

Retrieval Tool

Operation and Maintenance Manual

Metal Samples Company

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1. Introduction

The Metal Samples' retrieval tool and service valve can be used to insert or retrieve corrosion monitoring devices from process systems operating under full pressure (up to 6000 psi). It can be used to retrieve a variety of sensors from MHT™ and HPT™ high pressure access systems or any other conventional 2-inch access system when used with an inexpensive adapter.

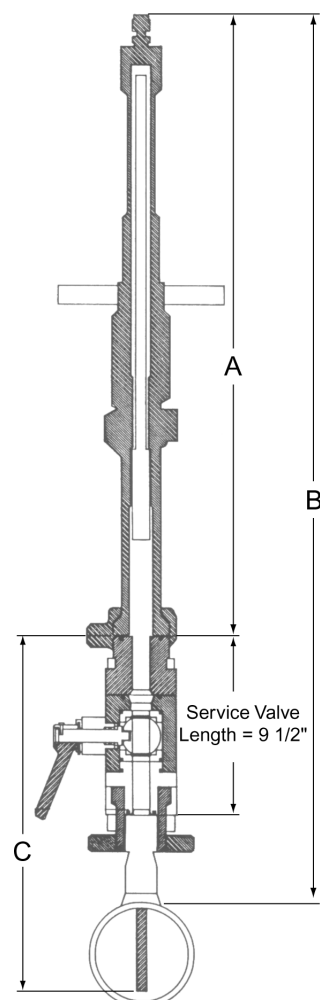


Figure 1. Retrieval Tool / Service Valve Dimensional Schematic

The tool is constructed to comply with NACE MR0175 for a working pressure of 6000 psi (422 kg/cm²). The standard tool is suitable for operation between -15°F and 400°F (-26°C and 204°C). For operation at temperatures between -30°F and 250°F (-34°C and 121°C), a low temperature version of the tool is available. The difference between the low and standard temperature versions is in the use of seal materials appropriate for each temperature range. *Optional seal materials for higher and lower temperature ratings are available. Please contact your Metal Samples sales representative for options.*

The tool size or stroke is determined by the combined maximum pipeline size and the maximum height of any access fitting assembly with which the tool will be used. The stroke is defined as the distance that the plug/sensor assembly must travel to permit the service valve to close. The following tables gives the standard tool part numbers and the line size and stroke data. If the required pipeline size falls between two size ranges, the larger tool should be selected.

Letter	Description	Maximum Pipeline Size								
		4"	8"	12"	16"	20"	24"	30"	36"	40"
A	Retrieval Tool Overall Length - Inches	39	47	55	63	71	79	91	103	111
B	Retrieval Tool and Service Valve Overall Length to Pipe OD (includes non-tee access fitting) - Inches	54	62	70	78	86	94	106	118	126
C	Stroke Available - Inches	18.5	22.5	26.5	30.5	34.5	38.5	44.5	50.5	54.5
	Retrieval Tool Weight - lbs.	47	52	57	62	67	72	83	92	97
	Case / Tool Kit Weight - lbs.	37	37	40	40	43	43	48	48	53
	Total Weight - lbs.	84	89	97	102	110	115	131	140	150
	Total Cubage - ft ³	2.4	2.4	2.9	2.9	3.5	3.5	4.3	4.3	4.8

Table 1. Dimensions from Schematic

2. Retrieval Tool Part Numbers / Parts & Materials List

<u>Part#</u>	<u>Pipeline Size</u>	<u>Part#</u>	<u>Pipeline Size</u>
HA10004X	4"	HA10024X	24"
HA10008X	8"	HA10030X	30"
HA10012X	12"	HA10036X	36"
HA10016X	16"	HA10040X	40"
HA10020X	20"		

X = 4 (HP adapter), 5 (MH adapter), 6 (HP adapter for low temperature)

The retrieval tool and service valve are usually sold together. When ordering, the part number which indicates tool size, and the temperature service are specified. The retrieval tool is supplied as a kit complete with a field service case, assembly accessories, and one O-ring repair kit. The service valve is ordered by specifying either **HA101250** (-15°F to 200°F) for standard service, **HA101251** (-30°F to 200°F) for low temperature service, or **HA101252** (-15°F to 400°F) for high temperature service. Service valves are supplied with a field service case, extension bar and one O-ring repair kit.

ITEM	QTY	DESCRIPTION	PART #	MATERIAL	ITEM	QTY	DESCRIPTION	PART #	MATERIAL
1A	1	MH™ Adapter Assy	PS5554158	As Listed	15	4	Thrust Washer	PR6270158	316 SS
A1	1	Collet Latch	PR6297110	17-4PH	16	4	O-Ring	PR7430834	Viton®
A2	1	MH™ Spanner	PR6296158	316 SS	17	1	O-Ring	PR7433834	Viton®
A3	2	Spirol Ring	PR6243138	302 SS	18	1	Omniseal	PR6251	Fluorocarbon
A4	1	Adapter Guide	PR6244158	316 SS	19	1	Flange Bearing	PR6239	P/M Bronze
A5	1	Set Screw	09141E2520CP1000	SS	20	1	Drive Tube	PR6272G86	17-4PH HH1150
A6	1	Spirol Pin	PR6247141	SS	21	1	Thrust Bearing	PR6273207	AISI 52100
1B	1	HP™ Adapter Assy	PS5552158	As Listed	22	1	Bearing Cap	PR6274G86	17-4PH HH1150
B1	1	Landing Screw	PR6242159	316 SS	23	1	Sleeve Bearing	PR6275	P/M Bronze
B2	1	HP™ Adapter Body	PR6246158	316 SS	24	1	O-Ring	PR7432834	Viton®
B3	2	Spirol Ring	PR6243138	302 SS	25	2	Set Screw	09141E3716CP0500	SS
B4	1	Adapter Guide	PR6244158	316 SS	26	2	Key	PR6276141	304 SS
B5	1	Spring	PR6245599	IN 600	27	1	Drive Ring	PR6277158	316 SS
B6	2	Spirol Pin	PR6247141	SS	28	2	Handle	PR6278158	316 SS
2	1	Hammer Union	PR6290C25	A350 LF2	29	1	Upper Tube	PR6279G86XX**	17-4PH HH1150
3	1	Lower Tube	PR6264G86XX*	17-4PH HH1150	30	1	O-Ring	PR6280834D90	Viton®
4	1	Spirol Ring	PR6265138	SS	31	1	End Cap	PR6281G86	17-4PH HH1150
5	2	Bleed Valve	PR6359158	316 SS	32	1	Spline Rack	PR6282G86XXXX***	17-4PH HH1150
6	1	Pressure Gage	PR7020158	316 SS	33	1	Flat Head Screw	09141E3716FH0500	SS
7	5	Set Screw	09158E3716CP0375	SS	34	1	End Stop	PR6283158	316 SS
8	1	Gear Box Assy	PS5551	Cast 316L SS	35	1	O-Ring	PR7429834	Viton®
9	1	Hand Wheel Nut ⁺	09141E7510JN0000	304 SS	36	2	Grease Fitting	PR6427139	303 SS
10	1	Lock Pin ⁺	PR6291139	SS	37	1	O-Ring	PR7439834	Viton®
11	1	Handwheel Body ⁺	PR6289338	Aluminum	38	1	O-Ring	PR7428834	Viton®
12	1	Shaft Retainer	PR6267G86	17-4PH HH1150	39	1	Handwheel Handle ⁺	PR6288A69	Aluminum
13	1	O-Ring	PR7431834	Viton®					
14	1	Gear Shaft	PR6269110	17-4PH					

Table 2. Retrieval Tool Parts

* XX is 10" greater than the Retrieval Tool length; i.e. XX = 26 if Retrieval Tool length is 16".

** XX is 11" greater than the Retrieval Tool length; i.e. XX = 15 if Retrieval Tool length is 4".

*** XXXX is 18.56" greater than the Retrieval Tool length; i.e. XXXX = 3456 if Retrieval Tool length is 16".

If replacement parts are required, use the part numbers listed above and specify length where necessary. Viton® is the standard O-ring material, however other materials are available. Consult your Metal Samples representative for the options available with non-standard materials.

⁺ Item is included in the Handwheel Assembly - Part # PS5556338.

Viton® is a registered trademark of DuPont Dow Elastomers.

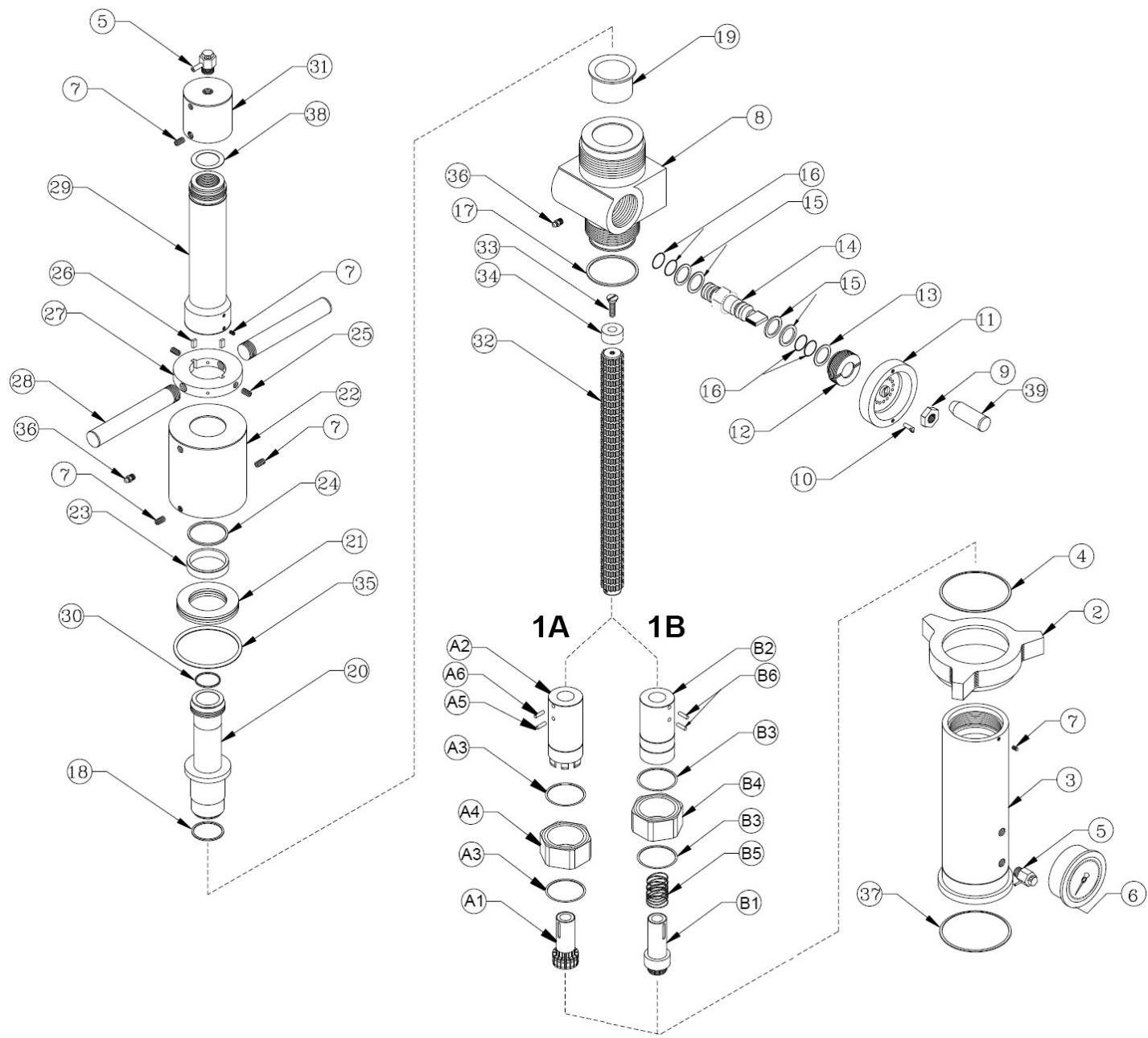


Figure 2. Retrieval Tool Exploded View

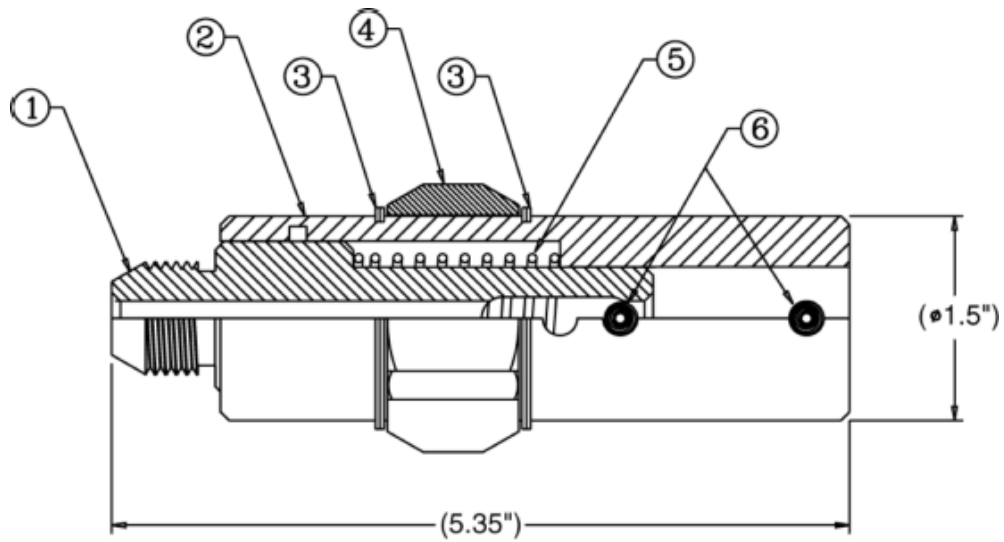


Figure 3. HP Adapter Assembly

Item	Description	Part No.	Material
1	Landing screw	PR6242159	316 SS
2	Adapter body	PR6246158	316 SS
3	Spirol ring	PR6243138	302 SS
4	Adapter guide	PR6244158	316 SS
5	INCO spring	PR6245599	INCO 600
6	Spiral pin, 1/4" dia. x 1 1/2"	PR6247141	304

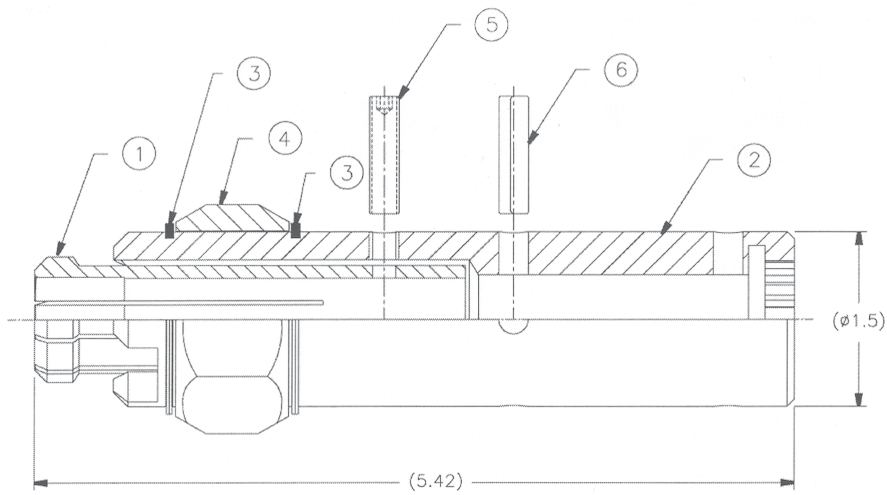


Figure 4. MH Adapter Assembly

Item	Description	Part No.	Material
1	MH Adapter Collet Latch	PR6297110	17-4PH
2	MH Adapter Spanner	PR6296158	316 SS
3	Spirol Ring	PR6243138	302 SS
4	Adapter Guide	PR6244158	316 SS
5	1/4 - 20 x 1/2 Set Screw	09141E2520CP1000	SS
6	Spirol Pin \varnothing 1/4" x 1 1/2"	PR6247141	SS

3. Retrieval Tool Assembly Procedure

Gear Box

1. Place thrust washers (15) on gear shaft (14) using two washers on each side of the gear. Slide O-rings (16) on gear shaft, coat shaft with bearing grease rated at desired operating temperature and slide gear into gear box (8). Place O-ring (13) on shaft retainer (12) and screw clockwise into the gear box.

Front Tube

2. Slide the hammer union (2) onto front tube (3). Slide spiral retainer ring (4) in place. Place O-ring (17) on the gear box. Apply grease to O-ring and threads and screw front tube onto gear box. Tighten with strap wrench and install set screw (7) in place.

Bearing Cap

3. Install the Omniseal (18) on the drive tube (20) with the spring side of the seal facing outward.

CAUTION: Take care not to scratch or deform the seal. If the seal should become deformed, heat it and the drive tube in an oven at 400°F for fifteen minutes and allow to cool prior to assembly. Grease seal (18) and flange bearing (19), then slide the drive tube into the gear box. Grease thrust bearing (21) and slide over drive tube. Note that the small ID of thrust bearing is toward drive tube flange. Place O-rings (24 and 35) into the bearing cap (22). Grease and screw the bearing cap onto the gear box, and secure with two set screws (7).

Drive Ring

4. Put two keys (26) in the keyways on the drive tube and slide the drive ring (27) in place. Secure with two set screws (25). Install handles (28) on the drive ring by threading in clockwise.

Spline Rack

5. Install the proper adapter assembly body (PS5554158 or PS5552158) onto the spline rack (32) by sliding the adapter assembly (1A or 1B) over spline rack and retaining with spiral roll pin (A6 or B6).

Back Tube

6. Install the O-ring (38) in the end cap (31). Grease and screw the end cap clockwise onto the back tube (29) and secure with set screw (7). Slide the assembled back tube over the spline rack, coat with grease and screw clockwise onto the drive tube. Secure with set screw (7).

4. Retrieval Tool Overhaul Procedure

Back Tube Removal

1. Remove back tube (29) from tool by first removing set screw (7) and rotating back tube off counterclockwise with spanner wrench provided in tool kit.

Gear Rack Removal

2. Remove spline rack (32) by removing end stop flathead screw (33) and end stop (34) from rack. The spline rack can now be pulled out from the front of the tool.

Drive Ring Removal

3. Remove handles (28) from drive ring (27) by rotating out counterclockwise. Remove both set screws (25) from the drive ring and slide the drive ring off the drive tube (20) taking care not to lose the two keys (26).

Bearing Cap Removal

4. Remove bearing cap (22) from the gear box (8) by first removing each set screw (7) and rotating the bearing cap out counterclockwise with the spanner wrench provided.

Thrust Bearing Removal

5. The thrust bearing (21) can now be removed from the bearing cap by gently tapping the threaded side of the bearing cap on a block of wood.

Drive Tube Removal

6. The drive tube (20) can now be pulled straight out of the gear box.

Front Tube Removal

7. Remove the front tube (3) from the gear box by first removing set screw (7) and then backing the gear box out of the front tube by rotating counterclockwise.

Union Nut Removal

8. First unscrew counterclockwise the pressure gauge (6) from front tube by using a wrench on the flats provided. Next, remove the bleed valve (5) in the same manner. Then remove the spiral retainer ring (4) by prying the lead end out of the groove and sliding the spiral retainer ring off the end of the front tube. The hammer union (2) can now be slid off the front tube.

Gear Shaft Removal

9. Place the gear box (8) in a soft jawed vise and by holding the handwheel (11) remove nut (9) from the gear shaft using the 1-1/16" socket wrench provided. The handwheel can now be pulled free of the gear shaft. Now place shaft retainer wrench over the gear shaft and back the shaft retainer (12) out counterclockwise. The gear shaft can now be pulled free of the gear box.

End Cap Removal

10. The end cap (31) can be removed, if necessary, from back tube (29) by first removing the set screw (7) and rotating the end cap counterclockwise with the spanner wrench.

Adapter Assembly Removal

11. Remove the spiral pin (A6 or B6) from the adapter assembly (1A or 2A) by using a punch and hammer. The adapter can now be pulled free of the spline rack (32).

Seal Inspection

12. Remove all seals from tool, degrease, and check for wear and nicks.

Overhaul Trouble Shooting Guide

Problem	Possible Cause	Possible Solution
Connection binding during removal	1. Set screw not clear of threads 2. Possible galling	1. Remove set screw from connection 2. Tap connection with hammer while backing off thread
Threads binding during make-up	1. Possible galling	1. Do not proceed, back thread off while tapping with a hammer, deburr, polish and grease threads prior to making up connection.
Gear shaft binding after assembly	1. Gear shaft retainer tightening down on thrust washer	1. Use thinner thrust washers or remove one thrust washer on gear box side.
Tool leaking at connections under test pressure	1. Wrong O-ring	1. Consult parts list for proper seal size. 2. Replace damaged seals and redress seal surfaces
Pipe threads on gauge or bleed valve leaking	1. Improper thread make-up	1. Use Teflon tape or pipe dope on connection.
Grease fitting leaking through full port	1. Ball not seated	1. Grease with grease gun and pressurize the tool. Note: If fitting still leaks, replace.

5. General Welding Instructions for Installing Carbon Steel Access Fittings

1. Determine if the system in which the access fitting is to be placed will permit welding.
2. Remove the plug assembly from access fitting prior to welding.
3. Protect the internal and external threads from weld splatter with a temperature resistant cloth wrapped around the body and dampened on the outside only.
4. Place the access fitting on the line and align.
5. Establish proper weld gap by placing 1/16" spacer rods under the access fitting.
6. Most steels should be preheated prior to welding when the fluid or metal temperature is less than 50°F.
7. Arc welding should be used to minimize warping.
8. Preheat access fitting body to 400°F and tack weld, using AWS 1/8" welding rod of the proper grade.
9. Remove weld gap spacers. Remove tack weld slag.
10. Tie the root pass into the tack weld to make complete fusion. Apply a stringer bead around the base of the fitting, removing slag at each pass.
11. Tempil sticks should be used to ensure that the access fitting body temperature does not exceed 1000°F.
12. Apply continuous cover beads to fill the bevel.
13. Apply a post heat of 600°F for fifteen (15) minutes. Wrap with insulating cloth and allow to cool.
14. Hot tapping will be necessary for lines in service.

Note: Weld time approximately one (1) hour with welder and helper.

The procedure described above is for general access fitting installation reference. Metal Samples **shall not** be held responsible or liable in any way for loss or damage resulting therefrom, or any regulations which they may conflict.

6. General Hot Tapping Instructions for Access Fittings

1. After access fitting has been welded on line in accordance with approved welding procedures, and has completely cooled, the plug assembly should be screwed in by hand to check for warping. Metal Samples provides thread chasers, reamers, and brushes to take care of most difficulties.
2. After it has been determined that the plug assembly will run freely in access fitting, the weld should be tested hydrostatically. Dye penetrant, magnetic particle, or radiographic inspection should also be used to determine the condition of the welds.
3. Remove plug assembly from access fitting if it has not already been done, install the cutter assembly into the access fitting and screw the service valve on the access fitting. Screw the Hot Tap Tool onto the service valve. (Note: If the fitting is mounted at the 12 o'clock position and to make the cut easier, cutting oil may be placed into the access fitting prior to installing the cutter assembly.)
4. Advance feed on the Hot Tap Tool until cutter contacts pipe wall. Rotate cutter while slowly advancing the feed. Completion of the cut can be determined by lack of resistance on the feed screw.
5. Back out the Hot Tap Tool, close the service valve and bleed pressure off prior to removing the Hot Tap Tool from the line. Remove the Hot Tap Tool from the service valve.
6. Install the retriever on the service valve. Open the service valve and remove the cutter assembly from the access fitting. Close the service valve, bleed off pressure from the retriever and remove the retriever from the service valve.
7. Option: Install surge tube (Part Number HA102005) on the service valve. Open the valve and flush fitting to remove any shavings from the threads. Close valve, bleed pressure, and remove surge tube from line.
8. Install plug assembly on the retrieval tool adapter assembly and run in as per the tool operating instructions. *Note: If high resistance is encountered, back plug out, close valve, bleed pressure and try surge tube again, or run taps, reamers, or brushes on retrieval tool to clear fitting of trash and shavings before trying to run plug assembly again.*
9. Once the plug assembly is in place and holding pressure, the tool and valve can be bled off and removed from line and the fitting capped.

Note: With a two (2) man crew, hot tapping excluding weld inspection, usually takes about one-half hour, depending on pipe grade, wall, and site conditions. Another half-hour should be added to allow for running in the plug assembly for a total of about one hour at each site.

7. Retrieval Tool Operation for Installation of Plug Assemblies

1. Install the solid/hollow plug on the retrieval tool adapter.
2. Rotate the retrieval tool handwheel counterclockwise until the plug is full retracted into the tool body. Lock the handwheel in this position by inserting the handwheel lock-pin provided into the top or bottom most lock hole on the inner diameter of the handwheel. This will prevent the possible free downward travel of the rack assembly, which could damage the service valve.
3. The service valve should be in the closed position. Install the retrieval tool on the service valve. Close the bleed valve(s) on the retrieval tool and service valve.
4. With one hand on the retrieval tool handwheel, use the other hand to remove the handwheel lock pin and place it in its keeper (storage) hole on the handwheel.
5. Slowly open the service valve to equalize system pressure into the tool body. An extension bar is provided with the service valve to assist opening the valve, if necessary.
CAUTION: See **Section 8.13** for systems greater than 2000 psi.
6. Rotate the handwheel clockwise (run-in direction) to move the plug assembly down the tool body and through the service valve until it makes light contact with the access fitting.

For HP Plug Assemblies

7. Apply slight clockwise pressure on the handwheel while turning the T-bar handle. This will locate the spring-loaded socket onto the hex of the plug assembly. With the adaptor engaged in the plug assembly, continue turning the T-bar handle clockwise (approximately 15 turns) until a definite, positive stop is felt. This is your indication that the plug has seated. Do not over stress the rack assembly by applying unnecessary rotational force on the T-bar handle.

Note: An alignment mark may be placed on the T-bar handle drive ring to assure that the device is in the proper alignment with the pipe flow.

For MH Plug Assemblies

7. Apply slight clockwise pressure on the handwheel while turning the T-bar handle. Continue turning the T-bar handle clockwise (approximately 10 turns) until a definite, positive stop is felt. This is your indication that the plug has seated. Do not over stress the rack assembly by applying unnecessary rotational force on the T-bar handle.

Note: An alignment mark may be placed on the T-bar handle drive ring to assure that the device is in the proper alignment with the pipe flow.

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8. The retrieval tool may now be bled down to atmospheric pressure. (See **Section 8.14** for the venting of hazardous products.) In liquid service, a bleed hose may be connected to the lower bleed valve with the other end placed in a container to catch the drained product. Open the lower bleed valve. Leave it in the open position. Check the retrieval tool pressure gauge to be sure that the pressure has been released.

CAUTION: If after approximately 1 minute, product continues to vent through the bleed valve, the seal on the plug assembly may not be seated or may be damaged. Close the bleed valve, rotate the T-bar handle counterclockwise 1/8 turn and then clockwise 1/8 turn to its original position. Reopen the bleed valve. If product continues bleeding from the bleed valve port, remove the plug assembly and check the plug seal for damage. (See **Section 7. Retrieval Tool Operation for the Removal of Plug Assemblies.**)

Note: If a bleed hose is connected to the auxiliary bleed valve, be certain personnel at the discharge end are aware of the bleed-off. When the tool is being used in liquid service, a splash pan or container having approximately two (2) gallons (16-inch tool) capacity should be used to contain the liquid which will drain from the tool during bleed-off. Approximately 1/2 cup of liquid will remain in the tool below the bleed valve after bleed-off if the access fitting is mounted in a “12 o’clock” position. This may be bled off using the bleed valve on the service valve.

For HP Plug Assemblies

9. Holding counterclockwise pressure on the handwheel, turn the T-bar handle in the counterclockwise direction until the spring-loaded socket adaptor has cleared the plug assembly.

Note: Monitor the bleed valve for any discharge. If discharge occurs, stop rotating the T-bar handle. Attempt to reseal the plug by putting clockwise pressure on the handwheel and turning the T-bar handle in the clockwise direction. Once the plug is reseated, attempt step 9 again.

For MH Plug Assemblies

9. N/A

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10. Turn the handwheel in the counterclockwise direction until the adaptor is fully retracted in the tool body.
 11. Secure the handwheel in position by removing the lock-pin from its keeper hole and placing it into the lock holes on the inner diameter of the handwheel.
 12. Verify that there is no pressure in the tool body by checking that the bleed valve(s) is in the open position. There should be no pressure indication on the retrieval tool pressure gauge at this time.
 13. Remove the retrieval tool from the service valve. Check for splash pan in liquid service.
 14. Remove the service valve from the access fitting. Check for splash pan in liquid service. If installing electrical devices, dry the plug assembly before installing protective cap.
 15. Install protective cap on the fitting. Close optional bleed valve on the cap.

Note: The retrieval tool and service valve should be cleaned after each day's use with solvent, diesel fuel or hot, soapy water. The tool should be disassembled, cleaned, and inspected after each 50 cycles (approximate) or prior to storage. (See **Section 4. Retrieval Tool Overhaul Procedure.**)

8. Retrieval Tool Operation for Removal of Plug Assemblies

1. Open optional bleed valve on access fitting cap, if present.
2. Slowly remove the cap from access fitting. **Note:** *There may be an escape of a very small amount of product (approx. 2 cubic inches) as the cap is removed from the fitting if the plug assembly primary O-ring was damaged during installation or has deteriorated.* **CAUTION:** A very large volume (prolonged escape) will indicate a plug assembly was not installed into the fitting when the fitting assembly was installed on the pipe. You must shut down the process line to install a plug assembly.
3. Install the service valve on the access fitting with the valve in the full open position. Close the bleed valve(s) on the retrieval tool and service valve.
4. The retrieval tool handwheel should be at its stop in the full, run-out position, secured there by the lock-pin placed in one of the lock holes on the inner diameter of the handwheel.
5. Install the retrieval tool on the open service valve. **CAUTION:** See **Section 8.13** for systems greater than 2000 psi.
6. With one hand on the retrieval tool handwheel, use the other to remove the handwheel lock-pin and place it in its keeper (storage) hole.

For HP Plug Assemblies

7. Slowly rotate the handwheel clockwise to move the spring-loaded socket adaptor to the plug. Slowly turn the T-bar handle clockwise until it comes in contact with the solid plug assembly. Turn the T-handle 3-5 turns to engage the landing screw in the plug. Check for engagement by attempting to rotate the handwheel counterclockwise. The handwheel should not rotate. If it does rotate, repeat the start of this step. With slight clockwise pressure on the handwheel turn the T-handle in the clockwise direction until the spring-loaded socket seats on the solid plug. With continued pressure on the handwheel, turn the T-handle in the counterclockwise direction 2-5 turns. **Note:** *You should notice system pressure equalizing past the plug assembly into the retrieval tool body after approximately two (2) turns of the T-bar handle.*

CAUTION: Do not rotate the T-bar handle more than five (5) times without equalization occurring. If pressure does not equalize, you must have the tool back pressured to equal or to slightly exceed system pressure to successfully accomplish plug retrieval. Equalization may be verified by checking the pressure gauge on the retrieval tool. As you rotate the T-bar, you will notice the handwheel is rotating in the run-out direction.

For MH Plug Assemblies

7. Slowly rotate the handwheel clockwise to move the collet on the adaptor to the plug. Continue to rotate the handwheel in the clockwise direction to engage the collet into the plug. Turn the T-handle in the counterclockwise direction 2-5 turns. **Note:** *You should notice system pressure equalizing past the plug assembly into the retrieval tool body after approximately two (2) turns of the T-bar handle.*

CAUTION: Do not rotate the T-bar handle more than five (5) times without equalization occurring. If pressure does not equalize, you must have the tool back pressured to equal or to slightly exceed system pressure to successfully accomplish plug retrieval. Equalization may be verified by checking the pressure gauge on the retrieval tool. As you rotate the T-bar, you will notice the handwheel is rotating in the run-out direction.

8. When the handwheel stops rotating, the plug assembly has reached the end of its threads. (For HP approximately 15 turns. For MH approximately 10 turns.) Rotate (run-out) the handwheel to its stop to retrieve the plug into the tool body.
9. Lock the handwheel in the full run-out position to prevent possible damage to the service valve or plugs should it gravitate downward.
10. Close the service valve.
11. The retrieval tool may now be bled down to atmospheric pressure. (See **Section 8.14** for venting hazardous products). In liquid service, a bleed hose may be connected from the tool to a container to catch the drain product. Open the retrieval tool bleed valve(s). Leave the bleed valve(s) open. Check the retrieval tool pressure gauge for zero reading.

Note: If a bleed hose is connected to the auxiliary bleed valve, be certain personnel at the discharge end are aware of the bleed-off. When the tool is being used in liquid service, a splash pan or container of approximately two (2) gallon capacity (16-inch tool) should be used to contain the liquid which will drain from the tool during bleed-off. Approximately 1/2 cup of liquid will remain in the tool below the bleed valve. A splash pan will contain this residual product.

12. Manipulate the plug assembly out of the tool body for service or inspection.
13. Where the retrieval tool is being operated on systems over 2000 psi, it is recommended the operator back pressure the tool to equal system pressure after installing the tool on the service valve, (see Back Pressure Procedure below). Since the pressure differential across the plug is decreased, thread life in the plug/fitting assemblies is prolonged. Torsional requirements on the spline rack are also reduced and the plug will be more easily removed.

Back Pressure Procedure

- 13.1 To back pressure the retriever, attach the male quick connect to the retriever bleed valve. Either retriever bleed valve may be used.

Suggestion: Attach the back pressure pump hose to whichever retriever bleed valve is lower so that the upper retriever bleed valve may be used to bleed off air as the retriever is filled.

- 13.2 Connect the back pressure pump hose female quick connect to the male quick connect.

13.3 Open the retriever bleed valve and pressurize the retriever to system pressure. Operate the back pressure pump in accordance with the *Enerpac* tech manual.

Note: The back pressure pump reservoir may need to be filled several times to completely fill the retriever.

13.4 Pressurize the retriever to slightly less than system pressure. Shut the retriever bleed valve, depressurize the back pressure pump, and remove the pump from the retriever.

13.5 Return to Step 6.

14. It may be necessary to use a vent hose to keep operating personnel from exposure to hazardous products when the tool is bled to atmospheric pressure.

9. Tool & Seal Kits for Retrieval Tool

Tool Kit (PS5698)

<u>Qty.</u>	<u>Description</u>	<u>Part No.</u>
1	HP Thread Chaser	HA102038
1	Allen Wrench 1/8" Short Handle	PR6351
1	Allen Wrench 3/16" Short Handle	PR6352
1	Allen Wrench 3/32" Long Handle	PR6478
1	Shaft Wrench, C4140	PR6292396
1	Socket 1-1/16" Hex 1/2" Drive	PR6355
1	Socket 1-1/8" Hex 1/2" Drive	PR7374
1	Seal Kit	KR1025
1	Spanner Wrench Adj Pin 2" to 4-3/4"	PR6356
1	Sliding Tee Handle Wrench 1/2" Sq Dr	PR6357
1	Hammer 1-2.9# Deadblow Non-Spark	PR6358
1	Pin Punch 3/16" Pin	PR7118
1	Adapter Guide 316	PR7189158
1	Wire Brush	SWS0017

Seal Kit (KR1025)

<u>Qty.</u>	<u>Description</u>	<u>Part No.</u>
1	O-Ring	PR7431834
4	O-Ring	PR7430834
1	O-Ring	PR7433834
1	Omniseal	PR6251
1	O-Ring	PR7432834
1	O-Ring	PR6280834D90
1	O-Ring	PR7429834
1	O-Ring	PR7439834
1	O-Ring	PR7428834

See **Section 2. Parts and Material List** for location of seals.

10. Optional Accessories for Retrieval Tool

<u>Part#</u>	<u>Description</u>
HA104005	Diverter Hose 10 Feet
HA104003	Hollow Plug Moisture Seal Plug
HA104004	Hollow Plug Overshot Adapter
HA102016	HP Thread Tap Assembly for Repair of Damaged Threads
HA102036	HP Thread Die Assembly
HA102038	HP Thread Chaser for Cleaning of Threads
HA102009	MH Thread Chaser Assembly for Cleaning of Threads
HA104001	Retriever Backpressure Kit - pneumatic
HA104002	Pipe Plug Retriever Adapter
HA104000	Retriever Backpressure Kit - hydraulic
SWS0017	Stainless Steel Wire Brush
HA104006	Surge Tube Assembly