



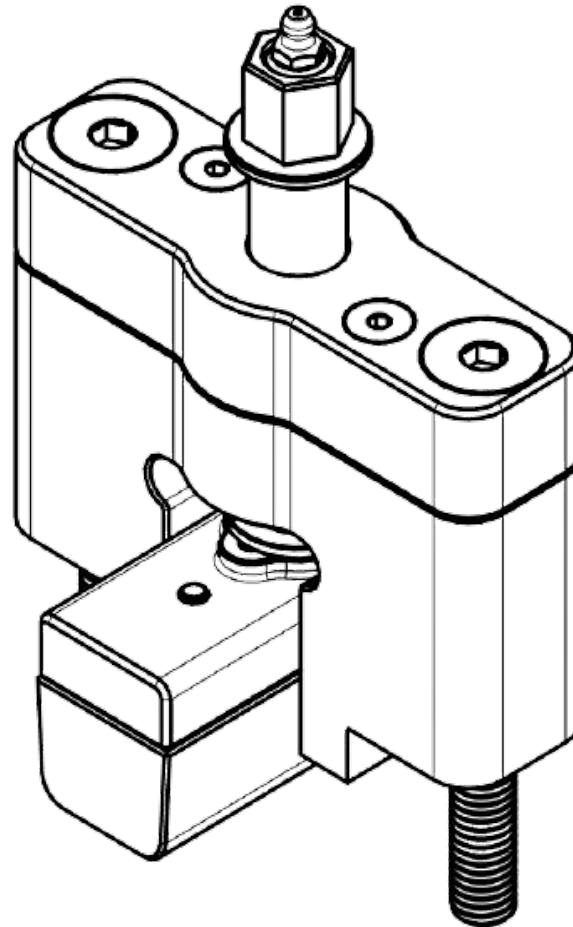
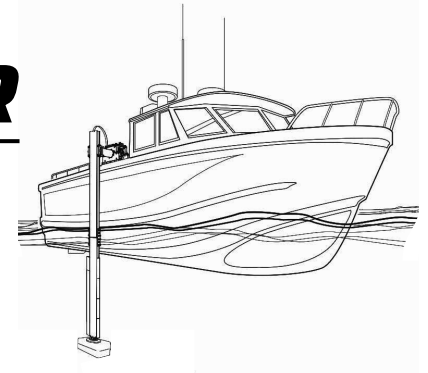
Patent #8094520

HIGHTOWER - MEGATOWER

SHEAR BLOCK TOWER

USER MANUAL

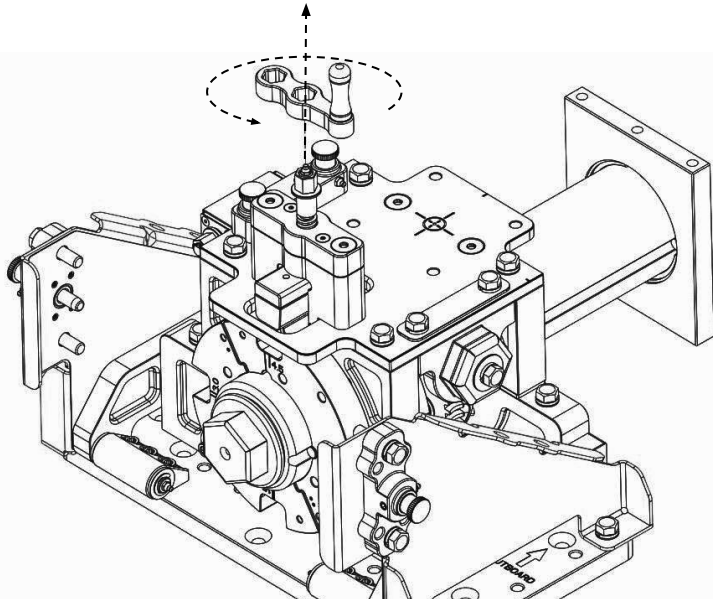
Deployment & Maintenance



SCAN FOR VIDEO

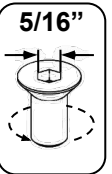
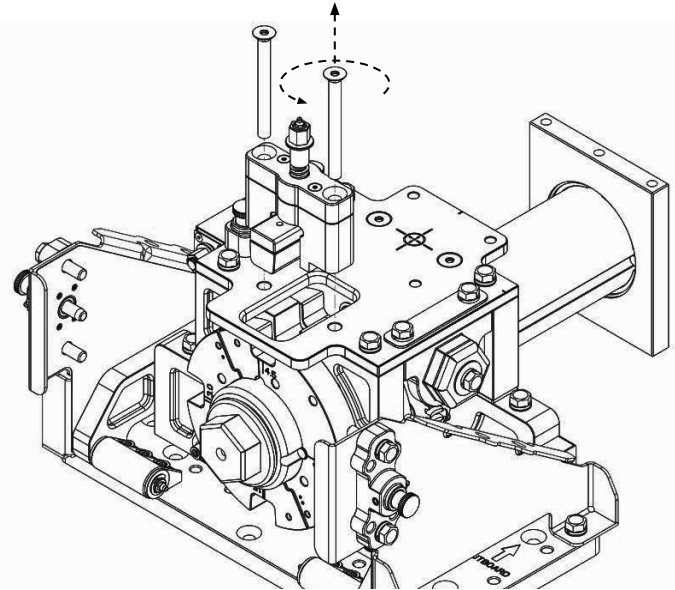
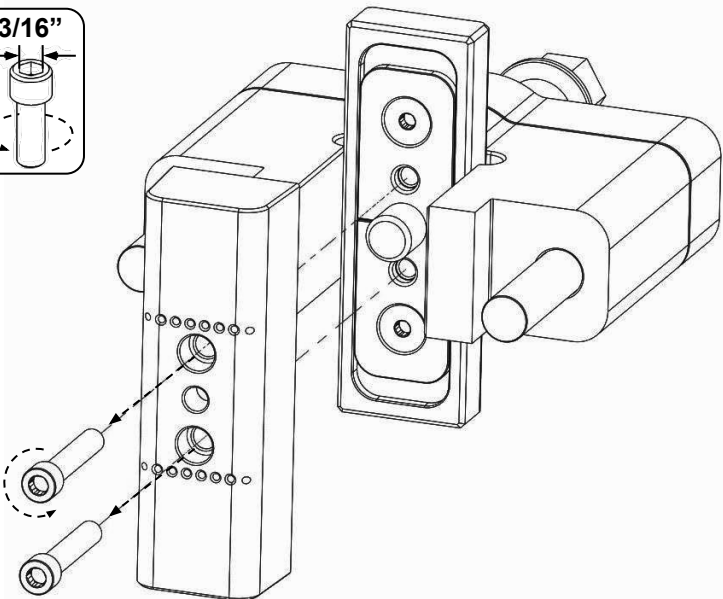
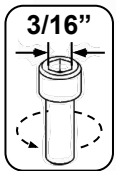


SCAN FOR ALL
USM VIDEOS



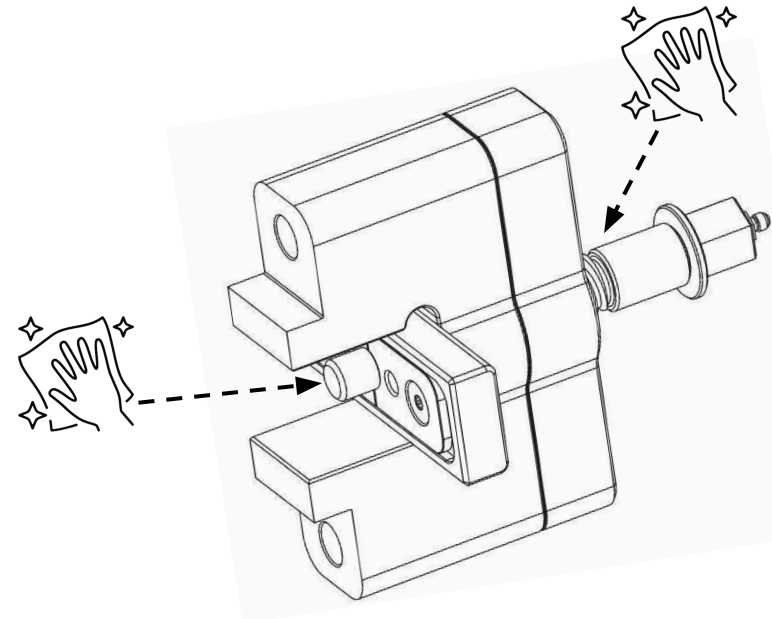
1 **DISENGAGE SHEAR BLOCK** - Using the Speed-Wrench loosen the lead-screw on top of the Shear Block Tower. Ensure the Shear Block is fully disengaged from the Notch Rings.

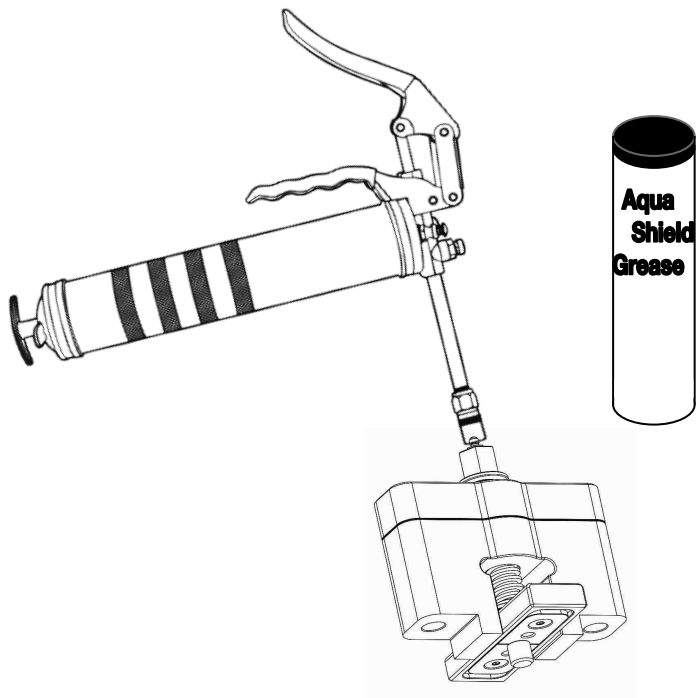
3 **REMOVE SHEAR BLOCK** - Using a 3/16" Allen Wrench, remove two 1/4-20 x 1.375" socket-head screws.



2 **REMOVE TOWER FROM MOUNT** - Using a 5/16" Allen Wrench, remove two 1/2-13 x 5.0" flat-head bolts. Lift the Shear Block Tower from the USM.

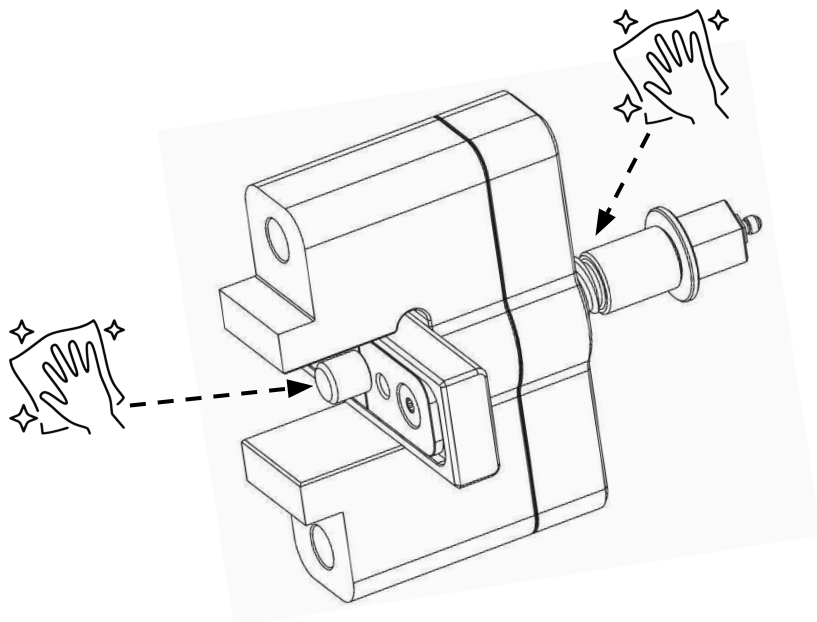
4 **WIPE CLEAN** - Once the Shear Block has been removed, use a rag or paper towel to wipe away any dirt, grease or salt residue etc.





LUBRICATE MOVING PARTS - Using a grease gun inject grease into the top of the Shear Block Tower through the zerk fitting.

REMOVE EXCESS GREASE - Wipe away excess grease.



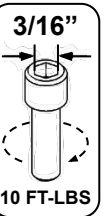
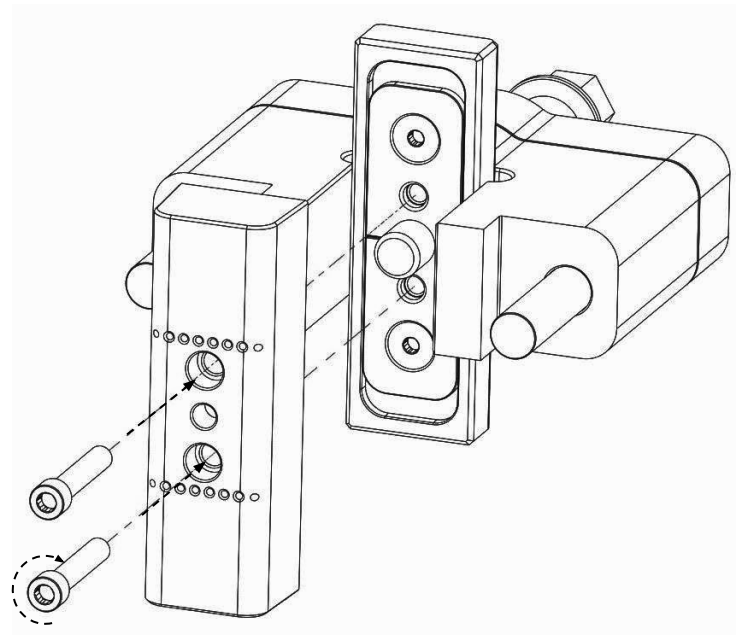
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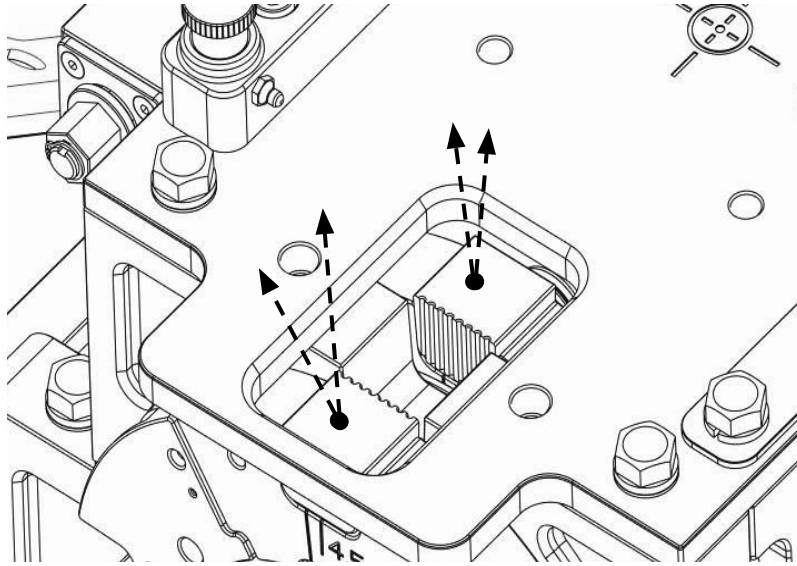
6

ROTATE WHILE GREASING - Using Speed-Wrench rotate Lead-Screw while injecting grease. Continue injecting until fresh grease is expelled.

8

INSTALL SHEAR BLOCK - Using a 3/16" Allen Wrench, install two 1/4-20 x 1.375" socket-head screws.



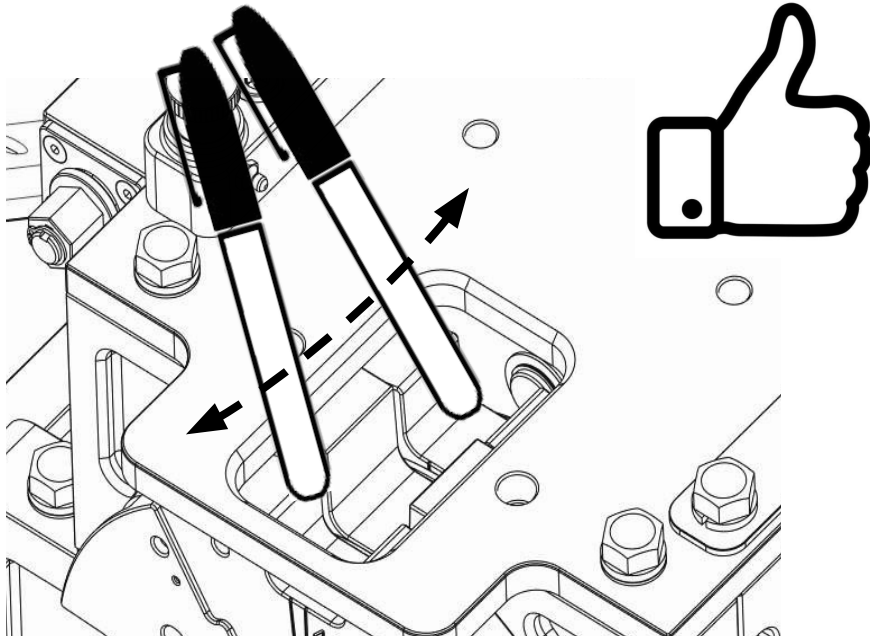


REMOVE BLOCK FRAGMENTS - Ensure there are no remaining fragments of the broken Shear Block between the Notch-Rings. Do not put hands into the space between the Notch-Rings.

9

USE TOOL FOR REMOVAL - Use a tool to remove broken fragments such as a pen or other non metallic tool.

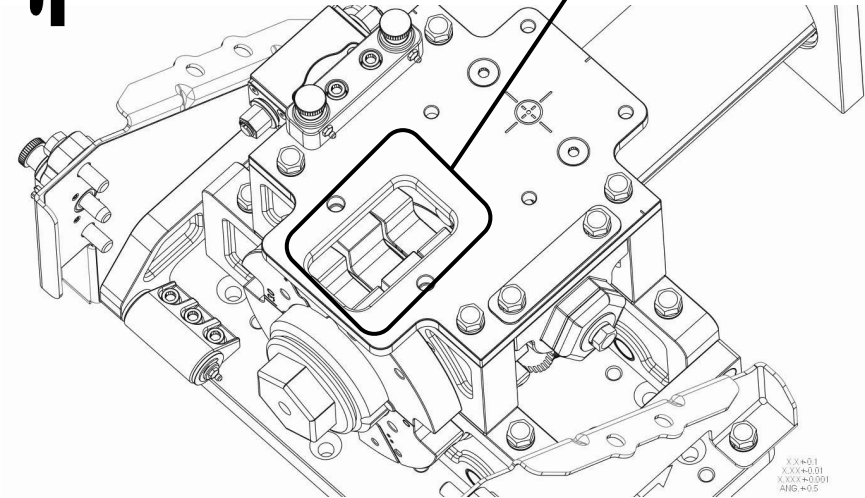
11



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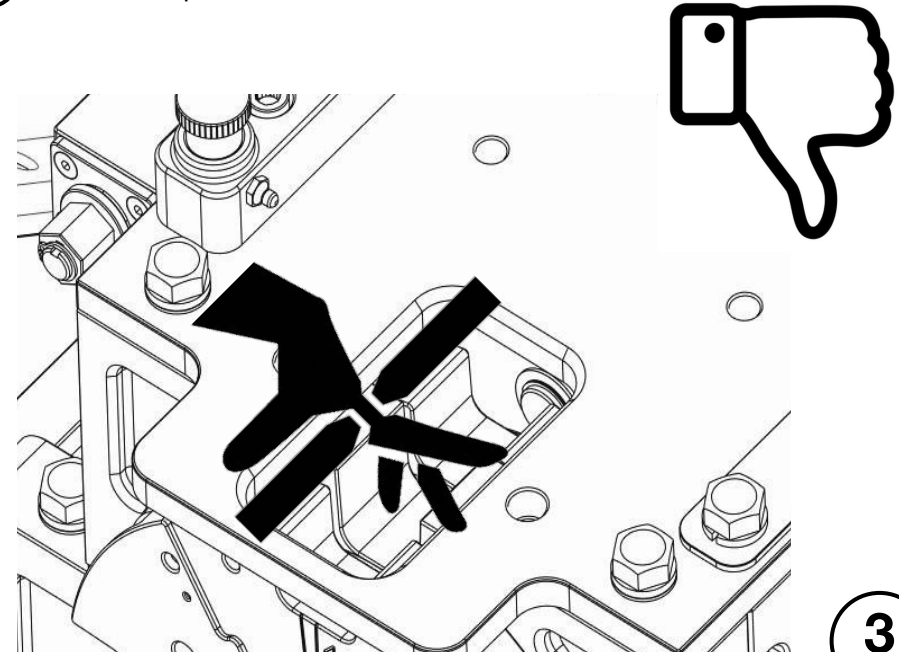


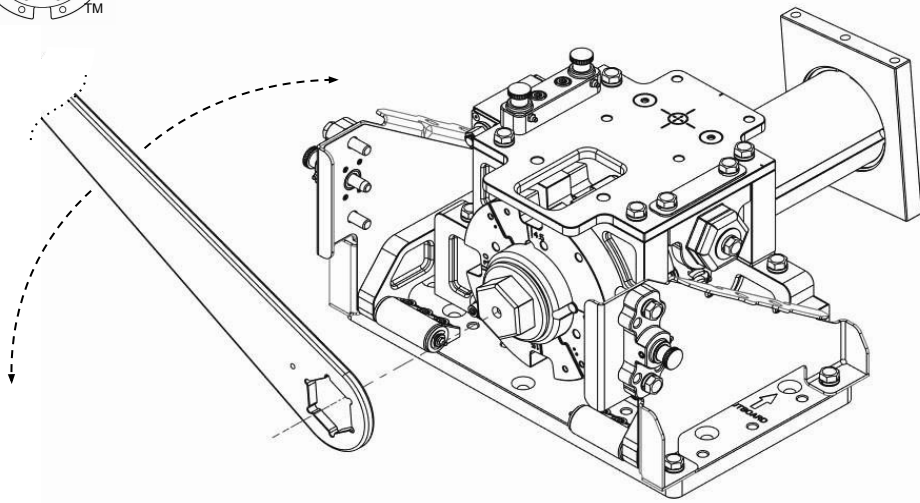
KEEP FINGERS AWAY.



12

NEVER USE HANDS - Use a tool to remove broken fragments such as a pen or other non metallic tool.



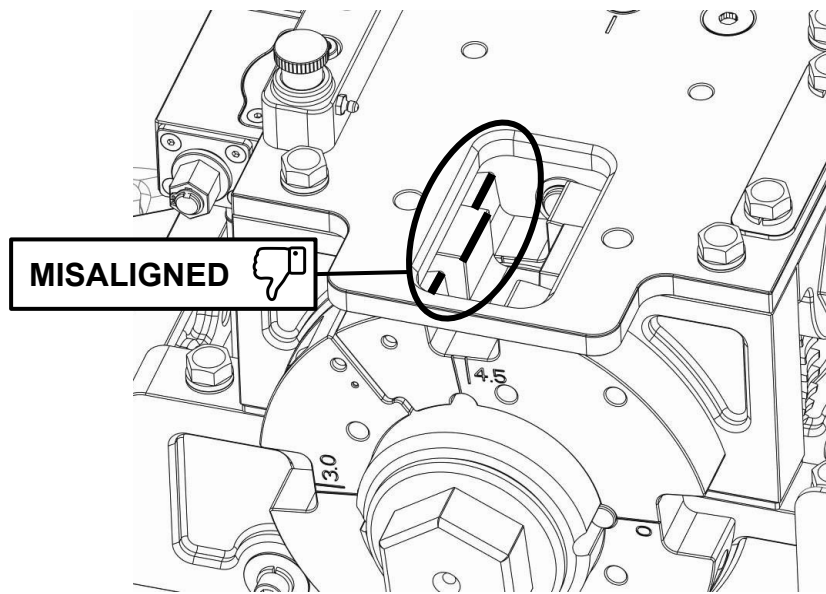
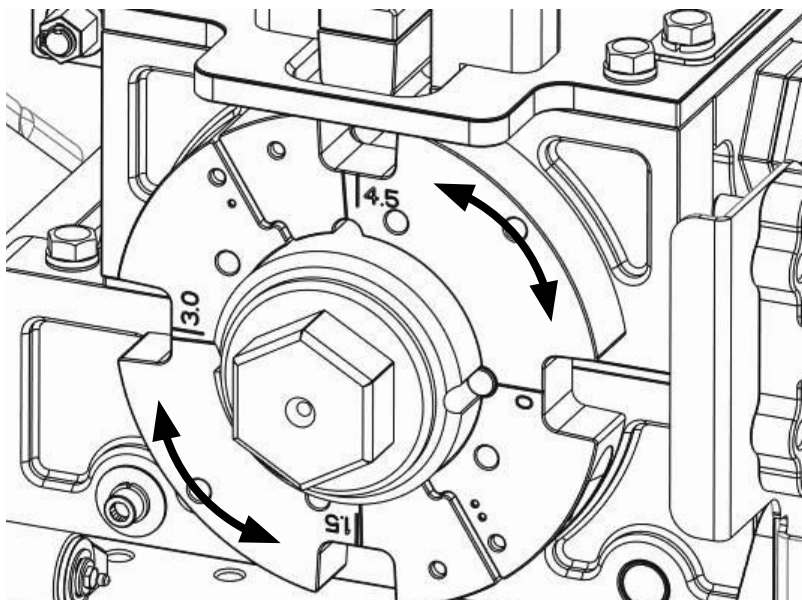


ALIGN NOTCH RINGS - Align Notch-Rings with the notch in the Top-Block using X-Pole Wrench.

13

ROTATE X-POLE - Using the X-Pole Wrench as pictured above, rotate the X-Pole to align notches as in cell 16.

15



MISALIGNED

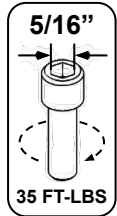
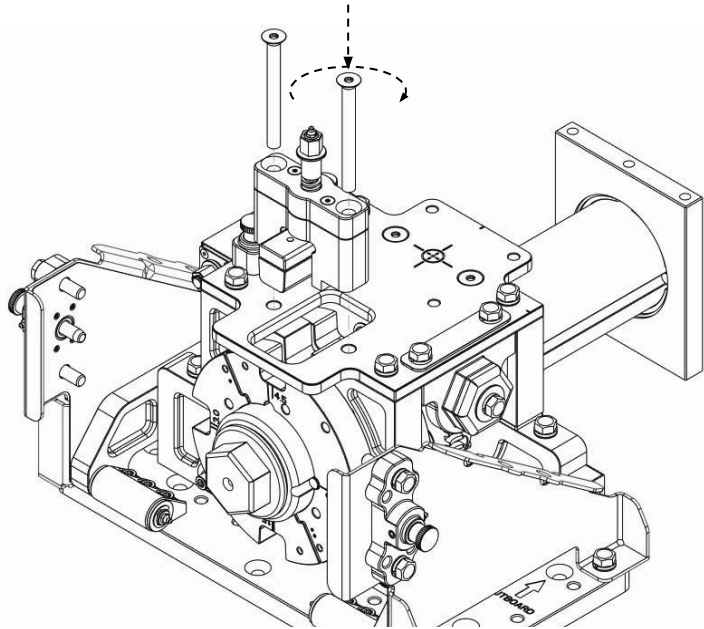
14

NOTCHES MISALIGNED - Simply Rotate the X-Pole to align notches.

16

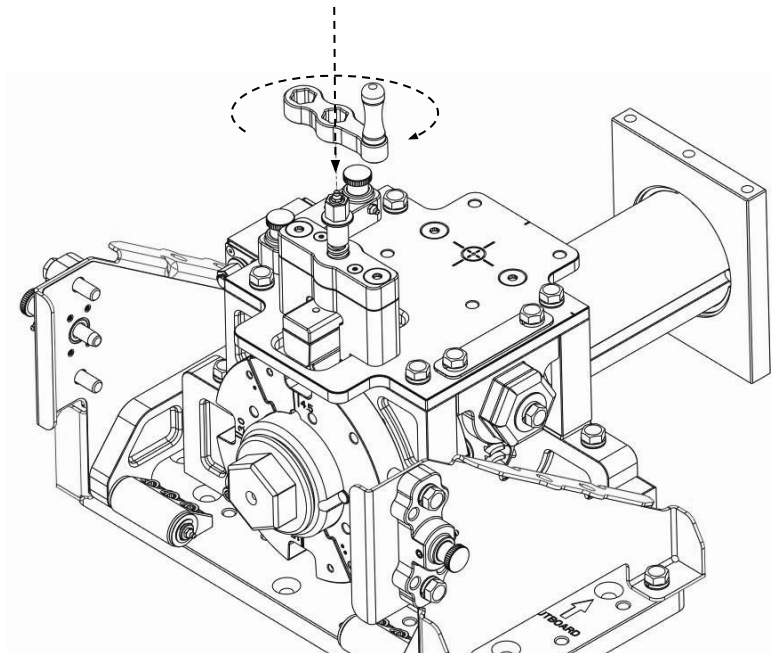
NOTCHES ALIGNED - With the notches aligned you may proceed with reinstalling the Shear Block Tower.

ALIGNED



REINSTALL SHEAR BLOCK TOWER - Using a 5/16" Allen Wrench, install two 1/2-13 x 5" flat-head bolts. Torque screws to 35 FT-LBS.

17

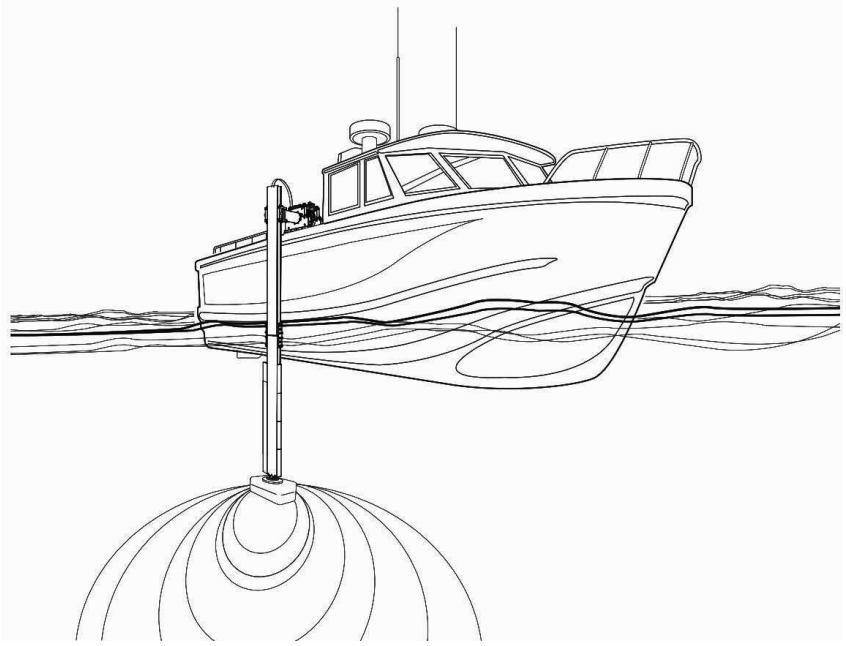


ENGAGE SHEAR BLOCK - Using the Speed Wrench, engage Shear Block. Tighten until you feel a 'hard stop'. Do Not Over Tighten.

18

READY FOR SURVEY - The USM is ready to deploy and begin survey operations.

19



20

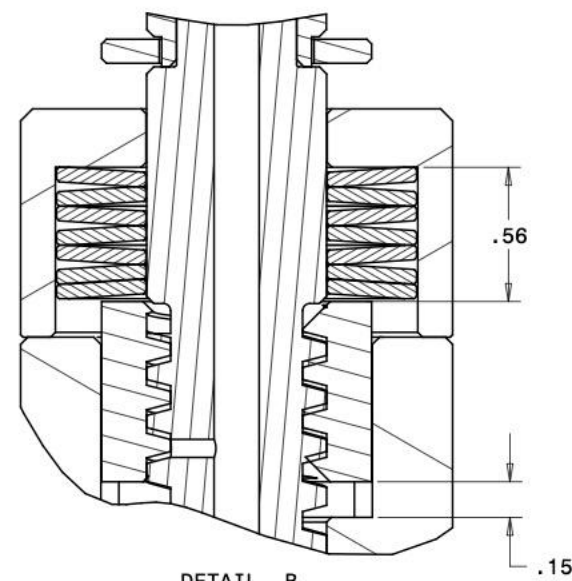
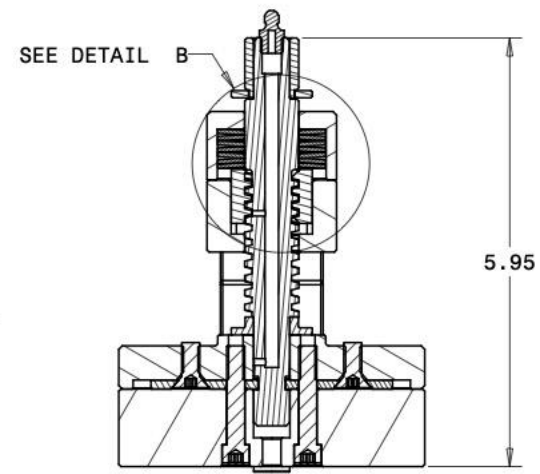
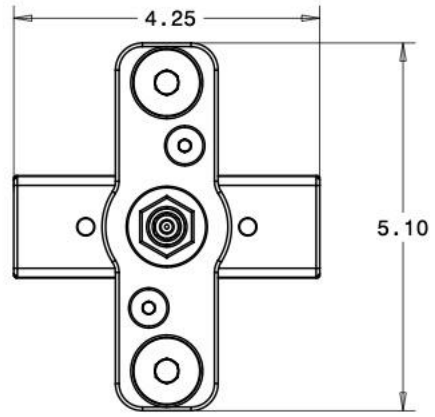
GENERAL MAINTENANCE - Ensure all stainless hardware always coated with a marine grade anti-seize product. Always wash and dry the USM after each use. After the unit is dry apply a silicone spray or lubricant that does not make plastic swell.

AVAILABLE FROM USM FOR MOUNT SERVICE AND MAINTENANCE

- AQUA-SHIELD GREASE
- T-9 BOESHIELD
- CMD EXTREME PRESSURE #3 GREASE
- BOLT AND SPARES KITS

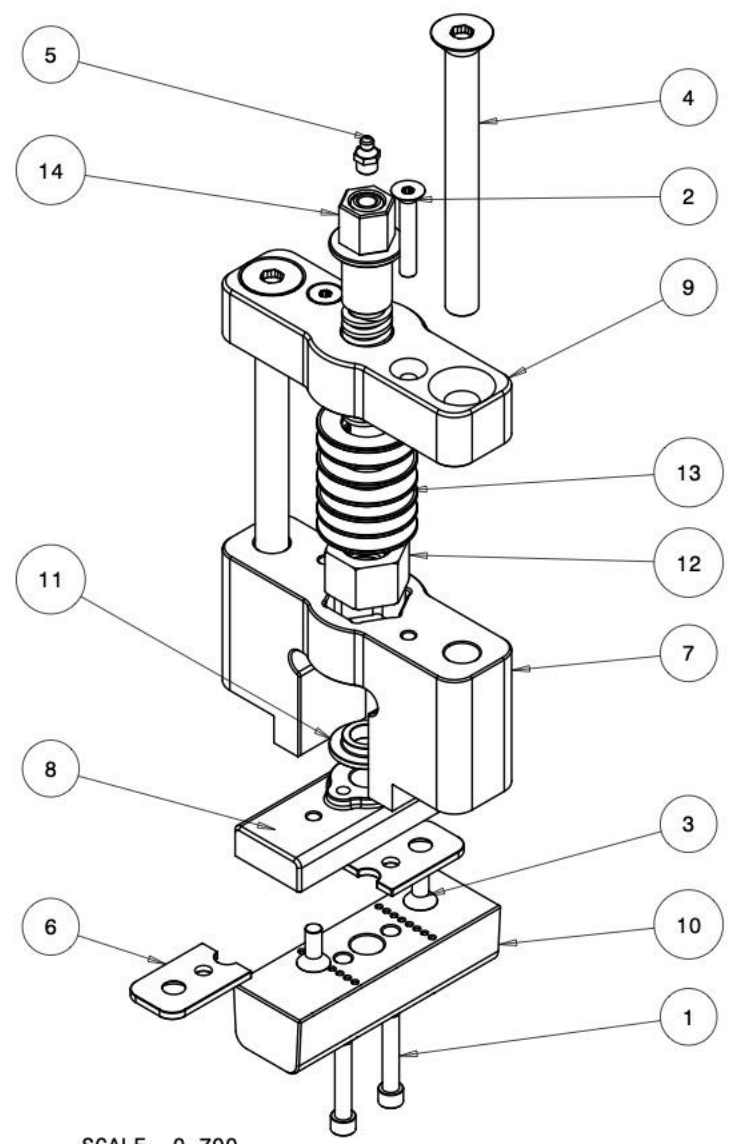


| REVISIONS | | | | |
|-----------|-----|-----------------|--------------|----------|
| ZONE | REV | DESCRIPTION | DATE | APPROVED |
| -- | 1 | INITIAL RELEASE | 02022-JAN-19 | MZ |



DETAIL B
SCALE 2.500

NOTE: BELLEVILLE WASHER ORIENTATION



SCALE 0.700

| ITEM NO. | QTY | PART NO. | DRAWING TITLE OR DESCRIPTION | MANUFACTURER | MFG PART NO. |
|----------|-----|-----------------------|--|--------------|--------------|
| 14 | 1 | 540-001-9011 | ASSEMBLY, LEAD SCREW, HT | ASSY | --- |
| 13 | 7 | 500-001-BV-750-450LBS | BELLEVILLE SPRING WASHER, 750 ID X 450LBS | MCMASTER | 9713K99 |
| 12 | 1 | 500-001-1026 | ACME NUT, 3/4-5, BRASS, HT | FAB | --- |
| 11 | 1 | 500-001-1017 | THRUST BUSHING, HT | FAB | --- |
| 10 | 1 | 500-001-1014 | SHEAR BLOCK, HT | FAB | --- |
| 9 | 1 | 500-001-1013 | TOWER NUT RETAINER, HT | FAB | --- |
| 8 | 1 | 500-001-1012 | SHEAR BLOCK BACKING PLATE, HT | FAB | --- |
| 7 | 1 | 500-001-1010 | TOWER BLOCK, HT | FAB | --- |
| 6 | 2 | 500-001-1009 | RETAINER, SHEAR BLOCK, HT | FAB | --- |
| 5 | 1 | 94-350-313F-344-01-23 | GREASE FITTING, 5/16-24-UNF STRAIGHT 303 SST | MCMASTER | 1293K44 |
| 4 | 2 | 90-110-500C-5000-20 | SCREW, 1/2-13 UNC X 5.0 FHC 18-8 | MCMASTER | 92210A732 |
| 3 | 2 | 90-110-250C-625-20 | SCREW, 1/4-20 X .625 FHC 18-8 | MCMASTER | 92210A539 |
| 2 | 2 | 90-110-250C-1500-20 | SCREW, 1/4-20 X 1.50 FHC 18-8 | MCMASTER | 92210A546 |
| 1 | 2 | 90-100-250C-1375-20 | SCREW, 1/4-20 X 1.375 SHC 18-8 | MCMASTER | 92196A545 |

| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. | | PRO/E REPORTED PARAMETERS | | DESIGNER | |
|--|--|---------------------------|--|----------------------|--------------|
| TOLERANCES ARE: | | PRO/E MATERIAL | | G STAPLES | |
| .X +/- 0.1 | | N/A | | ENGINEER | G STAPLES |
| .XX +/- 0.01 | | PRO/E MASS | | DRAFTER | 02019-AUG-15 |
| .XXX +/- 0.001 | | 4.546 | | --- | 02019-AUG-15 |
| ANGLES +/- 0.5 | | PRO/E VOLUME | | CHECKED | 02019-AUG-15 |
| INTERPRET DIMENSIONS PER ASME Y14.5M 1994 (R2004) | | PRO/E DRAWING FILE NAME: | | DO NOT SCALE DRAWING | |
| | | 540-001-9010 | | | |

| UNIVERSAL SONAR MOUNT | | | |
|---------------------------|---------------------------|--------------|--|
| ASSEMBLY, SHEAR TOWER, HT | | | |
| SIZE | CUSTOMER DRAWING/PART NO. | REV | |
| C | --- | 1 | |
| DRAWING/PART NO. | | 540-001-9010 | |
| SCALE | | SHEET 1 of 2 | |
| 0.750 | | | |

CUSTOMER DRAWING/PART NO. 540-001-9010