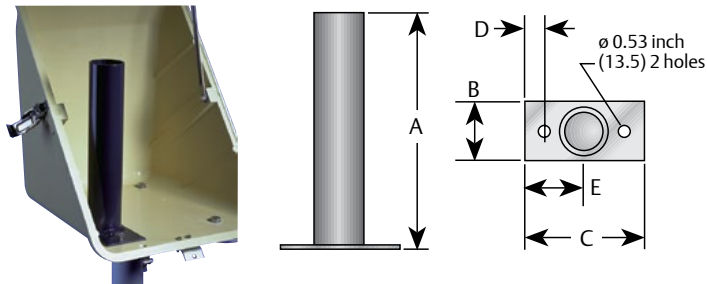
GRP weir type ventilator measures 2.75" x 3.15" (70 mm high x 80 mm wide) and is fitted in a round hole measuring 1.10" (28 mm) diameter. Available on the full range of enclosures.



TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

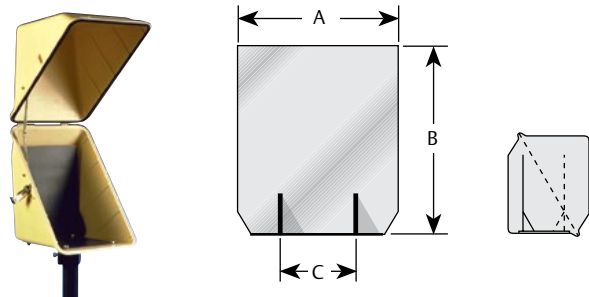
IPS - Internal pipestand

The standard internal 2" NB epoxy coated carbon steel pipestand is available for use in all enclosures. A 2" NB Sch 80 internal pipestand (full base) can also be supplied.



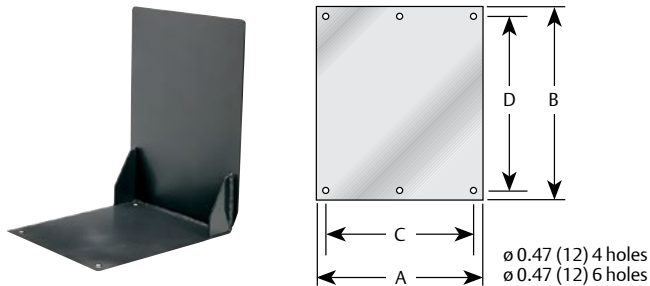
VMP - Vertical mounting plate

An 'L-shaped' vertical mounting plate can be fitted to the rear or front of an enclosure. Cut outs and holes are drilled to individual specification. The VMP is 0.12" (3 mm) thick and made from epoxy coated carbon steel plate.



BMP - Back mounting plate

The back wall of an enclosure can be fitted with a 0.12" (3 mm) thick epoxy coated carbon steel plate for instrument mounting if required.



Dimensions, inches (mm)

Model no.	A	B	C	D	E	Wt. lb (kg)
IPS	11.80 (300)	2.95 (75)	5.90 (150)	1.0 (25)	2.95 (75)	4.4 (2)
VMP						
5L	10.82 (275)	14.20 (360)	9.65 (245)	-	-	8.8 (4)
15L	15.75 (400)	18.70 (475)	7.50 (190)	-	-	13.2 (6)
24L	27.15 (690)	18.70 (475)	19.30 (490)	-	-	22 (10)
BMP						
5L	9.65 (245)	11.22 (285)	8.07 (205)	9.85 (250)	-	6.6 (3)
15L	13.40 (340)	15.75 (400)	11.80 (300)	14.17 (360)	-	4.4 (4)
24L	25.20 (640)	15.75 (400)	19.70 (500)	14.17 (360)	-	13.2 (6)

ACCESSORIES - INTERNAL MOUNTING

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Special bracketing

Specially designed and fabricated bracketing is available to allow non-standard instruments or other equipment to be mounted inside an enclosure.



NOTE

1. All brackets are also available in 316 stainless steel as an option. Add S to model no., e.g. VMPS.

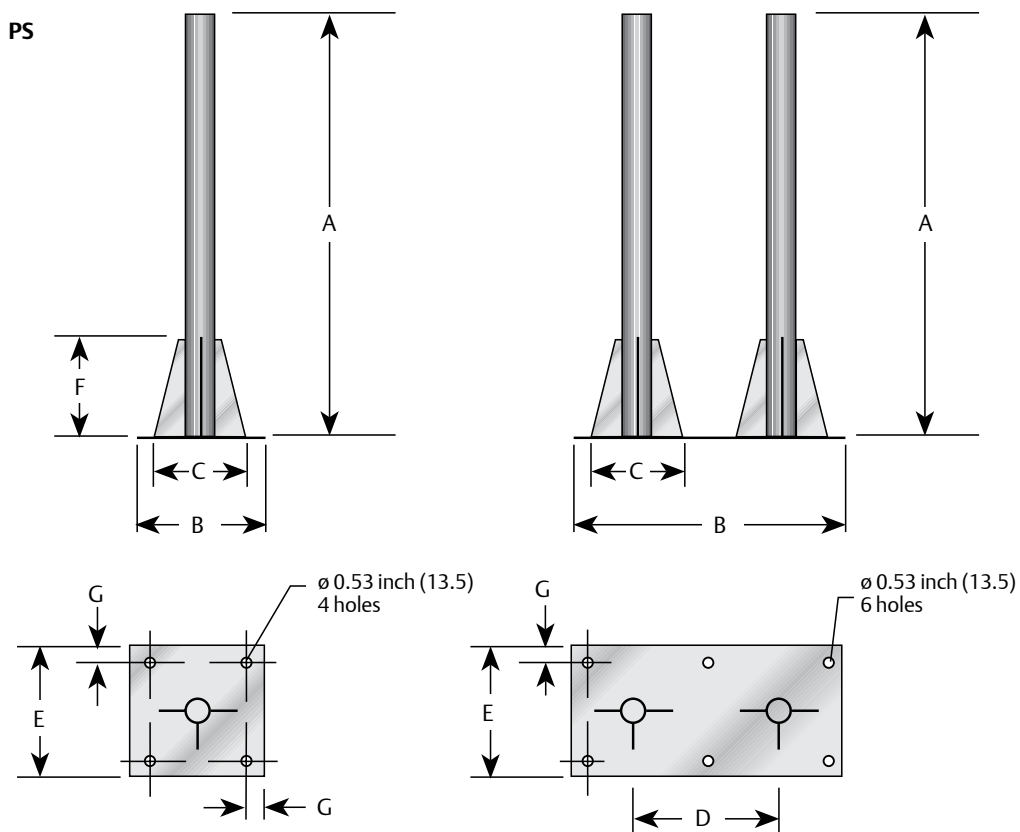
TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

PS - Pipestands

All enclosures are supplied as standard with baseplates and a collar with pinch bolt to suit 2" NB pipestands. The standard enclosure pipestand is 39.40" (1 m) high.

All instrument shades are supplied as standard with vertical mounting brackets to suit 2" NB pipestands. The standard shade pipestand is 59.0" (1.5 m).

Models 5L/5S and 15L/15S require a single pipestand, 24L/24S require twin pipestands. The PS is made from 2" NB Sch 80 epoxy coated carbon steel.



NOTE

1. All pipestands are also available in 316 stainless steel as an option. Add S to model no., e.g. PS1MS

Dimensions, inches (mm)

Model no.	A	B	C	D	E	F	G	Weight	
								lb	(kg)
PS									
PS1M	39.37 (1000)	12.00 (305)	7.50 (190)	-	12.00 (305)	9.05 (230)	1.50 (38)	26.5	(12)
PS15M	59.00 (1500)	12.00 (305)	7.50 (190)	-	12.00 (305)	9.05 (230)	1.50 (38)	35.3	(16)
PS1MT	39.37 (1000)	25.00 (635)	7.50 (190)	13.40 (340)	12.00 (305)	9.05 (230)	1.50 (38)	57.3	(26)
PS15MT	59.00 (1500)	25.00 (635)	7.50 (190)	13.40 (340)	12.00 (305)	9.05 (230)	1.50 (38)	61.7	(28)

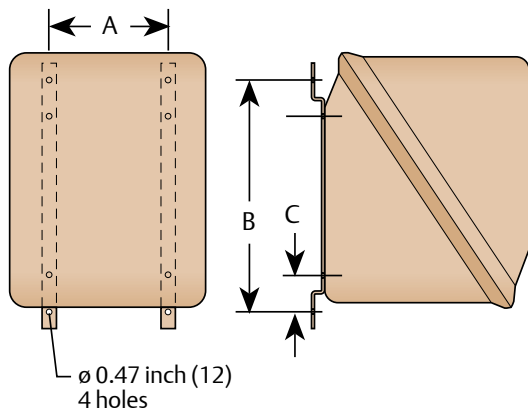
ACCESSORIES - ENCLOSURE MOUNTING

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

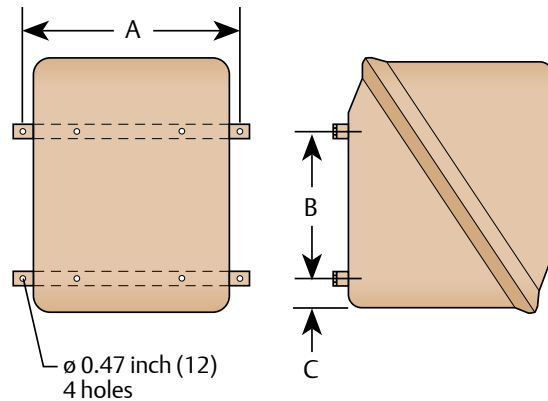
WMS - Wall mounting straps

All enclosures and shades can be supplied with either vertical or horizontal wall mounting straps made from epoxy coated carbon steel.

WMSV



WMSH



NOTE

1. All wall straps are also available in 316 stainless steel as an option. Add S to model no., e.g. WMSVS

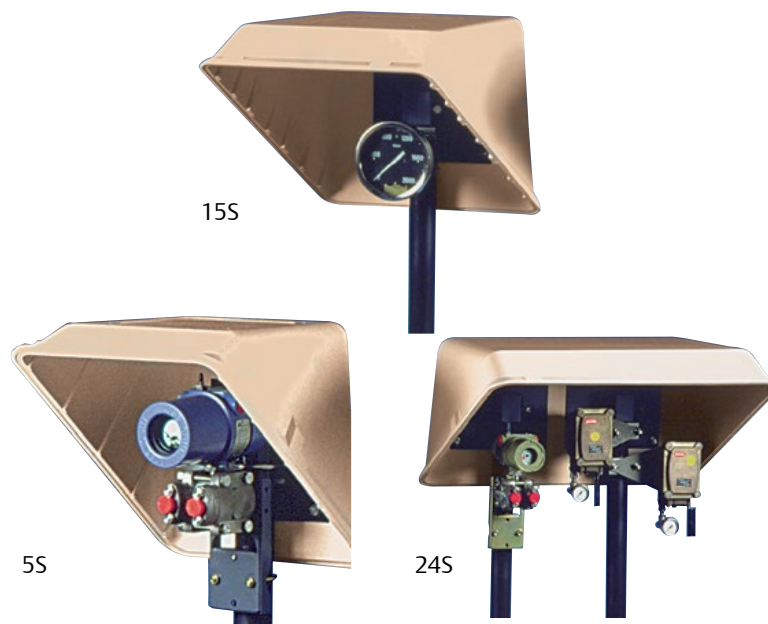
Dimensions, inches (mm)

Model no.	A	B	C	D	E	F	G	Weight	
								lb	(kg)
WMSV									
5L	8.07 (205)	15.35 (390)	0.70 (17)	-	-	-	-	4.4	(2)
15L	11.80 (300)	25.60 (650)	2.63 (67)	-	-	-	-	8.8	(4)
24L	25.20 (640)	25.60 (650)	2.63 (67)	-	-	-	-	8.8	(4)
WMSH									
5L	13.00 (330)	9.85 (250)	2.08 (53)	-	-	-	-	4.4	(2)
15L	23.62 (600)	14.17 (360)	3.07 (78)	-	-	-	-	8.8	(4)
24L	35.43 (900)	14.17 (360)	3.07 (78)	-	-	-	-	8.8	(4)

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Instrument shades are available in three sizes to provide cover from industrial to desert conditions offering protection against rain, snow, direct sunlight and falling objects for most instrument installations. All shades can also help to minimize the effects of instrument drift by reducing instrument surface temperature in direct sunlight and offer:

- Glass reinforced polyester sheet moulded for rigid construction.
- Standard color: beige.
- Austenitic steel fastener and fittings.
- Suitable for environments from -94°F to +176°F (-70°C to +80°C).
- Epoxy coated carbon steel back plate and collar as standard.
- Fire retardant.
- Anti-static option.

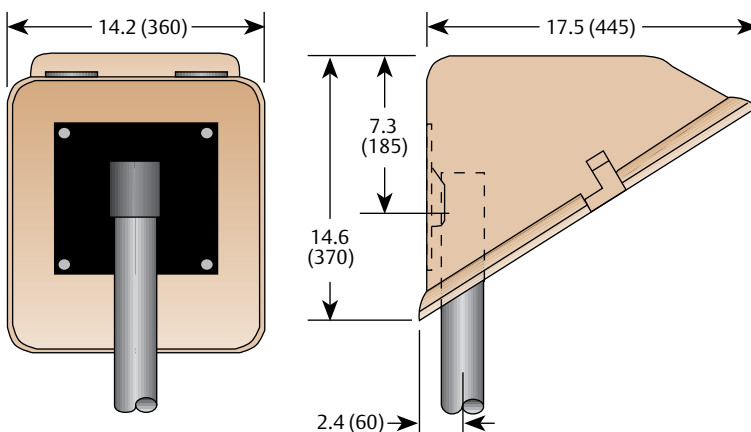


5S

A standard shade for single instrument applications such as differential pressure or pressure transmitters, pressure switches and controllers.

Approximate weight: 11.0 lb (5.0 kg)

Dimensions, inches (mm)



INSTRUMENT SHADES

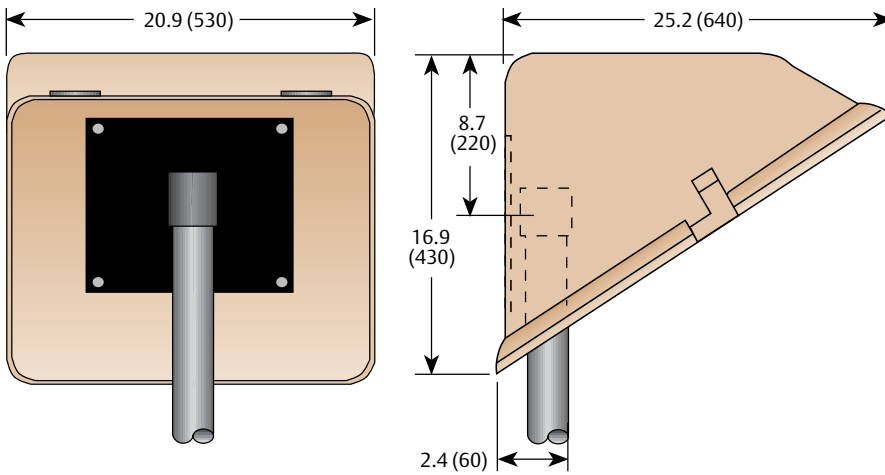
TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

15S

A medium sized shade suitable for protecting process recorders, dual transmitters or large transmitters.

Approximate weight: 20.0 lb (9.0 kg)

Dimensions, inches (mm)

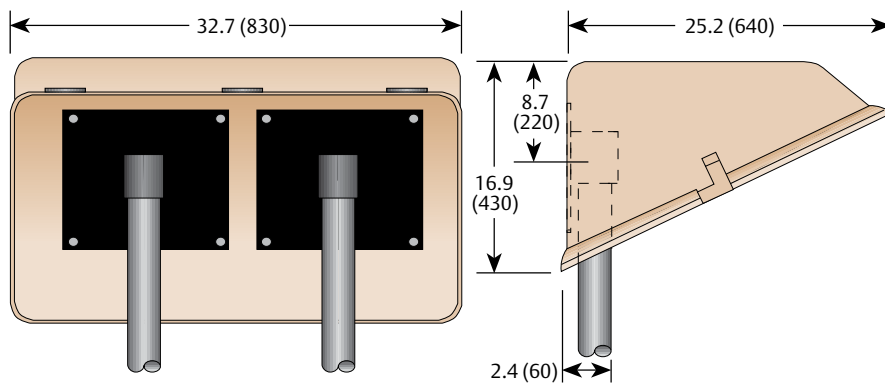


24S

Larger shade used to safeguard multiple instrument applications and small analyzers.

Approximate weight: 37.4 lb (17.0 kg)

Dimensions, inches (mm)



TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Selection Guide

15L		AS.IW		EM5HIS-4	SG	TSA5	
FIELD 1: ENCLOSURE TYPE		FIELD 2: ENCLOSURE OPTIONS ⁽¹⁾		FIELD 3: MANIFOLD TYPE	FIELD 4: MANIFOLD OPTIONS	FIELD 5: HEATER OPTIONS	
5L	Small enclosure	AS	Anti-static	See table on pg. 45 for field 3 Manifold type.	AT	Anti tamper bonnet	See table on pg. 45 for detailed heater options.
15L	Medium enclosure	I	Insulated		K	Key for anti tamper bonnet	
24L	Large enclosure	W	Window		LAT	Lockable anti tamper bonnet	
		BS	316 SS baseplate		PD	Padlock for LAT	
		S	316 SS backplate and collar (sunshade only)		ISH	Steam heating channel	
					CB	Ceramic ball tip	
					ST	Stellite ball tip	
					R3V	Bolt kit for Rosemount® 3051 C transmitter	
					HB	High back mounted in enclosure	
					LB	Low back mounted in enclosure	
					SG	NACE MR0175 latest revision	
					OC00	Degreased for oxygen service	
					SSB	High tensile SS bolts (ASTM A 193 B8M.CL2)	
					SSC	SS bolts (ASTM A193 B8M)	
					MA	1/2 NPT Female manifold adaptor	
					MA 4V	1/2 NPT Female verticle manifold adaptor (EM2 only)	
					M4 4M	1/2 NPT male manifold adaptor	

NOTE:

1. These codes may be used together e.g.: AS.I Anti-static, Insulated

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

G3

FIELD 6: ACCESSORY OPTIONS

WMSV	Wall mounting straps vertical - carbon steel	IPS	2-inch NB internal pipestand - carbon steel
WMSH	Wall mounting straps horizontal - carbon steel	IPSS	2-inch NB internal pipestand - 316 SS
WMSVS	Wall mounting straps vertical - stainless steel	VMP	Vertical mounting plate - carbon steel
WMSHS	Wall mounting straps horizontal - stainless steel	VMPS	Vertical mounting plate - 316 SS
L	Padlock bracket including padlock	BMP	Back mounting plate - carbon steel
UD	'U'-drain in base of enclosure	BMPS	Back mounting plate - 316 SS
LH	Lifting handle on enclosure lid	PS1M	2-inch NB pipestand 39-inch (1 m) - carbon steel
GPB	GRP gland plate (200 mm x 77 mm)	PS15M	2-inch NB pipestand 59-inch (1.5 m) - carbon steel
SGP	Split gland plate (inc. split G2 grommet)	PS1MS	2-inch NB pipestand 39-inch (1 m) - 316 SS
LR	Stainless steel louvre (150 mm x 100 mm)	PS15MS	2-inch NB pipestand 59-inch (1.5 m) - 316 SS
VR	GRP ventilator	PS1MT	2-inch NB pipestand 39-inch (1 m) - carbon steel (twin for 24L)
G1	Rubber grommet (5 - 7 mm) diam.	PS15MT	2-inch NB pipestand 59-inch (1.5 m) - carbon steel (twin for 24S)
G2	Rubber grommet (7 - 10 mm) diam.	PS1MST	2-inch NB pipestand 39-inch (1 m) - stainless steel (twin for 24L)
G3	Rubber grommet (10 - 14 mm) diam.	PS15MST	2-inch NB pipestand 59-inch (1.5 m) - stainless steel (twin for 24S)
G4	Rubber grommet (14 - 20 mm) diam.	TT	Tag traffolyte
G5	Rubber grommet (20 - 26 mm) diam.	TS	Tag stainless steel
G6	Rubber grommet (26 - 35 mm) diam.		
M20B	M20 brass cable gland (8 - 10 mm) diam.		
M20N	M20 nylon cable gland (8 - 10 mm) diam.		
PG11B	PG11 brass cable gland (6 - 9 mm) diam.		
PG11N	PG11 nylon cable gland (6 - 9 mm) diam.		
PG135B	PG13.5 brass cable gland (8 - 12 mm) diam.		
PG135N	PG13.5 nylon cable gland (8 - 12 mm)		
PG16B	PG16 brass cable gland (11 - 14 mm) diam.		
PG16N	PG16 nylon cable gland (11 - 14 mm) diam.		
PG21B	PG21 brass cable gland (14 - 16 mm) diam.		
PG21N	PG21 nylon cable gland (14 - 16 mm) diam.		

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Field 3: Manifold Type

EM5		H		I		S		-4	
MANIFOLD TYPE		GLAND PACKING		SEAT TYPE		MATERIAL		PROCESS CONNECTIONS	
Connection outlet x inlet									
EM2	Flange x thread two-valve manifold	V	PTFE	I	Integral	S	316 SS	4	1/2 NPT Female
EM2T	Thread x thread two-valve manifold	H	Graphite (GRAFOIL®)					Omit	Flange (EM2F, EM3F, EM5F)
EM3	Flange x thread three-valve manifold								
EM5	Flange x thread five-valve manifold								
EM2F	Flange x flange two-valve manifold								
EM3F	Flange x flange three-valve manifold								
EM5F	Flange x flange five-valve manifold								

Field 5: Heating Options

Combinations - Hazardous areas				
Code	Heater wattage	Type	Junction box	Thermostat
FSA5	100	Finned	PJB1	FFT
FSA7	200	Finned	PJB1	FFT
FSAO	500	Finned	PJB1	FFT
FSD5	100	Finned	PJB2	(None)
FSD7	200	Finned	PJB2	(None)
FSDO	500	Finned	PJB2	(None)
FSE5	Consult factory			
FSE7	Consult factory			
FSEO	Consult factory			
MHF9	100	Direct (EM manifold)	PJB2	(None)
Combinations - Non-hazardous areas				
E5G	100	Industrial	IT	Adjustable
E500	500	Industrial	IT	Adjustable
Individual components - Hazardous areas				
Code	Heater wattage	Type	Material	
FHA-100	100	Finned	Aluminum	
FHA-200	200	Finned	Aluminum	
FHA-500	500	Finned	Aluminum	
MH-B3	100	Direct heater (EM manifold)	Aluminum	
PJB1/FFT	Plastic junction box with fixed thermostat			
PJB2	Plastic junction box			
BST	Consult factory			

Individual components - Non-hazardous areas		
EH5	100 watt industrial heater	
EH-500	500 watt industrial heater	
IT	Non-hazardous adjustable thermostat (plastic)	
Individual components - Steam coils (with tube fittings)		
Code	Size	Material
XSCU25	1/4" OD	Copper
XSCU38	3/8" OD	Copper
XSS25	1/4" OD	Stainless steel
XSS38	3/8" OD	Stainless steel

DESIGN & MANUFACTURING CAPABILITIES

TESCOM™ Anderson Greenwood Instrumentation Enclosure Systems

Full Systems Capability

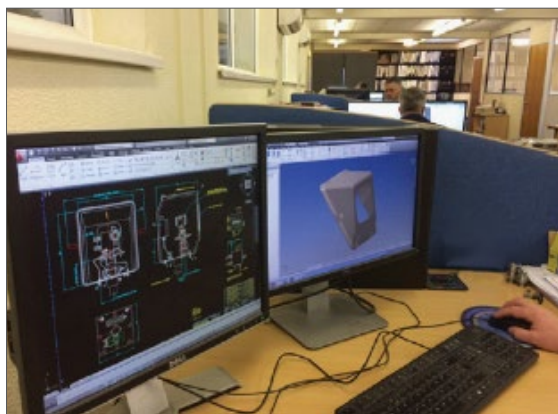
Designed and engineered to combine ease of on-site installation with efficient and reliable in-service operation, TESCOM™ Anderson Greenwood Instrumentation instrument protection systems provide the complete solution.

Design service

Our dedicated design team has the specialist knowledge and skill to layout instrument systems with the optimum use of space within each enclosure.

- Complete enclosure design service based on customer applications, process conditions, instruments to be installed and heating requirements.
- Pre-production drawings for customer review and approval.
- As-built drawings for final documentation.

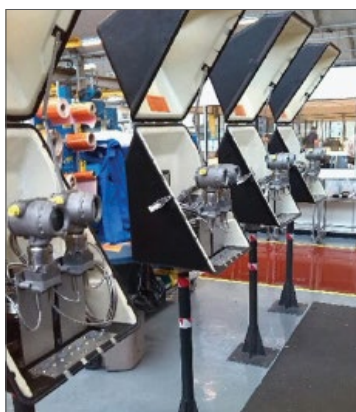
A wealth of experience gained from many years of 'fitting out' instrumentation is the basis of a service which reduces on-site installation time and costs and ensures each enclosure reaches its destination safely.



Full assembly and instrument fitting

Customer's free-issue instruments can be fitted into a range of enclosures, with the complete package supplied fully assembled direct to site. This enables all process connections to be made simply and easily through a service plate in the back or base of the enclosure and negates the need for extra drilling on site.

- Installation (and pressure testing^[1]) of free-issued customer instruments or equipment.
- Installation (and pressure testing^[1]) of tube, fittings and manifolds.
- Tagging of all enclosures and instruments in accordance with customer tag list.
- Installation of electrical heaters, thermostats, junction boxes, cable glands and grommets.
- Wiring of all electrical connections by qualified technicians.
- Installation of all internal and external brackets.



NOTE

1. Pressure testing of installed components can be provided; please contact the factory for details.