Kinetics Controls & Innovation Ltd

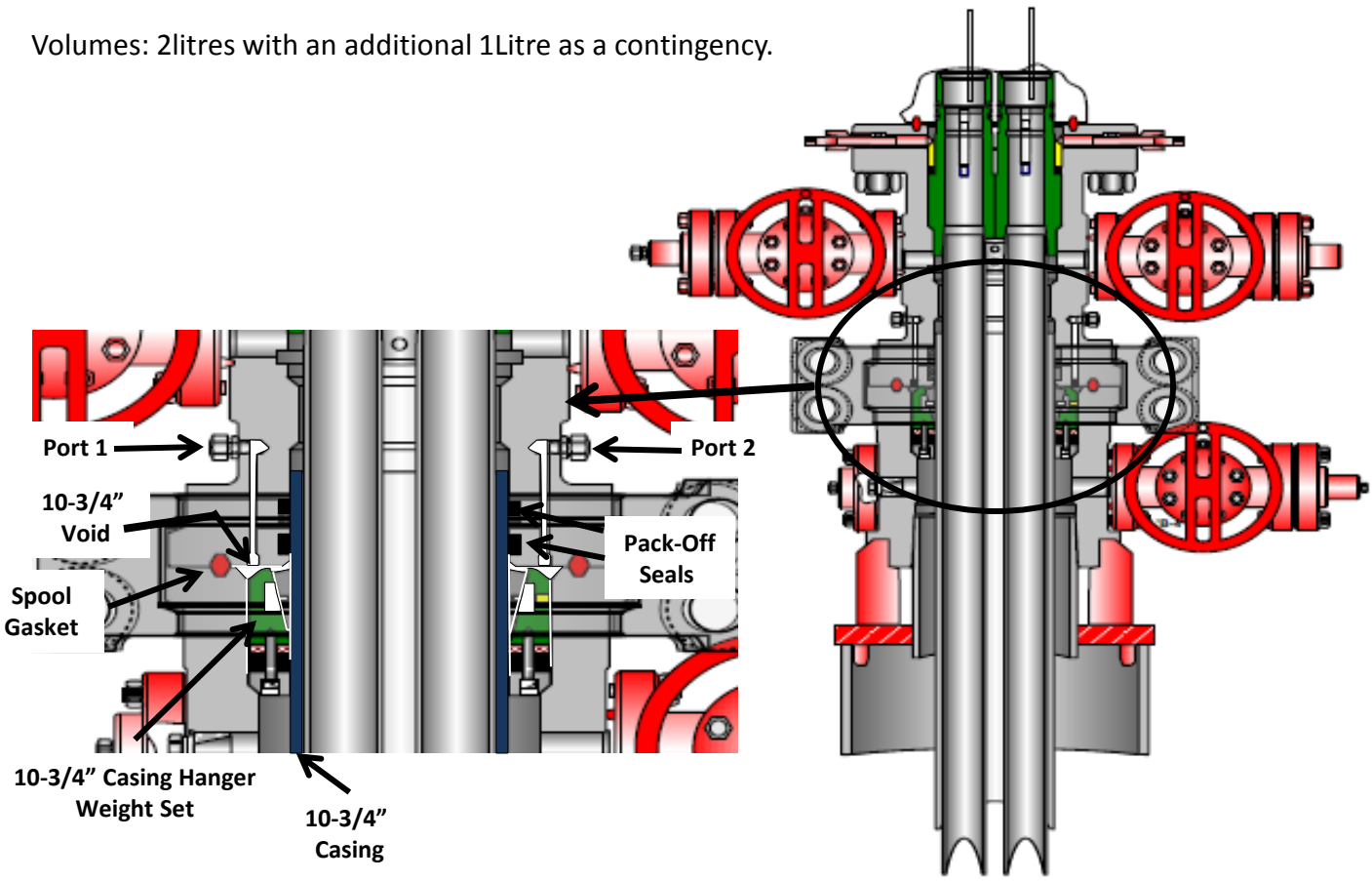
FMC –Abu Dhabi
10-3/4” Weight Set Casing Hanger
MS-Sealant Void Full Fill Isolation
AB1000RM

The 10-3/4” Void is passing. An unsuccessful attempt has been made by Seal-tite to repair the damaged seal. There is no indication at this time which seal structure is passing i.e. casing Pack-off or the hanger body seal. The Void volume is limited and a full fill is recommended.

There are 2 ports into the void which will support this application if we are able to obtain communication between port after Seal-tite. 1 port entry is also possible and will not effect the end result.

The main objective of the full fill is to ensure that the Spool Gasket is protected from annulus pressure from above or below the hanger. A more detailed Method Review will be provided in the event that this becomes an order.

Volumes: 2litres with an additional 1Litre as a contingency.



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Evaluation:

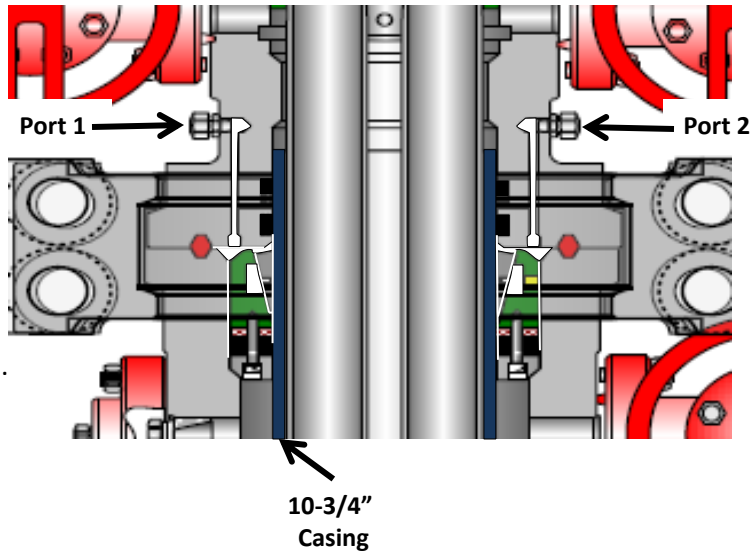
Vent and bleed down annulus pressure above and below the hanger assembly.

Sting and vent ports 1 and 2.

Inject a set volume of light oil or test fluid in through port 1 and displace through port 2

Close port 2 and apply test pressure if possible. monitor leak rate. This will determine the size of the leak path. Customer to provide test pressure.

Vent and sting ports 1 & 2



MS-Sealant Deployment:

Vent and bleed down annulus pressure above and below the hanger assembly.

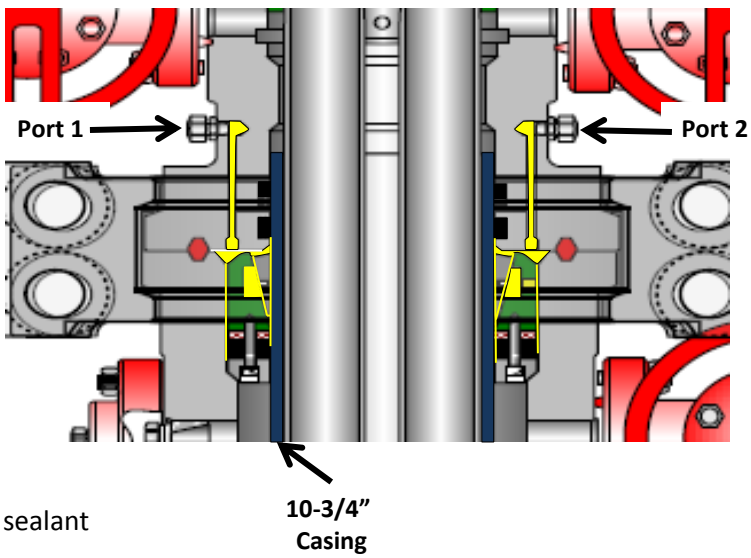
Sting and vent ports 1 and 2.

MS-Sealant 02
Fluid State

Inject a set volume of MS-Sealant 02 (2 to 3Litres) in through port 1 and displace through port 2

Close port 2 and continue injecting the sealant. The viscosity of the sealant may provide a pressure build up and may retain the test pressure until the sealant is cured.

Leave a sample on the wellhead to confirm that the sealant has cured.



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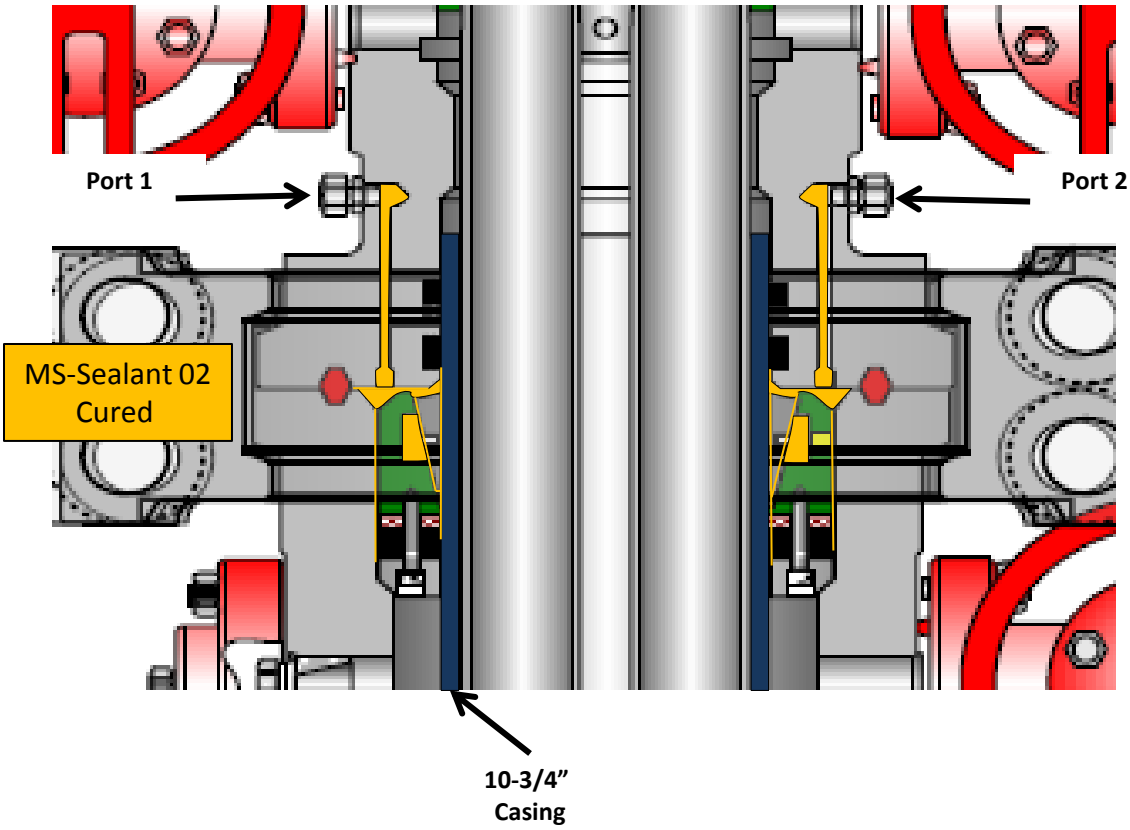
MS-Sealant Deployment:

The MS-Sealant 02 will convert t a solid self energised seal structure and will allow the well to produce Until remedial work can be arranged.

Testing: Inflow only, Do not apply pressure to the injection fittings as this may disturb the seal structure. The injection fitting can be stung to confirm isolation during production if required.

The port fittings will be coated with MHS-Protect and tagged to advise maintenance personnel.

Removal: The Cured MS-Sealant 02 is cut and peeled from all surface areas without damaging metal or and existing seals to allow replacement of original seals. As and when required.



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KCI MS-Sealant - Viscosity 01 to 06
Mixing and Deployment Review Sheet

The KCI MS-Sealant is a compound deployed in a fluid state against pressure (if required). The MS-Sealant is designed to flow around existing materials and annulus areas as a filler and will establish a pressure energised seal.

The product is provided in two parts,
1/ Compound,
2/ Activator,
Both products combined provide a package to meet a specified setting time.
Note: The activator measure is subject to curing time requirements and can not be adjusted please contact the above office for advise if required.
Standard setting time is 2 to 24 hours subject to temperature
Deployment time is 1 to 1-1/2 hours subject to temperature.
Review information label attached to both compound and activator.

Mixing:
Use in well ventilated area.
KCI provide a large container to support mixing and a hand air drive stirrer
Empty compound into container provided and stir gently.
Empty activator into same container and continue to stir approximately 5 minutes.

Deployment: Subject to viscosity
Deployment Tool: Barrel injection Pump, or Cylinder complete with interface fitting, manifold, feed hose etc.
Place the pump into the container.

Allow the MS-Sealant fluid to displace any grease within the feed line prior to connecting to the manifold assembly

.
Note: if the sealant is being deployed through an existing grease / injection fitting. Remove the manifold and inject a small amount of grease to flush the check valve only.

Cleaning the tool and accessories:
Return to KCI for redress
Note: This product is required to be deployed by KCI trained and registered personnel or sub-contractors.

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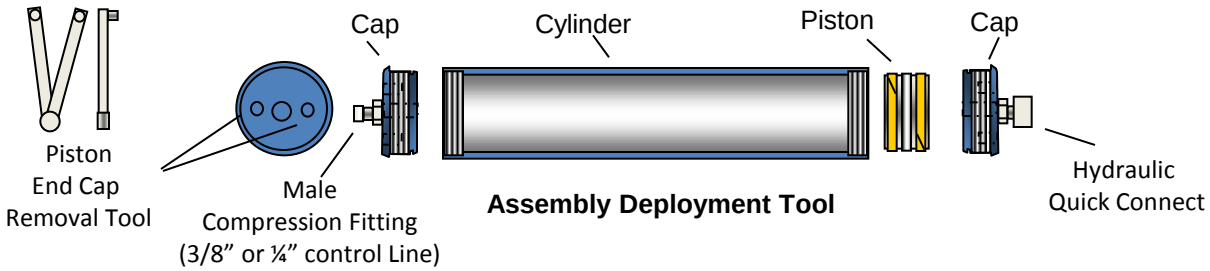
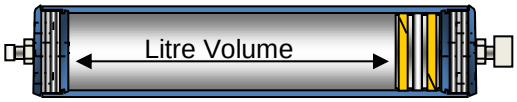
Deployment Tools

Cylinders are provided as the preferred method of deploying the sealant. These are designed as a simple process for preparation / handling, deployment (diver assist) and refurbishment.
The cylinders have been designed to operate with seawater and range from 250mls, 1,3,& 5litre deployment volumes. Operating pressure 5,000psi and 10,000psi.



Assembly Deployment Tool



Litre Deployment Tool

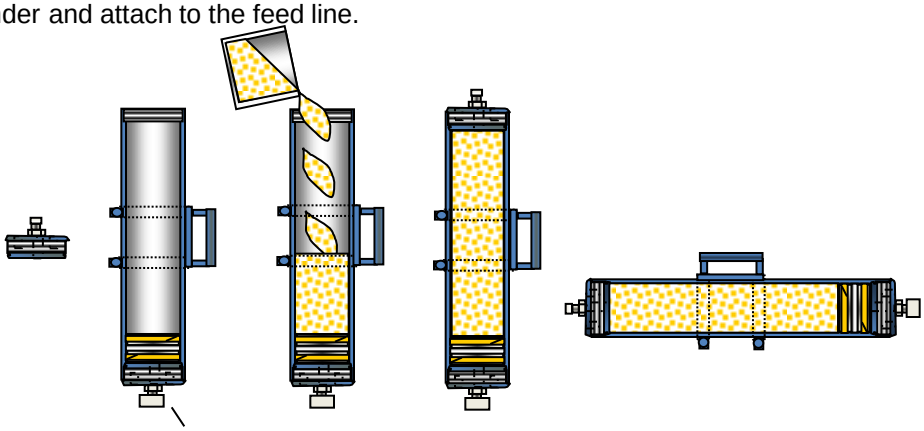
Mixing Instructions

The IBS / Mac-Seal / MS-Sealant is a two-part product i.e. compound and hardener. The product has been provided with set volumes i.e. 250mls , 1,3 & 5 Litre packs of compound (white) and hardener. Pour the set volume of hardener into the compound tub and mix until the sealant is mixed throughout. Pour the mixed compound and hardener into the cylinder and attach to the feed line.

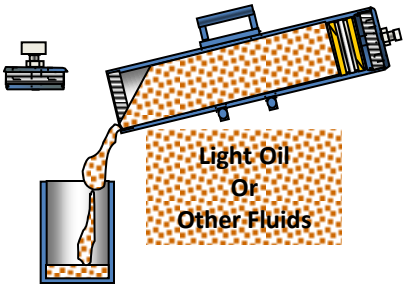
**IBS /
Mac-Seal / MS-Sealant
Mixed with Hardener**

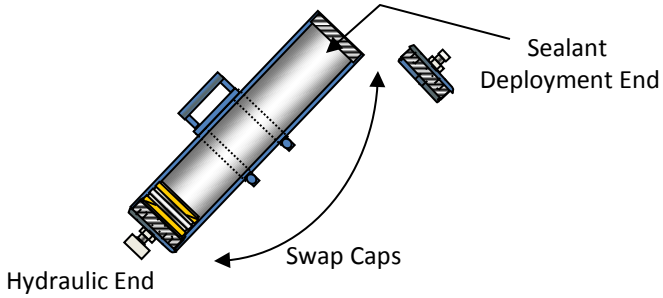
Note: Prepare all cylinders to receive the sealant prior to mixing

Sealant curing time:
3 hours subject to temperature
24 hours for IBS
Sealant deployment time:
1 hours after mixing.



KCI provides the sealant as a fixed volume package i.e. compound & hardener. In the event that more that one package is required the cylinder can be re-used by emptying the hydraulic fluid and swapping the caps.





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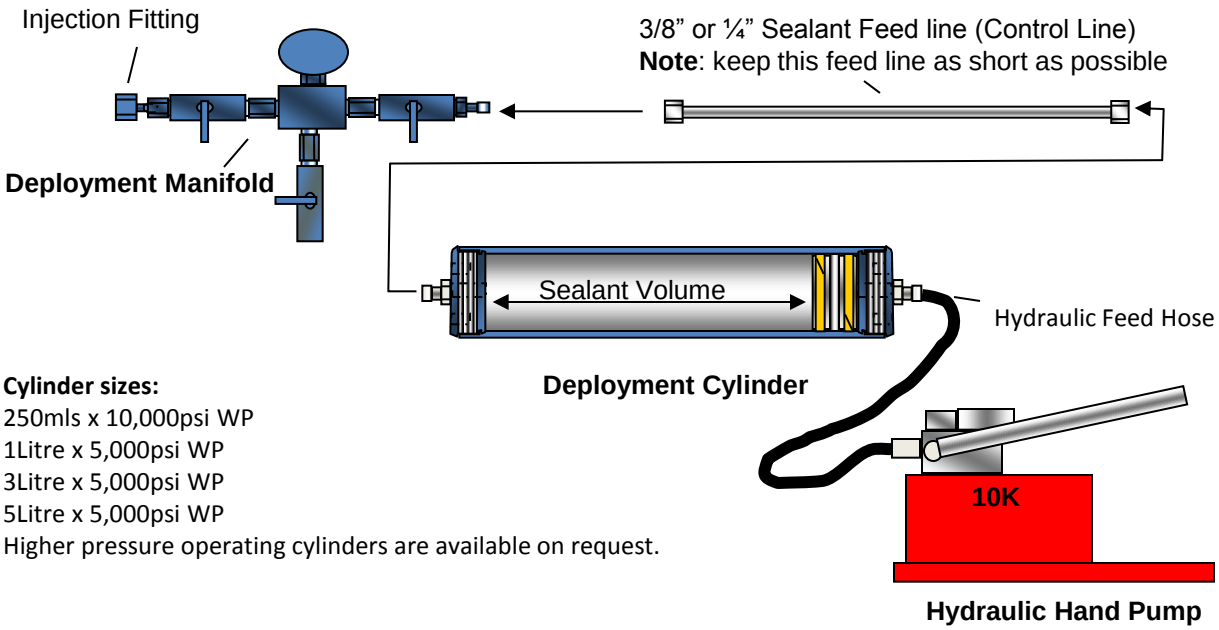
KCI IBS / Mac-Seal / MS-Sealant Deployment Tools



Cylinder sizes:
250mls x 10,000psi WP
1Litre x 5,000psi WP
3Litre x 5,000psi WP
5Litre x 5,000psi WP
Higher pressure operating cylinders are available on request.

Note: This product is required to be deployed by KCI trained and registered personnel or sub-contractors.

Tooling review:
The pump can be used directly for the evaluation of the leak path. With volumes over 3litres a pump will be provided with a high volume / low pressure and low volume / high pressure button.

The hydraulic feed hose is provided with quick connects.

The cylinder is designed to provide repeat applications.

The sealant feed line is recommended to be as short as possible.

The KCI manifold is designed to provide 2 barriers at all times (if required) with venting capabilities). **Note the gauge has a filled grease box to prevent the sealant from entering the gauge, ensure this is in place before deploying the sealant.**

Deployment Review:
Mix the compound and hardener as per mixing instructions.
Remove the cylinder cap and pour in the mixed sealant and replace the cap.
Connect the feed line and Manifold to the cylinder
Connect the hydraulic feed hose and pump to the cylinder and displace the sealant through to the injection interface fitting.
Leave a sample on the wellhead. This will confirm internal sealant structure i.e. cured condition.
Connect the tool package to the injection port and deploy the sealant in accordance with the application and KCI method procedure..

Note: If any ongoing deployment is a part or full cylinder fill, displace any air prior to connecting the cylinder to the feed line.