

WARNING: READ AND COMPLY WITH ALL APPLICABLE SAFETY AND OPERATING INSTRUCTIONS AND WARNINGS FOR MULTI-STRAND STRESSING BEFORE STARTING ANY WORK OR OPERATION.

CAUTION: WHEN PRESSURIZING GROUT CAPS, DO NOT STAND BEHIND CAPS!

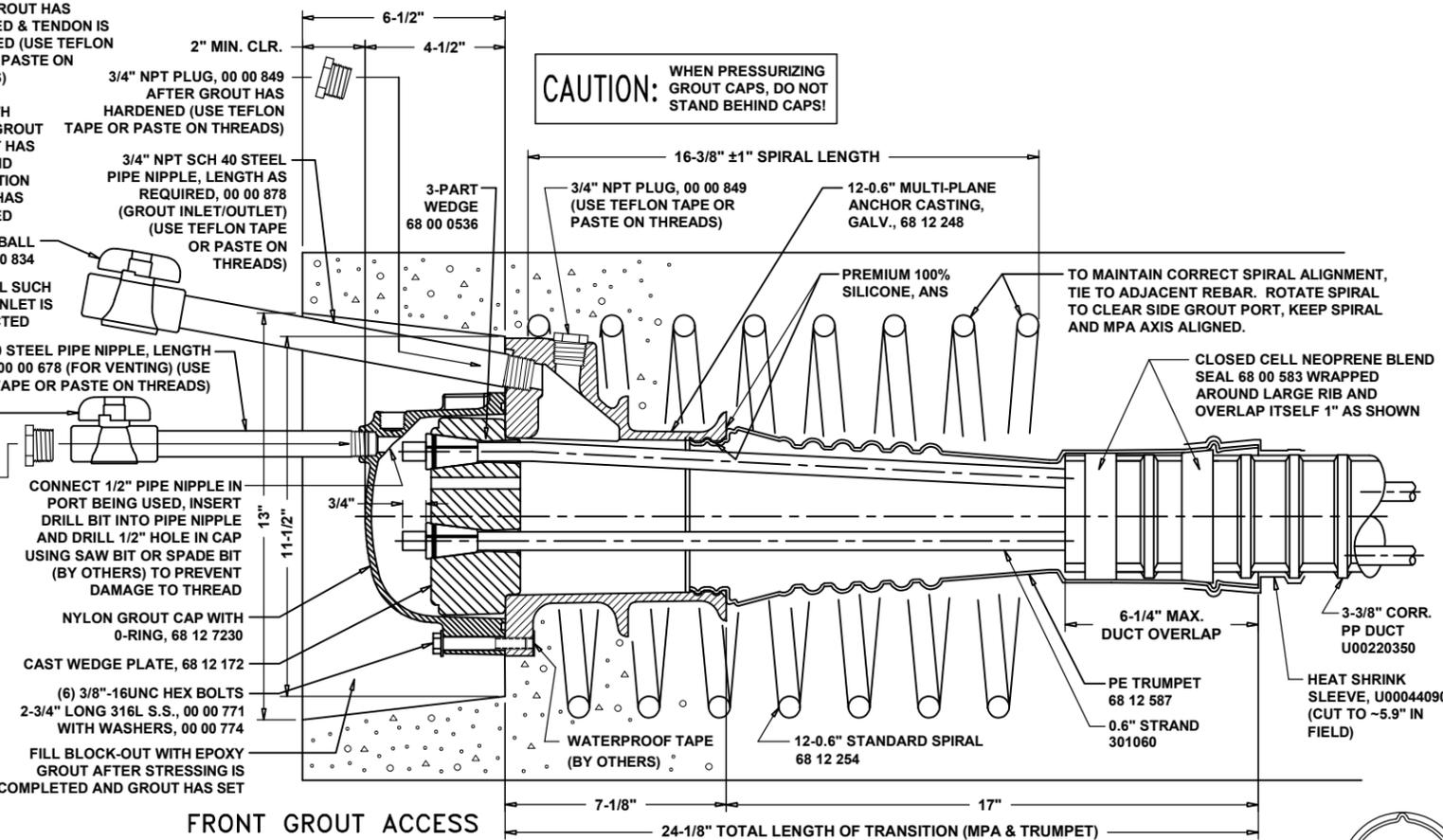
END VIEW
(WEDGE PLATE, MPA AND SPIRAL ONLY)

1/2" NPT BALL VALVE, 00 00 634
1/2" NPT SCH 40 STEEL PIPE NIPPLE, LENGTH AS REQUIRED, 00 00 678 (FOR VENTING) (USE TEFLON TAPE OR PASTE ON THREADS)
3/4" NPT NYLON PLUG, 00 00 849 (USE TEFLON TAPE OR PASTE ON THREADS)
1/2" NPT NYLON PLUG 00 00 649, AFTER GROUT HAS HARDENED AND TENDON IS INSPECTED (USE TEFLON TAPE OR PASTE ON THREADS)
CONNECT 1/2" PIPE NIPPLE IN PORT BEING USED, INSERT DRILL BIT INTO PIPE NIPPLE AND DRILL 1/2" HOLE IN CAP USING SAW BIT OR SPADE BIT (BY OTHERS) TO PREVENT DAMAGE TO THREAD
ADJACENT PRECAST SEGMENT
FILL BLOCK-OUT WITH EPOXY GROUT AFTER STRESSING IS COMPLETED AND GROUT HAS SET

TOP GROUT ACCESS

3/4" NPT BALL VALVE, 00 00 834
3/4" NPT SCH 40 STEEL PIPE NIPPLE, LENGTH AS REQUIRED 00 00 878 (GROUT INLET/OUTLET) WITH FOAM INSULATION (BY OTHERS) (USE TEFLON TAPE OR PASTE ON THREADS)
3/4" NPT PLUG, 00 00 849 AFTER GROUT HAS HARDENED & TENDON IS INSPECTED (USE TEFLON TAPE OR PASTE ON THREADS)
FILL HOLE WITH NON-SHRINK GROUT AFTER GROUT HAS HARDENED AND FOAM INSULATION (BY OTHERS) HAS BEEN REMOVED
3/4" NPT BALL VALVE, 00 00 834
ORIENT SPIRAL SUCH THAT GROUT INLET IS NOT OBSTRUCTED
1/2" NPT SCH 40 STEEL PIPE NIPPLE, LENGTH AS REQUIRED, 00 00 678 (FOR VENTING) (USE TEFLON TAPE OR PASTE ON THREADS)
1/2" NPT BALL VALVE 00 00 634
1/2" NPT PLUG 00 00 649 AFTER GROUT HAS HARDENED (USE TEFLON TAPE OR PASTE ON THREADS)
CONNECT 1/2" PIPE NIPPLE IN PORT BEING USED, INSERT DRILL BIT INTO PIPE NIPPLE AND DRILL 1/2" HOLE IN CAP USING SAW BIT OR SPADE BIT (BY OTHERS) TO PREVENT DAMAGE TO THREAD
NYLON GROUT CAP WITH O-RING, 68 12 7230
CAST WEDGE PLATE, 68 12 172
(6) 3/8"-16UNC HEX BOLTS 2-3/4" LONG 316L S.S., 00 00 771 WITH WASHERS, 00 00 774
FILL BLOCK-OUT WITH EPOXY GROUT AFTER STRESSING IS COMPLETED AND GROUT HAS SET

FRONT GROUT ACCESS



INSTALLATION PROCEDURE:
BELOW PROCEDURE IS GENERIC. USERS SHALL REFER TO FDOT STANDARD SPECIFICATIONS AND PROJECT SPECIFIC CRITERIA

- PREASSEMBLE THE MULTI-PLANE ANCHOR, SPIRAL AND PE TRUMPET. USE PREMIUM 100% SILICONE BETWEEN MPA AND TRUMPET TO HAVE A STRONG CONNECTION. GREASE THE BOLTS TO FACILITATE REMOVAL LATER.
- BOLT THE MULTI-PLANE ANCHOR (MPA) WITH PE TRUMPET TO THE POCKET FORMER USING SOME OF THE SIX THREADED HOLES IN MPA. THE MPA SHALL BE ORIENTED SUCH THE GROUT HOLE POINTS UP. THE SPIRAL SHOULD BE ATTACHED TO ADJACENT REBAR AND ROTATED SUCH THAT IT WON'T INTERFERE WITH 3/4" NPT PIPE ATTACHMENT (IF USING SIDE GROUT HOLE IN MPA). ALIGN AXIS OF SPIRAL WITH ANCHOR. USE PLUG IN UNUSED PORT IN MPA AS SHOWN. INSTALL PIPE NIPPLE WITH FOAM INSULATION FOR ANY PIPE NIPPLE CAST IN CONCRETE.
- INSTALL THE DUCT SYSTEM AS SHOWN ON SHOP DRAWINGS. INSERT DUCT WITH SPACER INTO TRUMPET AND HEAT SHRINK. SECURE DUCT PROFILE EVERY TWO FEET.
- PRESSURE TEST DUCT SYSTEM PER FDOT SPECS 462-8.2.1.1.

CONCRETING CAN NOW PROCEED

- AFTER COMPLETION OF CONCRETE PLACEMENT, PROVE THAT THE DUCTS ARE CLEAR OF ANY OBSTRUCTIONS OR DAMAGE. PASS A TORPEDO THROUGH THE DUCT TO DEMONSTRATE.
- PROVE THAT ALL GROUT VENTS ARE FREE AND SECURED.
- AFTER THE CONCRETE HAS GAINED STRENGTH, THE STRESSING OPERATION MAY BEGIN.
- INSTALL STRANDS BY PUSHING OR PULLING INDIVIDUALLY OR AS A BUNDLE INTO DUCTS. ALLOW SUFFICIENT TAIL LENGTH FOR STRESSING.
- CHECK THE WEDGE PLATE FOR RUST, DIRT AND GRIT. CLEAN WEDGE HOLES WITH WIRE BRUSH IF NECESSARY. LIGHTLY GREASE OR OIL WEDGE HOLES.
- CHECK WEDGES FOR RUST, DIRT AND GRIT. DISCARD RUSTY WEDGES. USE ONLY CLEAN WEDGES.
- INSTALL WEDGE PLATE, SLIP THE WEDGES OVER THE STRANDS AND LOOSELY SEAT IN WEDGE HOLES.

STRESSING CAN PROCEED WHEN CONCRETE STRENGTH HAS REACHED MIN. COMPRESSIVE STRENGTH REQUIRED IN CONTRACT DRAWING NOT LESS THAN 4000 PSI.

- AFTER THE STRESSING OPERATION IS COMPLETED AND THE ELONGATIONS FALL WITHIN ±7%, OBTAIN APPROVAL FROM THE ENGINEER TO CUT THE STRAND TAILS APPROXIMATELY 3/4" AWAY FROM THE WEDGES.
- EVALUATE STRESSING OPERATION IF ELONGATIONS FALL OUTSIDE THE 7% LIMIT.
- INSTALL GROUT CAP WITH O-RING USING SIX BOLTS. CONNECT 1/2" PIPE NIPPLE IN PORT TO BE USED, INSERT DRILL BIT INTO PIPE NIPPLE AND DRILL 1/2" HOLE IN CAP USING SAW BIT OR SPADE BIT (BY OTHERS) TO PREVENT DAMAGE TO THREADS.
- CONNECT THE 3/4" NPT PIPE NIPPLE ASSEMBLY INTO THE FRONT PORT OF THE MPA.
- THREAD 1/2" NPT PIPE NIPPLE ASSEMBLY INTO THE THREADED PORTS PROVIDED IN THE GROUT CAP. THIS PORT CAN BE USED AS AN INJECTION VENT ONLY.
- PRESSURE TEST DUCT SYSTEM PER FDOT SPECS 462-8.2.2.

GROUTING CAN NOW PROCEED

- REMOVE GROUT PORT PIPES AND INSERT PLUGS. FILL BLOCKOUT AND HOLES WITH NON-SHRINK GROUT AFTER POST GROUTING OPERATIONS AND INSPECTIONS ARE COMPLETED.

REFER TO STANDARD PLANS 462-003 FOR PT ANCHORAGE AND TENDON FILLING DETAILS



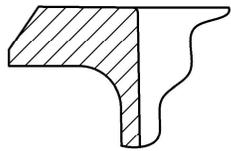
DUCT END VIEW

| MATERIAL LIST | | |
|---------------|------------------------------------------------|----------------------------------------------------------------|
| PART NO. | DESCRIPTION | MATERIAL SPECIFICATION |
| 68 12 248 | 12-0.6" MULTI-PLANE ANCHOR CASTING, GALVANIZED | DUCTILE IRON ASTM A536, GRADE 65-45-12 GALV. ACC. TO ASTM A123 |
| 68 12 254 | 12-0.6" STANDARD SPIRAL | ASTM A615, GR. 60, #5, 2-1/4" PITCH, 12-7/8" O.D., ~7 TURNS |
| 68 12 587 | 12-0.6" PE TRUMPET | POLYETHYLENE |
| 68 12 172 | 12-0.6" CAST WEDGE PLATE | DUCTILE IRON 80-55-06 |
| 68 12 7230 | 12-0.6" NYLON CAP WITH O-RING | CAP: NYLON 6, 20% GLASS FILLED O-RING: EPDM |
| U00220350 | 3-3/8" (85mm) CORR. DUCT (Rmin.=25.4 FT.) | POLYPROPYLENE |
| U00220355 | (OPTIONAL) 3-3/8" SLIP-ON COUPLER | POLYPROPYLENE |
| U00044090 | HEAT SHRINK SLEEVE, PLA-90-450-YE | ACCORDING TO FDOT SPEC. 960-2.2.1.8 |
| 301060 | 0.6" STRAND | 270 KSI LOW RELAX STRAND |
| 68 00 0536 | 3-PART WEDGE FOR 0.6" STRAND | AISI-C12L14 HEAT TREATED |

| MATERIAL LIST | | |
|---------------|------------------------------------------------|----------------------------|
| PART NO. | DESCRIPTION | MATERIAL SPECIFICATION |
| 00 00 771 | (6) 3/8"-16UNC HEX BOLT 2.75" LONG (GROUT CAP) | 316 STAINLESS STEEL |
| 00 00 774 | (6) SMALL DIA. WASHERS (FOR GROUT CAP) | 316 STAINLESS STEEL |
| 00 00 878 | 3/4" NPT PIPE NIPPLE, LENGTH AS REQ'D (TEMP.) | SCH 40 BLACK STEEL |
| 00 00 834 | 3/4" NPT BALL VALVE (TEMPORARY) | PVC |
| 00 00 849 | 3/4" NPT PLUG | NYLON 6, WHITE |
| 00 00 678 | 1/2" NPT PIPE NIPPLE, LENGTH AS REQ'D (TEMP.) | SCH 40 BLACK STEEL |
| 00 00 634 | 1/2" NPT BALL VALVE (TEMPORARY) | PVC |
| 00 00 649 | 1/2" NPT PLUG | NYLON 6, WHITE |
| ANS | PREMIUM 100% SILICONE | SILICONE |
| 68 00 583 | 1" x 1/4" SEAL | CLOSED CELL NEOPRENE BLEND |
| ANS | TEFLON TAPE OR PASTE FOR THREADS | -- |
| 00 00 861 | (OPTIONAL) 3/4" NPT GROUT VENT PORT | POLYPROPYLENE |

- NOTES:
1. REQUIRED REINFORCING BARS NOT SHOWN.
2. DUCT IS DELIVERED IN STRAIGHT SECTIONS AND IS NOT INTENDED TO BE COILED.

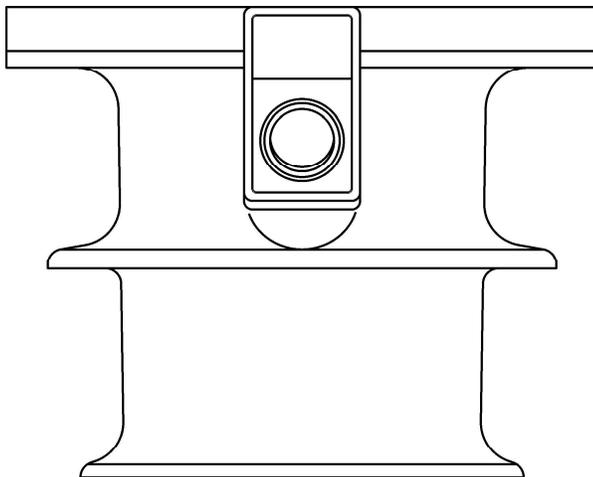
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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------------------------------------------------------------------------------------------------------------------------|------|------------------------------|--|
| INTERNAL GROUTED 12-0.6" MA ASSEMBLY DRAWING | | | | REV. | DATE | NAME | |
| | | | | | | | |
| DATE: 05/08/19 DWG: G. MALECKI CHK: S.I. APP: S.I. | | | | SCALE: 1:6 | | DRAWING NUMBER: MA 68 12 200 | |
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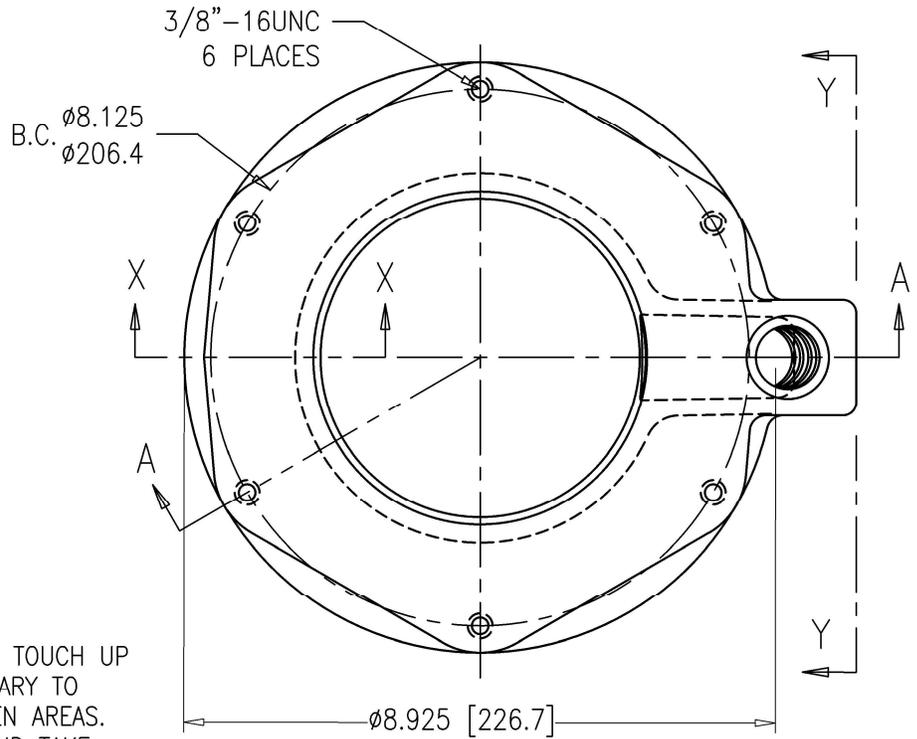
SECTION X-X

NOTES FOR GALVANIZING PARTS:

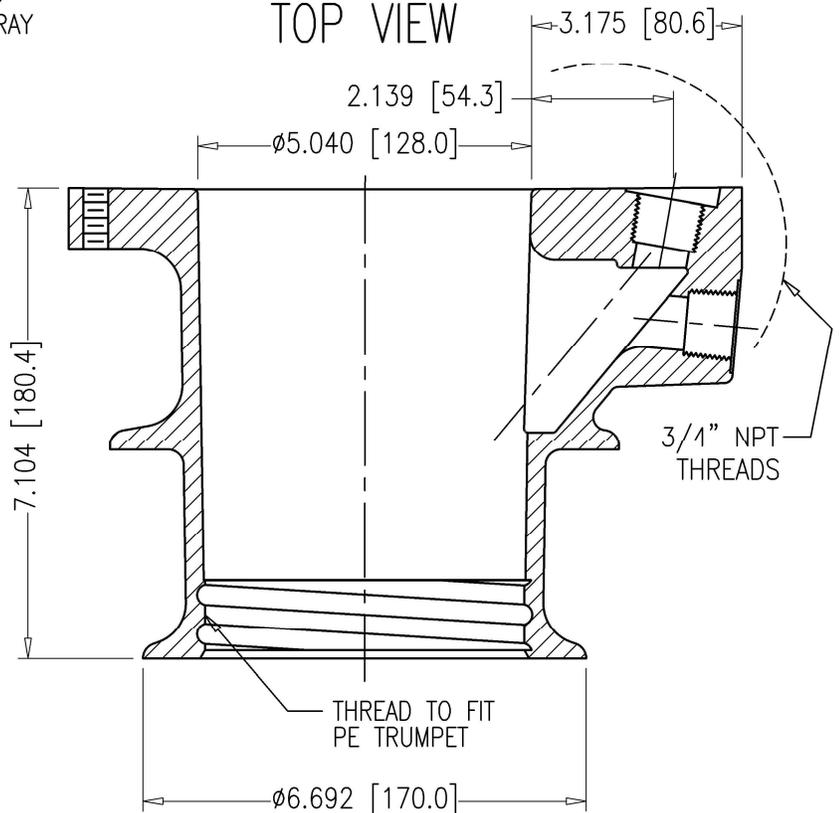
1. AFTER CASTING IS STRIPPED, GRIND AND TOUCH UP TOP AND BOTTOM SURFACES AS NECESSARY TO ELIMINATE ANY PARTING LINES OR UNEVEN AREAS.
2. GALVANIZE ACCORDING TO ASTM A123 AND TAKE CARE HOW CASTINGS ARE STORED TO PREVENT RUST.
3. DRILL & TAP BOLT HOLES AND GROUT PORTS AND MACHINE GROOVE IN BOTTOM OF ANCHOR AND SPRAY THEM WITH ZINC RICH PAINT ACCORDING TO ASTM A780, ENSURE THREADABILITY.



VIEW Y-Y

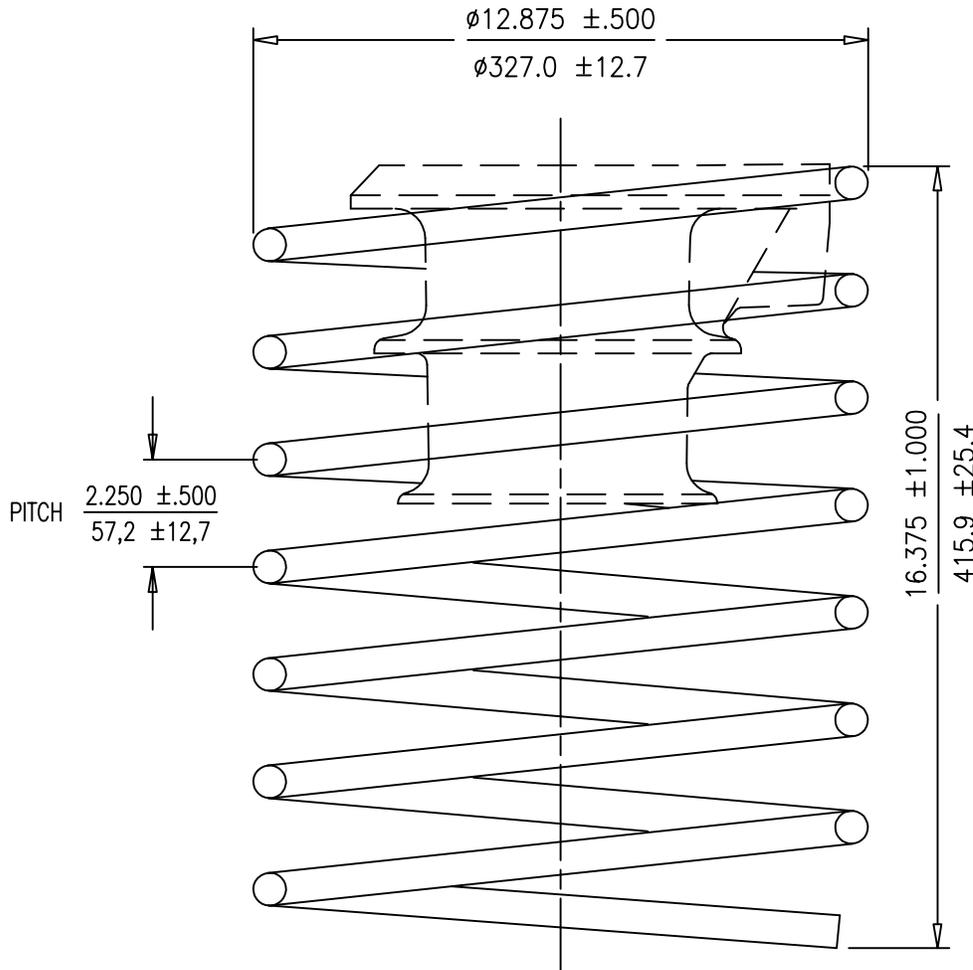


TOP VIEW



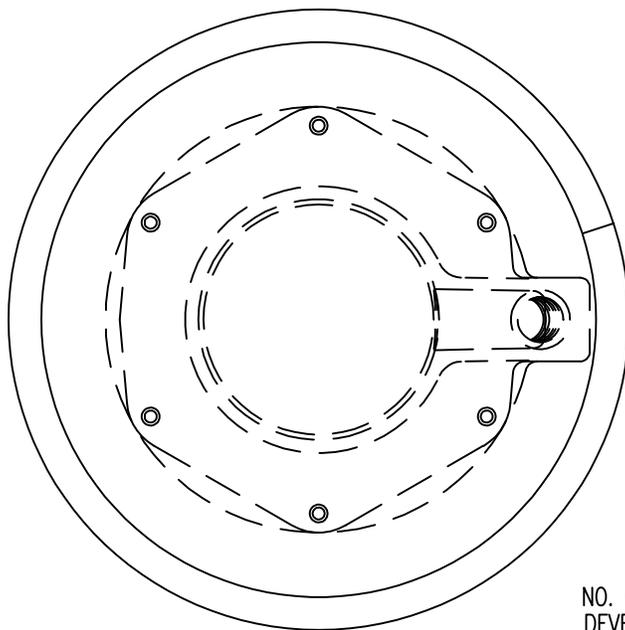
SECTION A-A

| | | | | | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------|----------------------|------|----------------|------|------|-------------------------------------|--|
| DIMENSIONS: INCH/mm mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: QS60021200C | | TOLERANCES: ±.030 ±2° UNLESS NOTED | WEIGHT 20 LBS. | REV. | DATE | NAME | ECRN | PART NUMBER: 68 12 248 | |
| 12-0.6"/15-0.5" MULTI-PLANE ANCHOR WITH TWO GROUT PORTS-GALV. | | | | MATERIAL: DUCTILE IRON 65-45-12 ASTM A536 | SCALE 1:3 | | | | | DRAWING NUMBER: 68 12 216 | |
| DATE: 10-13-04 | DWG: G. MALECKI | CHK: H.K. | APP: K.S. | | | | | | | | |
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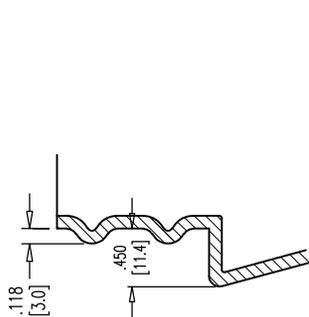
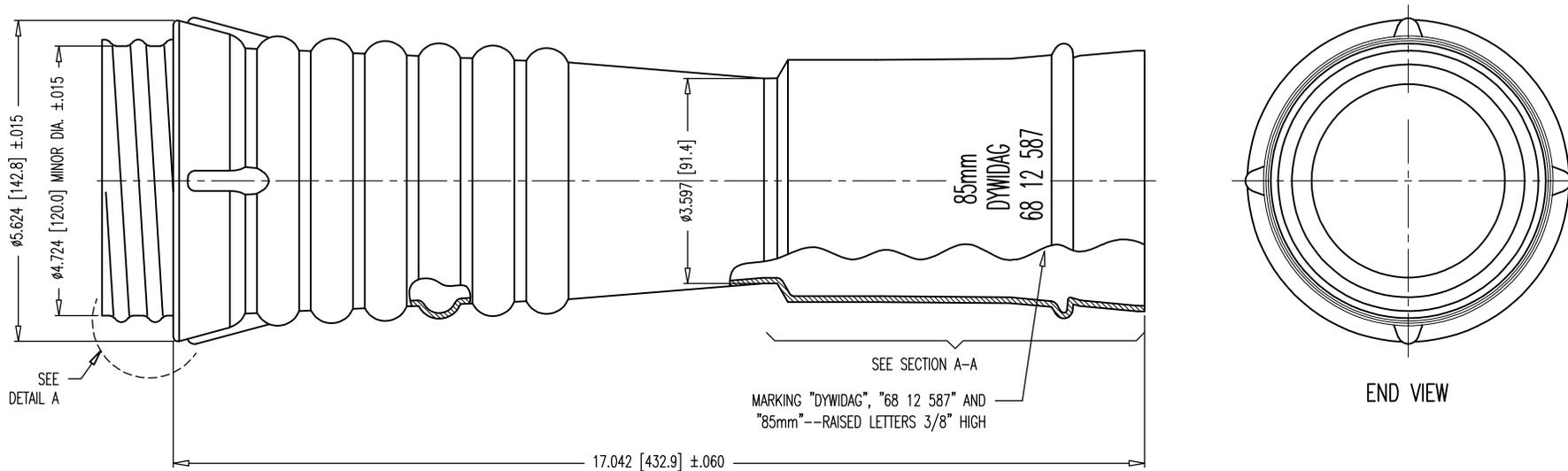
NOTES:

1. SPIRAL IS MADE FROM STANDARD #5 REBAR, NO PART NUMBER MARKING IS SHOWN.
2. KEEP SPIRAL AND MPA AXIS ALIGNED, IF USING SIDE PORT, ROTATE SPIRAL TO CLEAR.

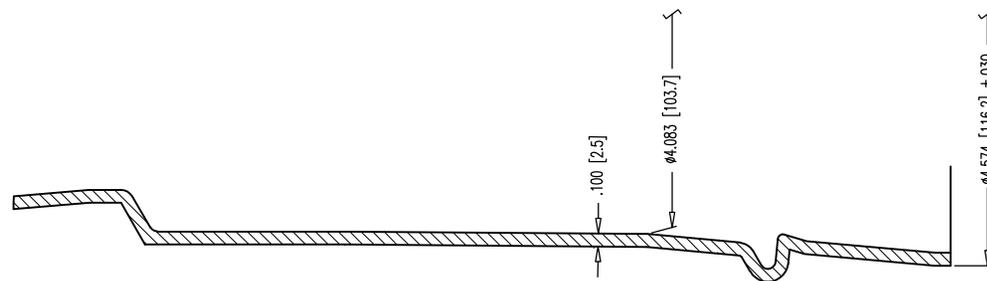


NO. OF FULL TURNS: 7
 DEVELOPED LENGTH: 22'-6" ±1/4 IN.
 WEIGHT: 23.5

| | | | | | | | | | | |
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| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: QS60021400A | | TOLERANCES: ±.020 UNLESS NOTED | WEIGHT 23.5 LBS. | REV. | DATE | NAME | PART NUMBER: 68 12 254 | |
| STANDARD SPIRAL FOR 12-0.6"/15-0.5" MPA | | | | MATERIAL: ASTM A615 SIZE #5, GR 60 | SCALE 1:4 | | | | DRAWING NUMBER: 68 12 254 | |
| | | | | DATE: 01-19-07 | DWG: G. MALECKI | CHK: S.Y. | APP: K.S. | | | |
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DETAIL A
 THREAD FITS INTO 12-0.6" MPA
 CASTING (SEE DRAWING 68 12 216)

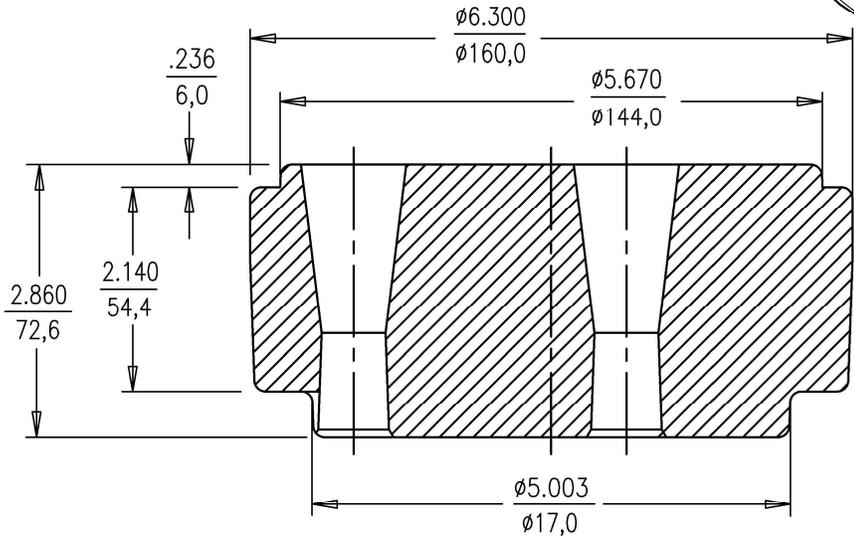
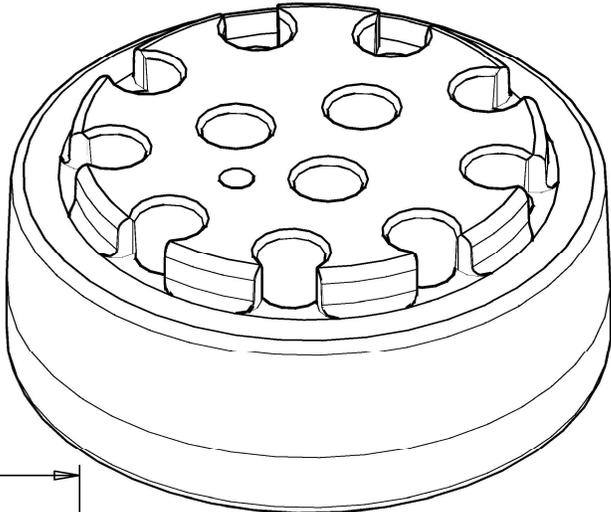


SECTION A-A

- ▲ MATERIAL SPECIFICATIONS:
 HIGH-DENSITY POLYETHYLENE, CONFORMING TO THE FOLLOWING:
1. MEETS REQUIREMENTS OF ASTM D3350 WITH A MINIMUM CELL CLASS OF 445574C.
 2. CONTAINS ANTIOXIDANTS WITH A MINIMUM OXIDATIVE-INDUCTION TIME (OIT) ACCORDING TO ASTM D3895 OF 40 MINUTES.
 3. REMOLDED FINISHED MATERIAL HAS A MINIMUM FAILURE TIME OF 24 HOURS WHEN TESTED FOR STRESS CRACK RESISTANCE USING ASTM F2136 AT AN APPLIED STRESS OF 600 PSI.

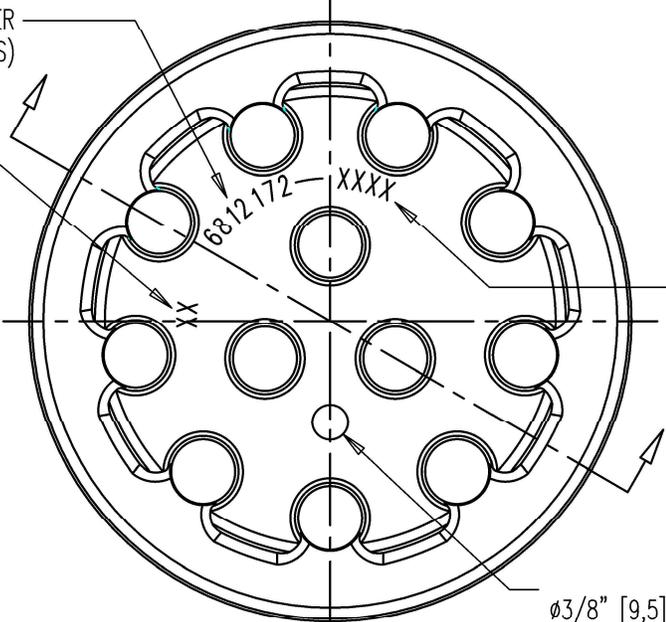
| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: QS60058800P | | TOLERANCES: ±.020 UNLESS NOTED | WEIGHT | REV | DATE | NAME | PART NUMBER: | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|-----------|--------------------------------------|--------------------|-----|----------|------|------------------|-------------------------------------|
| 12-0.6" TRUMPET FOR MPA TO 85mm PP DUCT OR 3" HDPE PIPE | | | | MATERIAL: SEE ABOVE | SCALE 12 1:1 | ▲ | 01-11-19 | S.I. | 68 12 587 | |
| DATE: 10-16-06 | DWG: G. MALECKI | CHK: E.A. | APP: K.S. | | | | | | | DRAWING NUMBER: 68 12 587 |
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PART NUMBER
(RAISED CHARACTERS)

VENDOR ID
(RAISED CHARACTERS)

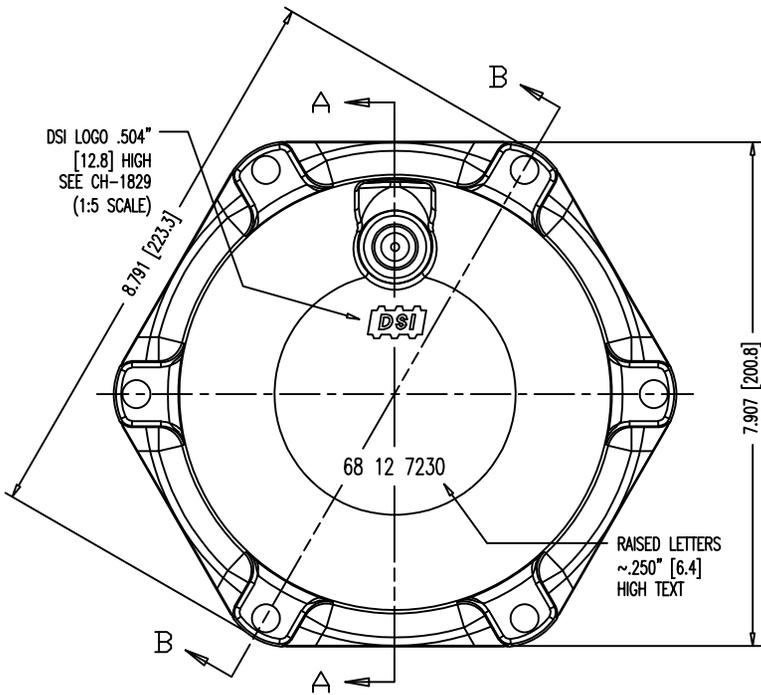


HEAT CODE
(RAISED CHARACTERS)

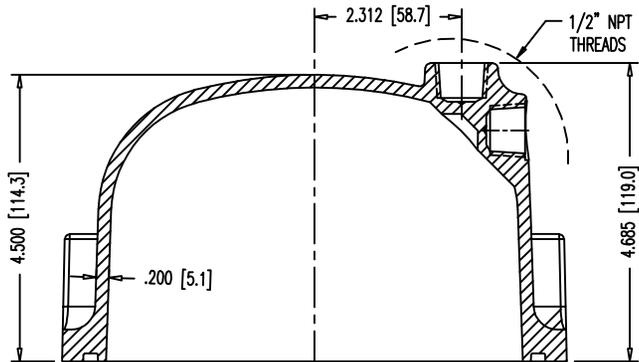
ø3/8" [9,5]
DRILLED THRU HOLE

BOTTOM VIEW

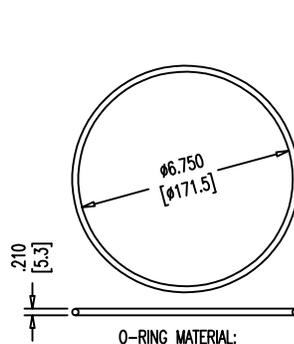
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|-----------|-------------------------------------|
| DIMENSIONS: INCH/mm mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: QS00014200F | | WEIGHT ~16.16 LBS. | REV. | DATE | NAME | PART NUMBER: 68 12 172 |
| 12-0.6" CAST WEDGE PLATE | | | | MATERIAL: DUCTILE IRON 80-55-06 ASTM A536 | SCALE 1:2 | | | DRAWING NUMBER: 68 12 172 |
| | | | | DATE: 01-27-15 | DWG: G. MALECKI | CHK: S.Y. | APP: S.E. | |
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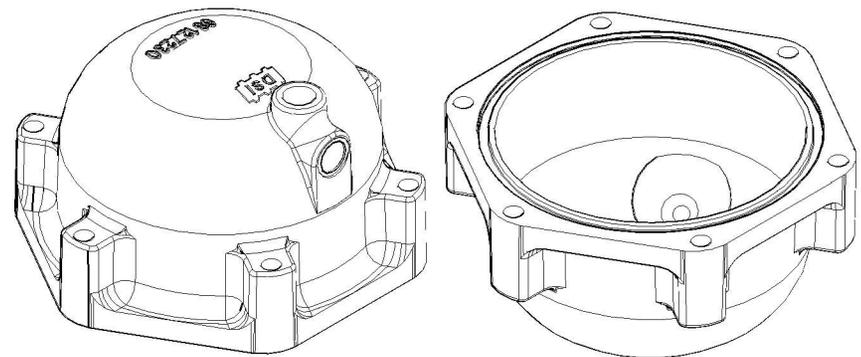
TOP VIEW



SECTION A-A

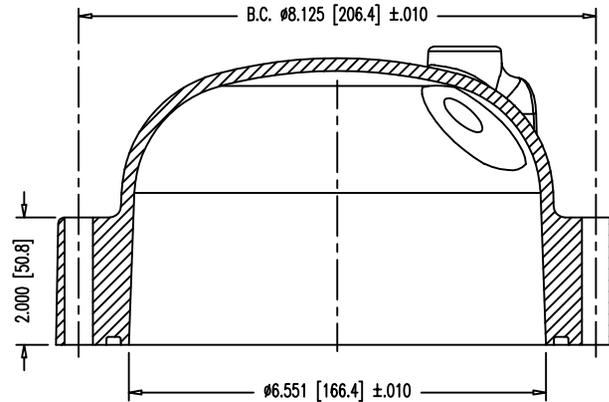


O-RING MATERIAL:
EPDM, MEETING FDOT
SPECIFICATIONS 960-2.2.1.7.
#364 O-RING
6-3/4"x7-1/8"x3/16"
SCALE: NTS



ISOMETRIC VIEWS

SCALE: NTS

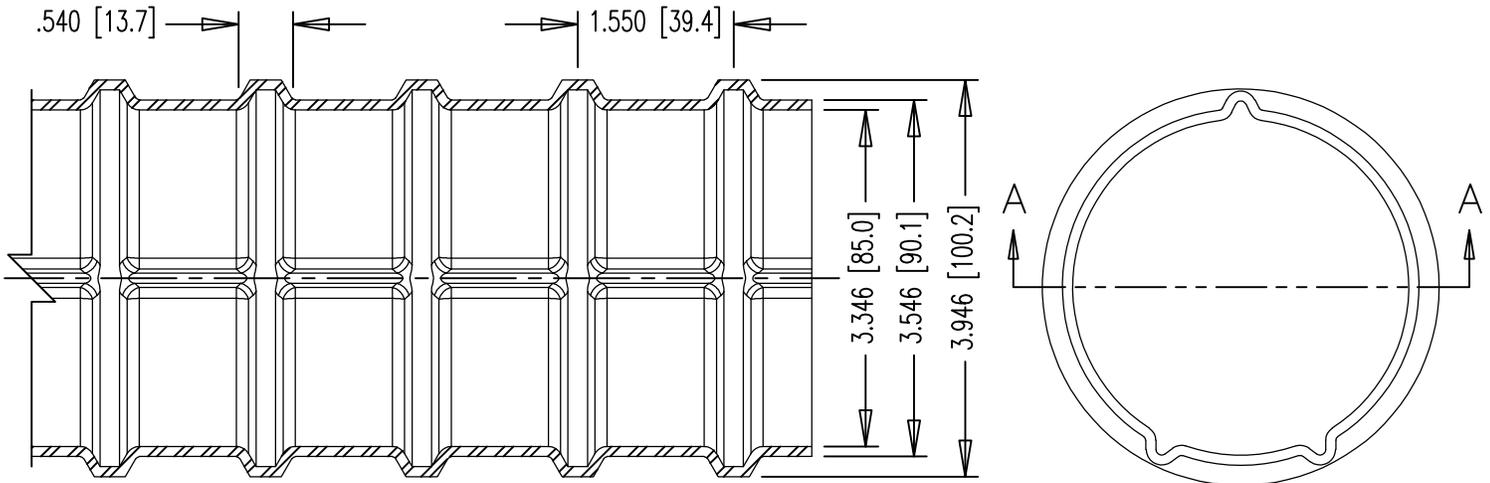
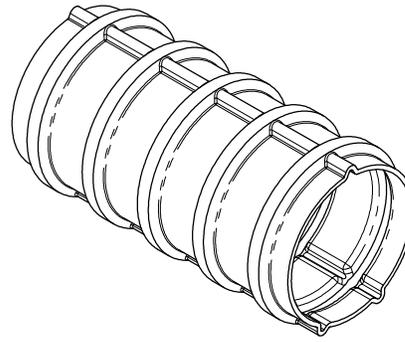


SECTION B-B

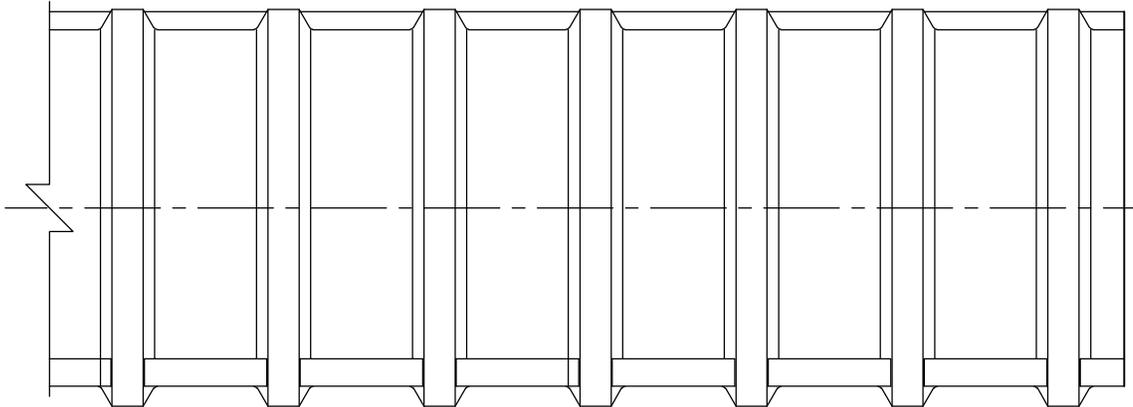
- △ NOTES:
1. USE 3/8"-16UNC 316L S.S. HEX BOLTS, 2-3/4" LONG W/SMALL DIA. WASHER.
 2. INSTALL O-RING IN GROOVE USING DROPS OF LIQUID ADHESIVE BEFORE SHIPPING. DON'T USE EXCESSIVE ADHESIVE. O-RING MUST STAY IN PLACE UNTIL INSTALLATION.
 3. THE NYLON CONFORMS TO ASTM D5989, WITH CELL CLASSIFICATION S-PA0401 (ULTIMATE STRENGTH 10,000 PSI MIN., WITH UV STABILIZER ADDED).
 4. DRILL 1/2" [12.7] HOLE IN PORT BEING USED -CAUTION-RECOMMEND USING HOLE SAW BIT OR SPADE BIT (BY OTHERS), BE CAREFULL TO PREVENT DAMAGE TO THREADS OR CAP.
 5. WHEN PRESSURIZING GROUT CAPS, DO NOT STAND BEHIND CAPS!

| DIMENSIONS: INCH (mm) mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: QS80072300P | | TOLERANCES: ±.020 UNLESS NOTED | WEIGHT -1.7 LBS. | REV. DATE NAME ECRN | PART NUMBER: 68 12 7230 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|-----------|----------------------------------------------------|---------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12-0.6" PLASTIC GROUT CAP | | | | MATERIAL: NYLON 6, 20% GLASS FIBER FILLED | SCALE 1:2 UNLESS NOTED | 10/04/18 S.I. | |
| DATE: 11-07-03 | DWG: G. MALECKI | CHK: E.A. | APP: K.S. | | | | DRAWING NUMBER: 68 12 7230 |
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SECTION A-A



NOTES:

1. MIN. BENDING RADIUS, $R_{min} = 25.6$ FT.
2. DUCT IS DELIVERED IN STRAIGHT SECTIONS AND IS NOT INTENDEND TO BE COILED.

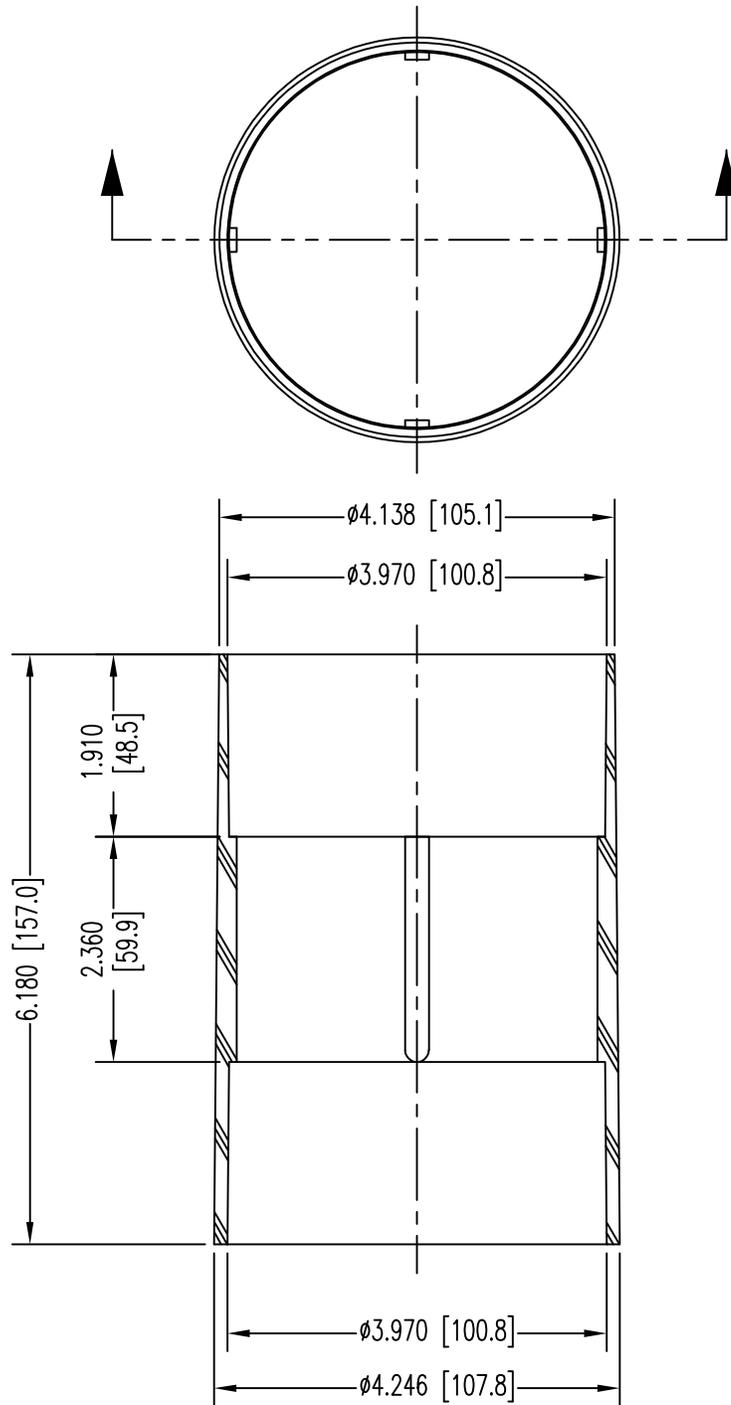
△ MATERIAL: POLYPROPYLENE
 CELL CLASS RANGE: PP0340B44541 TO PP0340B67884
 MATERIAL MEETS FDOT SPECS. 960-2.4.3.

| | | | | | | | | | |
|----------------------------------------------------------------|-----------------|-------------------------------------|-----------|--------------------------------------|------------------------|-----------|------------------|--------------|------------------------------|
| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: QU00041110P | | TOLERANCES: ±.010 UNLESS NOTED | WEIGHT 0.43 LBS. | REV. △ | DATE 01-11-19 | NAME S.I. | PART NUMBER: U00220350 |
| 3-3/8" (85mm) CORRUGATED PP DUCT WITH FLOW CHANNELS | | | | MATERIAL: SEE ABOVE | SCALE 1:2 | | | | DRAWING NUMBER: U00220350 |
| DATE: 10-28-04 | DWG: G. MALECKI | CHK: H.K. | APP: K.S. | | | | | | |

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 POST TENSIONING / REINFORCING UNIT PHONE: 630-739-1100
 320 MARMON DRIVE - BOLINGBROOK, IL FAX: 630-739-1405





▲ MATERIAL: POLYPROPYLENE
 CELL CLASS RANGE: PP0340B44541 TO PP0340B67884
 MATERIAL MEETS FDOT SPECS. 960-2.4.3.

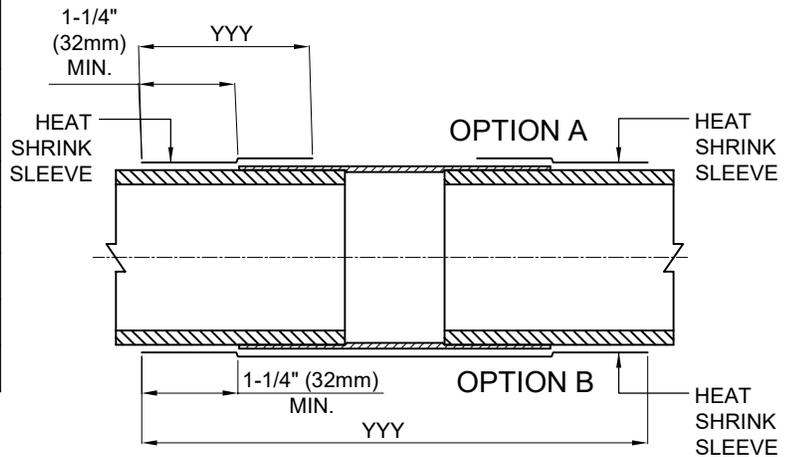
| | | | | | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------|--|--------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------|--|-----------------------------------|--|-------------------------------------|--|
| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: | | TOLERANCES: ±.010 UNLESS NOTED | | WEIGHT 0.3 LBS. | | REV. DATE NAME ▲ 01-11-19 S.I. | | PART NUMBER: U00220355 | |
| 3-3/8" (85mm) SLIP-ON COUPLER | | | | MATERIAL: SEE ABOVE | | SCALE 1:1 | | | | DRAWING NUMBER: U00220355 | |
| | | | | DATE: 03-20-08 DWG: G. MALECKI CHK: S.Y. APP: K.S. | | | | | | | |
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| | | |
|---------------------------------------|------------------------------------|----------------------------------------------------|
| DIMENSIONS & ORDERING INFO | P L A - XXX - YYY - ZZ | STANDARD ORDERING OPTIONS |
| | COLOR ▶ | YE - YELLOW, BK - BLACK |
| | SLEEVE WIDTH ▶ | 300mm, 450mm, 600mm, 900mm (12", 18", 24", 36") |
| | SLEEVE SIZE ▶ | 63mm -315mm (2-1/2" - 12") |
| | ADHESIVE (thickness as supplied) ▶ | A - 0.75 mm (30 mils) |
| | BACKING (thickness as supplied) ▶ | L - 0.80 mm (31 mils) |
| | CONFIGURATION ▶ | P - Tubular |

PMA - HIGH SHRINK SLEEVE.
 └── HIGH SHRINK TUBULAR BACKING.

| TUBULAR SLEEVE | TUBULAR SLEEVE DIAMETER AS SUPPLIED | FULLY RECOVERED |
|-------------------|-------------------------------------|-----------------|
| PLA 63-YYY YE | 3.5" [90mm] | 2.5" [63mm] |
| PLA 90-YYY YE | 4.8" [120mm] | 3.3" [81mm] |
| PLA 115-YYY BK | 5.5" [145mm] | 3.8" [98mm] |
| PLA 125-YYY YE | 6.3" [160mm] | 4.3" [110mm] |
| PLA 160-YYY BK | 7.5" [190mm] | 5.2" [130mm] |
| PMA 90/30-YYY BK | 3.5" [90mm] | 1.2" [30mm] |
| PMA 120/40-YYY BK | 4.7" [120mm] | 1.6" [40mm] |

YYY = SLEEVE WIDTH: 300/450/600/900/1500(mm)
 COLOR: YE = YELLOW; BK = BLACK



NOTE:
 FOLLOW MANUFACTURER'S
 INSTALLATION INSTRUCTIONS.

MATERIAL:
 POLYELEFIN FDOT SPECS 960-2.2.1.8 FOR
 GROUTED APPLICATIONS

| | DUCT SIZE | STRAND SYSTEM | BAR SYSTEM | HEAT SHRINK SLEEVE SIZE | PART NUMBER |
|--------------------|-----------------------|---------------|--------------------|-------------------------|-------------|
| CORRUGATED DUCT | 1" x 3" (25mm x 76mm) | 4-0.6" | | PLA-63-450 YE | U00044063 |
| | 2-3/8" (59mm) | 7-0.6" | | PLA-63-450 YE | U00044063 |
| | | | 1", 1-1/4", 1-3/8" | PMA-90/30-450 BK | U00044030 |
| | 3" (76mm) | | 1 3/4" | PMA-120/40-450 BK | U00044040 |
| | 3-3/8" (85mm) | 12-0.6" | | PLA-90-450 YE | U00044090 |
| | 4" (100mm) | | 2-1/2" | PLA-90-450 YE | U00044090 |
| | 4" (100mm) | 19-0.6" | | PLA-115-450 BK | U00044115 |
| | 4-1/2" (115mm) | 27-0.6" | | PLA-125-450 YE | U00044125 |
| 5-1/8" (130mm) | 31-0.6", 37-0.6" | | PLA-160-450 BK | U00044160 | |
| SMOOTH DUCT | 3" SDR 17 HDPE PIPE | | 1-3/8" | PLA-63-450 YE | U00044063 |

DIMENSIONS: INCH [mm]
 mm FOR REFERENCE ONLY

HEAT SHRINK SLEEVE SIZES FOR INTERNAL GROUTED APPLICATIONS

DATE: 07-31-19 DWG: G. Malecki CHK: S.I. APP: S.I.

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| REV. | DATE | NAME | ECRN |
|------|----------|------|------|
| 1 | 05-28-20 | S.I. | |
| 2 | 02-15-21 | S.I. | |
| | | | |
| | | | |
| | | | |
| | | | |

SCALE
 NTS

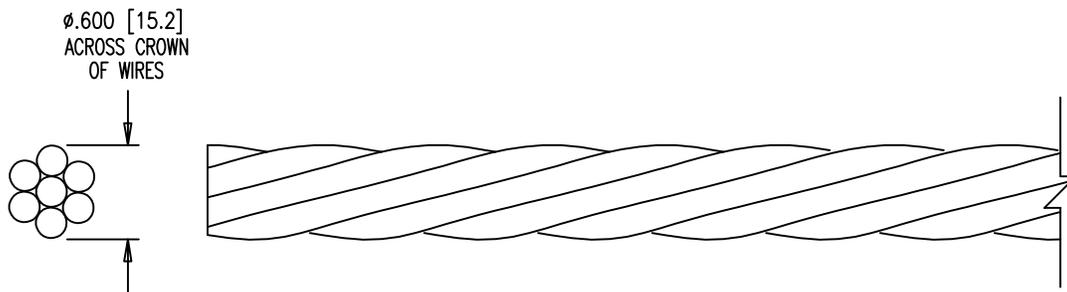
PART NUMBERS:

SEE TABLE ABOVE

DRAWING NUMBER:
U00044000

DYWIDAG-SYSTEMS INTERNATIONAL, USA, INC.
 320 MARMON DRIVE - BOLINGBROOK, IL 60440
 PHONE: 630-739-1100 FAX: 630-739-1405

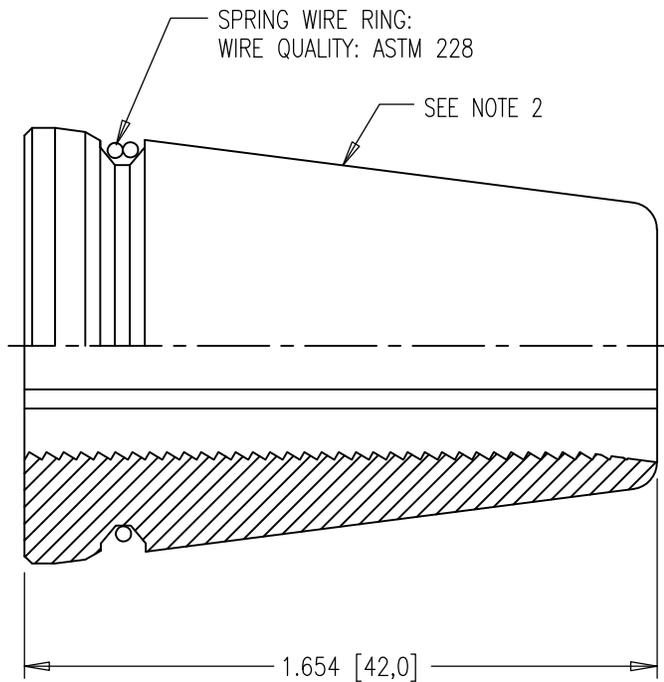
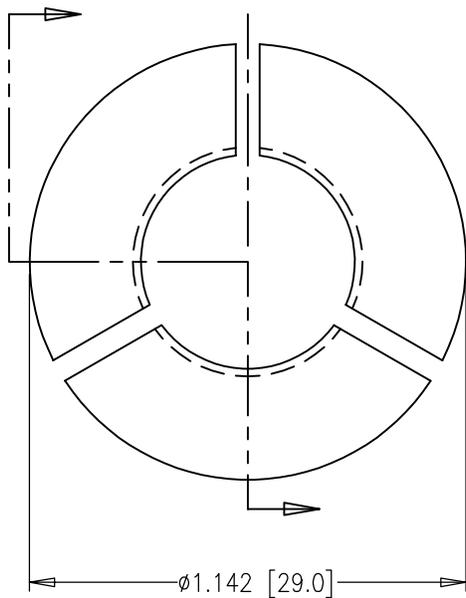




- NOTES:
1. NO PART NUMBER OR IDENTIFICATION MARKS ON STRAND.
 2. RUST PRODUCING VISIBLE PITTING TO THE UN-AIDED EYE IS NOT ALLOWED.

MATERIAL:
0.6" 270 KSI LOW RELAX STRAND
ASTM A416

| | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|---------------------------------------------------------------------------------------|------|----------------------------------|
| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: QS000301000 | | TOLERANCES: ±.020 UNLESS NOTED | WEIGHT .738 PER/FT | REV. | DATE | NAME | PART NUMBER: 301060 |
| 0.6" BARE 270 KSI STRAND | | | | MATERIAL: SEE ABOVE | SCALE 1:1 | | | | DRAWING NUMBER: 301060 |
| | | | | DATE: 02-18-19 | DWG: G. MALECKI | CHK: C.S. | APP: K.S. | | |
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NOTES:

1. SHARP EDGES MUST BE BROKEN.
2. VIBRATE TO SURFACE FINISH OF 63 μIN. MAX.
3. DIP IN SQ70 OIL OR EQUIV. FOR CORROSION PROTECTION.
4. MAKE SURE THAT THE BUTTRESS THREAD IS ORIENTED IN THE DIRECTION SHOWN ON THIS DRAWING.
5. NO STAMPED PART NUMBER

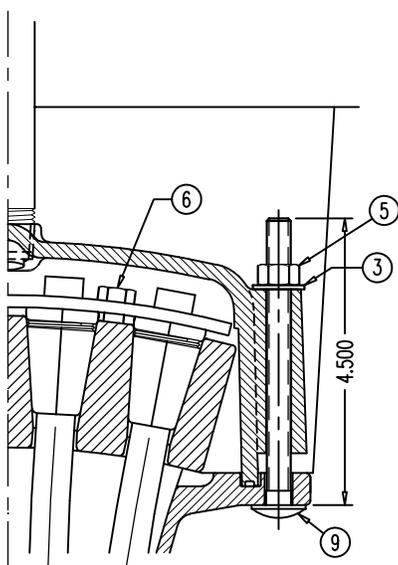
MATERIAL:
12L14
ALL HARDENED

| | | | | | | | | | |
|----------------------------------------------|--|-------------------------------------|--|-------------------------------------------|------------------------|-----------|-----------|------|-------------------------------|
| DIMENSIONS: INCH/mm mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: QS00000500D | | TOLERANCES: ±.010; ±2° UNLESS NOTED | WEIGHT 0.19 LBS. | REV. | DATE | NAME | PART NUMBER: 68 00 0536 |
| 3-PART WEDGE FOR 0.6" STRAND | | | | MATERIAL: SEE ABOVE | SCALE 2:1 | | | | DRAWING NUMBER: 68 00 0536 |
| | | | | DATE: 06-01-18 | DWG: G. MALECKI | CHK: C.S. | APP: S.I. | | |

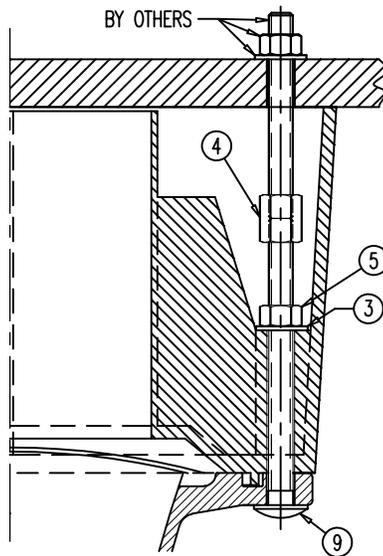
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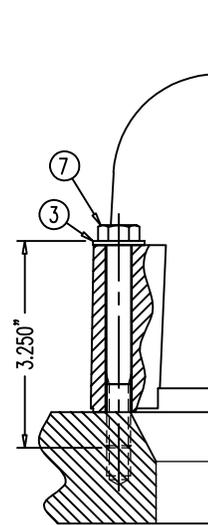




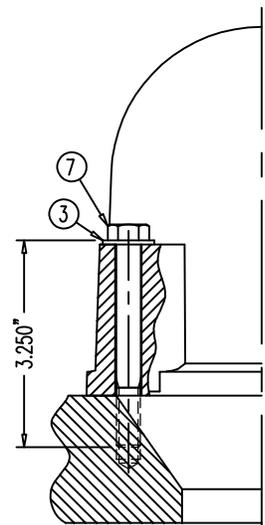
KEEPER PLATE 68 04 2637 ON
WEDGE PLATE 68 04 2534A &
NYLON CAP 68 04 2539 ON
FLAT ANCHOR 68 04 2548



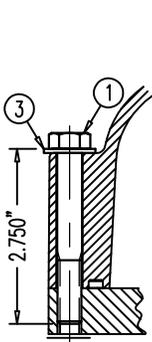
POCKET FORMER 68 04 2640
ON FLAT ANCHOR 68 04 2548



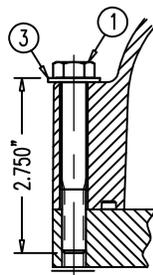
NYLON BAR CAP B36E50700 OR 50700A
ON GALV. BEARING PLATE
B26E22510, 22610, 22700, 22800,
B32E22510, 22610, 22700, 22800,
B36E22410, 22420, 22910, 22510,
22610, 22700, 22800 & NYLON
BAR CAP B66E50700 OR 50700A
ON GALV. BEARING PLATE B66E22700



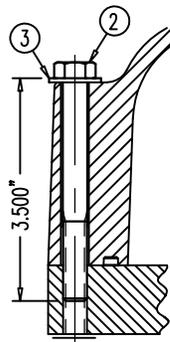
NYLON BAR CAP
B46M50700
OR 50700A
ON GALV.
BEARING PLATE
B46E22700 &
B46E22800



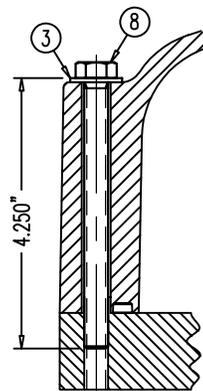
NYLON CAP
68 07 7230 OR 7230A
ON MPA 68 07 248



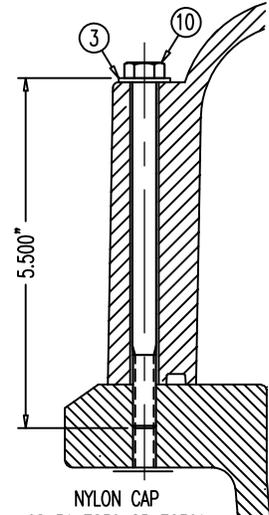
NYLON CAP
68 12 7230 OR 7230A
ON MPA 68 12 248



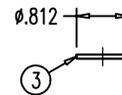
NYLON CAP
68 19 7230 OR 7230A
ON MPA 68 19 248



NYLON CAP
68 27 7230 OR 7230A
ON MPA 68 27 248



NYLON CAP
68 31 7230 OR 7230A
ON MPA 68 31 248



TYPE A NARROW WASHER
FOR 3/8"-UNC BOLT

NOTE:
THE 316L S.S. BOLTS ARE SPECIAL ORDER.
ALL WASHERS, HEX NUTS & COUPLERS HAVE
NO MARKINGS.

| POS. | PART NUMBER | DISCRIPTION (ALL PARTS 316L STAINLESS STEEL UNLESS NOTED) |
|------|-------------|-----------------------------------------------------------|
| ① | 00 00 771 | 3/8"-16UNC HEX BOLT, 2-3/4" LONG (1" LONG THREAD) |
| ② | 00 00 772 | 3/8"-16UNC HEX BOLT, 3-1/2" LONG (1" LONG THREAD) |
| ③ | 00 00 774 | TYPE A NARROW WASHER FOR 3/8"-UNC BOLT |
| ④ | 00 00 776 | 3/8"-16UNC COUPLER, ZINC COATED |
| ⑤ | 00 00 777 | 3/8"-16UNC HEX NUT |
| ⑥ | 00 00 778 | 5/16"-18UNC HEX BOLT, 7/8" LONG, ZINC PLATED |
| ⑦ | 00 00 783 | 3/8"-16UNC HEX BOLT, 3-1/4" LONG (1" LONG THREAD) |
| ⑧ | 00 00 784 | 3/8"-16UNC HEX BOLT, 4-1/4" LONG (FULL THREAD) |
| ⑨ | 00 00 789 | 3/8"-16UNC CARRIAGE BOLT, 4-1/2" LONG |
| ⑩ | 00 00 790 | 3/8"-16UNC CARRIAGE BOLT, 5-1/2" LONG |

DIMENSIONS: INCH

QUALITY PLAN NUMBER:

STAINLESS STEEL 316L BOLTS AND WASHER FOR NYLON CAPS

DATE: 09-10-04 DWG: G. MALECKI CHK: E.A. APP: K.S.

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SCALE
1:3

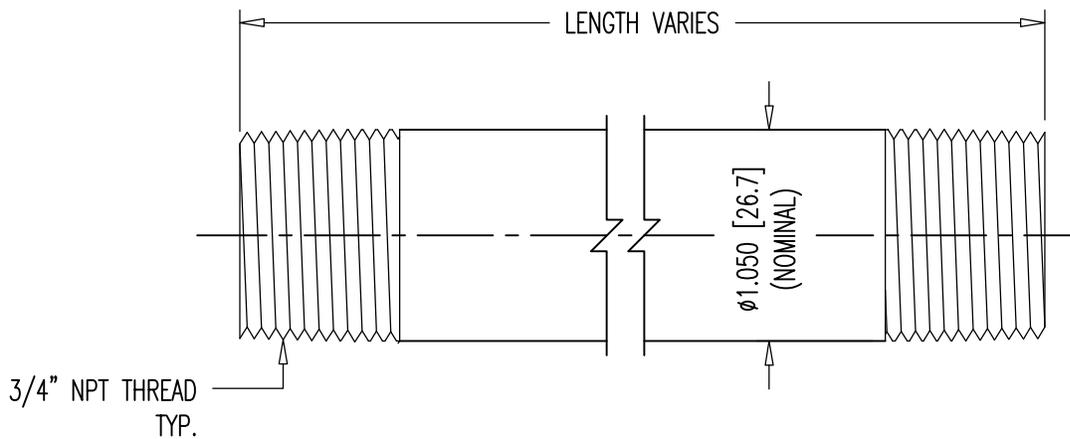
| REV. | DATE | NAME | NAME |
|------|----------|------|------|
| 1 | 05/01/19 | S.I. | |
| 2 | 05/28/20 | S.I. | |

PART NUMBERS:
SEE TABLE

DRAWING NUMBER:
00 00 770

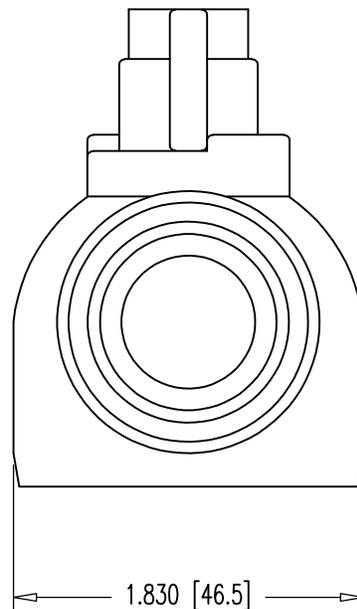
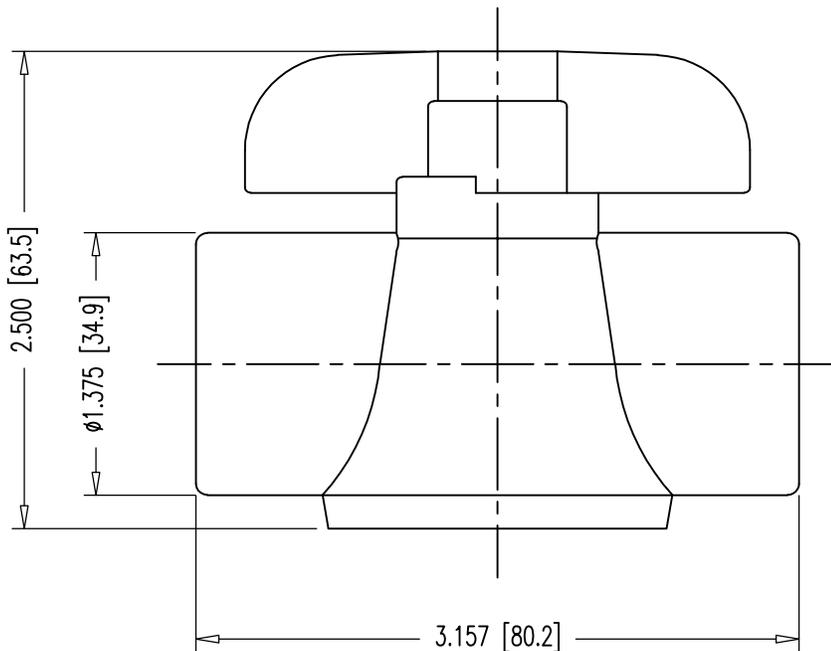
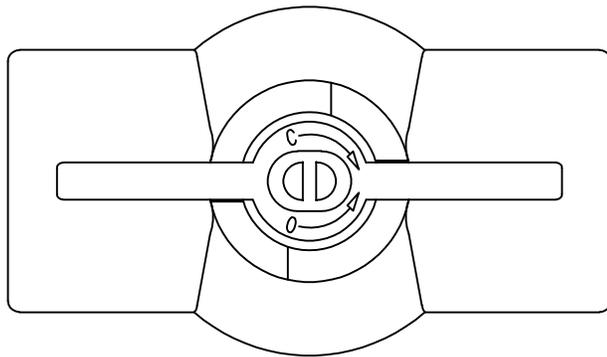
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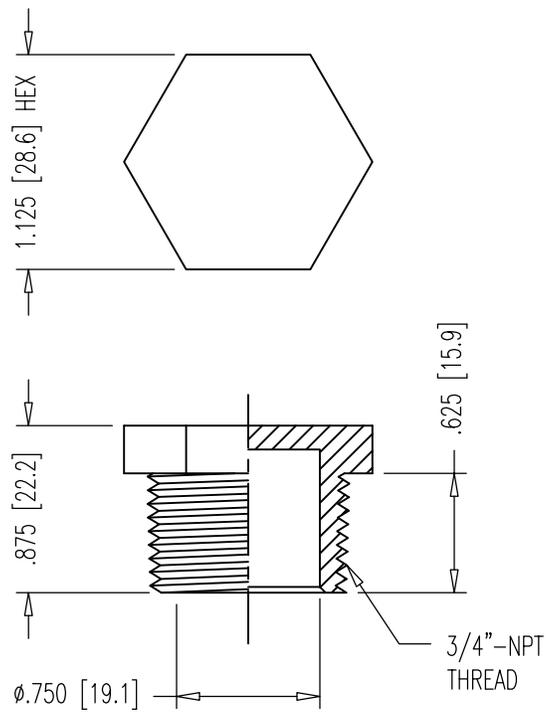
PRESSURE RATED: 150 PSI

| | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|-------------------------------------|
| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | QUALITY PLAN NUMBER: Q00000020P | | | REV. | DATE | NAME | ECRN | PART NUMBER: 00 00 878 |
| 3/4" NPT PIPE NIPPLES | | MATERIAL: SCH 40 BLACK WELDED STEEL | SCALE 1:1 | | | | | DRAWING NUMBER: 00 00 878 |
| DATE: 01-29-19 | DWG: G. MALECKI | CHK: S.I. | APP: S.I. | | | | | |
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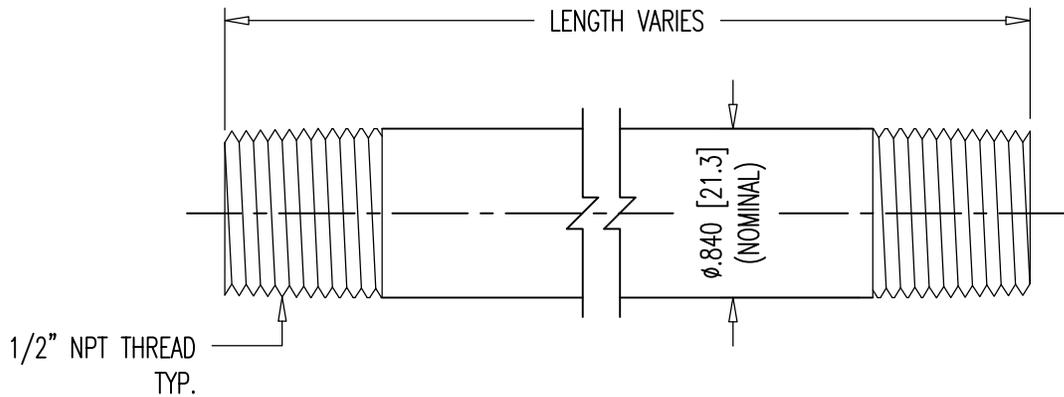
▲ NOTE:
PRESSURE RATED: 150 PSI.

| | | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|-----------|----------------------------------|
| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: | | WEIGHT 0.213 LBS. | REV. | DATE | NAME | PART NUMBER: 00 00 834 |
| 3/4" NPT BALL VALVE | | | | | SCALE 1:1 | ▲ | 01-11-19 | |
| | | | | DATE: 04-30-07 | | DWG: G. MALECKI | CHK: S.N. | APP: E.A. |
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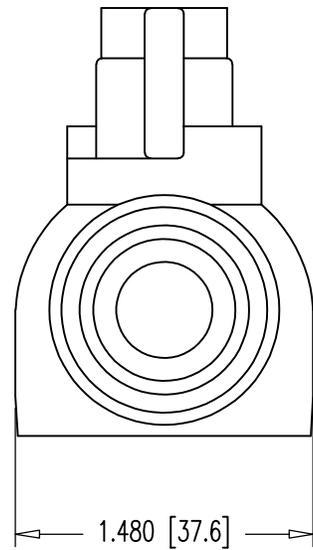
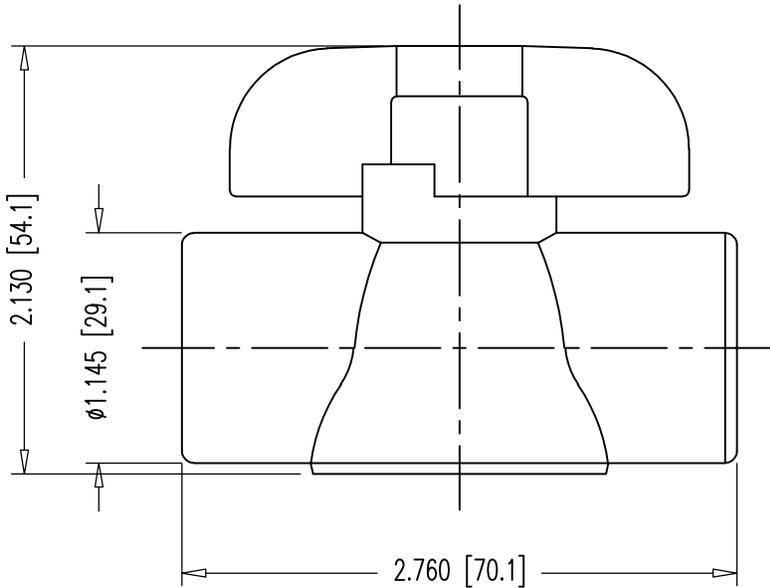
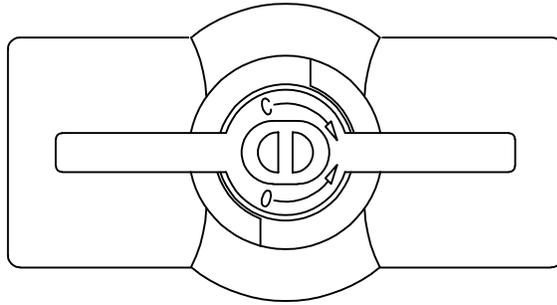
PRESSURE RATED: 150 PSI

| | | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------|--|------------------------|-----------------|-----------|------------|------------------------------------------------------------------------------------------------------------------------------------|
| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: | | WEIGHT .009 LBS. | REV. | DATE | NAME | PART NUMBER: 00 00 849 |
| 3/4" NPT NYLON PLUG | | | | | | | | |
| | | | | DATE: 03-12-19 | DWG: G. MALECKI | CHK: S.I. | APP: S.I.. | DYWIDAG-SYSTEMS INTERNATIONAL, USA, INC. 320 MARMON DRIVE - BOLINGBROOK, IL 60440 PHONE: 630-739-1100 FAX: 630-739-1405 |
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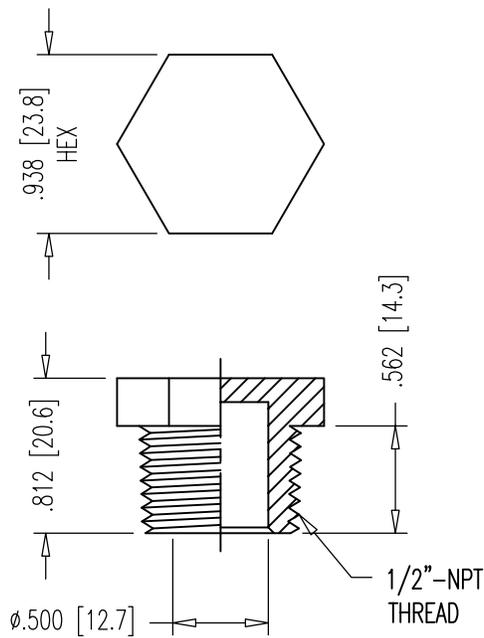
PRESSURE RATED: 150 PSI

| | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------|--------------|------|-------------------------------------|
| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: Q000000020P | | REV. | DATE | NAME | PART NUMBER: 00 00 678 |
| 1/2" NPT PIPE NIPPLES | | | | MATERIAL: SCH 40 BLACK WELDED STEEL | SCALE 1:1 | | DRAWING NUMBER: 00 00 678 |
| | | | | | | | |
| DATE: 01-29-19 | DWG: G. MALECKI | CHK: S.I. | APP: S.I. | DYWIDAG-SYSTEMS INTERNATIONAL, USA, INC. 320 MARMON DRIVE - BOLINGBROOK, IL 60440 PHONE: 630-739-1100 FAX: 630-739-1405 | | | |
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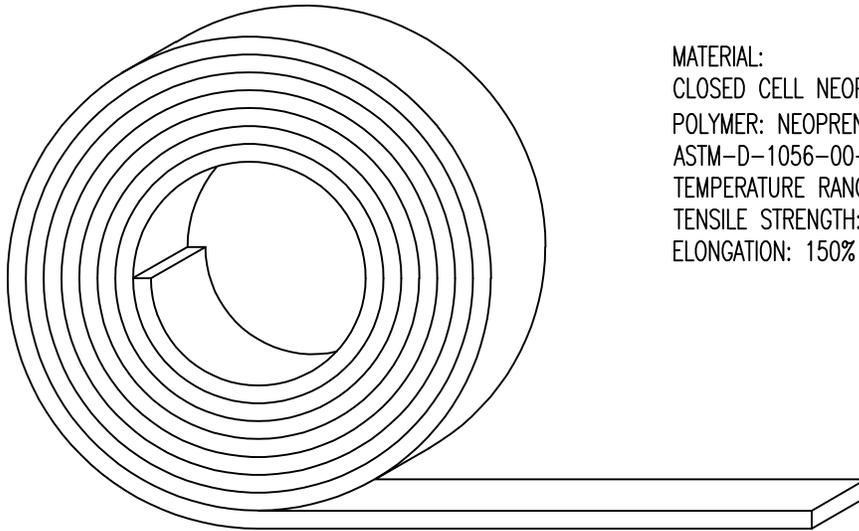
⚠ NOTE:
PRESSURE RATED: 150 PSI.

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| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: | | WEIGHT 0.138 LBS. | REV. ⚠ | DATE 01-11-19 | NAME S.I. | PART NUMBER: 00 00 634 |
| 1/2" NPT BALL VALVE | | | | | | | | |
| DATE: 04-30-07 | DWG: G. MALECKI | CHK: S.N. | APP: E.A. | | | | | DRAWING NUMBER: 00 00 634 |
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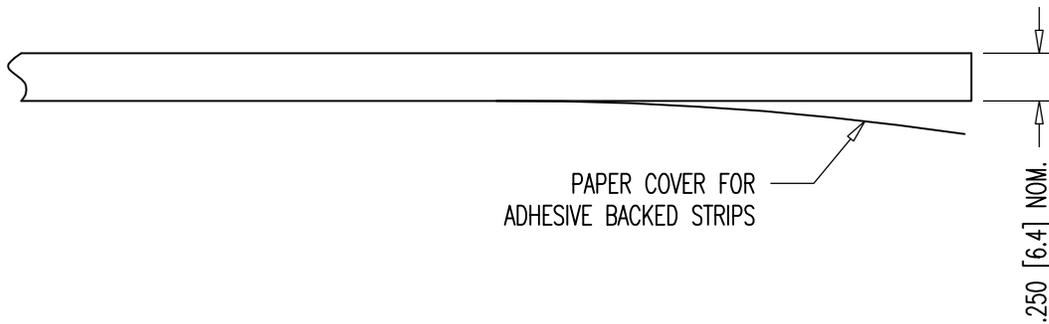
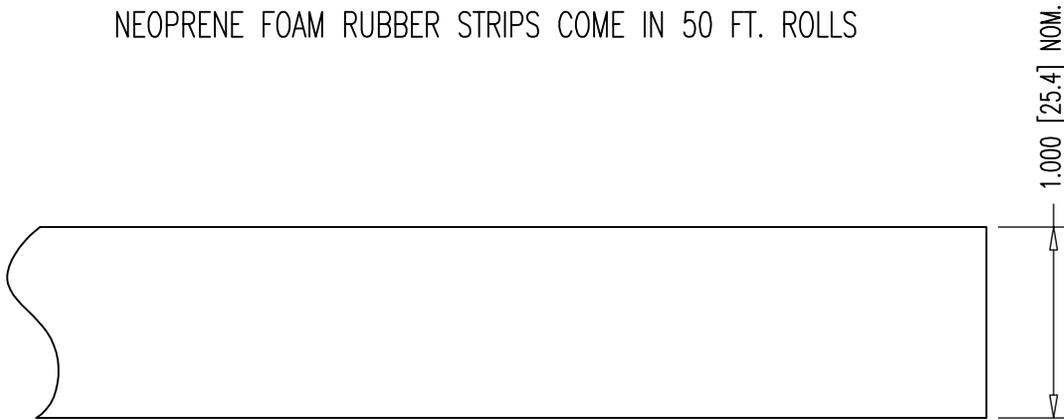
PRESSURE RATED: 150 PSI

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| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: | | WEIGHT .006 LBS. | REV. | DATE | NAME | ECRN | PART NUMBER: 00 00 649 |
| 1/2" NPT NYLON PLUG | | | | | | | | | |
| | | | | DATE: 03-12-19 | DWG: G. MALECKI | CHK: S.I. | APP: S.I. | MATERIAL: NYLON 6 COLOR: WHITE | |
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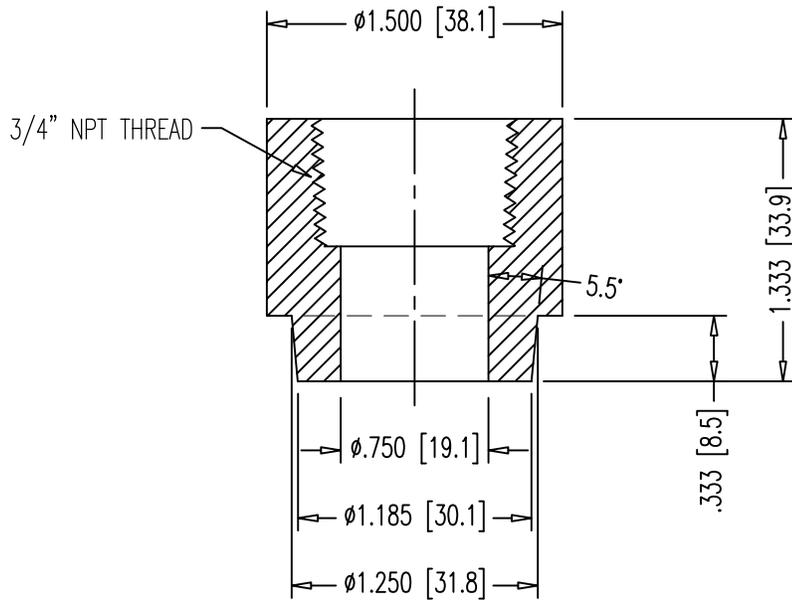
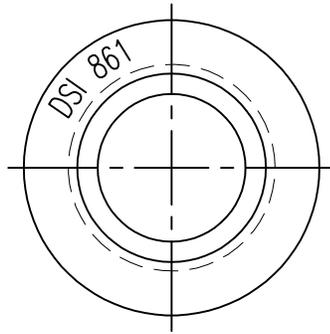


MATERIAL:
 CLOSED CELL NEOPRENE BLEND SPONGE
 POLYMER: NEOPRENE/EPDM/SBR
 ASTM-D-1056-00-SA2
 TEMPERATURE RANGE: -40 TO +200 DEG. F
 TENSILE STRENGTH: 100 PSI
 ELONGATION: 150%

NEOPRENE FOAM RUBBER STRIPS COME IN 50 FT. ROLLS



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| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: | | WEIGHT .019 LBS./FT. | REV. | DATE | NAME | PART NUMBER: 68 00 583 |
| 1"x1/4" NEOPRENE FOAM RUBBER STRIPS | | | | | MATERIAL: SEE ABOVE | SCALE 1:1 NTS | | |
| DATE: 12/01/06 | DWG: G. MALECKI | CHK: S.Y. | APP: K.S. | | | | | DRAWING NUMBER: 68 00 583 |
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WELDING OPERATIONS:
 DRILL A HOLE USING SPECIFIED CONE DRILL TOOL
 WHEREVER NEEDED IN COMMON POLYETHYLENE
 DUCTS OF ALL BRANDS. HEAT UP POLYETHYLENE
 GROUT PORT AND THE HOLE IN DUCT FOR ABOUT
 10 SECONDS USING PES-TEC WELDING EQUIPMENT.
 RELEASE THE GROUT PORT AND PRESS INTO THE
 HOLE IN DUCT BY HAND FOR 15 SECONDS.

MATERIAL: POLYPROPYLENE
 USAGE: FOR CORRUGATED PP DUCTS
 PRESSURE RATED: 150 PSI

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| DIMENSIONS: INCH [mm] mm FOR REFERENCE ONLY | | QUALITY PLAN NUMBER: | | TOLERANCES: ±.020 UNLESS NOTED | WEIGHT 0.045 LBS. | REV. | DATE | NAME | PART NUMBER: 00 00 861 |
| 3/4" NPT PP PORT | | | | MATERIAL: SEE ABOVE | SCALE 1:1 | | | | DRAWING NUMBER: 00 00 861 |
| | | | | DATE: 01-11-19 | DWG: G. MALECKI | CHK: S.I. | APP: S.I. | | |
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