

AC Series 2" Access System High Pressure - Up to 6000 psi 400 bar

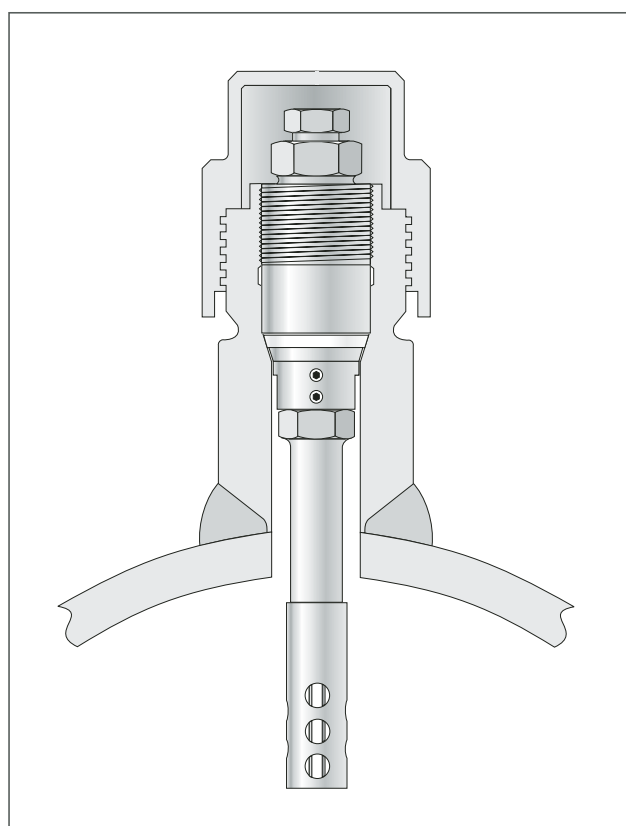
The 2" system is a widely used "industry standard" high pressure access method for mounting corrosion monitoring devices into pipework and vessels. The system allows insertion and retrieval of the devices under pressure, enabling monitoring to be maintained continuously without the need to shut down operation of the process.

- Allows on-line retrieval and insertion of a wide range of injection sampling and monitoring devices, including CEION®, ER and LPR probes, weight-loss coupon holders, hydrogen monitors, sand/erosion probes and biofilm sampling probes.
- Operates up to 6000 psi
- Meets NACE sour service specifications
- Interchangeable industry standard system
- Can be hot-tap installed

ACCESS FITTINGS

The mounting equipment comprises a 2" branch fitting (the access fitting) and a carrier plug assembly (the plug) into which a range of monitoring probes or other devices may be placed. Access fittings have an internal 1 3/4" 12 UNF parallel thread to receive the plug. Below the thread is a taper shoulder that mates with the packing element of the plug. An external 3" ACME thread allows installation of the service valve used in making retrievals under pressure.

Fittings may be welded directly to the pipe or vessel using a Butt weld or weldolet configuration; the weldolet version of the access fitting is commonly described as a Flare weld Fitting. Alternatively, a flanged fitting may be bolted to a suitable receiving flange, allowing the option to renew or replace the fitting at a later date. Fittings using generic hub configurations such as Techlock or Graylock are also available to order. Access Fittings are generally rated at 6000 psi / 400 bar and are available in a wide range of materials to match those used in the system. Material certification to BS EN ISO 10204 3.1b and



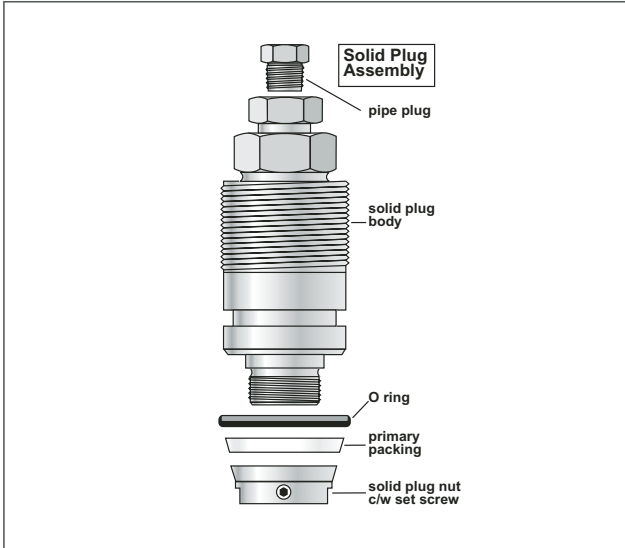
NACE MR-01-75, latest issue, are standard. All requirements for higher level certification and special testing must be specified at the quotation stage.

CARRIER PLUGS

The carrier plug assembly is generally called a **Hollow** or **Solid Plug** according to the type required.

Hollow plugs allow a monitoring probe to be connected electrically to an external measuring instrument or a device to pass through the plug e.g. a hydrogen probe. Hollow plugs are supplied with a **Bore Seal Nut** and packing to allow pressure integrity to be maintained when no probe is fitted.

Solid plugs are used with devices such as weight loss coupons or biofilm probes when no external connection is necessary. Solid Plugs are also used for Sampling and Injection assemblies that employ fittings with a side tee. Solid plugs are fitted with an additional O Ring to enhance the sealing properties.

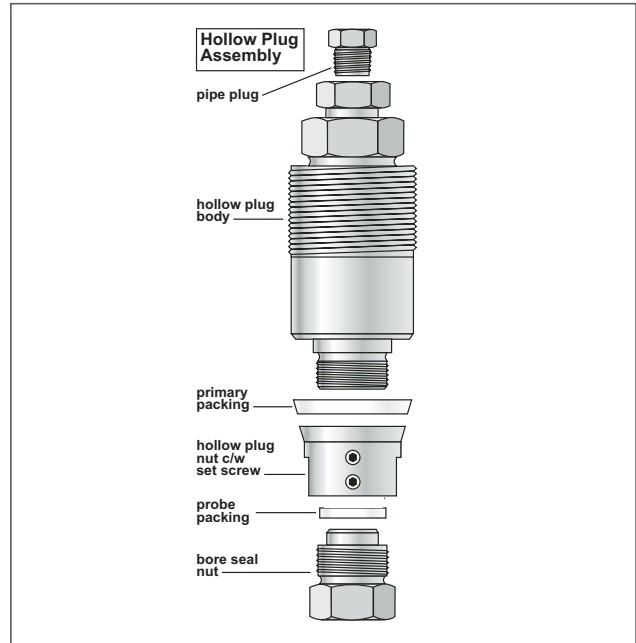


Standard plugs are made from 316 stainless steel with a glass filled Teflon primary packing/probe packing and Viton® O Ring. Packings and O Rings in more durable materials such as Vespel® and Kalrez® are available for extreme applications (200 – 300deg.C), and a Nitronic 60 packing used as a metal-to-metal seal is available for very demanding applications. When access fittings of high alloy material such as stainless or duplex steels are to be used it is recommended that a Nitronic 60 plug body be installed to minimise the risk of galling between the plug and fitting threads. Plugs in Duplex and Super Duplex are also available but great care is needed to avoid galling between like materials. Special coatings such as Ceramic can be used to reduce the risk.

Very little make-up torque is required to effect a seal between plug and fitting due to the design of the sealing arrangements. The seals also prevent process fluid from reaching the threaded components, which protects this highly stressed material from corrosion.

COVERS

Access Fittings should be fitted with a 3" ACME threaded cover to protect the external thread and top sealing face of the fitting from corrosion and impact damage. A number of designs are available, all of which serve this basic purpose and each of which has additional features. For example: many users of probes



require an access hole to allow the probe to be interrogated without removing the cover, while others require designs with pressure retaining capability to provide a secondary security barrier between process and environment. Both of these requirements may be incorporated into one cover by using a Swagelok Extension Adapter fitted in a threaded hole, and a pressure bleed valve and tell-tale gauge may be added for safety. This type of cover is now standard for most offshore and high-pressure systems. See relevant data sheet for details.

PLUG SELECTION GUIDE

Solid Plug	Hollow Plug
Biofilm Stud Probes	CEION, Probes
Weight Loss Coupon	Electrical Resistance Probes
Strip, Flush Disc,	Polarisation Resistance
Scale etc.	Probes
Injection Assemblies	Galvanic Probe
Sampling Assemblies	Tee-less Injection
Hydrogen Probes	Erosion/ Sand Probes

TEE ACCESS FITTINGS

When injection of treatment chemicals or sampling of the process is required it is preferable to use an access fitting with side tee. The tee can be between 1/4" and 1" in diameter and configured to suit the type of service. Options for NPT threaded tees, plain Butt weld tees, Butt weldolet tees and flanged tees are available. Where threaded connections are contemplated, the relevant piping codes should be consulted to ensure these are acceptable. The addition of a tee adds between 1 and 3 inches to the height of the standard access fitting (5 1/4") according to the diameter and rating.

An Injection Nut is fitted below the Solid Plug Assembly. This device seals off the proportion of the fitting bore opposite the tee and channels the flow through a hole in the base of the Nut. An injection quill, injection tube and spray nozzle, or sampling tube may connect with this according to the application. Pressure integrity of injection/sampling assemblies is only achieved by the addition of a valve to the side tee.

Injection can be carried out using a Cormon **Tee-less**® assembly and an ordinary non-tee fitting. Pressure integrity is maintained by incorporating a check (non-return) valve into a special Hollow Plug design.

RETRIEVAL UNDER PRESSURE

By using a Retriever Kit and Service Valve, devices can be installed or retrieved under pressure. The Service Valve is mounted onto the 3" ACME thread of a fitting and the retriever connected to the valve so that a pressure tight assembly is formed.

When the telescoping retriever body is collapsed, the inner rod passes through the open valve where it connects with the plug inside the fitting. The plug with its monitoring device can then be backed off and withdrawn through the valve by extending the body of the retriever.

Once the plug assembly is clear of the valve it is closed and pressure is bled from the retriever which can then be dismantled from the valve allowing access to the plug assembly.

After servicing or changing the device in the carrier plug, re-installation is carried out using the reverse procedure.

The retriever is a pressure balanced design that will not telescope if pressure is released suddenly from the system. Care must be taken when specifying retrieval under pressure to ensure sufficient clearance exists for the extended tool to withdraw the device from the line. See the detailed data sheet on Retrievers.

ACCESS FITTING HEIGHT TABLE

Type	Non Tee & 1/4" Tee		1/2" Tee & 3/4" Tee		1" Tee	
	inches	mm	inches	mm	inches	mm
Flarweld & Butt weld	5.25	133	6.25**	159	7.25**	184
2" ANSI RF/RJ						
150/300#	5.25	133	7.25	184	7.25	184
400/600#	6.25	159	7.25	184	7.25	184
900/1500/2500#	6.25	159	8.25*	210*	8.25*	210*
2" API RJ						
2000#	6.25	159	7.25	184	7.25	184
3/5/10000#	6.25	159	8.25	210	8.25*	210*

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*Note: for 3/4" and 1" NB flanged tees at these ratings fitting height must be 9.25" (235mm)

**Note: for flanged tees add 1" (25mm)

CARRIER PLUG ASSEMBLIES

A				
System	Type	Coating	Seals	Material
2" Access System	S Solid plug H Hollow plug	P Standard anti-galling C Copper plated O Un-coated F Fired ceramic N Nickel plated Note: Standard is P Refer to data sheet text for notes on galling. Contact Cormon if in doubt	A GF PTFE/Viton® B Vespel®/Kalrez® C Tee-Less® D GF PTFE/PTFE E GF PTFE/Kalrez® F GF PTFE/BFR58 Expl. Decompression H GF PTFE/HNBR low temp.nitrile P Nitronic 60/PTFE Standard is A Seal materials listed refer to Solid plugs. Hollow plugs do not have O rings, so only first named material applies.	B03 316ss A10 A105 C.Steel B15 Nitronic 60 B09 Duplex UNS31803 CRA plugs require special coatings if used with CRA fittings. See notes in data sheet text.

PRODUCT CODE SYSTEM – 2" ACCESS FITTINGS

A F									
Group	Mounting	Tee Option		Height		Radius / Flange		Material	Plug Assembly
2" High Pressure Access Fitting	W Flarweld	NT	Non-tee		5	5 1/4"	Radius codes for Flarweld & Buttweld	A06 standard carbon steel	O Not required
	L Flanged		Threaded NPT Tees		6	6 1/4"			
	B Buttweld	T1	1/4"		7	7 1/4"	00 No radius	A10 A105 carbon steel	D Solid plug 316ss Viton®
	N 2" NPT		1/2"		8	8 1/4"			
		T2	3/4"		9	9 1/4"	02 2" OD	A10 A105 carbon steel	E Solid plug Nitronic 60 Viton®
			1"						
		T3	Welded nipple 100mm plain end Tee				04 4" OD	A10 A105 carbon steel	F GF PTFE
			1/2"						
		T4	3/4"				10 8-10" OD	A05 A350LF2 Carbon steel	G Hollow plug Nitronic 60 GF PTFE
			1"						
			Codes for flange mounts ANSI 2" NB				36 20-36" OD	A05 A350LF2 Carbon steel	F Hollow plug 316ss
			1"						
	Flanged Tee						51 300#RF	For a full list of material codes see data sheet MD0149	See separate table for other plug options.
	ANSI NB	1/2"	3/4"	1"					
	150#RF	R1	K1	M1			53 9/1500#RF		
	300#RF	R2	K2	M2					
	4/600#RF	R3	K3	M3			55 150#RJ		
	9/1500#RF	R4	K4	M4				56 300#RJ	
	2500#RF	R5	K5	M5			57 4/600#RJ		
	150#RJ	J1	L1	S1				58 9/1500#RJ	
	300#RJ	J2	L2	S2			59 2500#RJ		
	4/600#RJ	J3	L3	S3				63 150#FF API 2"	
	9/1500#RJ	J4	L4	S4			60 200#RJ		
	2500#RJ	J5	L5	S5				61 3/5000#RJ	
							62 10000#RJ		

SPARES AND ACCESSORIES

AAC				
System	Item		Material	
Spares & accessories for 2" access system	PP	Primary	N01	GF PTFE
	SN	Probe/seal nut packing	N02	Vespel®
			B15	Nitronic 60
	OR	O ring	N03	Viton®
			N04	Kalrez®
			N06	PTFE
		N07	HNBR low temp. nitrile	
		N08	BFR58 anti expl.decompression	
	NT	Bore seal nut	B03	316ss
	SR	Solid plug retaining nut		
	HR	Hollow plug retaining nut		
	SS	Set screw		
	NP	Pipe plug	B03	316ss (solid plug)
			S07	Low density polyethylene (hollow plug)
	LG	Lubricating grease	Z10	10 oz. tube