



COSASCO® RSL RETRIEVER AND DOUBLE ISOLATION SERVICE VALVE

Work Instruction



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Revision History Record

ECN No.	Page No.	Rev	Date	Description of Change	Issue	Reviewed	Approved
	ALL	-	2/15/13	Initial Release	KR	ENG	RA
	ALL	A	3/05/13	General Revision	KR	ENG	RA
	5	B	4/11/13	Added Disclaimer Notes	KR	ENG	RA
	8,13,15 ,18, 21, 25	C	8/20/13	Added Revision History, Improvements to document in line with Shell's docs.	KR	ENG	RA
	ALL	D	01/30/14	Annual Review	KR	ENG	RA
	ALL	E	03/25/15	Annual Review	KR	ENG	RA
	ALL	F	04/01/15	Annual Review/Added notice on footer	KR	ENG	RA
	ALL	G	12/15/15	Annual Review/Update Cover and Name to Cosasco Throughout Document. Added Step 7.3.1 and 7.7.3	KR	ENG	RA
	ALL	H	07/21/16	Added Thread Brush ref. 7.6 Added Thread Brush ref. 7.9 Step 3 Notes Added Valve Blanking Cap ref. to 7.9 Warning box Added Thread Brush and No-go gauge ref. 7.9 Changed 8.3 - Thread Tap removed, Thread Chaser added Added 8.9 - No-Go Gauge	JL	ENG	RA
	43	I	03/03/17	Added Flow Chart	MP	ENG	RA
	16 22 29	J	26/06/17	Remove use of hand tools Insert comment regarding plug renewal every 3 insertions. Remove use of hand tools	JT	JL	DS
20988	ALL 2	K	02/07/18	Annual Review Insert ECN No	JL	MR	DS
21102	18&19 20 21	L	26/10/18	Step 7.4 (P18) and Step 7 (P19) Amended back pressure to at least 10% above line pressure and not to exceed the equipment rating. Step 3 Added not to exceed the equipment rating. Added new Step 3 to deal with non-equalization of the equipment.	JL	MR	DS

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1 IMPORTANT INSTRUCTIONS

Cosasco is committed to providing the safest and highest quality products, services, and training for the industries it serves. We are committed to ensuring that all users of our equipment work safely and efficiently. Fully anticipating the infinite variety of conditions that may be encountered in the field would be impossible, but we have designed this work instruction to emphasize safe working practices, and as much as possible, to convey the full benefit of our knowledge and collective experience in the use of the Cosasco RSL Retriever and Double Isolation Service Valve. This work instruction is not meant to be a sole source of instruction or training guide. Because these tools are used in a broad range of environments and applications, it is important that the owner and operation personnel have been assessed, certified, and deemed competent in all safety, work management and additional risk assessment requirements in the application of this procedure.

WARNING



Installing, operating or maintaining a Cosasco high pressure RSL retrieval tool improperly could lead to a leak, serious injury or worse, from a surge of pressure into the Retriever, damaging the internals of the retriever. Comply with all information on the product, in this work instruction, and in Cosasco System Safety Awareness Training that apply to the product. Do not allow untrained or inexperienced personnel to work with this product. Use Cosasco parts and work procedures specified in this work instruction.

BE SURE ALL PERSONNEL READ AND FOLLOW THE INSTRUCTIONS IN THIS WORK INSTRUCTION AND ALL PRODUCT WARNINGS.

Product Owners (Purchasers)

1. Use the correct product for the environment and pressures present. If you are unsure, discuss your needs with your Cosasco representative.
2. Inform, educate, and train all personnel in the proper installation, operation, and maintenance of this product.
3. To ensure proper performance, only competent, field experienced and trained personnel should install, operate, repair and maintain this product.
4. Save this work instruction for future reference.

Product Operation Personnel (Personnel):

1. Read and understand all instructions and operating procedures for this product.
2. Follow all warnings, cautions, and notices marked on, and supplied with, this product.

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3. Follow all instructions during the installation, operation, and maintenance of this product.
4. To prevent personal injury, ensure that all components are in place prior to and during operation of the product.
5. If you do not understand an instruction, or do not feel comfortable following the instructions, contact a Cosasco service technician for clarification or assistance.
6. If this work instruction is not correct for your Cosasco product, contact your regional Cosasco office and Cosasco will provide you with the requested work instruction.
7. Use only replacement parts specified by Cosasco. Unauthorized parts and procedures can affect this product's performance, safety, and invalidate the warranty. "Look-a-like" substitutions may result in improper operation and may result in serious injury or death.
8. Save this work instruction for future reference.

2 DISCLAIMER

This disclaimer relates to the use of these work instructions by non-Cosasco persons and entities.

Any person or organization utilizing this work instruction, for any purpose, does so at their own risk. Rohrback Cosasco Systems, Inc., its affiliates and employees assume no liability arising from the use of, or reliance on the information provided in any Cosasco work instructions.

Information provided in this work instruction should not be considered as all-encompassing or suitable for all situations, conditions or environments. Each individual and the organization he or she represents are responsible for implementing their own program of training and safety awareness in connection with this work instruction.

Application of information furnished by this work instruction does not guarantee that the information furnished will meet applicable USA (including OSHA), United Kingdom, or any other country's health or safety standards or requirements or, that by implementing any of the programs you or your company will comply with such rules and regulations. Always seek the advice of your legal, medical or other advisors before using this information.

3 SAFETY WARNINGS

WARNING



It is imperative that the following safety warnings are taken into important consideration before and during use of Retrieval Equipment. Safety warnings are noted throughout this document to ensure precautions are taken for all procedures where there are risks involved. Failure to follow these warnings could result in serious injury or death.

1. Safe operation requires two experienced and competent operators.
2. Do not use this retrieval equipment unless you have been trained and competent in its safe operation.
3. If it has been longer than 90 days since your last operation, you should review the work instruction and complete an operation on a pressurized test rig.
4. Ensure all Retrieval Equipment is in good working order and has been tested in line with Section 8.1 of this work instruction.
5. Make sure you have complied with all plant safety requirements and environmental regulations.
6. Identify the type of media its pressure and temperature. Review material safety data information on the media prior to operation.
7. Ensure you have all the required safety equipment for the given media, "i.e. hard hat, safety glasses, protective clothing, safety gloves, respirator, spill safety equipment, etc...
8. Any actions which could vary system pressure such as surges caused by opening and closing of valves and chokes should be delayed until completion of retrieval operations.
9. Ensure you have enough clearance for safe operation. Note wind direction prior to starting operations involving hazardous products.
10. **WARNING:** Surface temperature may be hot. Contact may cause burn.
11. **WARNING:** Do not exceed equipment specified pressure rating. Over-pressurization can cause equipment to fail/burst posing a variety of safety hazards.
12. **WARNING:** Be sure to introduce pressure gradually into the tooling by opening the appropriate valve slowly. This safety measure is taken to prevent personal injury, environmental contamination and equipment damage.
13. **WARNING:** Do not apply a load of more than 150 pounds, perpendicular to the Retriever body axis, to prevent breakage from bending stresses.

4 SCOPE OF DOCUMENT

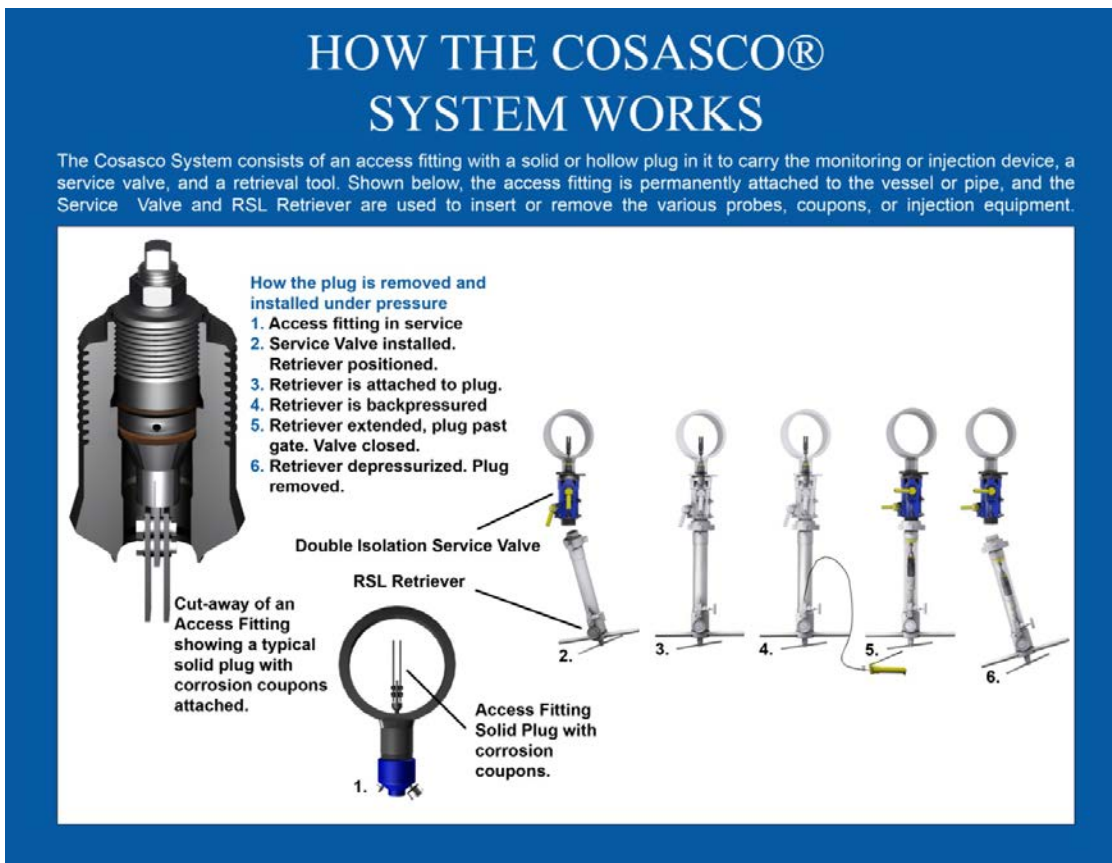
This document details the procedure for the installation and retrieval of corrosion and erosion monitoring devices or chemical injection equipment using the Cosasco RSL Retrieval Tool and Double Isolation Service Valve from 2" system access fittings.

Also included is the use of special ancillary tools in conjunction with the Retriever and Service Valve. These tools are designed to allow installation and retrieval of the above mentioned devices from access fittings without shutdown when production pipework is at full operating pressure.

This document is not to be used as a training manual in the use of the fore mentioned equipment and is intended for use by Cosasco trained and qualified personnel or service personnel of clients who have been assessed, certified, and deemed competent in all safety, work management and additional risk assessment requirements in the application of this procedure. The lead technician is responsible for the strict adherence to this work instruction.

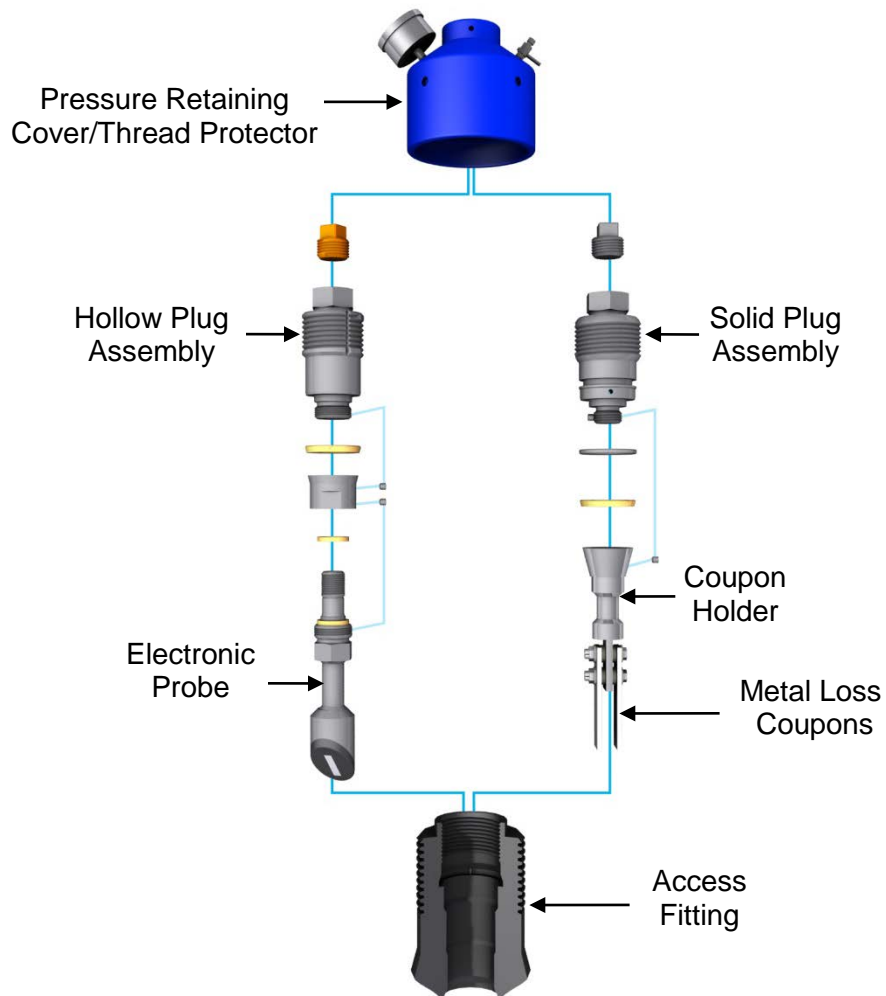
5 HOW THE COSASCO SYSTEM WORKS

5.1 Access Fittings



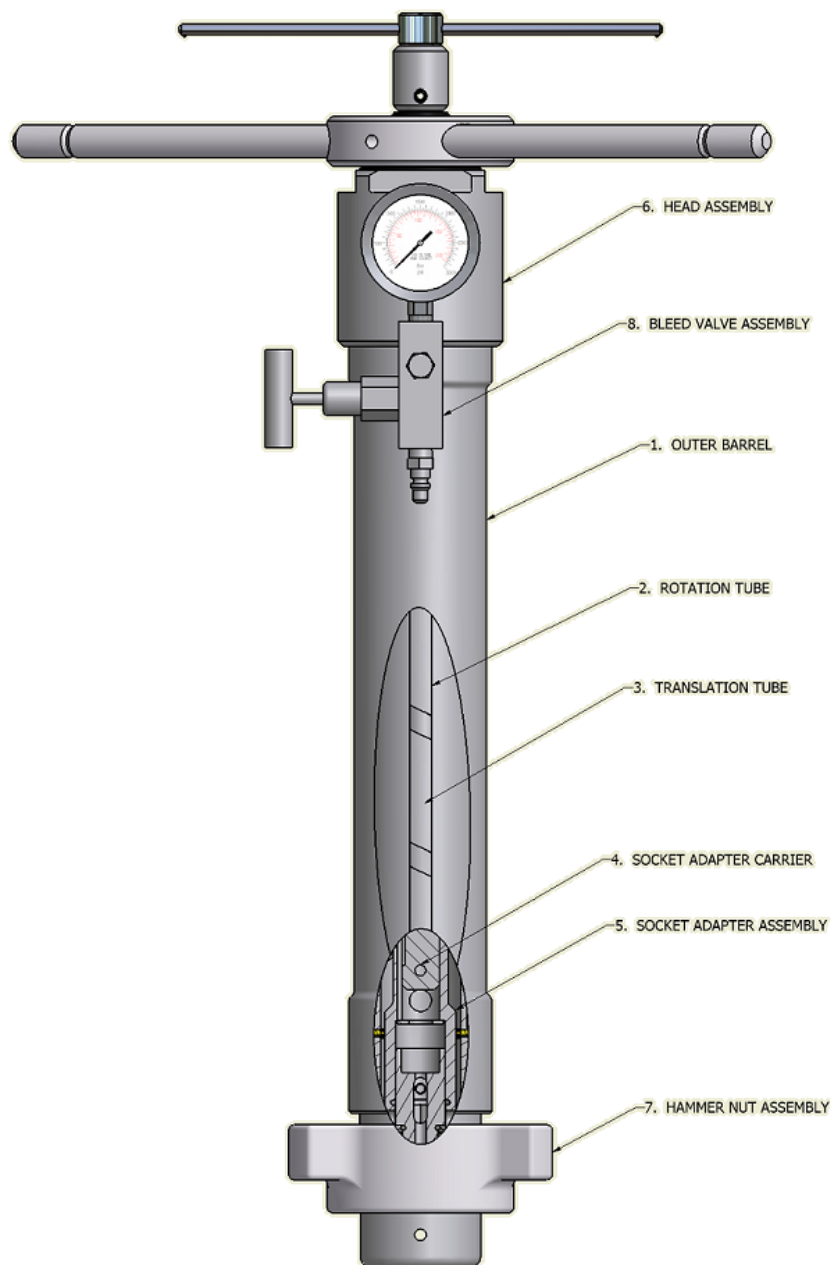
The COSASCO Access Fitting Assembly is the key to the concept of “Access under pressure - any time, any place”. When used with a COSASCO Retriever and Service Valve, the Access Fitting Assembly permits safe, easy insertion and retrieval of corrosion and erosion monitoring systems as well as preventive maintenance devices for injecting inhibitors or for sampling, etc. while under full operating pressure.

The COSASCO Access Fitting Body is available in several standard mounting configurations, including Flarweld, Buttweld, Socketweld, NPT, and Flanged. Access Fitting bodies are available in a wide variety of materials. Typically, the Access Fitting body material will be chosen to be compatible with the pipe or vessel material. The Access Fitting consists of the body, a hollow or solid plug assembly, and a pressure retaining or protective cover.



5.2 The Retrieval Tool

The standard RSL retrieval tool features a stainless steel outer barrel, Viton O-rings and graphite impregnated Teflon seals. They are pressure rated up to 6000 psi (414 barg) and have a maximum operating temperature of +400°F (+204°C) and meet the NACE MR0175 standard. The retriever has eight main parts as displayed below: Outer Barrel, Rotation Tube, Translation Tube, Socket Adapter Carrier, Socket Adapter Assembly, Head Assembly, Hammer Nut Assembly, Bleed Valve Assembly and Pilot adaptor.



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The most commonly used retrieval tools come in 18", 25" & 37" stroke lengths. The stroke length determines the length of device the retrieval tool can accommodate for installation or retrieval.

Some useful retrieval tool specifications are included in the table below.

RSL- Retriever Stroke Length	Clearance required for removal of retrieval tool (measured from top of access fitting)	Weight	DBBV 3600 PSI		DBBV 6000 PSI	
			Max. Device Length (S) Solid Plug or (H) Hollow Plug	Max. Device Length (S) Solid Plug or (H) Hollow Plug	Max. Device Length (S) Solid Plug or (H) Hollow Plug	Max. Device Length (S) Solid Plug or (H) Hollow Plug
18"	45.25" (114.9cm)	55lb (24.9kg)	5.50" (S) 4.00" (H)	4.50" (S) 3.00" (H)		
25"	52.25" (132.7cm)	63lb (29.0kg)	12.50" (S) 11.00" (H)	11.50" (S) 10.00" (H)		
37"	64.25" (163.2cm)	76lb (36.7kg)	24.50" (S) 23.00" (H)	23.50" (S) 22.00" (H)		

5.3 The Service Valves (Double Isolation)

The service valve contains line pressure while the plug is absent from the access fitting body during on-line service. The valves are pressure rated to 6000 psi and 3600 psi, with a maximum operating temperature of +450 F (232 C)* and also meets NACE MR0175 and MR0103 standards. It incorporates two bypass valves allowing controlled pressure equalisation of the retrieval tool during on-line retrievals and one bleed valve.

*With high temperature seal options



Double Isolation Service Valve
6000 psi



Double Isolation Service Valve
3600 psi

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5.4 Back Pressure Pump



To ensure safe working practices, a Back Pressure Pump must be used with all COSASCO Retrievers.

"Back Pressuring" pressurizes the retriever to a pressure slightly higher than the line pressure, thereby preventing a surge of pressure when the plug assembly is removed. Back pressuring also helps to loosen and push back any debris that may have accumulated in the access fitting.

5.5 Servicing & Pressure Testing of Retrieval Equipment

IMPORTANT!

Retriever and Service Valve must be pressure tested prior to use to ensure safe operation of tools!

All Retrieval Tools and Service Valves must be pressure tested prior to use. The Field Technician using the equipment must possess current pressure test certificates for the retrieval equipment prior to commencing on-line retrievals operations.

If the pipelines being worked on contain heavy debris, including, but not limited to; iron sulphide, sand, solids and iron oxide, the tool may become contaminated and difficult to use. The Field Technician will determine on a case by case basis if the tool needs to be stripped down or if it can be flushed out with either water or suitable cleaning agent without stripping the tools down.

At the end of each major service visit, the tools will be stripped down, cleaned, seals replaced as necessary, re-assembled and pressure tested. See Section 8.1 for pressure testing procedure.

6 PRE JOB PREPARATION

The following three sections discuss the major steps required, prior to starting any on-line retrieval using the RSL Retrieval Tool and Service Valve. The lists in the following sections are prompts and are not intended to replace client Risk Assessments or Job Safety Analysis, which will also have to be completed prior to work start.

6.1 *Site Survey*

It is necessary to perform a Job Step Analyses at each work location prior to work start, to ensure the following variable information is known:

- Scaffolding or any additional access requirements to ensure safe access and egress to work site
- Clearance for extension the Retrieval Tool and Service Valve. *See table in section 5.2 for guidance on clearances required.* A 1.5 M radial clearance around the retrieval tool will also be required for its operation
- Pipe line pressures & temperatures, so that operating pressure of tools is not exceeded
- Any potential hazards around the worksites, such as slip, trip or fall hazards
- Emergency access & egress routes
- The pipe line media, which the equipment and operators will be exposed to
- Means of raising alarm in emergency situations

6.2 *Documentation & Communication*

Prior to work start the following documentation must be generated and reviewed:

- Permit to Work, as specified by the client
- Client specific Risk Assessment or Job Step Analyses, with Cosasco personnel input
- Critical step checklist
- SAFR location sheet
- Pressure test certificates for Retrieval tool, Service valve, and Back pressure pump with hose
- Personnel competency certificates

A toolbox talk will be performed by the lead Engineer (Cosasco or Client), including but not limited to the following:

- The main steps involved in the job
- Equipment to be used
- Review of work permit and risk assessment
- PPE required
- Means of communication with Control Room personnel
- Actions to be taken in the event of an emergency

- Control room is aware of work party location
- All personnel involved with the work are aware of all control measures and are competent to be involved in the work
- Work party are aware of any other work taking place in close proximity to worksite
- Any additional hazards identified during this talk should be reviewed and control measures implemented

6.3 On-site equipment and Worksite Checks

Upon completion of the steps in section 6.1 & 6.2 final checks should be made at the worksite prior to work start, including equipment checks and worksite checks as follows:

Worksite

- Ensure any scaffolding to be worked on is certified and is of safe design
- Check previously identified escape routes are still clear
- Test means of communication with control room
- Double check PPE is in good condition and fit for purpose
- Identify any other work parties in proximity to the work location

Retrieval Equipment

- Inspect the Service Valve O-ring, which seats on the access fitting for any damage
- Inspect the Retriever O-ring which mates with the service valve at the hammer union
- Extend and collapse the Retriever inner barrel to ensure it is free to move and does not display any sign of binding
- Open and close the Service Valve to ensure that the ball valve is free to move and does not display any sign of binding
- Ensure that the Socket adapter assembly on the Retriever is adjusted to suit the valve in use (i.e. holes 4&6 for double valve) and device being installed or removed to / from the access fitting.

WARNING



If a situation arises during the execution of this Work Instruction, which requires a deviation, then an approved Job Step Analysis will be required before continuing with the operations at the monitoring location concerned. The JSA must be approved by Cosasco and by the Operator of the site before proceeding with the deviation. Site specific work permit policies should be followed to ensure site management are fully aware of the deviation to the standard procedures. No further steps may be taken at the monitoring location concerned until this is completed. Work may proceed as per the work scope at the next applicable monitoring location whilst the JSA is reviewed and issued for approval.

7 RETRIEVAL AND INSTALLATION OF DEVICES FROM 2" SYSTEM ACCESS FITTINGS

WARNING!



It is imperative for the operator to first determine pressure, temperature, and the type of media before the retrieval operation is started. Any action which could vary pressure, such as surges caused by the opening or closing of valves or chokes, must be delayed until after the retrieving operation has been completed. Failure to determine line pressure or change in line pressure will not let the operator determine if the Retriever has been completely pressurized which could lead to a leak, serious injury or worse.

7.1 Removal of Caps from Access Fittings

1. If a thread protecting cap is installed, use a C spanner to remove the cap.
2. If a pressure bearing cap is fitted, check gauge for pressure indication, if none is indicated open the bleed valve on cap to confirm no pressure is present and proceed to step 4. If pressure is present proceed to step 3 below.
3. If pressure is indicated on the pressure gauge of the cap, attempt to bleed off the pressure to assess the rate of leak past the carrier plug primary seal or the probe seal. If it is possible to bleed off pressure within 10 seconds, close the valve and check for speed of build-up. If pressure builds up within 2 minutes the cap cannot be removed and a shutdown will be required to remove the cap. If pressure does not build up, proceed to step 4 below.

WARNING!



If there is pressure build-up after a waiting period of 2 minutes as noted in the previous step, do not remove cap! A leak has occurred between the access fitting and plug assembly seal. A shutdown will be required to remove the cap. Serious injuries may occur if the cap is removed with pressure build-up.

4. Once the cap has been confirmed free of pressure, unscrew the cap using a C spanner. If a Swagelok probe adapter is installed through the cap, the adapter will have to be removed prior to removal or turning of the cap. Once the Swagelok nut is completely unthreaded pull the probe extension adapter away from the cap, this disconnects the adapter from the probe pins. Keeping a slight pulling pressure on the adapter unscrew the pressure retaining cover from the access fitting using a C spanner if necessary. It may be necessary for two operators to carry out this operation.

7.2 Access Fitting Preparation & Installation of Service Valve

1. Remove either the 1/2" SS pipe plug or 1/2" red plastic pipe plug from the hex of the carrier plug. If at any stage during removal of SS pipe plug (if fitted), line product can be seen travelling up the plug threads **STOP** and re-tighten hand tight. A steel pipe plug adapter in conjunction with back pressure pump will have to be used for removal of the carrier plug – **see special tools and adapters in section 8 of this procedure.**
2. If no indication of pressure is present remove the pipe plug and clean any grease or deposits from the external threads and sealing face of the access fitting. If excess corrosion product is present on any of the surfaces, attempt to remove using a wire brush. The external sealing face of the access fitting must be smooth and free of pitting, to ensure a good seal is made between the valve and access fitting.
3. When the access fitting has been cleaned, check with a magnet if fitting and plug materials are carbon or stainless steel and record findings in SAFR location sheet prior to applying nonmetallic grease to the threads and sealing face of the access fitting.
4. Check the Service Valve as follows:
 - Both ball valves are in the open position
 - Bleed valve is closed
 - By-pass valves are closed
 - O-Ring is in good condition
5. Install Service Valve on to the access fitting ensuring that the valve handles are positioned so that the valve can be opened and closed, and then tighten the hammer union with a non sparking hammer; ensuring valve is in the open position and firmly seated on the access fitting.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

7.3 Installation of Retrieval Tool

1. Inspect the mating retrieval tool to valve O ring seal on the retrieval tool and ensure there are no nicks, abrasions or damage etc. If damaged this seal should be replaced immediately.
2. With 2 Cosasco trained operators, mate retriever to service valve by lift the retrieval tool in to position to mate it with the valve, then tighten the retriever hammer union clockwise and tighten using a non-sparking hammer. **Note** - *Prior to lifting the retriever, if the access fitting is in a top of line position, it may be necessary to use an RSL retriever handle to lift it safely.*
3. Double check that the Retriever bleed valve is closed & Service Valve bleed and bypass valves are closed.

WARNING!



Double check that both the Retriever bleed valve and Service Valve bleed valve and bypass valves are closed! Leakage will result when plug assembly is disengaged. Leakage of volatile or high temperature media could result in serious injuries!

WARNING!



The next step includes "pressuring balancing" of the Retriever. Pressure balance between the line and the Retriever is crucial. If the Retriever is not pressure balanced when plug is removed, a surge of pressure may cause the internals of the retriever to be damaged which could lead to a leak, serious injury or worse.

Read the following warnings and make sure that you carefully review every step of the procedure.

- Never stand under or over the Retriever!
- Line Pressure must be identified! Do not proceed until you have verified line pressure! If line pressure cannot be verified, do not proceed!
- Make sure there is adequate clearance area.
- Ensure both operators performing the retrieval are always clear of the Retriever barrel and handles in case there is a surge of pressure possibly causing the handles to spin uncontrollably.
- Always keep body and head as far away from the Retriever as possible when performing pressurization.
- For all applications, retrievals must always be "back pressured" using back pressure pump or other method of back pressuring, due to build-up of solids in the access fitting that may cause blockage
- Check pressure gauge on Retriever to verify that it is working properly.

IMPORTANT!

For all applications Retriever must be back pressured. Failure of the Retriever to pressurize is normally due to contamination or build-up of debris in the access fitting. The debris is trapped in the access fitting

and pushes its way in while the plug assembly is being backed off, causing blockage and not allowing line pressure to enter the Service Valve and Retriever. Back pressuring the tool will prevent the internals of the retriever from being damaged when the plug is completely removed from the access fitting.

7.4 Back Pressuring Procedure - Device Retrieval

IMPORTANT!

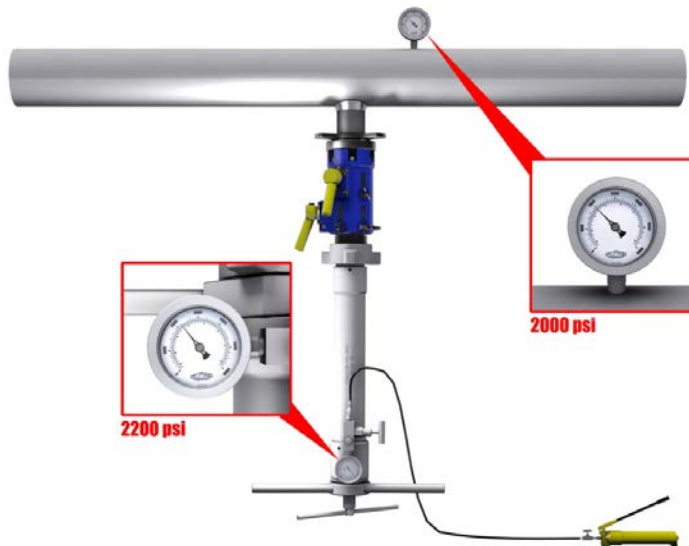
Retrieval tool, Service valve and Back Pressure Pump with Hose must be pressure tested prior to assure safe operation of tools!

Back pressuring the retrieval tool involves connecting a high pressure pump or other means of pressurization, such as nitrogen bottle via a hose, to either the valve bleed port or retrieval tool bleed port. The retrieval tool is then pressurized above pipe line pressure by at least 10% but not exceeding the pressure rating of the retrieval equipment.

All fittings must be back pressured to ensure safe working practices.

When the carrier plug is unscrewed the overpressure in the Retriever passes the carrier plug and will help push any debris back in to the pipe. This in turn will help prevent debris fouling the carrier plug threads and damage to the retrieval tool.

Back Pressure Pump Back Pressuring Procedure:



Back Pressure Pump shown connected to bleed port of the Retriever

1. Start Position: Valve and Retriever fitted to the access fitting with the carrier plug in the fully installed position ready for removal.
2. Attach quick connect fitting to Service Valve bleed port or retrieval tool bleed port.
3. Attach high pressure hose to pump. **Note** - Pump, hose and all connections must be pressure rated to at least the same pressure rating of retrieval tool.
4. Connect other end of hose to retrieval tool or Service Valve (depending on orientation) via the quick connect coupling.
5. Fill pump reservoir with desired fluid, potable water will normally be used although hydraulic oil can be used if required.
6. Open the bleed valve on the Retriever and Service Valve bleed ports.
7. Begin actuating the pump. Once the Retriever and Service Valve are full (purged), close the bleed valve that does not have hose the attached. Keep pumping until pressure indicated on pump or retrieval tool pressure gauge is at least 10% above line operating pressure but not exceeding the pressure rating on the retrieval equipment.

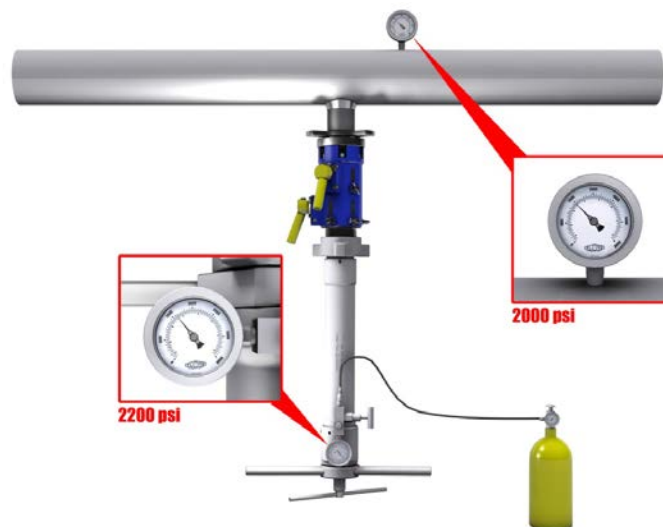
WARNING!



Ensure lowest pressure rating of retrieval tools are never exceeded (Retriever and Service Valve)

8. Once the desired pressure has been achieved, close the bleed valve on the retrieval tool or Service Valve.
9. Release the pressure back to pump reservoir from the hose via the pump valve.
10. Disconnect the hose from the retrieval tool or Service Valve.

Nitrogen Bottle Back Pressuring Procedure:



Nitrogen Bottle shown connected to bleed port of the Retriever

1. Connect a high pressure hose to the Retriever bleed valve or Service Valve bleed valve.
2. Nitrogen bottle connection. Connect the other end of the high pressure hose to the nitrogen bottle outlet. It is recommended that:
 - The nitrogen bottle pressure be at least 200 psi (13 bar) higher than the line pressure.
 - The nitrogen bottle be equipped with a regulator.
 - The nitrogen bottle be fitted with a bleed valve. (This is desirable to allow bleeding down the hose after back pressuring is completed).
3. Nitrogen bottle control valve. Open the control valve and allow pressure build-up within the hose to 200 (14 bar) to 300 psi (21 bar) above the line pressure but not exceeding the pressure rating of the retrieval equipment.

WARNING!



Ensure lowest pressure rating of retrieval tools are never exceeded
(Retriever and Service Valve)

4. Open the Retriever bleed valve or Service Valve bleed valve.
5. Allow the nitrogen pressure to enter the Retriever.
6. Once the desired pressure has been achieved, close the bleed valve on the retrieval tool or Service Valve.

IMPORTANT!

Make sure both bleed valve on the retrieval tool and Service Valve are both closed in order to retain pressure when nitrogen bottle is disengaged!

7. Close the nitrogen bottle control valve. Bleed off the pressure within the hose and disconnect it from the Retriever bleed valve.

7.5 Removal of Carrier Plug

1. Rotate the translation handle clockwise to move the socket adapter over the top of the plug. Once at the top of the plug, rotate the rotation handle clockwise to thread the socket adapter into the plug assembly. Slight clockwise pressure should be maintained on the translation handle to move the carrier forward as the thread engages the plug assembly, but not so much pressure that the hex on the socket adapter drops over the plug assembly. If the rotation handle becomes difficult to turn, rotate the translation handle slightly clockwise. If the rotation handle becomes easy to turn, then continue threading it into the plug. If it remains difficult, then the hex has probably engaged the plug, at which point you must rotate the translation handle counter clockwise to disengage the hex, and then continue clockwise with the rotation handle.

2. Once properly engaged to the plug, thread the socket adapter into the plug assembly about 3 or 4 turns. While maintaining clockwise pressure on the translation handle, to assure the hex stays firmly over the plug assembly, turn the rotation handle slowly anticlockwise one turn.
3. If the pressure in the retrieval equipment has not equalised with the line pressure after a maximum of 4 turns then the plug should not be removed any further. The plug should be re-inserted and more attempts should be made to try and equalise the system by running the plug in and out over the first 4 threads in an effort to create a bleed path. If this is not effective then the plug should be re-inserted fully and left for shutdown conditions to rectify.

Proceed to Step 4 only if the system has been successfully equalised.

4. With line pressure and retrieval tool pressure equalized, rotate the rotation handle anti-clockwise approximately 15 full turns to unscrew the carrier plug from the access fitting while maintaining slight clockwise pressure on the translation handle, to ensure the hex stays firmly over the plug assembly.
5. Hold the rotation handle and rotate the translation handle anti clockwise until the carrier plug is completely withdrawn into the retriever. Keep the rotation handles stationary during this step. If the translation handle stops after about ¼ of a turn, then the plug assembly is not completely removed from the access fitting body. In this case, drop the hex back over the plug assembly (see section 7.5 step 1) and continue to unthread the plug assembly until it is completely withdrawn from the access fitting body.
6. Close the ball valve closest to the access fitting to isolate line pressure. Note – *at this stage the retriever still contains line pressure.*
7. Release pressure from Retriever gradually using either the Service Valve or Retriever bleed valve into a suitable container to catch fluids. When venting, particular notice should be paid to the location of gas detection systems and general ventilation of area. **Note** - *Systems with a known high H2S content must be vented via a diverter hose to a safe location, such as a closed drain, away from personnel.*

WARNING!



Make sure Retriever has been completely depressurized! Leakage will result when Retriever is removed from Service Valve if not completely depressurized. Leakage of volatile or high temperature media could result in serious injuries!

8. Before removing the Retriever, close bleed valve on Retrieval tool or Service Valve and leave for 2 minutes to ensure the Service Valve is holding pressure. Monitor for any pressure build up.
9. Once the ball valve closest to access fitting is verified as holding line pressure close the 2nd ball valve closest to the retriever to provide double isolation when the retriever is removed.
10. While one operator is holding the retriever in position, the other operator should use a non sparking hammer to loosen the retriever hammer union from service valve. Both operators

can then remove the retriever from the service valve. Carefully turn the retriever translation handle to expose the monitoring device or injection quill, which can now be removed from the retrieval tool and replaced or serviced. Ensure that the retriever is located somewhere stable during service of the device.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

11. You may install a Service Valve blanking cap with bleed and pressure gauge onto the valve. However this is not normally required with the Double Isolation Service Valve.
12. Check the retrieval tool operation by turning both the Rotation and Translation handle's on the retriever to ensure the socket adaptor assembly moves freely up and down the internals of the retriever and it turns clockwise and counter clockwise. If it is difficult to operate or feels contaminated with solids, rinse the internals with a suitable cleaning agent or in some cases water is sufficient. Continue rinsing until operation of retriever feels smooth. If flushing does not improve the function of the retriever it will have to be stripped down and cleaned before continuing use.

7.6 Preparation of the Carrier Plug & Device

Pre-installation note

When devices have been removed from any fitting below the center line of the pipe, it is possible that the access fitting can act as a trap for solids, which can contaminate the internal threads of the access fitting, and present issues with re-installation of the device and carrier plug. If significant solids contamination is present when the carrier plug is removed, it will be necessary to back pressure the retrieval tool prior to opening of the Service Valve, which helps disperse any solids back in to the pipeline.

Following the backpressure operation, a thread chaser should be used to ensure that the internal threads are clean to allow smooth insertion of the carrier plug into the access fitting. The procedure for back pressuring, thread brushing and thread chasing is included in section 8 special tools and procedures.

1. Carrier plugs should be replaced after three insertions. Any damaged plugs should be replaced. Do not re-dress plugs. Any plugs found to be damaged during this recommended service schedule should be replaced with new. Fit a new primary packing after each service, and for a solid carrier plug, replace the secondary O' ring seal if it is excessively worn or damaged.
Note – Devices fitted to both solid and hollow plugs have a reverse thread.
2. For a solid plug, screw the coupon holder or chemical injection nut down on to the primary packing seal and tighten using a suitable spanner, then tighten the set screw using a hex key.

For a probe such as ER, screw the hollow plug nut on to the carrier plug until it contacts the primary packing, ensuring that the old probe seal is not present in the plug nut, and then tighten using a suitable spanner. Ensuring that a probe seal is present on the shaft of the new probe, screw the probe in to the hollow plug nut anticlockwise (reverse thread) until the probe seal makes contact with the carrier plug and tighten using a suitable spanner.

3. If the device, such as a chemical injection nozzle or 3" strip coupons will require alignment with the process flow in the pipe, the carrier plug hex should at this point be marked to allow orientation of the plug.
4. Ensure that the carrier plug threads are coated with non metallic grease.
5. Thread the carrier plug assembly on to the socket adapter of the Retriever. Make sure that the hex nut of the carrier plug pushes in to the spring-loaded hex socket. Do not screw the carrier plug fully down on to pilot adapter thread 'O' Ring. Leave at least one full thread showing.
6. Turn the translation handle counter clockwise until it stops and the device is fully inserted into the retriever. The device is now ready for reinsertion.

7.7 Installation of Retrieval Tool

1. Make the following checks on the Retriever & Service Valve:
 - Retriever bleed valve is closed
 - Service Valve bleed valve is closed
2. Check the pressure gauge for pressure indication on the Service Valve blanking cap (if used), if no pressure is indicated open bleed valve on the cap to confirm no pressure is present. If no pressure is present remove the blanking cap and proceed to step 3.

If pressure is indicated on the pressure gauge attempt to bleed off the pressure via the bleed valve on the cap or vent to atmosphere on the Service Valve. If it is possible to bleed off pressure within 10 seconds, close the bleed valve and check for speed of build up. If pressure builds up within 2 minutes the cap should not be removed. If it is not possible to bleed off pressure from behind the blanking cap, the closed Service Valve and blanking cap should remain installed on the access fitting until the next shutdown opportunity when they can be removed safely.

3. Inspect the mating retrieval tool to valve O ring seal on the retrieval tool and ensure there are no nicks, abrasions or damage etc. If damaged this seal should be replaced immediately.
4. With two Cosasco trained operators mate the retriever to the service valve by lifting the retrieval tool in to position then tighten the retriever hammer union clockwise and tighten using a non-sparking hammer.

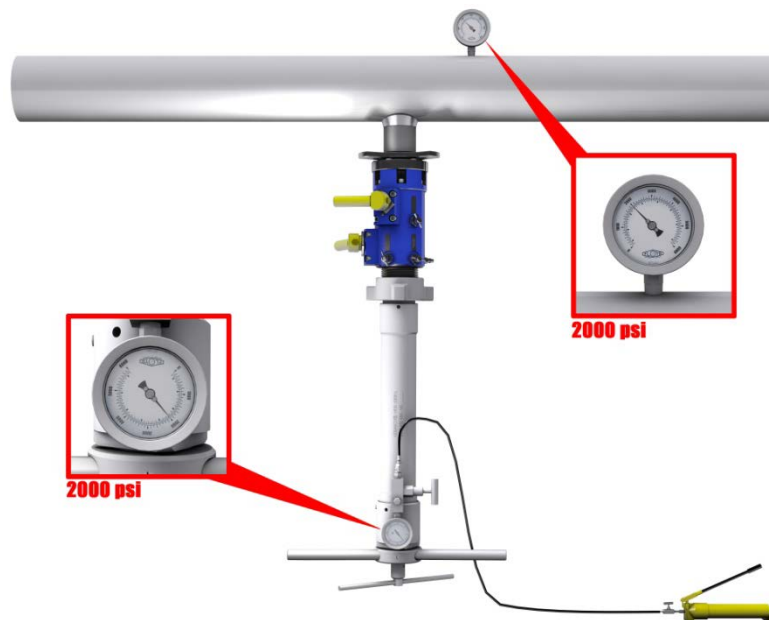
7.8 Back Pressure Retriever - Device Installation

Before the Service Valve can be opened, the retrieval equipment will need to be pressured to line pressure by using the by-pass valves on the Service Valve.

Open the Service Valve by-pass valves to allow line pressure pass the balls and into the Retriever. Once pressure in the Retriever matches the line pressure (pressure equalization) close the by-pass valves and proceed to section 7.9. If the by-pass valve(s) is clogged you will need to use the back pressure pump.

Back Pressure Pump Back Pressuring Procedure (if necessary):

Note: When installing the device, retriever will only be able to be back pressured to line pressure due to the floating ball in the valve.



Back Pressure Pump shown connected to bleed port of the Retriever

1. Attach quick connect fitting to Service Valve bleed port or retrieval tool bleed port.
2. Attach high pressure hose to pump. **Note** - Pump, hose and all connections must be pressure rated to at least the same pressure rating of retrieval tool.
3. Connect other end of hose to retrieval tool or Service Valve (depending on orientation) via the quick connect coupling.

4. Fill pump reservoir with desired fluid, potable water will normally be used although hydraulic oil can be used if required.
5. Open the bleed valve on the Retriever and Service Valve bleed ports.
6. Begin actuating the pump. Once the Retriever and Service Valve are full (purged), close the bleed valve that does not have hose attached.

Keep pumping until pressure indicated on pump or retrieval tool pressure gauge is the same as the line operating pressure.

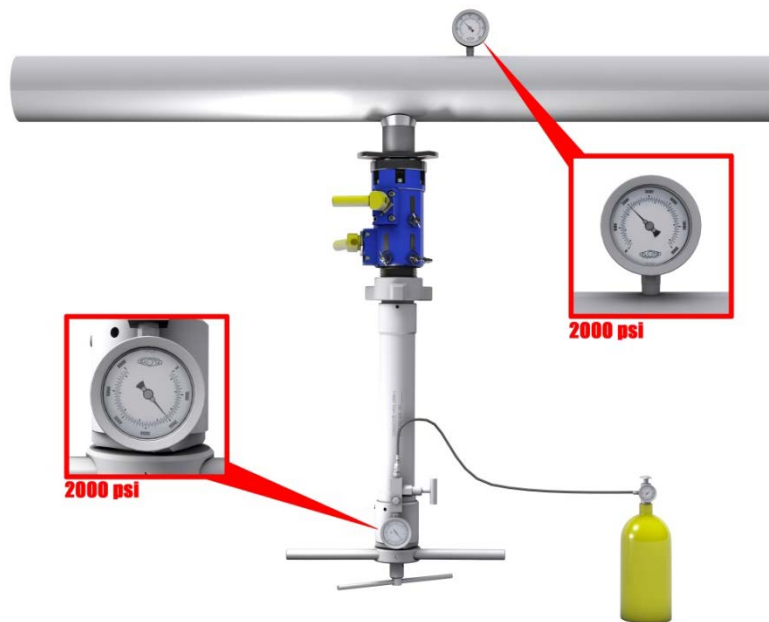
WARNING!



Ensure lowest pressure rating of retrieval tools are never exceeded (Retriever and Service Valve)

7. Once the desired pressure has been achieved, close the bleed valve on the retrieval tool or Service Valve.
8. Release the pressure back to pump reservoir from the hose via the pump valve.
9. Disconnect the hose from the retrieval tool or Service Valve.

Nitrogen Bottle Back Pressuring Procedure:



Bottle shown connected to bleed port of the Retriever

1. Connect a high pressure hose to the Retriever bleed valve or Service Valve bleed valve.
2. Nitrogen bottle connection. Connect the other end of the high pressure hose to the nitrogen bottle outlet. It is recommended that:

- The nitrogen bottle pressure is at least 200 psi (13 BAR) higher than the line pressure.
 - The nitrogen bottle be equipped with a regulator.
 - The nitrogen bottle be fitted with a bleed valve. (This is desirable to allow bleeding down the hose after back pressuring is completed).
3. Nitrogen bottle control valve. Open the control valve and allow pressure build-up within the hose to line pressure.

WARNING!



Ensure lowest pressure rating of retrieval tools are never exceeded (Retriever and Service Valve)

4. Open the Retriever bleed valve or Service Valve bleed valve.
5. Allow the nitrogen pressure to enter the Retriever.
6. Once the desired pressure has been achieved, close the bleed valve on the retrieval tool or Service Valve. Once line pressure has been achieved it will not be possible to increase the pressure.

IMPORTANT!

Make sure both bleed valve on the retrieval tool and Service Valve are both closed in order to retain pressure when nitrogen bottle is disengaged!

7. Close the nitrogen bottle control valve. Bleed off the pressure within the hose and disconnect it from the Retriever bleed valve.

IMPORTANT!

For all applications Retriever must be back pressured. Failure of the Retriever to pressurize is normally due to contamination or build-up of debris in the access fitting. The debris is trapped in the access fitting and pushes its way in while the plug assembly is being backed off, causing blockage and not allowing line pressure to enter the Service Valve and Retriever. Back pressuring the tool will prevent the internals of the retriever from being damaged when the plug is completely removed from the access fitting.

7.9 Installation of the Carrier Plug

Once the equipment has been pressured to line pressure then the upper and lower ball can be opened to allow installation of the carrier plug and monitoring device.

1. Slowly open the by-pass valve for the upper ball (closest to the retriever). Slowly open the upper ball fully.

2. Slowly open the by-pass valve for the lower ball (closest to the access fitting). Slowly open the lower ball valve.
3. Rotate the translation handle clockwise until it stops. At this point, the plug assembly is resting on the top of the access fitting body. While maintaining clockwise pressure on the translation handle, turn the rotation handle clockwise to thread the plug assembly into the access fitting body.
4. Turn the rotation handle clockwise approx 14 turns until carrier plug primary seal seats in access fitting.

IMPORTANT!

Do not use excessive force and be sure that the threads engage properly to prevent cross threading. Cross threading may require equipment to be left on the access fitting until the line is isolated.

Step 4 Notes

If at any stage during the execution of this step, excessive resistance of the access fitting and carrier plug can be felt. Stop, remove the carrier plug and proceed to section 7.5, step 9 of this procedure. Once the Retriever is de-pressurized a thread brush and/or thread chaser will have to be run through the access fitting to clear the internal threads, and the carrier plug threads will have to be checked for damage. See section 8 special tools and procedures for details on how to perform this operation.

WARNING!



If the plug assembly does not seat properly, it may be necessary to leave the Service Valve complete with service valve blanking cap on the line until a later shut-down when repairs can be made. Do not remove until repairs have been made and plug assembly is securely seated, otherwise leakage may occur and pressure may not be held!

If the carrier plug cannot be fully installed, one of the following problems may be occurring:

- The device being installed is too long and is making contact with the back of the pipe before the plug is fully home. A shorter device will be required.
 - Thread damage to the internal thread of the access fitting – see above note, a thread brush and/or thread chases will have to be run through the fitting. No-go gauges should be used. See section 8.9
 - Weld impingement not removed during installation of the access fitting, may be protruding in to the bore of the access fitting, preventing the passage of the device to be installed.
5. Tighten the carrier plug using sufficient force to obtain a seal. Do not fully compress the seal, as this will prevent orientation of the carrier plug.

6. Once the carrier plug is fully installed, release pressure from the Retriever in a controlled manner using either the Service Valve or Retriever bleed valve into a suitable container to catch fluids. When venting, particular notice should be paid to the location of gas detection systems and general ventilation of area. Systems with a known high H₂S content must be vented via a diverter hose to a safe location, such as a closed drain, away from personnel.

Step 6 Notes

If pressure cannot be vented from the Retriever and valve, tighten the carrier plug further to compress the primary seal further. If pressure still cannot be fully vented, close the bleed valve. It will be necessary to remove the carrier plug to rectify the problem, which may be caused by one of the following:

- The carrier plug is not fully installed – see notes in step 4 above
 - The primary packing seal is damaged and will have to be replaced
 - There is debris trapped between the primary packing and access fitting internal sealing face, providing a leak path for pipe line product. The carrier plug will have to be removed and the access fitting seat reamer will have to be used, see section 8 special tools and procedures for details on how to perform this operation.
 - The access fitting internal sealing face is corroded or pitted. In this case an attempt can be made to use access fitting seat reamer, see section 8 special tools and procedures for details on how to perform this operation
7. With bleeding of pipe line product from Retriever and Service Valve complete, close both Retriever & Service Valve bleed valves and leave for 2 minutes to observe for pressure build up on the Retriever pressure gauge, and confirm that primary packing seal and probe seal if applicable are sealing.
 8. Once it is confirmed that carrier plug seals are holding pressure, disconnect the socket adapter from the carrier plug hex by carrying out the following:
 - Turn the translation handle counter clockwise, the rotation handle will initially turn with it but then stop. It should then be held with minimum positive pressure until the translation handle stops.
 - With 1 operator supporting the weight of the retriever the other can loosen the hammer union of the retrieval tool, using a non sparking hammer, and unscrew from the service valve. Both operators can now lift the tool away from the service valve and place in a secure, stable location.

Using a non sparking hammer, loosen the hammer union of the service valve. Whilst one operator holds the body of the retriever the other can unscrew the service valve from the access fitting.

In a top of line location there may be a small quantity of fluid in the valve cavity (approximately 500ml), therefore ensure a sufficient means of capturing this fluid is available for when the valve is removed from the access fitting.

7.10 Carrier Plug Orientation & Access Fitting Cap Installation

1. Wipe the access fitting until clear of any residues.

If the installed device requires orientating with the pipe line flow direction, identify the mark on the hex of the carrier plug and using the retrieval tool turn the carrier plug **clockwise** until the mark is in the desired position to achieve orientation.

WARNING!



DO NOT TURN THE PLUG ASSEMBLY HEX COUNTERCLOCKWISE TO ACHIEVE ORIENTATION! This will unseat the primary packing seal from the internal sealing face of the access fitting and leakage will occur!

The following devices will require orientation:

- Sand Probes
 - Strip & ladder coupons
 - Chemical injection quills and nozzles
 - Corratier (LPR) Probes
2. Re-install the ½" ss pipe plug for solid carrier plugs or the plastic ½" pipe plug for hollow plugs carrying probes not being connected to a Swagelok probe adapter. Only install the pipe plugs hand tight, and do not use any thread sealant.
 3. Apply non metallic grease to the external threads and sealing face of the access fitting to ensure adequate protection from corrosion and minimize the likelihood of the protective cover seizing in place at a later date.
 4. If a thread protecting cap is being installed, screw this on to the access fitting until hand tight. If the pipe is likely to experience excessive vibration the cap should be lightly tightened using a C spanner.
 5. If a 2 hole pressure retaining cap is to be installed on the access fitting, check the following prior to installation.
 - O-ring is present inside the cap
 - Pressure gauge is installed and is in good condition and it also has thread sealant applied at the ¼" NPT connection
 - Bleed valve is installed and is in good condition and it also has thread sealant applied at the ¼" NPT connection

Thread the cap on to the access fitting and tighten lightly using a C spanner.

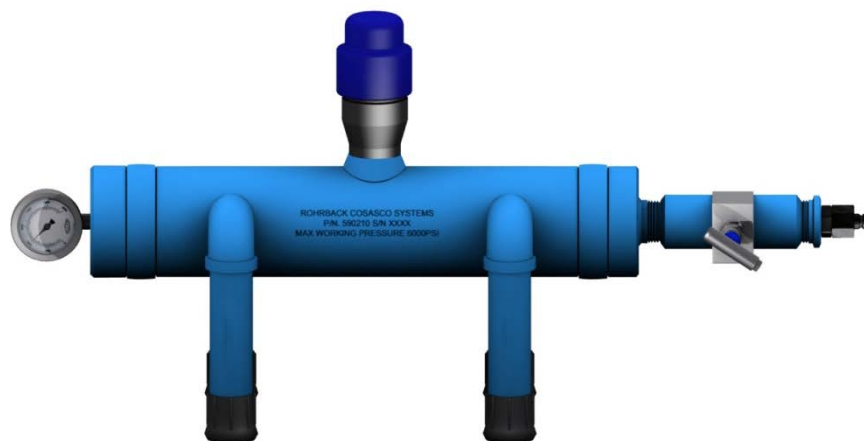
6. If a 3 hole pressure retaining cover is being installed in conjunction with a Swagelok probe adapter follow all stages of step 6 then proceed as follows.

- Apply thread sealant to the threaded section closest to the probe pin receiver holes on the probe extension adapter.
 - Position the male / male threaded part of the adapter as close to the probe pin receiver holes as possible and the female Swage nut at the top of the adapter nearest the instrument connection pins
 - While holding the shaft in position, thread the male / male threaded section in to the ½” NPT hole on the cap. It may be necessary to remove the bleed valve on the cap for adequate access during this step. Tighten the threaded nut in to position using a suitable spanner. **Note** - *it is important that the probe pins are not in contact with the probe adapter during tightening of the nut, otherwise damage to the probe pins can occur*
 - Gently lower or push the shaft of the adapter towards the probe until the adapter makes contact with the probe pins
 - Turn the adapter in either direction until the locator pin on the probe and locator groove on the probe adapter are aligned, which should be obvious to feel. Once aligned the probe adapter can be pushed fully on to the probe pins. If the adapter cannot be easily pushed on to the probe pins, double check the alignment of the pins and adapter.
 - Once the probe pins are engaged with the adapter, thread the female Swage nut on to the threaded male section of the nut located in the cap. Tighten slowly to compress the metal olive, using a suitable open ended wrench – do not over tighten. **Note** - *when tightening the female nut, observe the male threaded section to ensure it is not turning, if the male threaded section turns it means that the probe pins are being twisted and damaged, if necessary hold the threaded male section in place using another open ended wrench.*
7. Ensure pressure retaining cap bleed return valve is closed
8. End of procedure

8 SPECIAL TOOLS & PROCEDURES

The RSL Retrieval tool can be used with a number of ancillary tools and equipment which can aid with the servicing of an access fitting and may be essential in some circumstances as mentioned during earlier stages of this procedure. Below are some commonly used ancillary tools and the procedure for their safe and effective use.

8.1 *Pressure Testing*



Cosasco Pressure Test Rig

IMPORTANT!

Retriever and Service Valve must be pressure tested prior to use to ensure safe operation of tools!

All Retrieval Tools and Service Valves must be pressure tested prior to use. The Field Technician using the equipment must possess current pressure test certificates for the retrieval equipment prior to commencing on-line retrievals operations.

NOTE: A pressure test can only be considered valid if the test meets the following minimum criteria:

- Prior to Mobilisation:
 - On completion of a service campaign the Retrieval Tool and Service Valve must be disassembled, inspected, and fully serviced in accordance with the latest revision of the relevant COSASCO 'Maintenance Work Instruction'. Upon servicing completion, providing a successful pressure test is completed the

equipment may be mobilized for further service work within 7 days of the successful test.

- If the equipment is stored for a time period greater than 7 days from servicing, but no longer than 6 months it may be mobilized for further service work without being re-serviced, provided that a new successful pressure test has been completed within the 7 days prior to mobilization.
- If the equipment is to be stored for a period of greater than 6 months from being serviced then all equipment should be re-serviced and pressure tested every 6 months in accordance with the latest revision of the relevant COSASCO 'Maintenance Work Instruction'. A successful pressure test will be required within the 7 days prior to mobilization for service work.
- Equipment mobilized for Field Service:
 - Once the retrieval equipment has been used in the field each online retrieval operation can be considered a successful pressure test for a further consecutive online retrieval operation with a validity of 12 hours. This duration between retrieval operations may be increased to 72 hours provided the tool is drained of any process fluids and the equipment internals have a suitable lubricant / protectant such as WD40 or Hydraulic Oil applied within the 12 hours following the last successful retrieval operation.
 - If it has been longer than 12 hours since the equipment was last used (or 72 hours if drained, flushed and lubricated) then the equipment must be disassembled, inspected, and fully serviced in accordance with the latest revision of the relevant COSASCO 'Maintenance Work Instruction'. Upon servicing completion, providing a successful pressure test is completed the equipment may be used for further service work within 7 days of the successful test.
 - If the retrieval equipment is used on any fitting containing debris/grit/sand which is deemed to affect the smooth operation of the equipment then the equipment at minimum must be drained, flushed and lubricated prior to further use. Special attention should be given to bleed valve and pressure gauge assemblies. A successful pressure test must then be carried out prior to the equipment being used for further retrieval operations.

At the end of the shift, within a 12 hour period the equipment should then be disassembled, inspected, and fully serviced in accordance with the latest revision of the relevant COSASCO 'Maintenance Work Instruction'. Upon servicing completion, providing a successful pressure test is completed the equipment may be used for further service work within 7 days of the successful test.

IMPORTANT!

If at any point either Retrieval Technician deems it necessary, for any reason, then the equipment must be stripped, cleaned, and serviced in accordance with the relevant COSASCO 'Maintenance Work Instruction'. A successful pressure test will then be required prior to further use!

8.2 Pressure Testing Procedure

1. Fit the Service Valve to the access fitting on the pressure test rig by placing the hammer nut end of the valve onto the access fitting.
2. Turn the hammer nut clockwise down the external acme thread until the Service Valve is securely seated to the access fitting body.
3. Tighten the hammer nut using a brass or equivalent non sparking hammer.
4. Check that the bypass valves on the Service Valve are closed and the atmospheric bleed valve(s) are closed. Main balls should be fully open.
5. The back pressure pump should be filled with hydraulic oil and a connecting hose (of a suitable pressure rating) used to connect the pump outlet to the quick coupler inlet fitted to the test rig.
6. With the pump on "Pressure Hold" and at its low-pressure setting hand pump the oil into the pressure test rig.
7. Stop pumping once the oil level has passed the bottom ball valve and close it.
8. Re-commence pumping and pressurize the assembly to the pressures stated in step 9. Leave pressurized for 15 minutes during each stage and observe that there is no pressure drop on the pressure test rig gauge.

Note - *There may be some drop in pressure during the 15 minute test period due to the compression of air still in the system and also due to oil being drawn back into the hand pump. If any pressure loss is due to leakage, this will be visible and immediately apparent.*

9. Pressure test the equipment to the following pressures:
 - 5% of pressure rating of equipment.
 - 10% of pressure rating of equipment.
 - 20% of pressure rating of equipment.
 - 50% of pressure rating of equipment.
 - 100% of pressure rating of equipment.
 - 150% of pressure rating of equipment.
10. After completing all six tests in step 9, release pressure in the hydraulic pump. **Note:** this process must be repeated for the top ball valve of the Double Isolation Valve.
11. After completion of the pressure test on both balls, ensure both ball valves are opened and place the Retriever Tool onto the Service Valve. Turn the hammer nut union in a clockwise direction.

12. Tighten the hammer nut using a brass or equivalent non sparking hammer.
13. Ensure the bleed to atmosphere valve(s) on the Service Valve is closed and the Retriever bleed to atmosphere valve is opened.
14. With the hydraulic pump on "Pressure Hold" and at its low-pressure setting hand pump the oil through the Service Valve and into the Retrieval Tool, ensuring the isolating valve is fully opened.
15. Continue pumping until all air is displaced from the Retriever atmospheric bleed valve.
16. Continue pumping and during a pump action, close the Retriever atmospheric bleed valve.
17. Continue pumping and pressurize the assembly to the pressures stated in step 9. Leave pressurized for 15 minutes during each stage and observe that there is no pressure drop on the pressure test rig gauge. **Note:** There may be some drop in pressure during the 15 minute test period due to the compression of air still in the system and also due to water being drawn back into the hand pump. If any pressure loss is due to leakage, this will be visible and immediately apparent.
18. During each stage the Retriever requires to be stroked to check the integrity of the seals over the full travel of the outer barrel.
19. After completing all six tests in step 9, release pressure in the hydraulic pump Check both the pressure gauges on the test rig and retrieval tool are at zero and drain off any residual fluid trapped in the retrieval tool and Service Valve.
20. Remove both the retrieval tool and Service Valve from the test rig.
21. Complete a pressure test certificate for both the Retriever and the Service Valve and file these in the dedicated maintenance folder for each tool.
22. A scanned copy of the original should also be filed accordingly.

Note - *There may be some drop in pressure during the 15 minute test period due to the compression of air still in the system and also due to water being drawn back into the hand pump. If any pressure loss is due to leakage, this will be visible and immediately apparent.*

8.3 Thread Chaser Assembly (P/N 125102)

It is assumed from the start of this procedure that the Service Valve is in the closed position and holding line pressure, with the internal threads of the access fitting requiring cleaning or repair.

1. Screw the thread chaser fully on to the socket adapter of the retrieval tool.
2. Apply non metallic grease to the cutting edges of the thread chaser.
3. Make the following checks on the Retriever & Service Valve:
 - Retriever bleed valve is closed
 - Service Valve bleed valve is closed

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

4. With two Cosasco trained operators, mate retriever to service valve by lift the retrieval tool in to position to mate it with the valve, then tighten the retriever hammer union clockwise and tighten using a non-sparking hammer.
5. Back Pressure the Retriever (refer to Section 7.8) Back Pressure – Device Installation.
6. Slowly open the bypass valves on Service Valve.
7. Slowly open the ball valves.
8. While maintaining clockwise pressure on the translation handle, turn the rotation handle clockwise to thread the chaser towards the access fitting body until the 1st plug thread contacts the first access fitting internal thread.
9. Turn the rotation handle clockwise approx 15 turns to run the chaser through the full run of threads in the internals of the access fitting. Then complete the reverse to remove the chaser from the access fitting. Always remembering to maintain positive pressure on the translation handle to prevent disconnection from the chaser.
10. Close Service Valve ball valves to isolate line pressure. **Note** – *at this stage the Retriever still contains line pressure.*
11. Release pressure from Retriever gradually using either the Service Valve or Retriever bleed valve into a suitable container to catch fluids. When venting, particular notice should be paid to the location of gas detection systems and general ventilation of area. **Note** - *Systems with a known high H2S content must be vented via a diverter hose to a safe location, such as a closed drain, away from personnel.*
12. Before removing the Retriever, close bleed valve on retrieval tool or Service Valve & leave for 2 minutes to ensure the Service Valve is holding pressure.

13. Once the service valve ball valve is verified as holding line pressure, release pressure from retriever gradually using either the service valve or retriever bleed valve into a suitable container to catch fluids.
14. While one operator is holding the retriever in position, the other operator should use a non sparking hammer to loosen the retriever hammer union from service valve. Both operators can then remove the retriever from the service valve. Carefully turn the retriever translation handle to expose the chaser, which can now be removed from the retrieval tool and replaced with the device. Ensure that the retriever is located somewhere stable during service of the device.
15. Install service valve cap on valve then check retriever operation. Turn both the Rotation and Translation handle's on the retriever to ensure the socket adaptor assembly moves freely up and down the internals of the retriever and it turns clockwise and counter clockwise. If it is difficult to operate or feels contaminated with solids, rinse the internals with a suitable cleaning agent, or in some cases water is sufficient. Continue rinsing until operation of retriever feels smooth. If flushing does not improve the function of the retriever it will have to be stripped down and cleaned before continuing use.

8.4 Overshot Adapter (P/N 126292)

The overshot adapter can be used when there is pressure located beneath a ½" steel pipe plug located in the hex of a solid carrier plug. With the overshot installed as an extension of the carrier plug hex, the ½" pipe plug remains in place holding pressure but the carrier plug can still be manipulated, allowing pressure to pass through the thread groove on the carrier plug and equalise pressure inside the retrieval tool.

1. Ensure the hex screws are sufficiently withdrawn from the overshot adapter.
2. Place the adapter over the hex of the carrier plug and tighten the hex screws until they are firmly tight against the hex of the carrier plug.
3. Remove carrier plug as per section 7.2 - 7.5.

Note – *Use of the overshot adapter will slightly reduce the size of device which can be withdrawn inside the retrieval tool.*

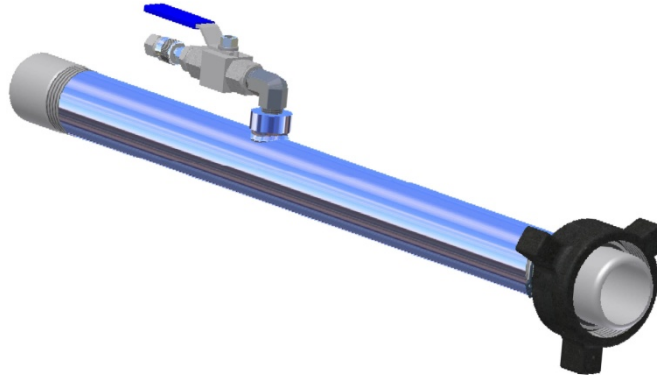


WARNING!



Back Pressure Pump will have to be used in conjunction with the Overshot Adapter. Refer to Section 7.4 Back Pressuring Procedure - Device Retrieval.

8.5 Surge Tube Assembly (P/N 123672)



The surge tube assembly is used to flush debris from the access fitting body by using line pressure.

Surge Tube Assembly - Low Pressure Lines

For LOW PRESSURE lines: (pressures lower than 250 psi -17 BAR), follow the steps below.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

1. Connect the surge tube assembly. Lift the surge tube assembly and place the hammer nut end on the service valve. Turn the hammer nut clockwise until the surge tube assembly is securely seated. Use the brass hammer to tap a secure connection.
2. Close the surge tube bleed valve. The same optional diverter hose assemblies used on the retriever and service valve are available for connection to the surge tube assembly.
3. Open the service valve ball valves quickly.
4. Open the surge tube bleed valve and allow flow for approximately twenty seconds.
5. Close the surge tube bleed valve.
6. Close the service valve ball valves.
7. Open the surge tube bleed valve and allow the surge tube pressure to bleed off.
8. Close the surge tube valve.
9. Repeat steps 4 through 9 at least two more times.

Surge Tube Assembly - High Pressure Lines

For HIGH PRESSURE lines: (pressures higher than 250 psi -17 BAR), follow the steps below.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

1. Connect the surge tube assembly. Lift the surge tube assembly and place the hammer nut end on the service valve. Turn the hammer nut clockwise until the surge tube assembly is securely seated. Use the brass hammer to tap a secure connection.
2. Close the surge tube bleed valve. The same optional diverter hose assemblies used on the retriever and service valve are available for connection to the surge tube assembly.
3. Open the service valve ball valves quickly.
4. Open the service valve equalizing valves. This will reduce the torque required to open the service valve.
5. Open the service valve ball valves quickly and then close the service valve equalizing valves.
6. Open the surge tube bleed valve and allow flow for approximately twenty seconds.
7. Close and open the surge tube bleed valve - at least two more times and each time allow flow for approximately twenty seconds. Each time the surge tube valve is in the open position, partially close and then fully open the service valve. This will help to remove solids or particles from the seat area or carrier.
8. Close all valves. Close the surge tube bleed valve, the service valve ball valves and the service valve equalizing valves.
9. Open the surge tube bleed valve and allow the surge tube pressure to bleed-off.
10. Close the surge tube bleed valve. If the optional diverter hose assembly is being used during the operation, it should be removed at this time.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

11. Remove the surge tube assembly. Using the brass hammer, tap loose and fully unscrew the surge tube hammer nut. Lift the surge tube assembly from the service valve.

8.6 Thread Brush Assembly (P/N 125116)

The thread brush assembly is used to clean small amounts of debris from the access fitting body threads.

1. Attach the thread brush assembly to the socket adapter pilot threads.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

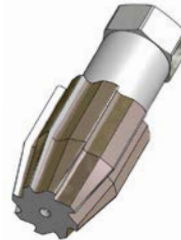
2. Connect the retriever. Lift the retriever and place it onto the service valve. Turn the hammer nut clockwise until the retriever is securely seated on the service valve. Use the brass hammer to tap a secure connection.
3. Back Pressure the Retriever (refer to Section 7.8) Back Pressure – Device installation.
4. Open the service valve equalizing valves and then open the service valve balls.
5. Rotate the translation handle clockwise until the thread brush just barely contacts the access fitting body.
6. Brush the threads. Turn the rotation handle in both directions while turning the translation handle clockwise until it bottoms.
7. Retrieve the thread brush assembly. Beginning with a very slight clockwise rotation on the rotation handle, pull the brush straight up and out of the access fitting body by rotating the translation handle counterclockwise while keeping the rotation handles stationary.
8. Pull the thread brush into the retriever by rotating the translation handle counterclockwise until it stops.
9. Close the service ball valves and the service valve equalizing valves.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

10. Bleed and remove the retriever. Open the retriever bleed valve and allow pressure to bleed off completely. Using the brass hammer, tap loose and fully unscrew the retriever hammer nut. Lift the retriever from the service valve.
11. Remove the thread brush assembly. Unscrew the thread brush assembly from the socket adapter pilot.

8.7 **Seat Reamer (P/N 125125)**



The Seat Reamer is used to clean small amounts of debris from the access fitting body seat.

1. Attach the seat reamer to the socket adapter pilot threads.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

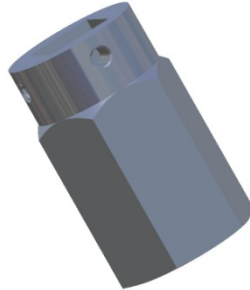
2. Connect the retriever. Lift the retriever and place it onto the service valve. Turn the hammer nut clockwise until the retriever is securely seated on the service valve. Use the brass hammer to tap a secure connection.
3. Back Pressure the Retriever (refer to Section 7.4) Back Pressure – Device Installation.
4. Open the service valve equalizing valves and then open the service valve balls.
5. Rotate the translation handle clockwise until the seat reamer just barely contacts the access fitting body.
6. Turn the rotation handle clockwise while turning the translation handle clockwise to rotate the seat reamer until it bottoms out.
7. Retrieve the seat reamer. Beginning with a very slight clockwise rotation on the rotation handle, pull the seat reamer up and out of the access fitting body by rotating the translation handle counterclockwise while keeping the rotation handles stationary.
8. Pull the seat reamer into the retriever by rotating the translation handle counterclockwise until it stops.
9. Close the service ball valves and the service valve equalizing valves.

IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

10. Bleed and remove the retriever. Open the retriever bleed valve and allow pressure to bleed off completely. Using the brass hammer, tap loose and fully unscrew the retriever hammer nut. Lift the retriever from the service valve.
11. Remove the seat reamer. Unscrew the seat reamer from the socket adapter pilot.

8.8 Steel Pipe Plug Adapter (P/N 125115)



The steel pipe plug adapter is used to install or allow retrieval of the 1/2" steel pipe plug, while plug assemblies are under pressure. This tool is used in cases where bleed-off cannot be accomplished.

The procedure described for the steel pipe plug adapter differs from the other tools described in this section in that the service valve is assumed not to be installed and that the plug assembly is assumed to be present within the access fitting body.

1. Attach the pipe plug adapter to the square head of the pipe plug and tighten the Allen head set screws.
2. Install the service valve onto the access fitting body in the same manner as described previously in Section 7.2, steps 5 and 6. Open the service valve balls.
3. Install the retriever in the same manner as described previously in Section 7.3, steps 1 through 2.

WARNING!



The next step includes "pressuring balancing" of the Retriever. Pressure balance between the line and the Retriever is crucial. If the Retriever is not pressure balanced when plug is removed, a surge of pressure may cause the internals of the retriever to be damaged which could lead to a leak, serious injury or worse.

4. Back Pressure the retriever in the same manner as described previously in Section 7.4. After pressure-balance is achieved, engage the socket adapter in the same manner as described previously in Section 7.5, step 1. Slowly turn the retriever outer barrel in a counterclockwise direction, thus loosening the pipe plug.
5. Retrieve the pipe plug. Continue to turn the rotation handle in a counterclockwise direction until the pipe plug is disengaged from the pipe plug assembly; then draw the pipe plug into the retriever by rotating the translation handle counterclockwise. While keeping the rotation handles stationary.
6. Close the service valve.
7. Open the bleed valve and bleed off pressure.

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IMPORTANT!

WEAR SAFETY GLASSES! USE NON-SPARKING HAMMER!

8. Using the brass hammer tap loose the retriever hammer nut and unscrew fully. Lift the retriever from the service valve.
9. Rotate the translation handle clockwise to expose the socket adapter, the attached pipe plug adapter and the pipe plug. Remove the adapter and the pipe plug from the socket adapter pilot.

Reinstall the retriever on the service valve and remove the solid plug assembly in the same manner as described previously in Section 7.3 - 7.5.

8.9 No-Go Gauge (P/N 741104-1/2/3)

The Cosasco Thread Condition Gauges are designed to evaluate the condition of the internal threads on a Cosasco Access Fitting while in service. Proper use of the gauges will allow an operator to determine if the threads are suitable for continued use at full rated pressure, or if the threads are worn or corroded to a point below the design thickness. If the threads are at a point below the design thickness, the progressive gauges can determine if the fitting is still suitable for use at a de-rated pressure.

It is recommended that the No-Go gauges should be used after every 10 retrievals/insertions, and after every thread tap.

The gauge is a GO / NO-GO design. If the thread is of a thickness which is greater than the minimum design thickness, the gauge will 'not go'. Conversely, if the thread has corroded or worn to a point below the minimum design thickness, the gauge will be able to engage the thread.

Since this gaging operation will be performed 'blind', with the use of a Cosasco Retriever and Service Valve, the gauges are designed to check pre-determined locations on the Access Fitting internal thread. If the threads furthest from the pipe are acceptable, then all threads on the fitting are assumed to be acceptable, and the fitting can maintain its full pressure rating.

Please note that the carrier plug will need to be removed before the No-Go gauge can be utilized. The following chart should be adhered to during the No-Go gauge operation:

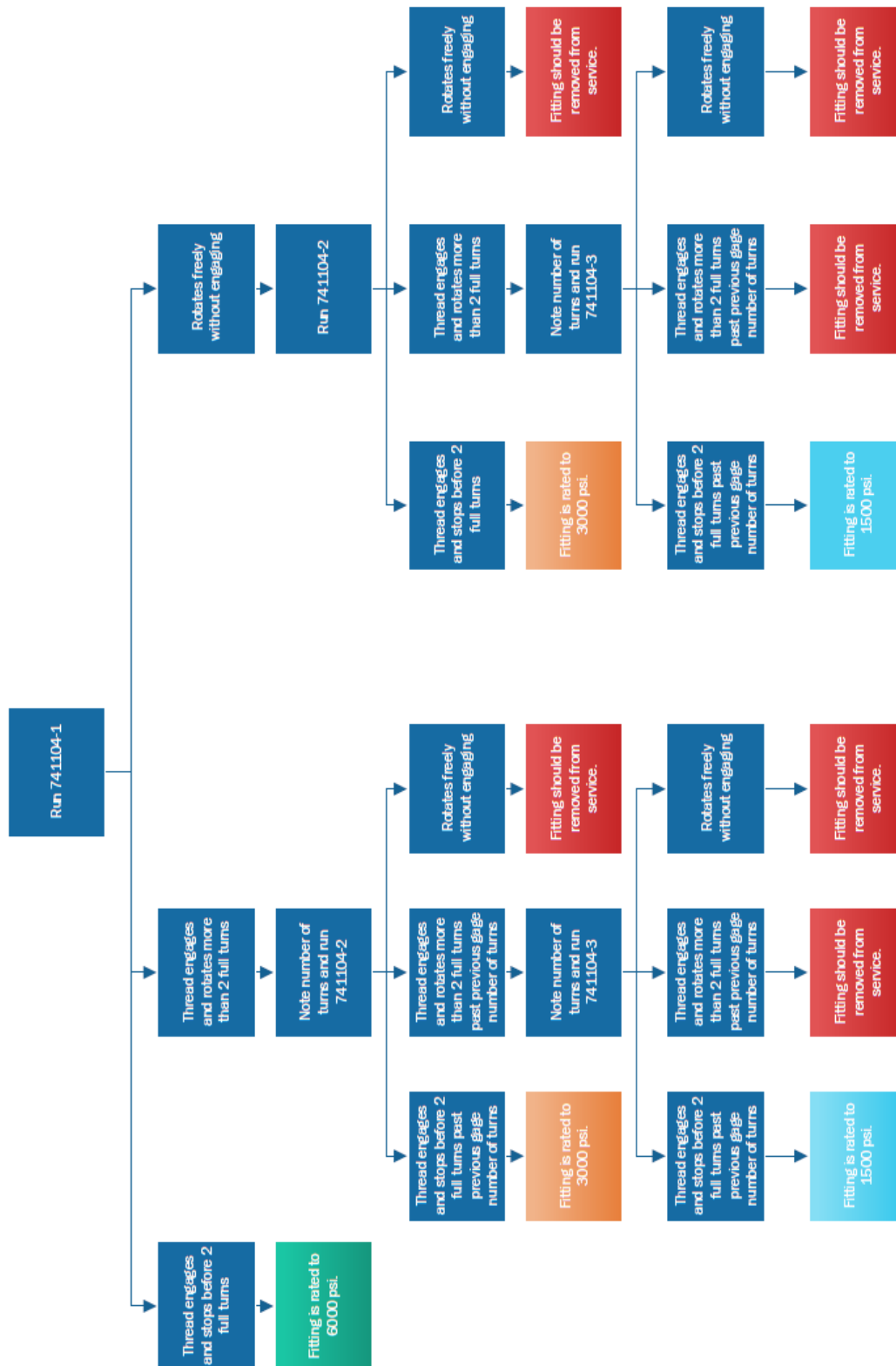
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