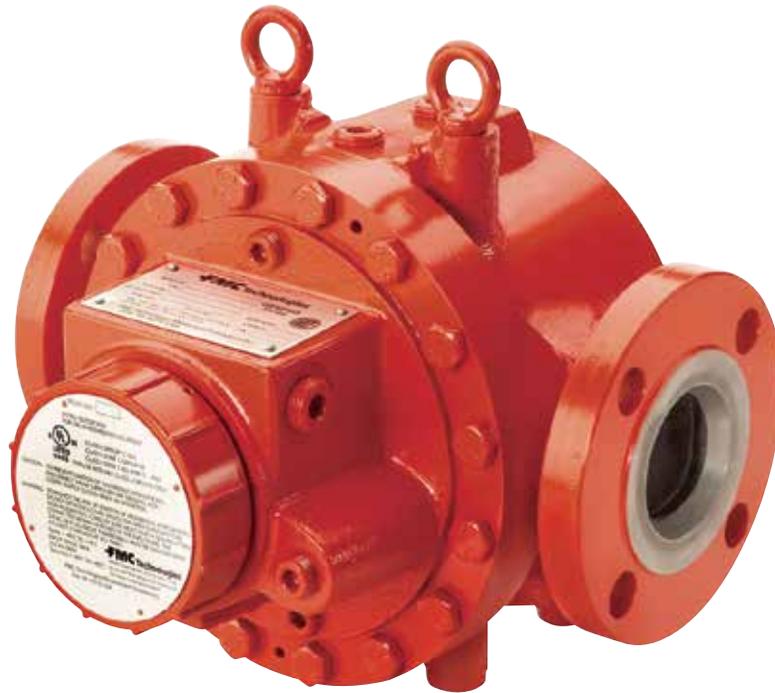


Smith Meter® PD Meter

Genesis™ Series 2" and 3" Steel Meters

Service Manual

Bulletin MN01047 Issue/Rev. 0.0 (10/18)



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Section I – General

General

To ensure the best performance of the Genesis Meter, the step-by-step procedures outlined in this manual should be followed. Review the entire manual prior to disassembly or repair of the meter to fully understand the requirements.

Reference Literature:

- P0502.01 – Genesis 2" Parts List
- P0505.01 – Genesis 3" Parts List
- SS01060 – Genesis 2"/3" Specifications
- MN01046 – Genesis 2"/3" Installation/Operation

Genuine Smith Meter Parts

The Genesis Meter is approved by several weights and measures authorities. In order to maintain these approvals, it is essential that all replacement parts are Genuine Smith Meter Parts. This will provide the best performance and quality.

Note: The Genesis integral electronic calibrator is matched by the meter serial number to provide the wide range of performance characteristics. To comply with weights and measures, replacement boards are required to be ordered using the factory meter serial number stamped on the nameplate.

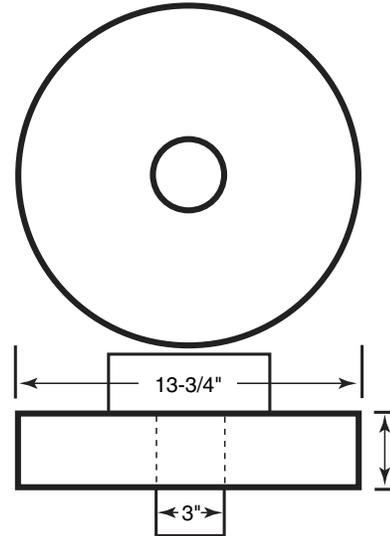
Tools and Sealants/Lubricants

Tools:

- 3 mm Hex-bit Socket
- 4 mm Hex-bit Socket
- 5 mm Hex-bit Socket
- 6 mm Hex-bit Socket
- 8 mm Hex-bit Socket
- 1/4" Hex-bit Socket
- 5/16" Hex-bit Socket
- 3/8" Hex-bit Socket
- 17 mm Combination Wrench
- 17 mm Hex Deep Well Socket (2" meter)
- 24 mm Hex Deep Well Socket (3" meter)
- Soft-headed Mallet
- Torque Wrench:
 - 40 to 250 in-lb
 - 45 to 160 ft-lb range
- Dial Indicator (thousandths of an inch)
- Dial Calipers

- Depth Micrometer
- Arbor Press
- Slide Hammer Bearing Puller (651037-008)
- Spider (for Checking Clearances):
 - 2" – 556222-001
 - 3" – 556223-001

Wood Block:



Feeler Gauges:

90° Feeler Gauges (0.001 to 0.010")

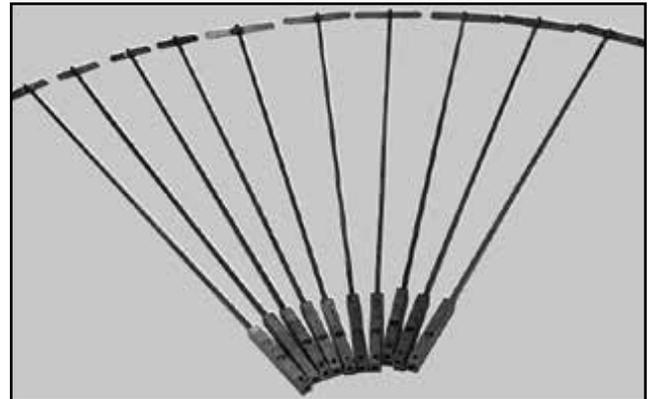


Figure 1 – Feeler Gauges

In-Line Feeler Gauges (.001 to .005")



Figure 2 – Feeler Gauges

Section I – General (continued)

90° Feeler Gauges		In-Liner Feeler Gauges	
515252-1	0.001"	515253-1	0.001"
515252-2	0.002"	515253-2	0.002"
515252-3	0.003"	515253-3	0.003"
515252-4	0.004"	515253-4	0.004"
515252-5	0.005"	515253-5	0.005"
515252-6	0.006"		
515252-7	0.007"		
515252-8	0.008"		
515252-9	0.009"		
515252-10	0.010"		

Table 1 – Feeler Gauges

Safety Suggestions:

- Steel-Toe Safety Shoes
- Safety Glasses with Side-Shields
- Gloves

Sealants/Lubricants:

- Loctite 242
- Loctite 567
- Molykote 55 O-Ring Grease
- Nickel Anti-Seize
- Petroleum Jelly

For sealant/lubricant part numbers, see parts list [PO0A002](#).

For a list of mechanical tools and part numbers, see parts list [PO0A001](#).

Section II – HRE Diagnostics

Remove the Junction Box Cover (Figure 3). Refer to Table 2 for HRE status check and troubleshooting prior to replacement. To determine the HRE status, the board must be powered.

Caution: Disconnect power (12 Vdc) before working on the meter or replacing the HRE board.



Figure 3 – Remove Junction Box Cover

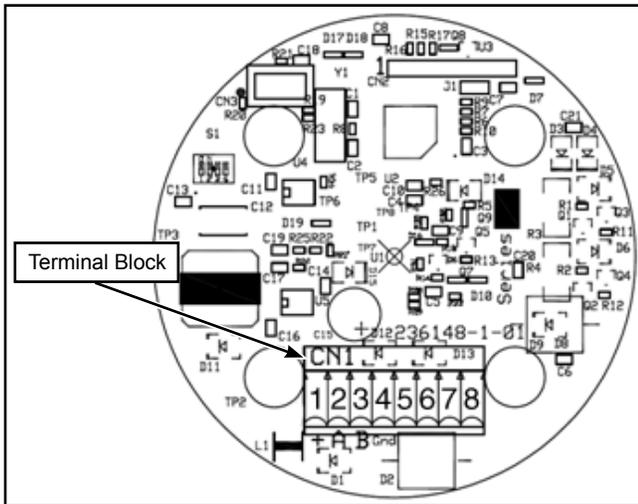


Figure 4 – HRE

Terminal 1	+ 10 to + 30 Vdc
Terminal 2	“A” Signal (Leading)
Terminal 3	“B” Signal (Lagging)
Terminal 4	Logic Common (Ground)
Terminal 5	No electrical connection on circuit board. These can be used for wiring connections or tie-ins (ex. RTD junction, etc.).
Terminal 6	
Terminal 7	
Terminal 8	

Table 2 – Terminal Block

To ensure proper operation of the HRE and to avoid damage to the circuitry, check to make sure that all S1 dip switches are locked in the “OFF” position (opposite of the ON position and closest to the numbers on the dip switch (see Figure 5).

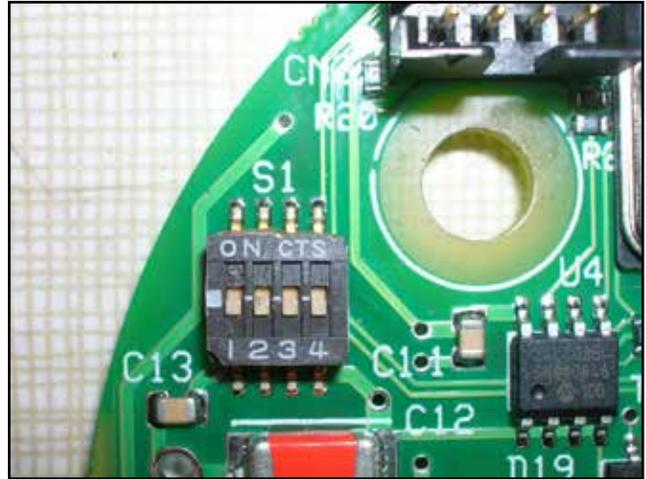


Figure 5 – HRE Dip Switches

There are 3 LEDs on the HRE. The 2 LED’s next to each other indicate if there is an issue with the distance position between the magnet and the sensor that is located on the backside of the HRE board. Both lights on indicates magnet is too far away. Only red on indicates the magnitude of the magnetic field is increasing. Only the green on indicates the magnitude of the magnetic field is decreasing. The 3rd LED (D14) is a diagnostic tool. It will blink a certain sequence to help diagnose any problems (Figure 6). Reference Table 3 for sequence code.

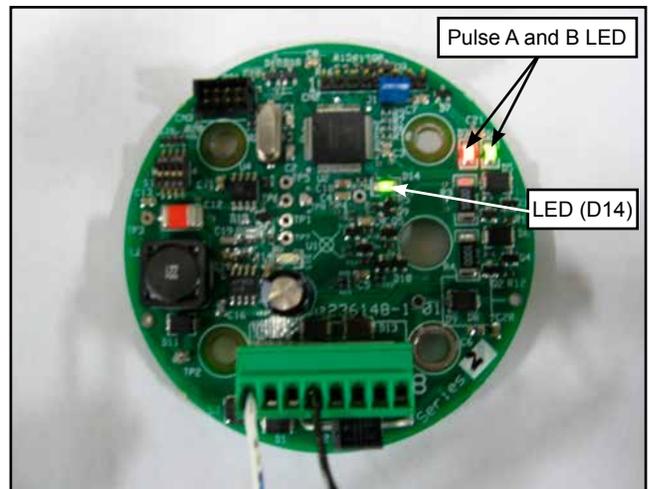


Figure 6 – HRE Diagnostics

Table 3 identifies the detectable firmware fault conditions, hardware fault conditions and notable status conditions that may exist. Table 3 also identifies the condition, whether or not pulses will come out of the HRE and how the LED (D14 on HRE board assembly) will indicate the condition.

Section II – HRE Diagnostics (continued)

LED Indication			Cause	Recommendation
Channel A Pulse	Channel B Pulse	D14		
Yes	Yes	On (Continuous)	No errors	None
No	No	Off	No power to the HRE.	Ensure that there is power to the board. Check wiring for damaged insulation or incorrect wiring.
No	No	Fast Blinks: 4 Slow Blinks: 2	There are no pulses coming from the HRE. Invalid hardware state detected internal to HRE.	Cycle power to the HRE. If continues or reoccurs, replace the HRE board.
Yes	No	Fast Blinks: 4 Slow Blinks: 3	Magnetic sensor error – the distance between the magnet and integrated circuit surface is too great.	Ensure that the HRE is completely seated in the conduit box to allow a minimal distance to the magnet. The board should not touch the magnet, and ensure there is not debris between the magnet and integrated circuit on the bottom of the HRE.
No	No	Fast Blinks: 4 Slow Blinks: 4	Internal HRE Error	Replace the HRE board.
No	No	Fast Blinks: 4 Slow Blinks: 5	There was an error with the HRE communications during power-up. Internal HRE Data Error.	Cycle the power to the HRE board. If continues or reoccurs, replace the HRE board.
Yes	Yes	Fast Blinks: 4 Slow Blinks: 9	A failure in hardware was detected.	Replace the HRE board.

Note: For other codes consult field service.

Table 3 – HRE Diagnostics

Section III – Disassembly and Inspection

Caution: Disconnect power, isolate the meter and relieve pressure before working on the meter.

Ensure that safety glasses and steel-toe safety shoes are worn at all times during meter maintenance. Ensure that appropriate gloves are worn during the dispensing of sealants and lubricants. Prior to working on the meter, drain the meter of all process fluids. If the meter is in-line, it must be isolated and the internal pressure must be zero.

Note: It may be helpful to reference the parts list when servicing the meter (see reference literature).

To drain the meter, rest the meter on its bottom so that the Lifting Lugs are facing up. Remove the two Drain Plugs (at the bottom of the cover). Carefully tip the meter so that the fluid flows from the Housing.

If the meter is in-line, assure that upstream and downstream valves are isolated prior to removing the Drain Plugs.

The following clearance tables are used to judge the degree of wear of various parts of the meter. It is essential to measure and record the clearances of the meter as found when disassembled.

Maximum Viscosity	20 cSt	20 cSt
Maximum Temperature	150° F	65° C
Units	Inches	Millimeters
Rotor to Block	(.002)/(.003)	(.050)/(.070)
Rotor to Shelf	(.001)/(.003)	(.050)/(.070)
Blade to Slot	(.0015)/(.0035)	(.038)/(.080)
Blade Top End Below Rotor	(.000)/(.002)	(.000)/(.050)
Blade Bearing to Cam Radius	(.0005)/(.003)	(.012)/(.070)
Blade Tip to Housing	(.002)/(.004)	(.050)/(.100)

Table 4A – Allowable Clearances – 2" Meter

Maximum Viscosity	20 cSt	20 cSt
Maximum Temperature	150° F	65° C
Units	Inches	Millimeters
Rotor to Block	(.003)/(.004)	(.070)/(.100)
Rotor to Shelf	(.002)/(.003)	(.050)/(.070)
Blade to Slot	(.002)/(.004)	(.050)/(.100)
Blade Top End Below Rotor	(.000)/(.003)	(.000)/(.070)
Blade Bearing to Cam Radius	(.0005)/(.003)	(.012)/(.070)
Blade Tip to Housing	(.002)/(.004)	(.050)/(.100)

Table 4B – Allowable Clearances – 3" Meter

Disconnect the terminal block from the HRE. The Terminal Block is a plug connection to the board. You can pull the plug from the board to better access the screw terminals to remove the wiring. Removing the board will be easier if the wiring is pulled away from the Junction Box. Inspect the board, looking for any electrical burn marks that could indicate a malfunction.

Remove the four 3 mm hex-bit socket screws. This will allow HRE Board removal from the meter (Figure 7).

Note: Ground yourself from static discharge by keeping one hand on the meter when handling the HRE Board.

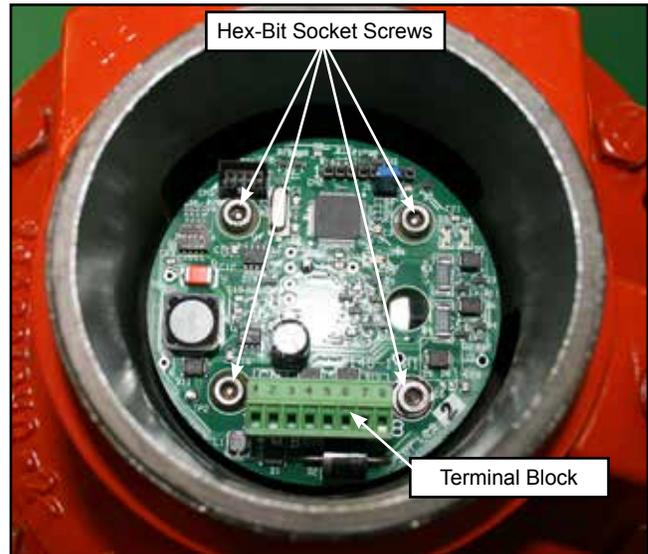


Figure 7 – HRE Removal

Section III – Disassembly and Inspection (continued)

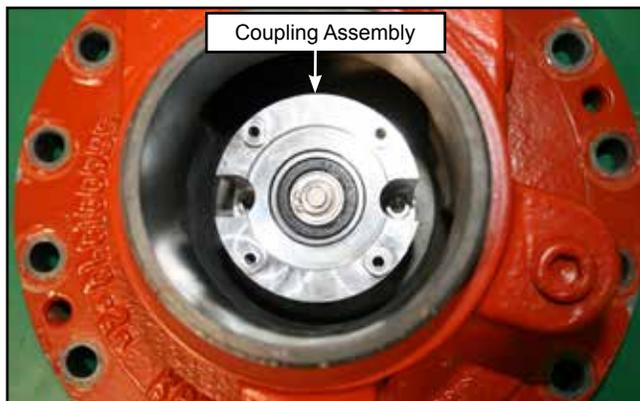


Figure 8 – Coupling Assembly

Removing the HRE Board allows access to the Magnetic Coupling Assembly (Figure 8). Inspect the Magnetic Coupling for general condition and if there is damage, replacement is necessary. Bearing should spin freely.

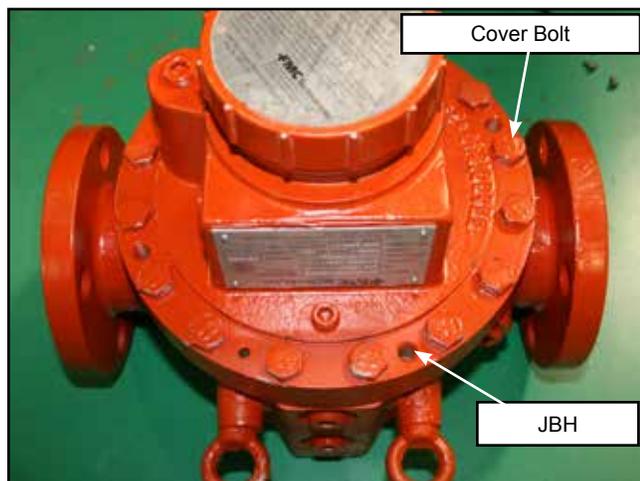


Figure 9 – Remove Cover Bolts

Remove the Cover Bolts (Figure 9). Once the Cover Bolts are removed, the Cover Assembly can be vertically lifted off of the Housing. To remove the Rotor Cover there are four threaded holes in the Rotor Cover; one on each segment. Install four of the screws to act as Jacking Screws.

Once the screws are installed, turn them clockwise evenly. This will lift the cover off of the Rotor (Figure 22).

With the Cover Assembly removed, the internal components can be viewed (Figure 10).

If necessary, clean and wash with degreaser. Soak up any residual fluid and remove any contaminants and/or degreasers.

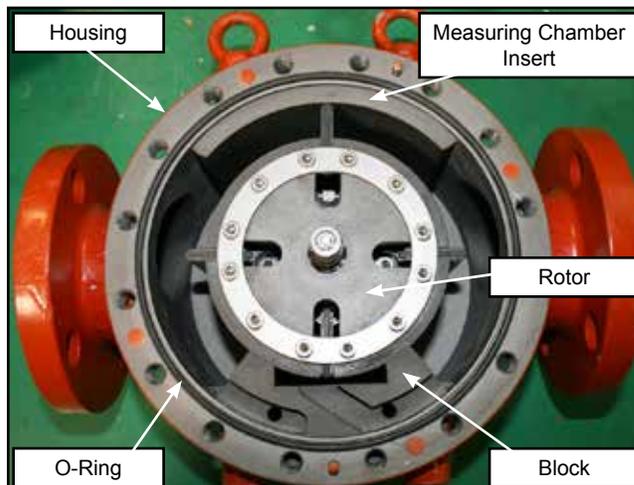


Figure 10 – Internal Components

Clearance Checks

The clearances of the meter will need to be taken using Feeler Gauges. A Feeler Gauge is a simple tool used to measure gap widths (reference parts list [PO0A001](#)).

The Spider is necessary to accurately measure clearances. It simulates the cover, while supporting the Rotor and allowing access to the meter internals (reference parts list [PO01015](#) or the Tool section at the beginning of this manual). Cover bolts should be used to secure the Housing.

Reference Table 4A and Table 4B for the required clearances. Record the found clearances in the Meter Clearance Record included with this manual (Section 5).

Rotor to Block Clearance

The clearances listed in Table 4A or 4B need to be checked on each segment of the Rotor, at the inlet and outlet of the meter and both sides of the block (Figure 11). If the clearances need adjusted, this can be accomplished by changing the shim located behind the Block (Figure 31).



Figure 11 – Rotor to Block Clearance

Section III – Disassembly and Inspection (continued)

Rotor to Shelf Clearance

The Rotor to Shelf clearance is the distance between the Shelf of the Housing and the bottom of the rotor.

This clearance is best checked using a Feeler Gauge.

Note: A Spider has a smaller Rabbit than the cover.

Note: The Spider is not present in the photos to provide clarity of the clearance.

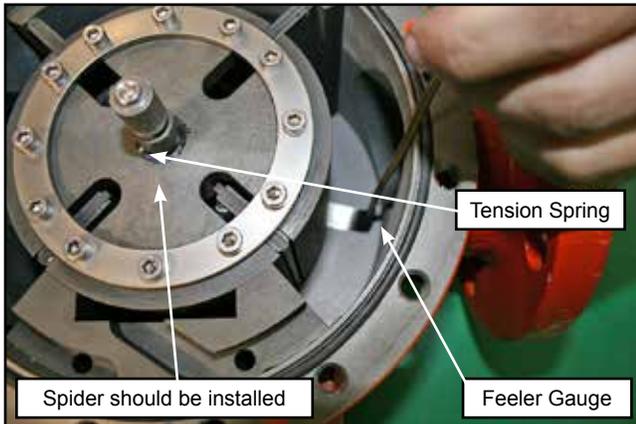


Figure 12 – Rotor to Shelf Clearance (Spider Should be installed)

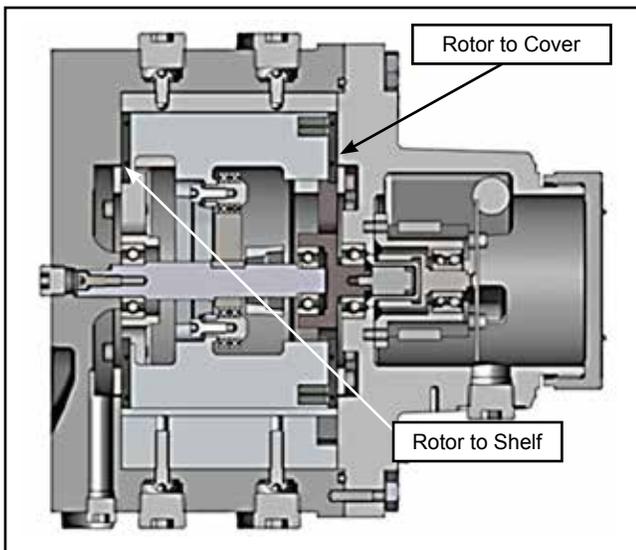


Figure 13 – Rotor End Clearance

Blade to Slot Clearance

The Blade to Slot clearance is the clearance between the Blade and the Rotor.

All four Blades should be checked for the clearances on both sides of the Blade, for a total of 8 measurements. The clearances should be measured with the Blade at transition, meaning half way through the Blade's travel (Figure 14).



Figure 14 – Blade to Slot Clearance (Spider Should be Installed)

Blade Top End Below Rotor Clearance (Rotor Removed)

The Blades need to be equal to the Rotor height or slightly shorter (see Table 4A). If the Blade is too short or taller than the Rotor, it can affect meter performance.

The best way to effectively check this clearance is with a Depth Micrometer (Figure 15). The Blade Retainer may need to be removed to allow the Micrometer to sit flat.

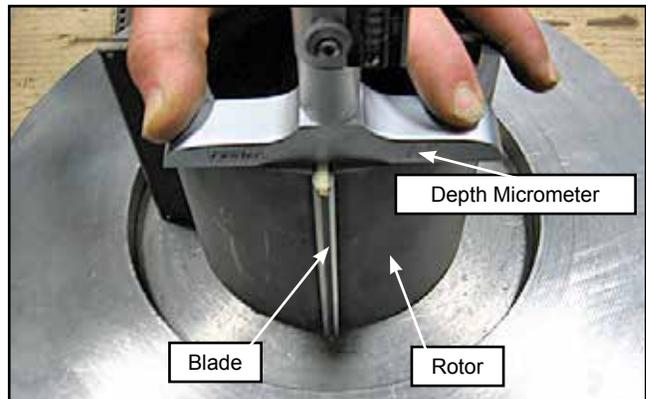


Figure 15 – Top End Clearance

Blade Bearing to Cam Clearance (Rotor Removed)

This clearance checks the wear between the Cam and Blade Bearings.

When parts are replaced, the clearance assures that the assembly is not too tight or loose for the rotating assembly.

The most effective way to check this clearance is with a dial indicator with a magnetic base (Figure 16). When checking this clearance, make sure to push and pull on the extended portion of the Blade to ensure the clearance is properly acquired.

Section III – Disassembly and Inspection (continued)

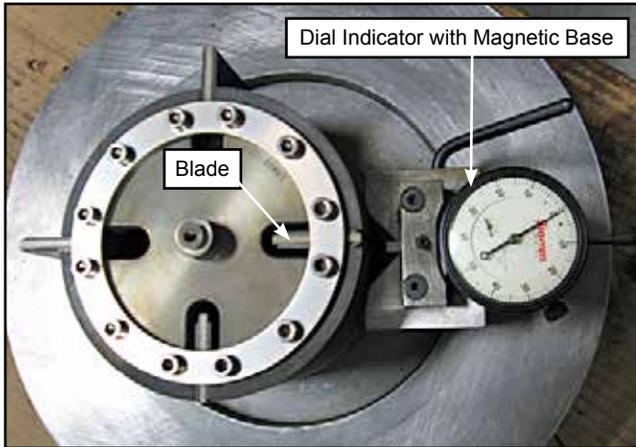


Figure 16 – Blade Bearing to Cam Clearance

Alternate Method (for Smaller Meters)

With the Rotor installed in the Housing and the Spider installed on the Rotor, rotate the element until the Blade is fully extended. With the Blade held toward the Measuring Chamber, check the clearance between the Blade Tip and measuring chamber. Then push on the back side of the Blade away from the Measuring Chamber and recheck the clearance between the Blade Tip and Housing. The difference between these clearances is the “Blade Bearing to Cam Radius Difference”.

Blade Tip to Housing Clearance

The clearance needs to be checked on each Blade using the spider. Rotate the Blade out towards the Measuring Section and measure the clearance (Figure 17). Check the clearance at the inlet, middle, and outlet of each Blade. Average the three clearance measurements of each Blade to achieve an overall clearance. Be sure to push on the Blade to fully extract it towards the Measuring Chamber.

The clearance can be adjusted using the required Shim behind the Measuring Chamber insert (Figure 31).



Figure 17 – Blade Tip to Housing Clearance

Disassembly

To remove the Rotor and Blade Assembly, the 1/4" NPT plug must be removed. Once the Plug is removed, access to the Shaft Locking Screw is possible.

Remove the Hex-Bit Socket Screw (2" meter – M4; 3" meter – M5). Once the screw is removed, the Rotor and Blade Assembly can be removed from the Housing (Figure 18 and Figure 19).



Figure 18 – NPT Removal



Figure 19 – Shaft Locking Screw Removal

Section III – Disassembly and Inspection (continued)

The Rotor and Blade Assembly uses Shims to set the Rotor to Shelf clearance. Set the Shims aside for use when reassembling. Depending on part replacement, Shims may need to be added or removed (Figure 20).

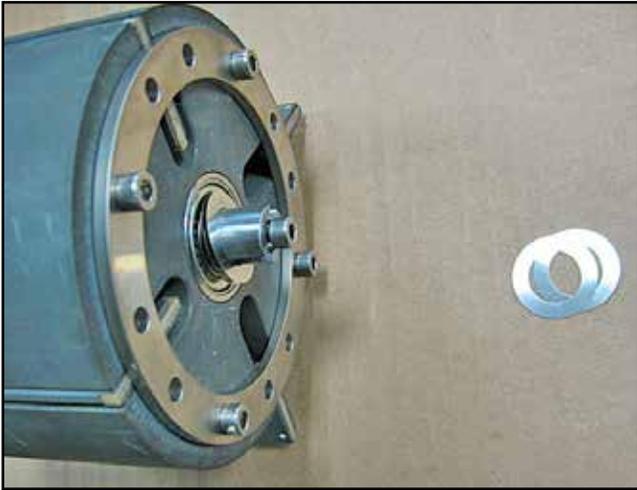


Figure 20 – Rotor Shims for Shelf Clearance

To disassemble the Rotor and Blade Assembly, the twelve Blade Retainer Bolts (4mm) will need to be removed. Once the bolts are removed, the Blade Retainer can be removed (Figure 21).

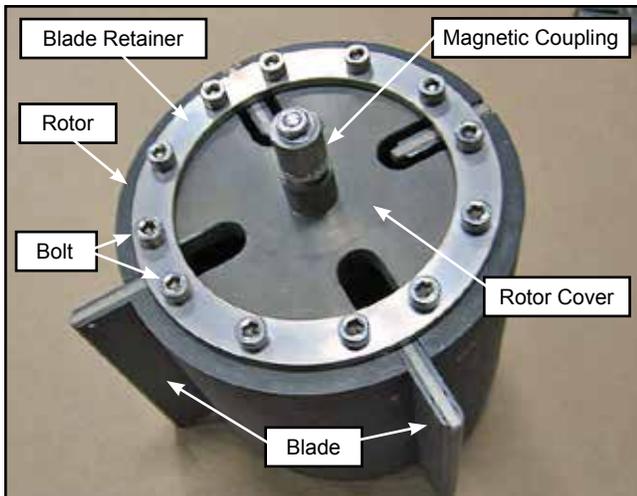


Figure 21 – Blade Retainer Removal

Inspect the magnetic coupling on the shaft. Only remove the coupling if it's broken or damaged. There's a Spring Washer at the base of the Cover Shaft. Remove it and set it aside for reassembly. Also inspect the Spring Washer for damage and replace it, if necessary.

To remove the Rotor Cover there are four threaded holes in the Rotor Cover; one on each segment. Install four of the screws to act as Jacking Screws.

Once the screws are installed, turn them clockwise evenly. This will lift the cover off of the Rotor (Figure 22).

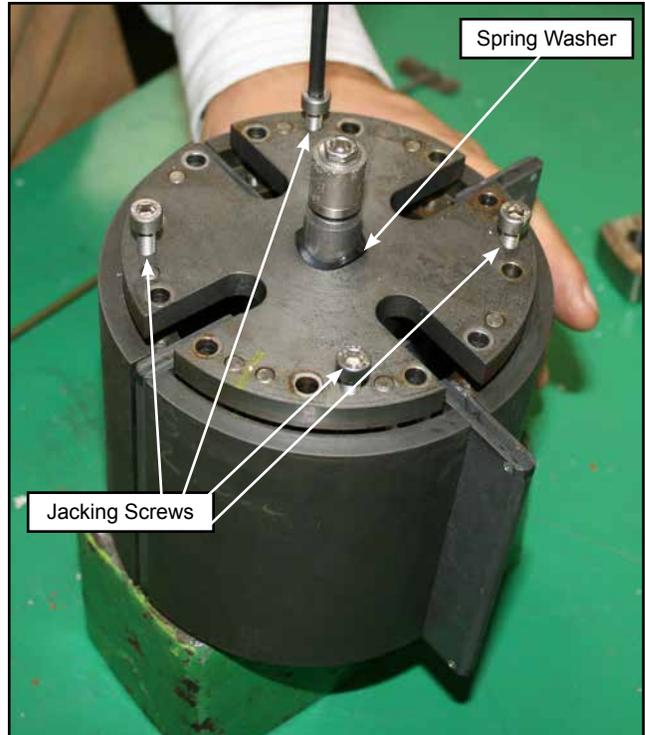


Figure 22 – Remove Cover

After the Rotor Cover is removed, the Blades, Cam and Shaft are exposed. Turn the shaft so that half of the upper Blade Paddle is exposed on both sides of the Rotor. The Upper Blade can be removed. Remove the Shaft and then the Lower Blade (Figure 23).

Note: Mark the slot, along with the Upper and Lower Rotor and the Blade that corresponds to that slot with a permanent marker. If the Blades are to be reused, they must be installed in the same position they were removed from (top, bottom and slot). Complete this for both Blades.

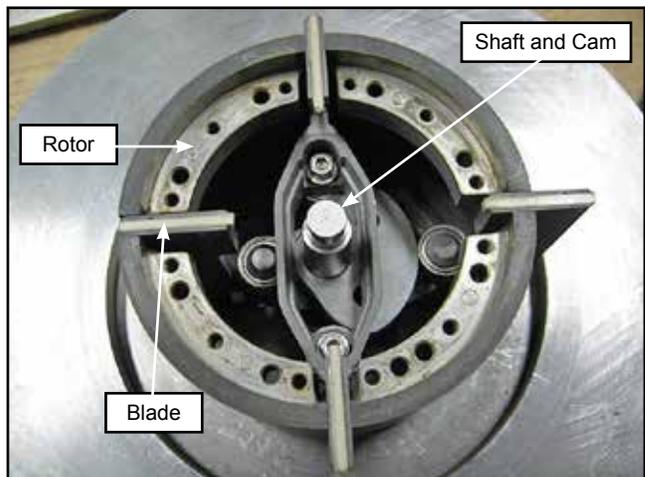


Figure 23 – Blade and Cam and Shaft Removal

Section III – Disassembly and Inspection (continued)

Now, with the Rotor disassembled, the Rotor can be evaluated. Inspect the Rotor for any noticeable wear. Also, inspect the Bearings and surfaces for wear or damage (Figures 24-27).

Note: There is one segment that has an additional pin. This is to ensure that the Rotor Cover can only be installed one way.

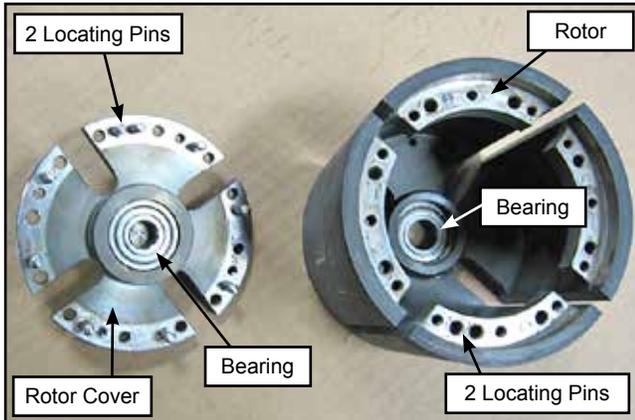


Figure 24 – Inspect Rotor

If the Cover and/or Rotor Bearings need to be replaced, remove using the Slide Hammer Bearing Puller (P/N 651037-008)

Prior to reinstalling the Bearings, apply a light coat of Cyberbond Titan 7769 Metal Bonder or equivalent inside the Bore of Rotor and Cover. Using an Arbor Press, press the Bearing into the Cover (or Rotor) until the Bearing bottoms out in Cover (or Rotor) Bore (Figure 25). When pressing the Bearing, only press the Bearing outer diameter – NOT THE INNER DIAMETER. Make sure the Rotor Body is supported internally and not resting on the segments.

Note: When using an Arbor Press, ensure the pilot portion of the top punch fits inside the diameter of the Bearing.

Once the Bearing has been successfully installed into the Cover/Rotor, ensure that the inner race of the Bearing spins freely.



Figure 25 – Rotor Assembly Bearing installation using Arbor Press

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Inspection Areas



Figure 26 – Cam and Shaft Wear

To remove the Blade Bearing Assembly, remove the M5 Screw from the bottom of the Bearing Assembly (Figure 27). Ensure that the Blade Assembly spins freely and independently. If Bearing Assemblies will be installed, it is recommended to clean the assembly with a spray solvent.

If Bearings are replaced, be sure to apply a light coating of Loctite 242 to the M5 Screw and Lockwasher. When reinstalling the Blade Assembly M5 Screw, torque to 60 in/lbs.

Note: Ensure that the screw is completely tightened in the mating hole and that the pin does not spin while tightening.

Also be sure that the bearings spin freely of each other after tightening is complete.

Section III – Disassembly and Inspection (continued)

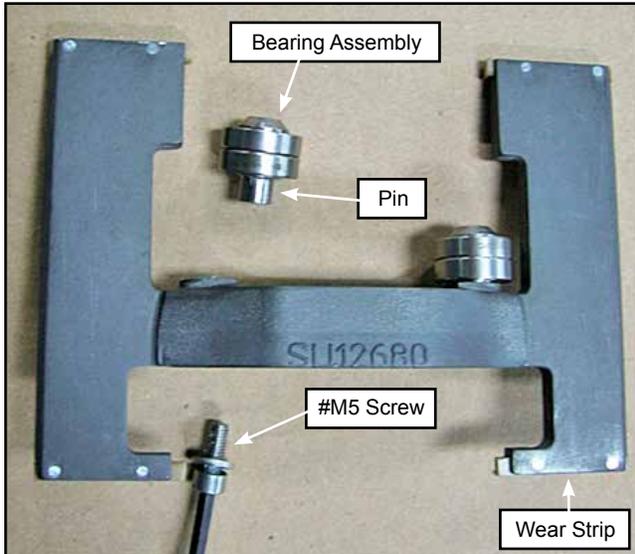


Figure 27 – Blade and Bearing Wear

Inspect the PEEK™ Blade Wear Strips (there are four per Blade). The Wear Strips should be secure to the Blade, not loose. They should also be slightly raised to the Blade surface. If worn, the complete Blade should be replaced.

Ensure that the cover Bearing spins freely. If not, it must be replaced. It is recommended to use a spray solvent to clean the Bearing.

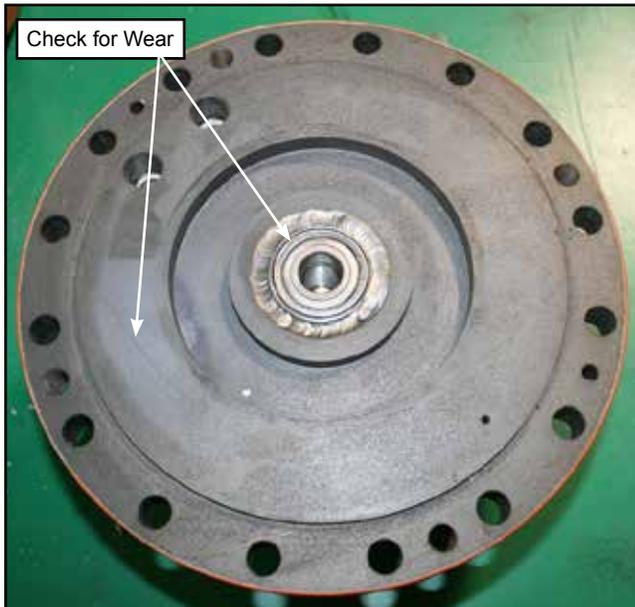


Figure 28 – Cover and Bearing Wear



Figure 29 – Measuring Section Wear

The Block and Measuring Insert are removable. Inspect for wear and replace, if needed.

Note: Most repairs of the meter will not require the Block to be removed. If the Block or Measuring Chamber Insert are removed, ensure they are reinstalled in the same orientation. It's strongly advised to set the Measuring Insert Shims aside with the Measuring Insert and set the Block Shims aside with the Block.

If the Block must be moved, the 1/2" NPT plug will need to be removed to access the Button Head Screws that secure the Block in place (Figure 30 and Figure 31). When reinstalling, the Cinch Bolts should have Loctite 242 lightly applied. The NPT Pipe Plugs should have Loctite 567 lightly applied as well.

Cinch Bolt Torque Specifications:

2" – 60 in/lb (7 N·m)

3" – 150 in/l (17 N·m)

Section III – Disassembly and Inspection (continued)

Note: Ensure that the wrench used to remove the Cinch Bolts fits snugly in the Bolt Head. If there is play, the bolts should be replaced.

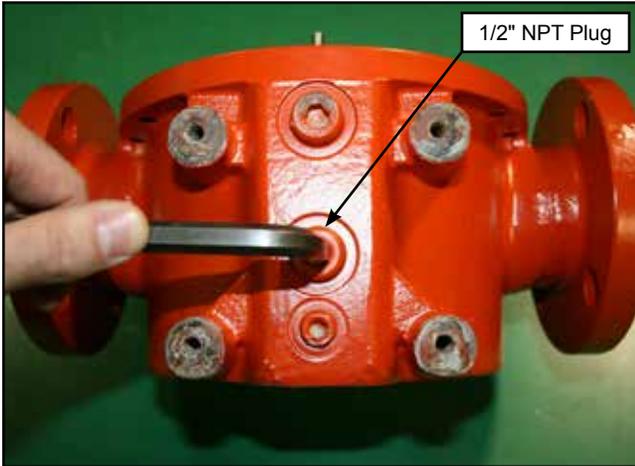


Figure 30 – NPT Removal

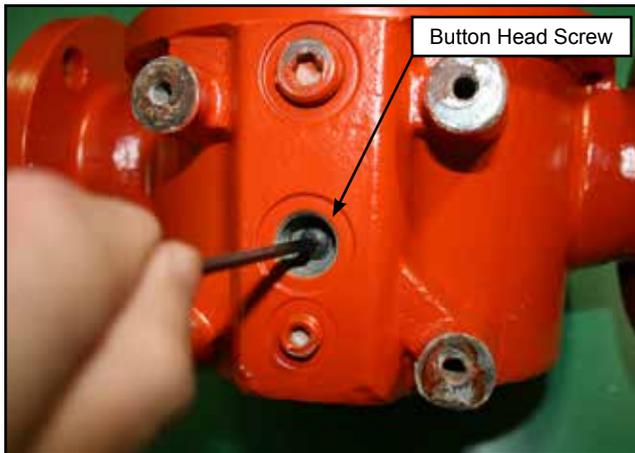


Figure 31 – Cinch Bolt Removal

Figure 32 shows an illustration of locations for the Blocks and Shims.

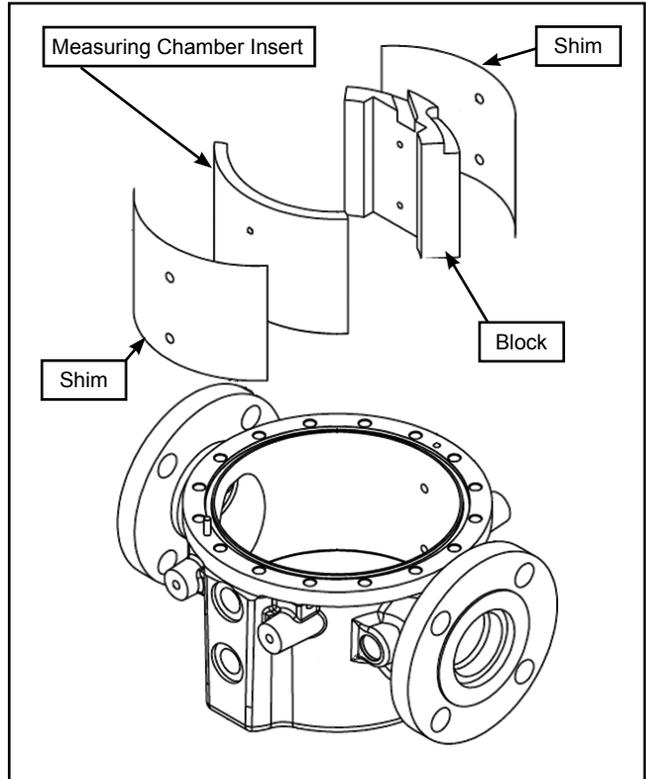


Figure 32 – Block, Measuring Chamber and Shim Locations

Meter Size	Shim Size	Part Number
2" Meter	0.002"	566220-002
	0.003"	566220-003
	0.004"	566220-004
	0.005"	566220-005
3" Meter	0.002"	566330-002
	0.003"	566330-003
	0.004"	566330-004
	0.005"	566330-005

Table 5 – Block and Measuring Chamber Shims

Section IV – Assembly

Assembly

Note: When assembling the meter, use a light coating of Loctite 242 on all threaded items. For pipe plugs, use Loctite 567.

Once all of the clearances have been taken, determine which parts require replacement.

Use Emory Cloth or a file to remove any burrs that may have developed from disassembly and cleaning.

Take caution while assembling and do not force any steps. If something needs to be forced, then there may be a problem.

After the meter is reassembled, the clearances will need to be recorded one more time.

Install both Blades and Cam Shaft into the Rotor (Figure 33).

Keep in mind that if the same Blades are to be reused, then they will need to be installed in the same position they were removed from.

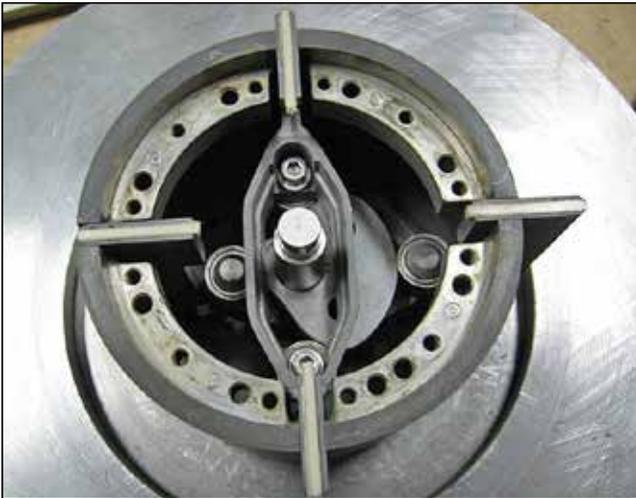


Figure 33 – Install Blades and Cam Shaft

The Rotor Cover will only fit in one orientation. Note the two pins and corresponding holes (Figure 34).

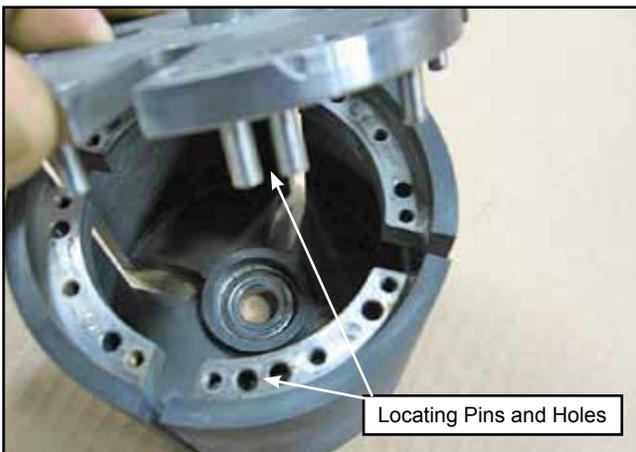


Figure 34 – Locating Pins and Holes

Install the Rotor Cover and Blade Retainer. Prior to installing the twelve Retainer Bolts, apply a light coating of Loctite 242 to the threads and torque the bolts to the appropriate specifications (Figure 35):

2" Torque Values: 50 in/lb (6 N·m)

3" Torque Values: 150 in/lb (17 N·m)

Once the Rotor and Blades are assembled, hold the bottom of the shaft and spin the assembly to check for binding. The assembly should spin freely.

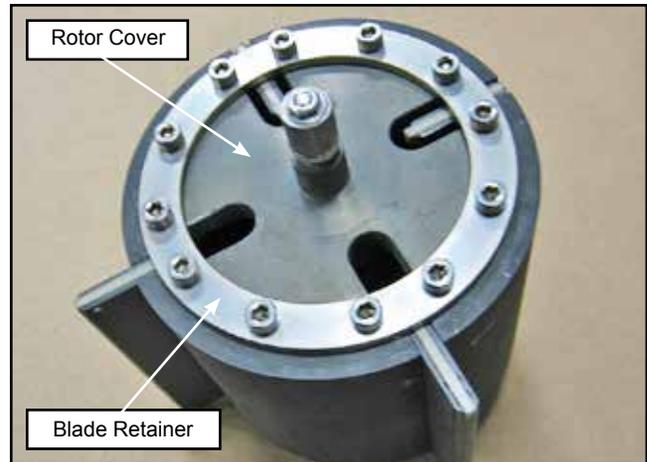


Figure 35 – Assemble Rotor and Blade Assembly

The Rotor and Blade Assembly is ready to be installed into the Housing. If there were no parts replaced, you can install the same Shims that were removed when the meter was disassembled. If there were parts replaced, then Shims may be added or removed accordingly (Figure 36). The Shims that are required can be found using the Rotor to Shelf Clearance. Shims are only installed on the bottom of the Rotor.

Meter Size	Shim Size	Part Number
2" Meter Washer Shims	.001"	647000-480
	.002"	647000-479
	.003"	647000-478
	.004"	647000-477
	.005"	647000-476
3" Meter Washer Shims	.001"	647000-461
	.002"	647000-462
	.003"	647000-463
	.004"	647000-464
	.005"	647000-465

Table 6 – Rotor Washer Shim Part Numbers

Install the Spring Washer over the Magnetic Coupling to sit flat on the Rotor Cover. A light coating of grease or petroleum jelly will help hold it in place.

Section IV – Assembly (continued)

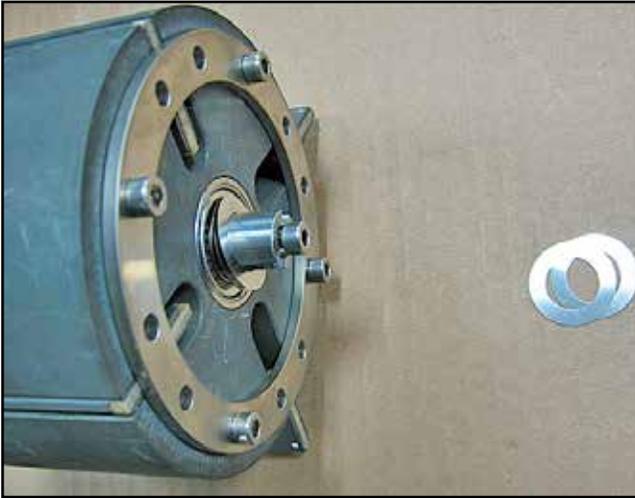


Figure 36 – Reinstall Shims, Bottom of Rotor Only.

When installing the Rotor and Blade Assembly into the Housing, care must be taken to ensure the key way on the shaft aligns with the corresponding key way on the Housing (Figure 37). By installing the Rotor and Blade Assembly in this manner, it allows proper timing of the Blade extension and retraction.

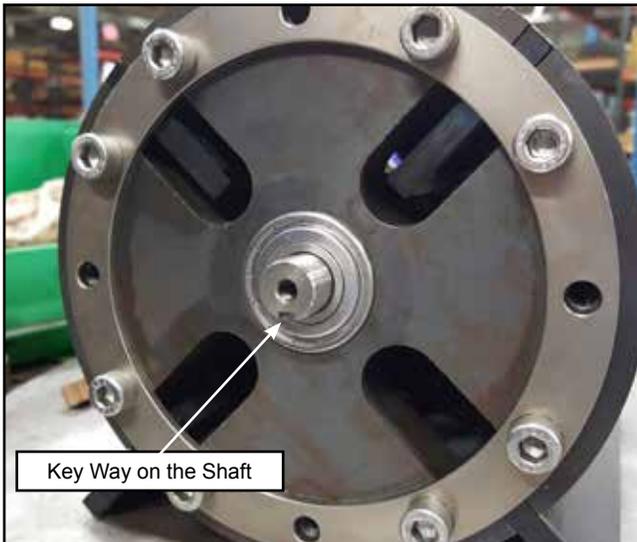


Figure 37 – Key Way on the Shaft

Carefully place Rotor and Blade assembly into the Housing so that the Blade Tips, Measuring Chamber and Block are not scratched.



Figure 38 – Insert Rotor & Blade Assembly into Housing.

After the Rotor assembly has been placed into the Housing (Figure 38), reattach the Spider. Place the meter on its side and insert the Shaft Fixture Bolt and Washers (Figure 39).

Shaft Seating Fixture Bolt and Washer Specifications:

2" Bolt – M5x8, 45mm long with a grade of 12.9 or greater

Washers – Total thickness of 13/64"

3" Bolt – M6x1, 45mm long with a grade of 12.9 or greater

Washers – Total thickness of 1/8"



Figure 39 – Shaft Seating Fixture Bolt and Washers.

Section IV – Assembly (continued)

Tighten the Shaft Fixture Bolt (2" – 50 in/lbs, 3" – 90 in lbs) in order to seat the Shaft within the Housing. Check clearance between the bottom of the Blades and the Housing Shelf once Shaft Fixture Bolt and Washers have been installed (Figure 40). Clearance should be .002"/.003". Adjust, if needed, by adding or removing Shims.



Figure 40 – Blade to Inside Surface

Check the Blade Tip to Housing clearance at the outlet, inlet, and middle portion of the Measuring Chamber (Figure 41).



Figure 41 – Blade Tip to Housing Clearance (at the Measuring Chamber)

It may be required to insert shims behind the Block and Measuring Chamber in order to obtain required clearances (Figure 42). The required Shim thickness can be calculated by taking the Rotor to Block clearance and subtracting the Blade Bearing to Cam clearance and recommended clearance from the Rotor to the Block. Be sure to align the holes in the Shim(s) with the holes in the Block and Housing. In order to install shims the Spider assembly will need to be removed. Shims should be flush with or below the Block or Measuring Chamber.



Figure 42 – Shims

Once required clearances have been achieved, the cover can be installed. Prior to installing the cover, inspect the Cover O-ring and if damaged, replace it. Reinstall the O-ring (lubricate the O-ring with a thin coating of Molykote 55 O-Ring Grease). Install the Cover and torque the Cover Bolts with a torque wrench (Figure 43). Use a cross-hole tightening pattern when tightening the bolts.

Note: When installing the Housing Cover, take caution when aligning it with the Rotor Magnetic Coupling. It should not be forced, but slip over the magnet. Misalignment could damage or chip the coupling.

Cover Bolt Torque Specifications:

2" Torque Value: 45 ft/lb (61 N·m)

3" Torque Value: 160 ft/lb (217 N·m)

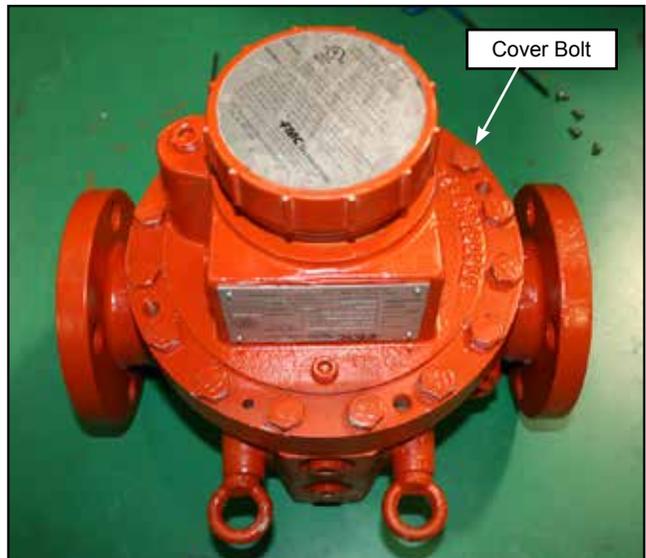


Figure 43 – Tighten Cover Bolts

Section IV – Assembly (continued)

The Locking Screw will need to be tightened. This locks the Rotor and Blade Assembly to the Housing (Figure 44). Do not push in while tightening or the rotor may bind on the cover.

Tighten the Locking Screw to the following Torque Values:

2" – 150 in/lb (17 N·m)

3" – 250 in/lb (29 N·m)

Note: The Locking Screw needs to be tightened after the Cover is installed.

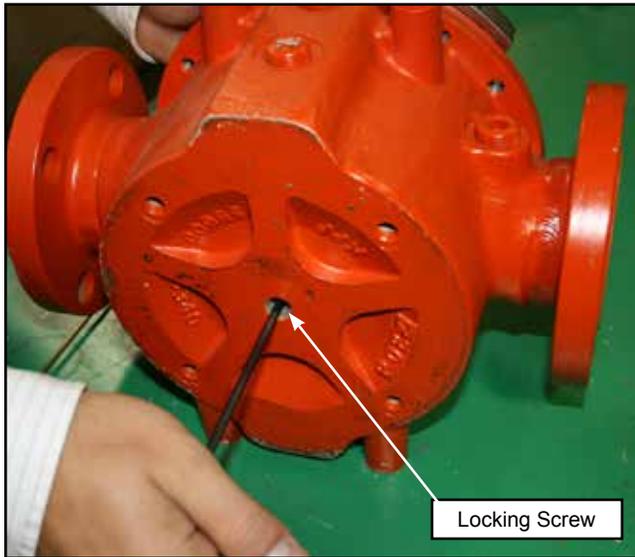


Figure 44 – Install Locking Screw

Install the Locking Screw Pipe Plug.

Now the meter is fully assembled. Insert a soft tip tool into the meter inlet and spin the Rotor and Blade Assembly. There should be no binding and it should operate smoothly.



Figure 45 – Fully Assembled Meter

Section V – Meter Clearance Record

Meter and Model: _____

Serial Number : _____

<i>Item</i>	<i>Date</i>	<i>As Found</i>	<i>As Assembled</i>
Rotor to Block			
Rotor to Shelf			
Blade to Slot			
Blade Top End Below Rotor			
Blade Bearing to Cam Radius			
Blade Tip to Housing			

<i>Item</i>	<i>Date</i>	<i>As Found</i>	<i>As Assembled</i>
Rotor to Block			
Rotor to Shelf			
Blade to Slot			
Blade Top End Below Rotor			
Blade Bearing to Cam Radius			
Blade Tip to Housing			

<i>Item</i>	<i>Date</i>	<i>As Found</i>	<i>As Assembled</i>
Rotor to Block			
Rotor to Shelf			
Blade to Slot			
Blade Top End Below Rotor			
Blade Bearing to Cam Radius			
Blade Tip to Housing			

<i>Item</i>	<i>Date</i>	<i>As Found</i>	<i>As Assembled</i>
Rotor to Block			
Rotor to Shelf			
Blade to Slot			
Blade Top End Below Rotor			
Blade Bearing to Cam Radius			
Blade Tip to Housing			

Section VI – Meter Proving Record

Date: _____

Record: _____

<i>Flow Rate</i>	<i>Temperature</i>	<i>Pressure</i>	<i>Meter Factor</i>

Date: _____

Record: _____

<i>Flow Rate</i>	<i>Temperature</i>	<i>Pressure</i>	<i>Meter Factor</i>

Date: _____

Record: _____

<i>Flow Rate</i>	<i>Temperature</i>	<i>Pressure</i>	<i>Meter Factor</i>

Date: _____

Record: _____

<i>Flow Rate</i>	<i>Temperature</i>	<i>Pressure</i>	<i>Meter Factor</i>

Section VII – Related Publications

The following literature can be obtained from FMC Technologies Measurement Solutions Literature Fulfillment at measurement.fulfillment@fmcti.com or online at www.fmctechnologies.com/measurementsolutions.

When requesting literature from Literature Fulfillment, please reference the appropriate bulletin number and title.

Genesis

Genesis 2"	Bulletin PO01052
Genesis 3"	Bulletin PO01053
Specifications (2" & 3")	Bulletin SS01060
Installation/Operation	Bulletin MN01046
Lubricants, Sealants, Adhesives	Bulletin PO0A002
Tools/Mechanical	Bulletin PO0A001
Spiders and Bushings	Bulletin PO01015

Technical Support

Contact Information:

Field Service Response Center

24/7 Technical Support/Schedule

a Technician: 1-844-798-3819

System Installation Supervision,
Start-Up, Commissioning Services,
and Training Available

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