PUMP ID: AQCJAXAAGBNABE0XXXAXXXXXXXXXX

TWS600S IV PUMP WORKSHEET

Sale's Id: TWS0600-011C

Size:

PRODUCT: 3.5 TWS600S STROKE 6 GEAR RATIO 4.61 ☐ US ☐ UK ☑ CH CERTIFICATION SPM ISO 9001 TEMPERATURE 0

CUST WEIR SPM SINGAPORE PTE L QTY 1 FLUID END S/N

PO DATE 2/11/2015 PWR END S/N

ITEM	P/N	DESC	QTY EA
1	2A103347* FLUID END	3.50 TWS600S TWO PIECE COVERS	1
	☐ AUTOFRETTAGE	A/F SPEC	A/F TOOLING
2	3A105368HP PACKING	3.50 RSL ACID/FRAC (ACIDS TO 28%) - WIPER/HI PERF - PEEK	3
3	3A105152 DISCH CVR	3.50-4.50 TWS600S (OPT#12 : 2 1502 GGE - TWO)	1
4	2A109375PP VALVING	3.50-4.50 SPM - POLY PROD	6
5	3A102713 DISCH FLG	2.50-4.50 TWS600 (OPT# 4: 2 1502F - TWO)	1
6	3A103391 SUCT MAN	3.00-4.50 TWS600 5 in (PLAIN)	1
	See Drawing Name PLATE	See Drawing	
	See Drawing NP - Screws	See Drawing	
1	2A121187 PWR END	TWS600S POWER END - STYLE IV	1
2	GEAR RED		1
	SIDE RIGHT	PO #15	
3	PINION		1
4	TACH DRV		1
5	4A105055 TOOL KIT	TWS600S TOOL KIT	1
6	4P105066 SVC MAN	TWS600S SERVICE MANUAL	2
7	SHPG SKD		1
8	OTHER		1
9	"		1
10	"		1
11	"		1
12	FLOW CTRL		1

1

COMMENTS: This is Pump : 1 OF 1
TO INCLUDE PRESSURE TEST AND RUN UP REPORT; 2. Light grey primer; 3. TO INCLUDE□ISO 9001 certificate of conformit/□

FOR TEMPERATURES LOWER THAN 0C, THE FOLLOWING BAR STOCK ITEMS MUST BE MADE FROM LOW-TEMP 4340 RATHER THAN THE STANDARD TEMPERATURE 4140 CITED ON THE DRAWING BOM

	PACKING NUT		SUCTION CVR RET NUT
	SUCTION CVR		DISCHARGE CVR
	DISCH CVR RET NUT		GAGE CONN
	GAGE CONN RET NUT		DISCH FLG
	DISCH FLG		

THE FOLLOWING LOW TEMP STUDS, NUTS, AND BOLTS SHOULD REPLACE THOSE SPECIFIED ON THE DRAWING AND BOM

	STUD		NUT
	OTHER		OTHER

TESTING: NDE

☐ FOR ALL BAR STOCK COMPONENTS BY LEVEL II INSPECTOR (REQUIRED BY DNV AND OTHER 3RD PARTIES

TESTING: PRESSURE

WORKING 10400 PSI / 717.6 BAR

☐ FLUID END TO BE TEST PRESSURED FOR 3 MINUTES AND 15 MINUTES PER 4S12497 (REQUIRED BY DNV AND OTHER THIRD PARTIES)

☐ UNIT TO BE RUN-IN ON SPM TEST STAND PER INSTRUCTIONS IN OPERATOR MANUAL

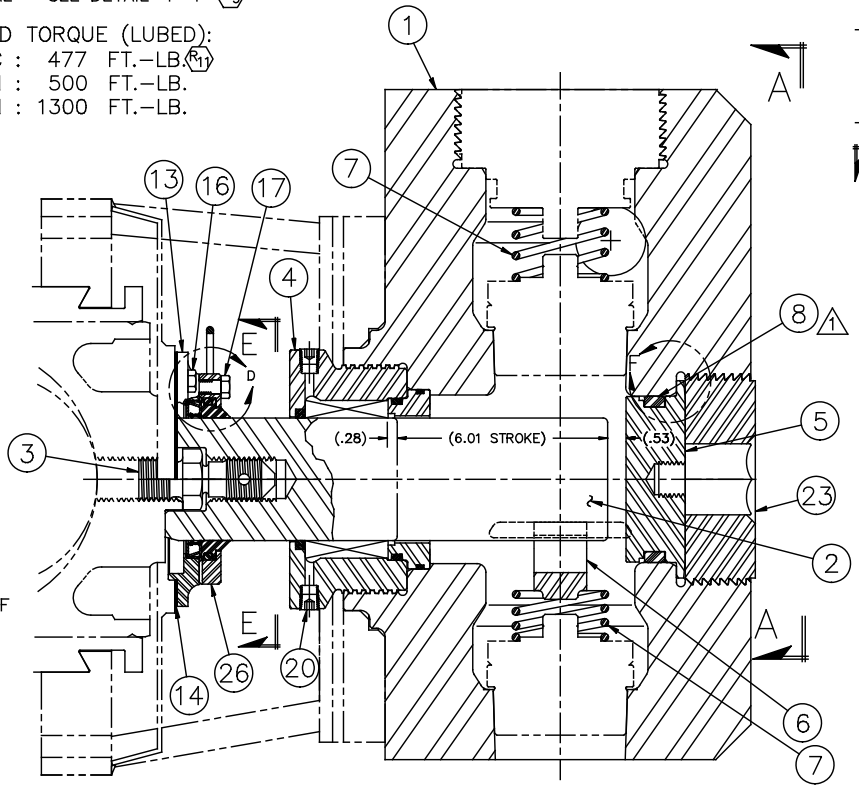
BY: A COPY OF THE SALES ORDER IS INCLUDED WITH THIS PACKAGE. PLEASE REVIEW AND VERIFY CONFORMANCE TO CONTRACT

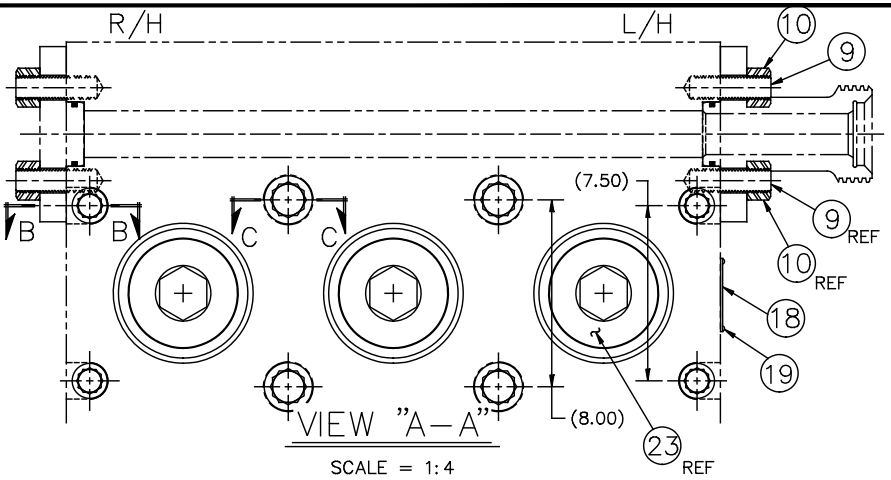
◉ SALES ◉ FILE ◉ PLANNING ◉ QUALITY

F-302 SEP. 28, 1994 Revision 1 MAR. 22, 1995 Revision 2 SEP. 12, 1996 Revision 3 MAY 24, 2002 Revision 4

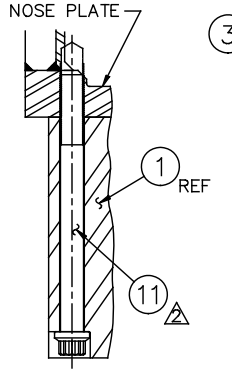
NOTES:

1. ALTERNATE SEAL – SEE DETAIL "F-1" (R9)
2. RECOMMENDED TORQUE (LUBED): (R11)
   1"~8UNC : 477 FT.-LB.
   1"~12UN : 500 FT.-LB.
   1 3/8"~12UN : 1300 FT.-LB.

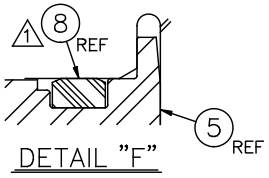




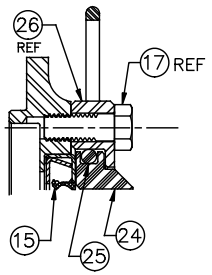
VIEW "A–A"
SCALE = 1:4



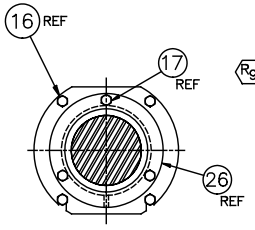
SECTION "B–B"
SCALE = 1:4



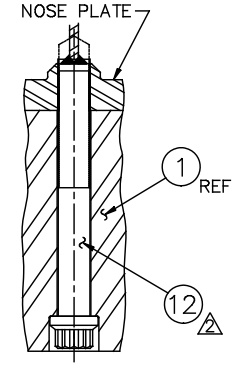
DETAIL "F"
SCALE = 1:1



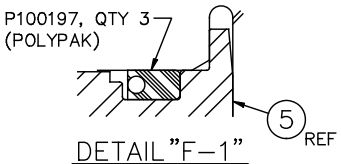
DETAIL "D"
SCALE = 1:1



VIEW "E–E"
SCALE = 1:4



SECTION "C–C"
SCALE = 1:4



DETAIL "F-1"
SCALE = 1:1

ITEM	QTY	PART NO	DESCRIPTION
26	3	3P107973	DEFLECTOR HOUSING
25	3	P106916	O-RING
24	3	2P107976	DEFLECTOR – MODIFIED
23	3	'G'	SUCTION COVER RETAINER NUT
22			
21			
20	24	P10453	PIPE PLUG
19	4	P18055	DRIVE SCREW
18	1	4P108170	NAME PLATE
17	9	P12975	3/8"~16UNC HHCS x 1.00 LG.
16	12	P14890	DIAPHRAGM SCREW
15	3	P107907	DIAPHRAGM OIL SEAL
14	3	3P103019	DIAPHRAGM PLATE GASKET
13	3	2P107892	DIAPHRAGM PLATE
12	4	'F'	1 3/8"~12UN TPFS x 10.50 LG
11	4	'E'	1"~12UN TPFS x 11.00 LG
10	8	'D'	1"~ 8NC HHN
9	8	'C'	1"~ 8NC x 3 1/2 STUD
8	3	P108291	SUCTION COVER SEAL – D-RING
7	6	4P100198	VALVE SPRING
6	3	3P100176	SUCTION VALVE STOP
5	3	'B'	SUCTION COVER
4	3	'A'	PACKING NUT
3	3	4P101714	PLUNGER STUD
2	3	2P103344	PLUNGER
1	1	1P102978	FLUID CYLINDER

REV.	DESCRIPTION	BY	Date
R11	SEE ECN #5454	JLC	03/08/2010
R10	SEE ECN #4300	KRM	3/14/05
R9	SEE ECN #4157	JED	08/17/2004
R8	SEE ECN #4105	ML	7/12/04
R7	SEE ECN #3950	JED	12/02/2003
R6	SEE ECN #3690	ADC	3/05/03
R5	SEE ECN #3647	JAS	3/6/2002
R4	SEE ECN #3575	DPH	10/21/01
R3	SEE ECN #3246	JAS	10/8/99
R2	SEE ECN #2890	DPH	9/12/97
R1	SEE ECN #2767	DPH	12/18/96

LOW TEMP (–30°C)	2A103347LT	3P103038GLT	3P104373LT	P14896C	P14897C	P19430C	P19431C	3P104372LT
STD TEMP (0°C)	2A103347	3P103038G	3P104373	P14896	P14897	P19430	P19431	3P104372
APPLICATION	PART NO.	'A'	'B'	'C'	'D'	'E'	'F'	'G'

DO NOT SCALE DRAWING

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

linear tol	fractional	±1/32
	.XX	±.01
	.XXX	±.005
Angular tol		±30'

All diameters concentric to .010 unless otherwise noted

125 surface roughness all machined surfaces

WEIR SPM

7601 WYATT DRIVE
FT WORTH TEXAS 76108-2587

Scale: 3:8 | Weight: | Drawn by: JAS
Date: 3/6/02 | | Approved: VK

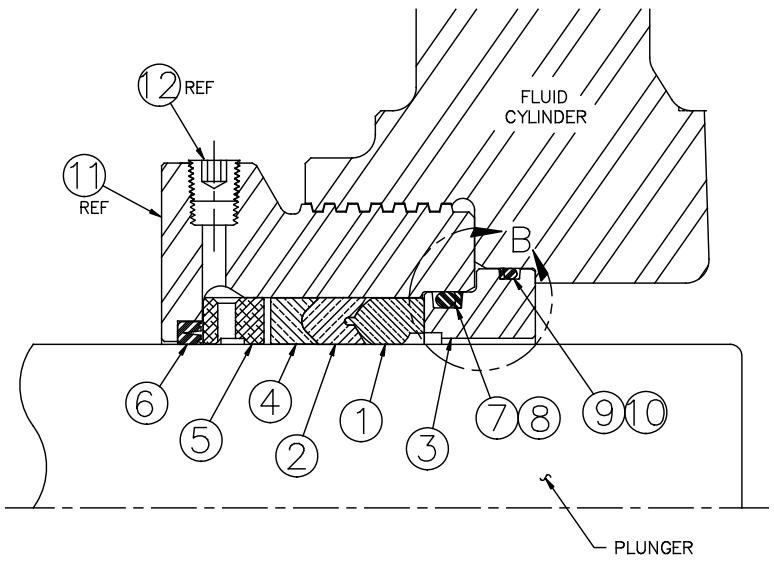
Description:
FLUID CYLINDER ASSY LISTING
3 1/2" TWS600S

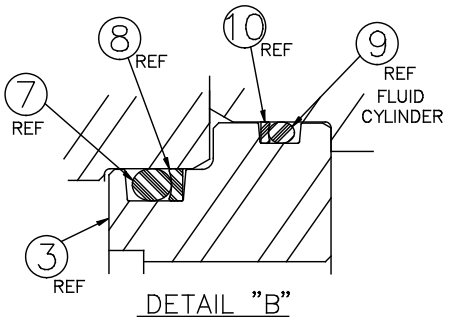
Material:

Drawing No: 2L108073

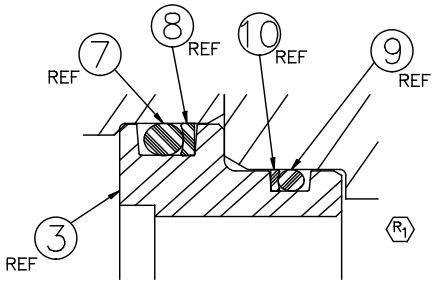
NOTES:

1. THE 2" PACKING ASSY 3A108782HP FITS A 2 1/2"–3" TWS600S FLUID CYLINDER. IT IS LIMITED TO 13000 PSI RATING.





DETAIL "B"
SCALE = 2:1



DETAIL "B" 4–1/2" ONLY (R1)
SCALE = 2:1

ASSEMBLIES INCLUDE THE HIGH PERFORMANCE HEADER RING AND PRESSURE RING.
ASSEMBLIES DO INCLUDE THE PEEK FEMALE ADAPTER

ITEM	QTY	PART NO	DESCRIPTION
12	REF	P10453	PIPE PLUG
11	REF	SEE TABLE	PACKING NUT w/ WIPER GROOVE
10	1		BACK–UP
9	1		O–RING
8	1		BACK–UP
7	1		O–RING
6	1		WIPER RING
5	1		LANTERN RING
4	1		FEMALE ADAPTER – PEEK
3	1		SEAL RING
2	1		PRESSURE RING
1	1		HEADER RING

	ASSY P/N	SIZE	ITEM #1	ITEM #2	ITEM #3	ITEM #4	ITEM #5	ITEM #6	ITEM #7	ITEM #8	ITEM #9	ITEM #10	ITEM #11
CEMENT		4 1/2"											
		4"											
		3 1/2"											
		3"											
		2 3/4"											
		2 1/2"											
ACID/FRAC ACIDS TO 28%	3A105297HP	4 1/2"	P100195HP	P100652HP	3P103022	P107469	3P107531	P101252HP	P103369	P103371	P103063	P103064	3P103027G
	3A104227HP	4"	P100342HP	P100343HP	3P103033	P107533	3P107530	P101883HP	P103061	P103062	P103063	P103064	3P103037G
	3A105368HP	3 1/2"	P100298HP	P100297HP	3P103034	P107532	3P107528	P102208HP	P101519	P103349	P103063	P103064	3P103038G
	3A104769HP	3"	P100332HP	P100331HP	3P103524	P107614	3P107527	P102093HP	P103368	P103370	P18481	P103576	3P104709
	3A105154HP	2 3/4"	P101390HP	P101738HP	3P103523	P107456	3P107526	P102207HP	P101955	P105316	P18481	P103576	3P104708
	3A104731HP	2 1/2"	P103572HP	P103571HP	3P103522	P107455	3P107525	P104736HP	P102244	P103575	P18481	P103576	3P104707
	3A108782HP	2"	P104602HP	P104596HP	3P106312	P107715	3P108778	P106327HP	P101889	P104606	P18481	P103576	3P108783

(1)

REV.	DESCRIPTION	BY	Date
R1	SEE ECN #4832	MMJ	03/06/2007

DO NOT SCALE DRAWING

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

linear tol	fractional	±1/32
	.XX	±.01
	.XXX	±.005
Angular tol		±30'

All diameters concentric to .010 unless otherwise noted

125 surface roughness all machined surfaces

SPM Flow Control, Inc.

7601 WYATT DRIVE
FT WORTH TEXAS 76108–2587

Scale: NONE
Date: 1/11/01
Drawn by: DPH[1]
Approved: MDM

Description: PACKING ASSY LISTING w/ WIPER
2" – 4 1/2" TWS600S/QWS1000S
HIGH PERFORMANCE CONFIGURATION
WITH PEEK FEMALE ADAPTER

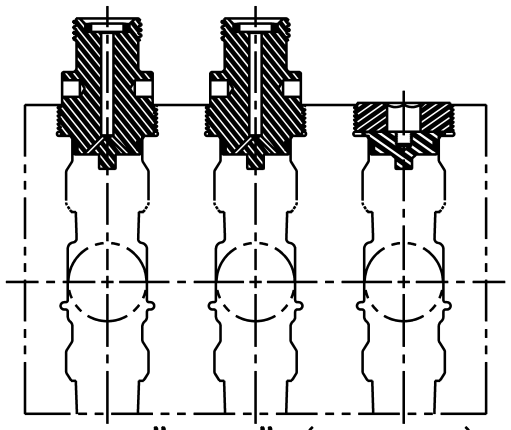
Material:

Drawing No: 2L107728

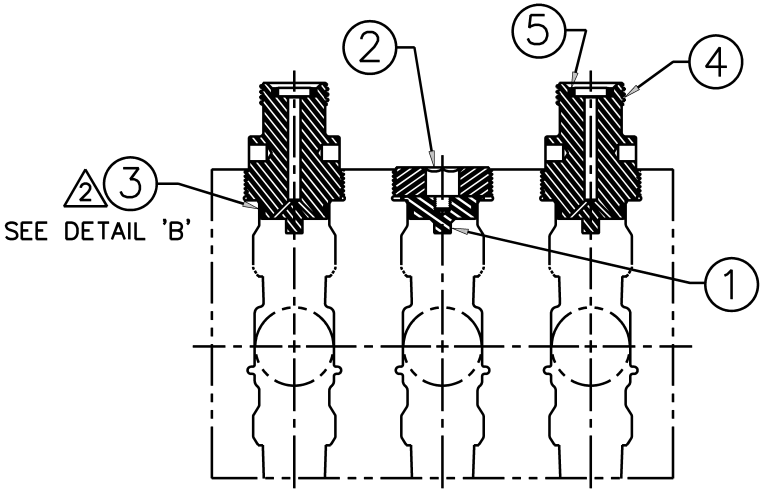
NOTES:

1. CONFIGURATION MAY VARY.
   FIG. 1,2,3 AS VIEWED FROM REAR OF POWER END.

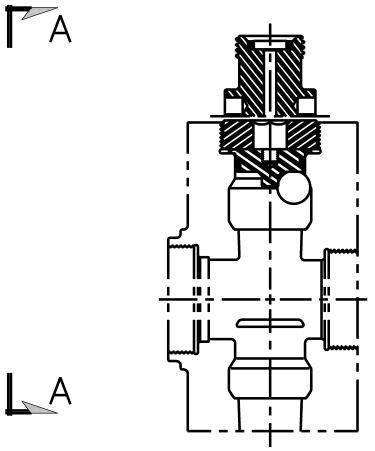
△2 ALTERNATE SEAL – SEE DETAIL "A-1" R3

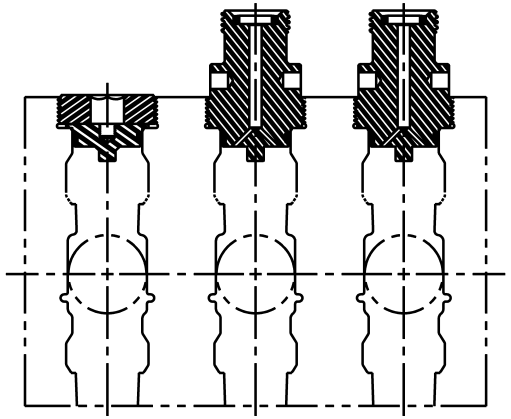


VIEW "A–A" (FIG. #2)

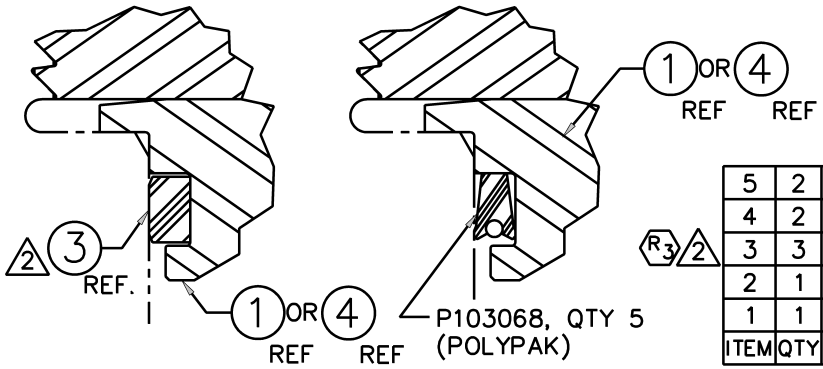


VIEW "A–A" (FIG. #1)





VIEW "A–A" (FIG. #3)



DETAIL "B"
SCALE = 1:1

DETAIL "B-1"
SCALE = 1:1

ITEM	QTY	PART NO	DESCRIPTION
5	2	4P10229	SEAL RING
4	2	'C'	DISCHARGE COVER W/ 2" 1502 F
R3 △2 3	3	P109379	DISCHARGE COVER SEAL – D-RING
2	1	'B'	RETAINER NUT
1	1	'A'	DISCHARGE COVER

APPLICATION	PART NO.	'A'	'B'	'C'
LOW TEMP (–30°C)	3A105153LT	3P105149LT	3P104372LT	2P103069LT
STD TEMP (0°C)	3A105153	3P105149	3P104372	2P103069

REV.	DESCRIPTION	BY	Date
R3	SEE ECN #4157	JED	09/17 2004
R2	SEE ECN #3950	JED	12/02 2003
R1	SEE ECN #3647	JAS	3/7 2002

DO NOT SCALE DRAWING

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

linear tol	fractional	±1/32
	.XX	±.01
	.XXX	±.005
Angular tol		±30'

All diameters concentric to .010 unless otherwise noted

125 surface roughness all machined surfaces

SPM Flow Control, Inc.

7601 WYATT DRIVE
FT WORTH TEXAS 76108-2587

Scale: 1:8 Drawn by: JAS
Date: 3/7/02 Approved: VK

Description: DISCHARGE COVER INST. LISTING 3 1/2" TO 4 1/2" (OPTION #13) 600S H.P. PUMP

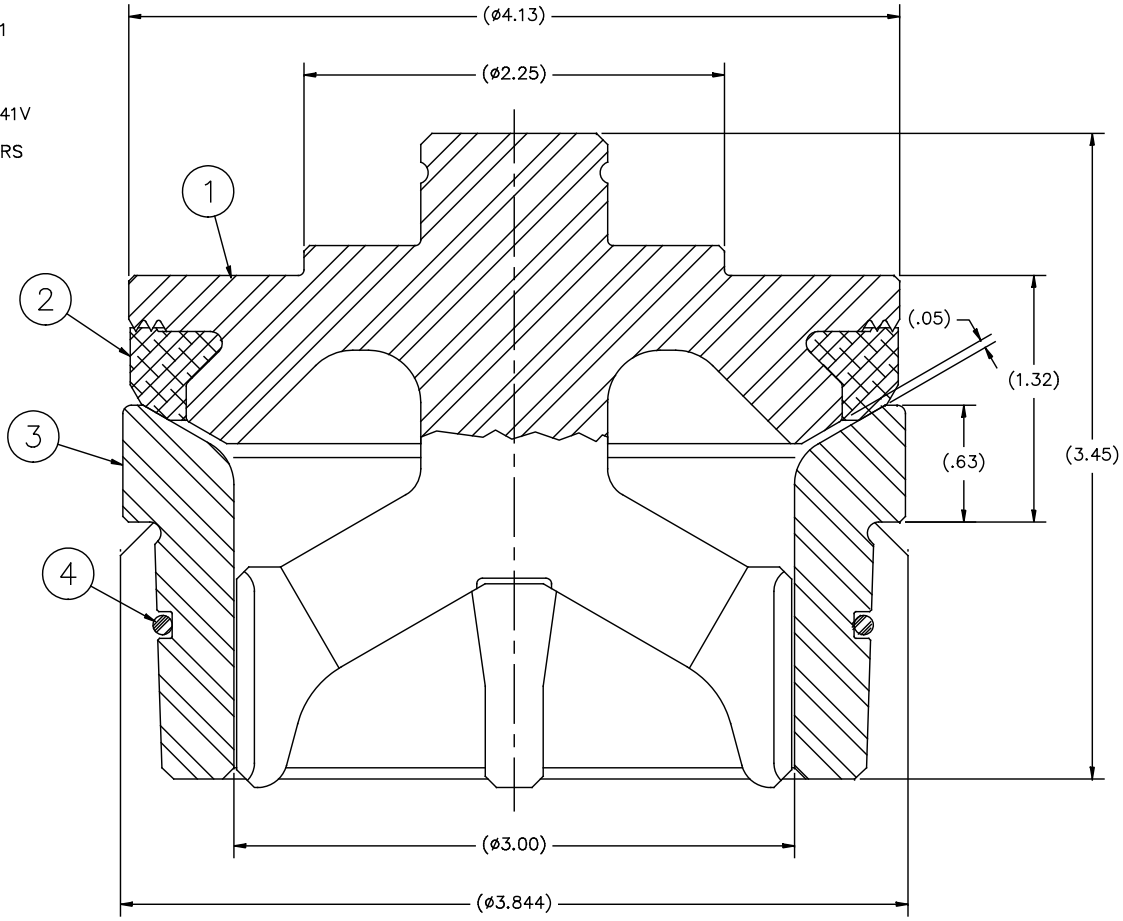
Material:

Drawing No: 3L108074

NOTES:

1. ACCEPTABLE ALTERNATE PART NUMBERS:
   2A109375PP VALVE: 2A109537PP
   2A109375PP VALVE SEAT: 2A109541

   2A109375PPV VALVE: 2A109537PP
   2A109375PPV VALVE SEAT: 2A109541V
2. PRIMARY AND ALTERNATE PART NUMBERS ARE INTERCHANGEABLE IF NECESSARY.



3 1/4" – 4"	TWS 250
3 1/2" – 4 1/2"	TWS 400
3 – 4 1/2"	TWS 600
3 1/2" – 4 1/2"	TWS 600S
3 1/2" – 4 1/2"	TWS 600 UNIBLOCK

ITEM	QTY	PART NO	DESCRIPTION
4	REF	'D'	SEAL (PART OF ITEM #3)
3	1	'C'	VALVE SEAT ASSY
2	REF	'B'	INSERT (PART OF ITEM #1)
1	1	'A'	VALVE ASSY

APPLICATION	PART NO.	'A'	'B'	'C'	'D'
VITON	2A109375PPV	P105742 (R8)	P105761 (R8)	P118705 (R8)	P105982
BUNA	2A109375PP	P105742 (R8)	P105761 (R8)	P105752 (R8)	P103293

REV.	DESCRIPTION	BY	Date
R8	SEE EC #7714	ABY	4/12/2012
R7	SEE EC #7621	JRP	2/22/2012
R6	SEE ECN #4718	ML	9/8/06

DO NOT SCALE DRAWING

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

linear tol	
fractional	±1/32
.XX	±.01
.XXX	±.005
Angular tol	±30'

All diameters concentric to .010 unless otherwise noted

125 surface roughness all machined surfaces

WEIR SPM

7601 WYATT DRIVE
FT WORTH TEXAS 76108-2587 △

Scale: NTS | Weight: 00.0 | Drawn by: ML
Date: 9/8/06 | Approved: RDK

Description: VALVE AND SEAT ASSY LISTING
NF-4-V2 "SNAP IN"
WELDED VERSION – 15000 PSI

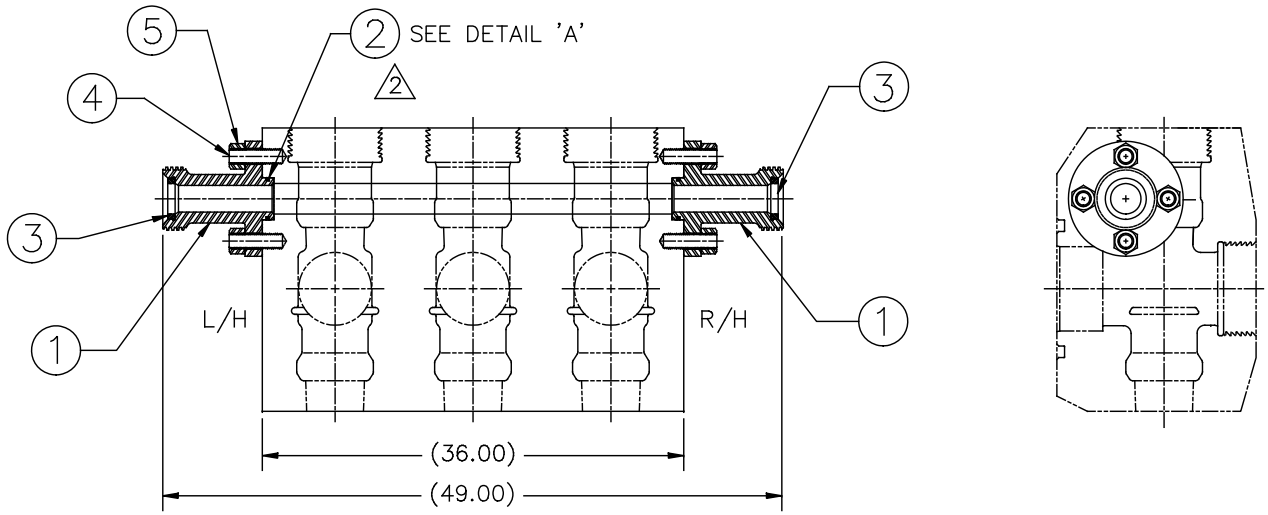
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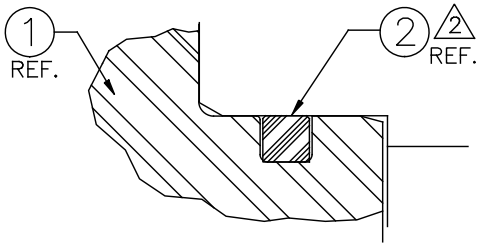
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NOTES:

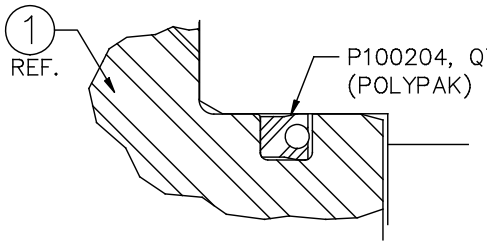
1. RECOMMENDED TORQUE (LUBED)
   1"~8UNC: 477 ft-lb. (R3)

2 ALTERNATE SEAL – SEE DETAIL "A-1" (R2)





DETAIL "A"
SCALE = 2:1



DETAIL "A-1"
SCALE = 2:1

(R2)2

ITEM	QTY	PART NO	DESCRIPTION
5	Ref	'C'	1"~ 8NC HHN
4	Ref	'B'	1"~ 8NC x 3 1/2" LG STUD
3	2	4P10229	2" FIG. 1502 SEAL RING
2	2	P109509	FLANGE SEAL – D-RING
1	2	'A'	DISCHARGE FLANGE W/2" FIG. 1502 F

APPLICATION	ASSY NO.	'A'	'B'	'C'
LOW TEMP (-30°C)	3A102713LT	3P100182LT	P14896C	P14897C
STD TEMP (0°C)	3A102713	3P100182	P14896	P14897

REV.	DESCRIPTION	BY	Date
R3	SEE ECN #4681	JED	07/28/2006
R2	SEE ECN #4157	JED	09/17/2004
R1	SEE ECN #3621	DPH	1/29/02

DO NOT SCALE DRAWING

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

linear tol		
	fractional	±1/32
	.XX	±.01
	.XXX	±.005
Angular tol		±30'

All diameters concentric to .010 unless otherwise noted

125 surface roughness all machined surfaces

SPM Flow Control, Inc.

7601 WYATT DRIVE
FT WORTH TEXAS 76108-2582

Scale: NONE
Date: 1/29/02
Drawn by: DPH
Approved: MDM

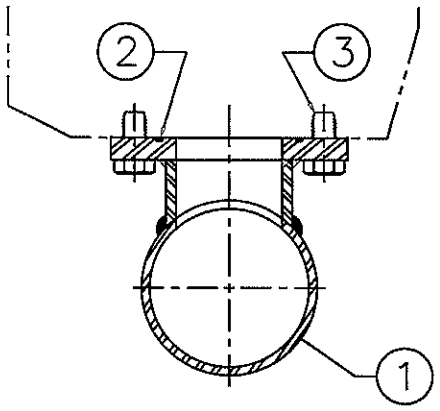
Description: DISCHARGE FLANGE INST. LISTING 3" – 4 1/2" (OPTION #4) TWS600 & TWS600S

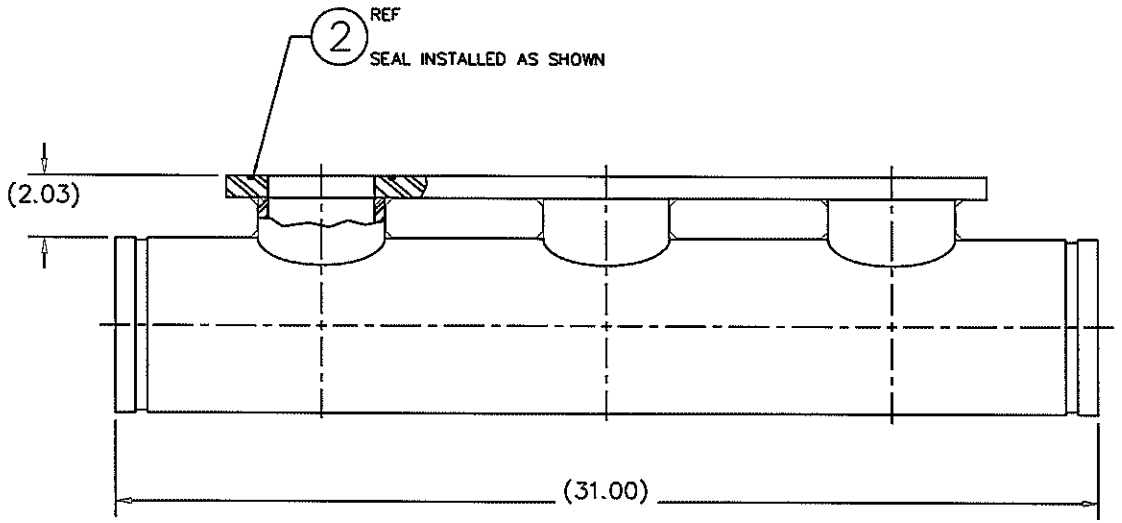
Material:

Drawing No: 3L108051

NOTES:

1. RECOMMENDED TORQUE (LUBED)
   3/4"~ 10NC: 260 ft-lb.





ITEM	QTY	PART NO	DESCRIPTION
3	12	P10070	3/4"~10NC HHCS x 1.50 LG.
2	3	P100203	SEAL
1	1	2P102594	MANIFOLD

DO NOT SCALE DRAWING

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

linear tol		
	fractional	±1/32
	.XX	±.01
	.XXX	±.005
Angular tol		±30'

All diameters concentric to .010 unless otherwise noted

125 surface roughness all machined surfaces

SPM Flow Control, Inc.

7601 WYATT DRIVE
FT WORTH TEXAS 76108-2587

Scale: 1: 4
Date: 7/6/95
Drawn by: DPH
Approved:

Description:
MANIFOLD INSTALLATION
5" VICTAULIC
3.00"-4.50" TWS 600

Material:

Drawing No: 3A103391

REV.	DESCRIPTION	BY	Date

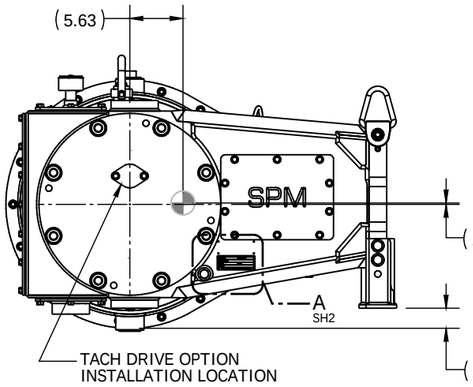
GENERAL NOTES:

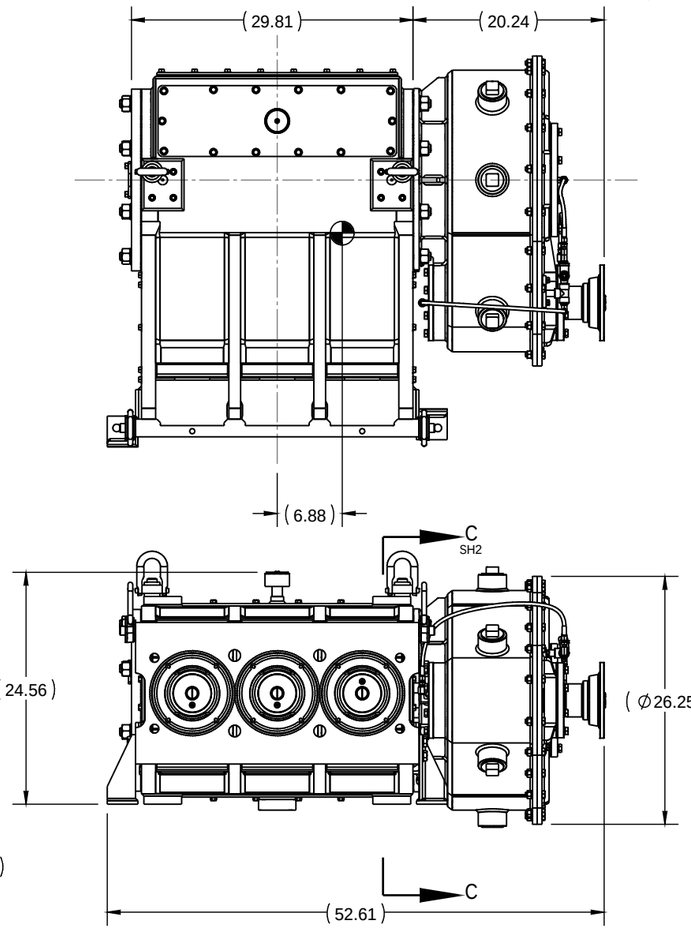
1. ALL CONNECTIONS MUST BE LEAK PROOF.

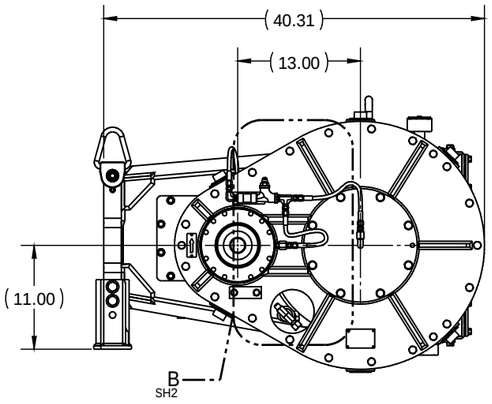
FLAG NOTES:

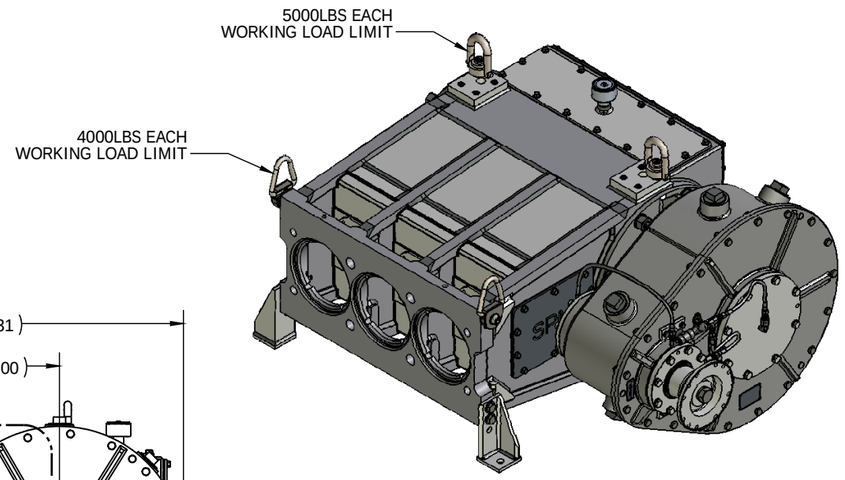
1. CONNECT P113530 (NOT SHOWN) TO THESE FITTINGS.
2. LOGO PLATE INSTALLATION HOLES.
3. USE CAUTION WHEN ROTATING GEARBOX INTO FNAL CLOCKING POSITION; DAMAGE TO LUBE HOSE CAN OCCUR. ADJUST LUBE HOSE AND FITTINGS ACCORDINGLY.

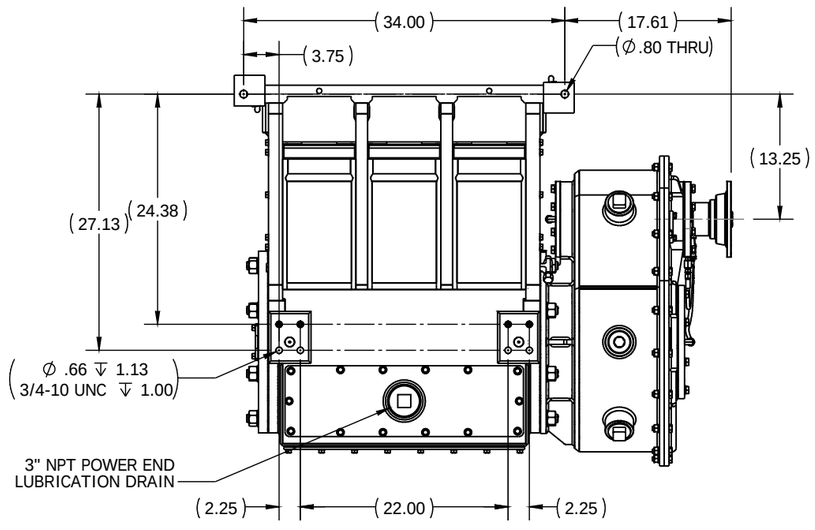
REVISIONS (SEE PREVIOUS REVISIONS FOR APPROVAL HISTORY)				
REV	DESCRIPTION	DATE	EC NUMBER:	PROCESSED BY:











MOUNTING HOLE LOCATION

ITEM NO.	QTY. REQD	PART NUMBER	NOMENCLATURE OR DESCRIPTION	WT (REF ONLY)
2	1	P109347	ASSY/HOSE/LUBE/35" LONG/.38" DIA	0.803
1	1	2A119353LS	ASSY/SUB/PWR END/TWS600S/STYLE IV/LS	3118.894

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1, .XX±.01, .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"
.003 PER INCH
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ← ITEM # / XX ← QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	J.Marquez	12/31/2012
CHECKED	D.Arnoldy	01/03/2013
APPROVED		
MATERIAL	SEE PART DRAWINGS	
WEIGHT	3119.697	WEIGHT SHOWN FOR REF ONLY
SCALE	1:16	SIZE B (17 x 11)

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TITLE

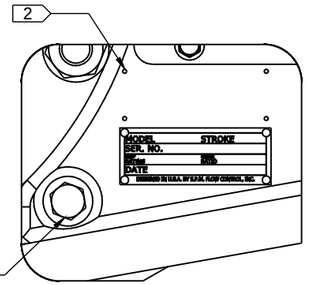
ASSEMBLY
POWER END, TWS600S
LEFT, SMALL GEARBOX, POSITION 1

SHEET	DWG NO.	REV.
1 OF 2	2A121187LS-01	IR

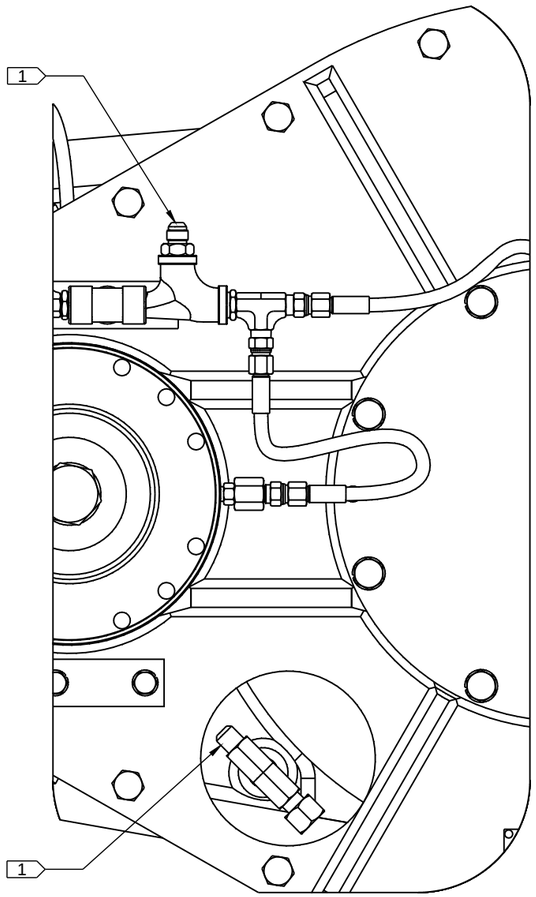
Thursday, January 03, 2013 10:55:53 AM

2A121187LS-01

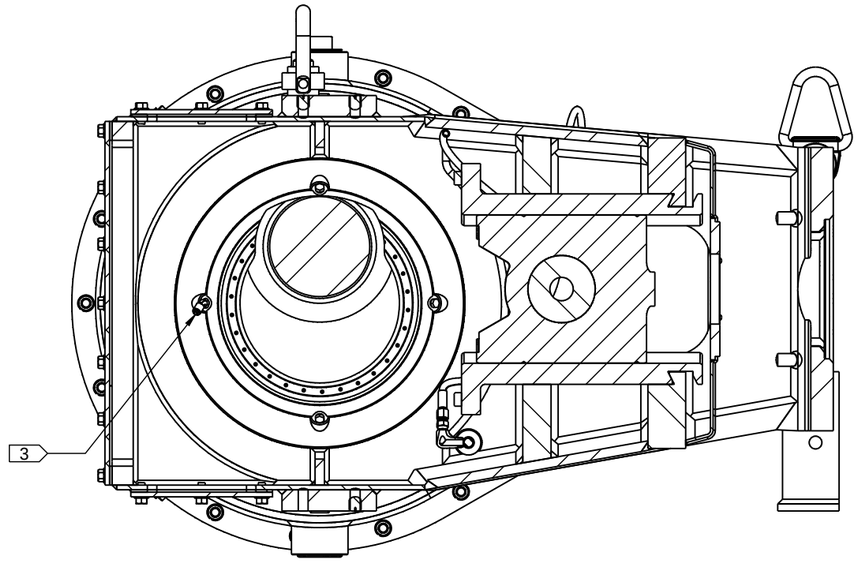
Thursday, January 03, 2013 10:55:53 AM



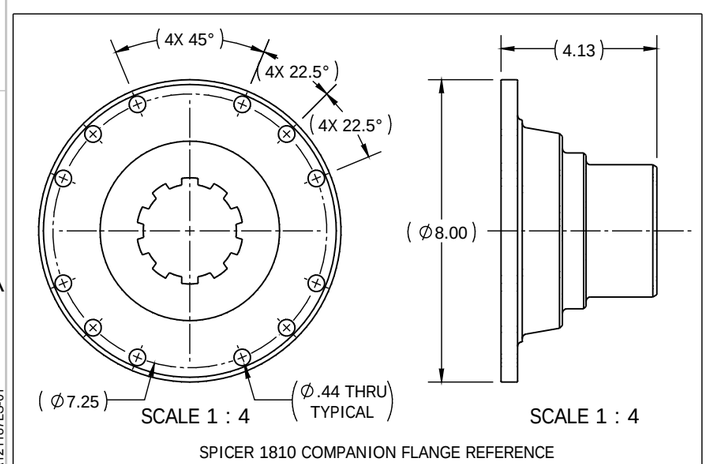
DETAIL A
SCALE 1 : 4



DETAIL B
SCALE 1 : 4



SECTION C-C
SCALE 1 : 8



SPICER 1810 COMPANION FLANGE REFERENCE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1 .XX±.01 .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
.003 PER INCH
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ← ITEM # XX ← QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	J.Marquez	12/31/2012
CHECKED	D.Arnoldy	01/03/2013
APPROVED	M.Dille	1/3/2013
MATERIAL	SEE PART DRAWINGS	
WEIGHT	3119.697	WEIGHT SHOWN FOR REF ONLY
SCALE	1:16	SIZE B (17 x 11)

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WEIR OIL & GAS SPM®

TITLE

ASSEMBLY
POWER END, TWS600S
LEFT, SMALL GEARBOX, POSITION 1

SHEET	DWG NO.	REV.
2 OF 2	2A121187LS-01	IR

2A121187LS-01

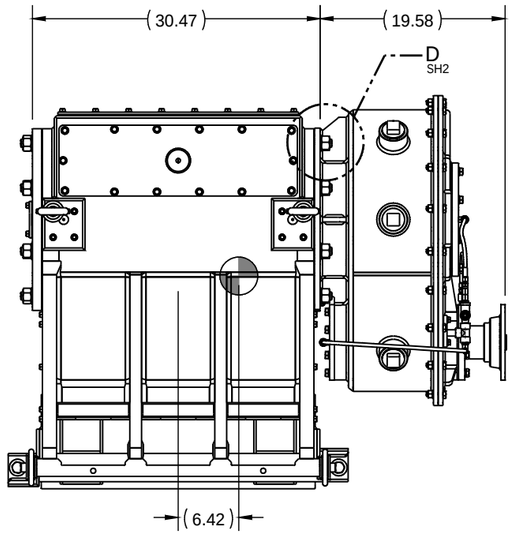
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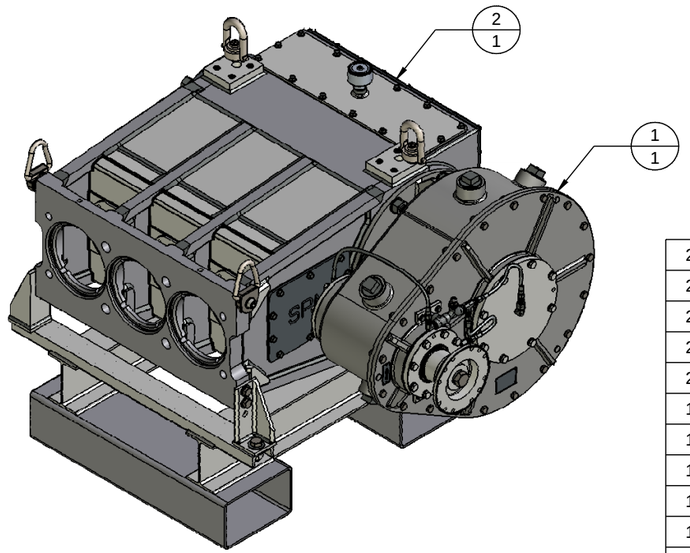
1. ALL CONNECTIONS MUST BE LEAK PROOF.

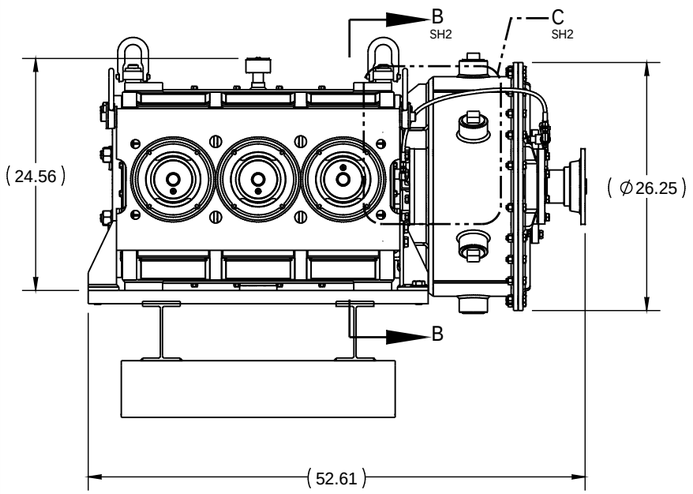
FLAG NOTES:

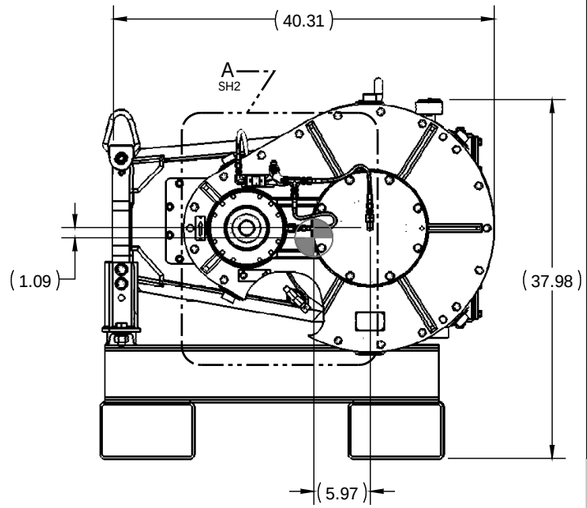
1. P101872 AND P10464 ARE INSTALLED INTO THE MAIN BEARING HOUSING, LOCATED DEPENDING ON GEARBOX POSITION.
2. REFERENCE LOCATION OF LOGO PLATE. B

REVISIONS (SEE PREVIOUS REVISIONS FOR APPROVAL HISTORY)				
REV	DESCRIPTION	DATE	EC NUMBER:	PROCESSED BY:
B	REMOVED SHEET 3 AND FLAG NOTE 3. CHANGED FLAG NOTE 2. ADDED 2P121159 AND P18055. CHANGED THE WORD ASSEMBLY TO SUB ASSEMBLY IN THE DESCRIPTION.	12/14/2012	7981	JMARQUEZ









ITEM NO.	Default/QTY.	PART NUMBER	NOMENCLATURE OR DESCRIPTION	WT (REF ONLY)
24	4	P18055	SCRW/DRV/4 X 3/16/TYPE U	0.001
23	8	P14893	WSHR/FLT/0.88	0.065
22	8	P14881	NUT/HEX/7/8-9UNC/HVY	0.318
21	8	P14878	STUD/ .88-9UNC X 3.00/GR B7	0.5089
20	1	P114515	FTG/CAP/SM/06	0.098
19	1	P114514	FTG/TEE/SMXSMXPM/06X06X08	0.38
18	3	P111960	FTG/CONN/SMxSF/04x04/ORIFICE- .094	0.089
17	1	P109677	ASSEMBLY, HOSE, LUBE, 24" LONG, .25" DIA	0.317
16	2	P10889	FTG/BSHNG/PMXPF/06X04	0.04
15	3	P10464	PLUG/PIPE/HEX/1/8-27 NPT	0.02
14	1	P102833	FTG/TEE/PMXPFXPF/06X06X06	0.29
13	1	P102831	CONNECTOR SMxPM/06x06	0.08
12	1	P101872	FTG/ELL/45/SMXPM/04X04	0.050
11	2	P101857	ASSEMBLY, HOSE, LUBE, 12" LONG, .25" DIA	0.220
10	1	P101850	FTG/TEE/PFXPFXPF/06X06X06	0.324
9	1	P101849	FTG/TEE/SMXSMXPM/04X04X04	0.13
8	1	P101847	FTG/ELL/90/SMXPM/04X04	0.10
7	2	P101845	FTG/ELL/90/SMXPM/04X04	0.09
6	1	P101844	FTG/CONN/SMXPM/O4X02	0.031
5	1	P100065	ASSEMBLY, HOSE, LUBE, 21" LONG, .25" DIA	0.295
4	1	2P121159	NAMEPLT/PWR END/TECH/UNIVERSAL	0.053
3	1	2P120837	MACH, GSKT, HSG, BRG, 19.25OD X 15.38ID	0.245
2	1	2A117260L	ASSY/SUB/PWR END/TWS600S/STYLE IV/NO GB	2377.464
1	1	1A103336	GEAR RED ASSY/TWS/4.6:1/PARA SHFT/SM	952.455

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1 .XX±.01 .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"
.003 PER INCH
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ITEM # XX QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	J.Marquez	07/09/2012
CHECKED	D.Arnoldy	01/02/2013
APPROVED	M.Dille	1/3/2013
MATERIAL	SEE PART DRAWINGS	
WEIGHT	3340.468	WEIGHT SHOWN FOR REF ONLY
SCALE	1:16	SIZE B (17 x 11)

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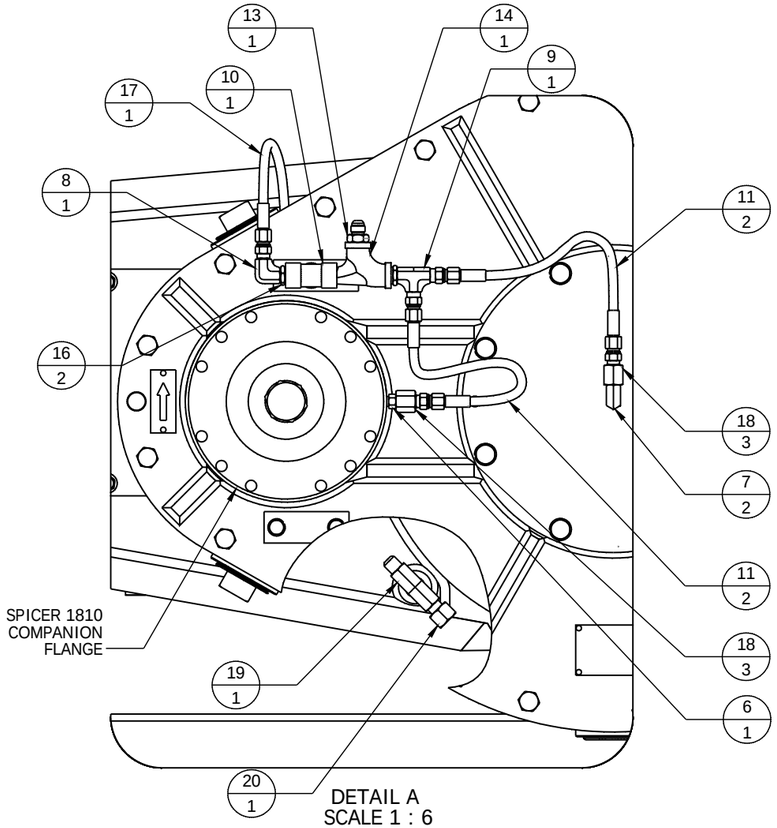
TITLE

SUBASSEMBLY
TWS600S POWER END, STYLE IV
LEFT HAND, SMALL GEARBOX

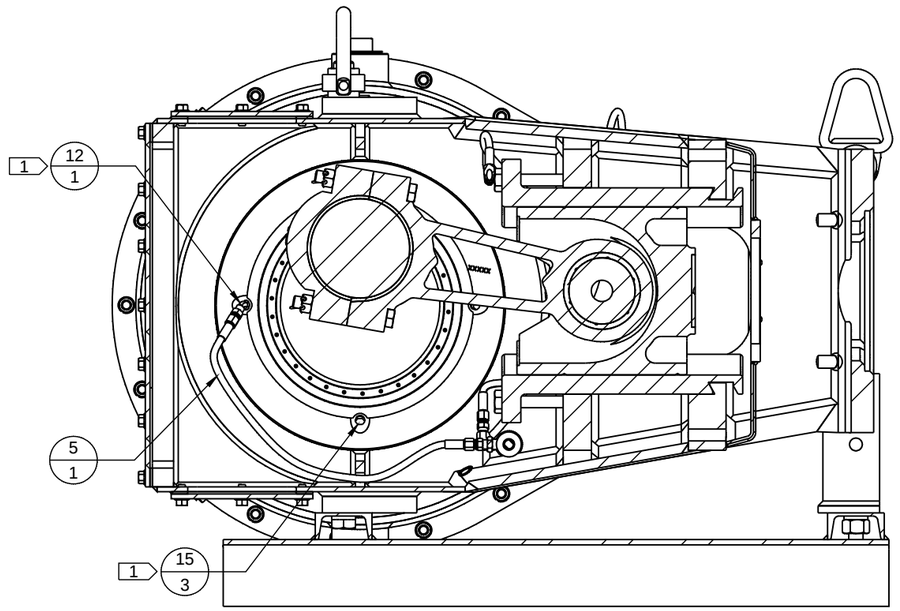
SHEET	DWG NO.	REV.
1 OF 2	2A119353LS	B

2A119353LS

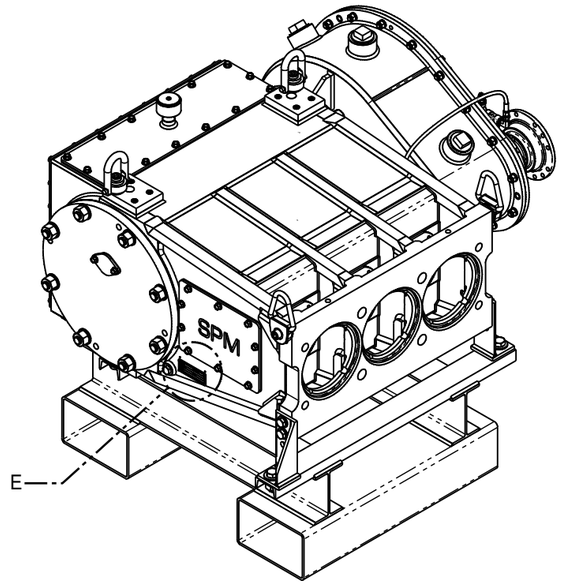
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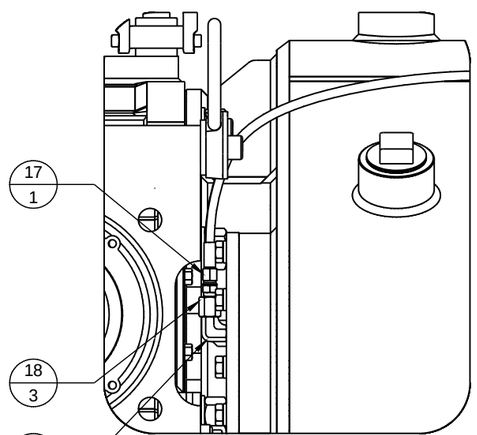


DETAIL A
SCALE 1 : 6

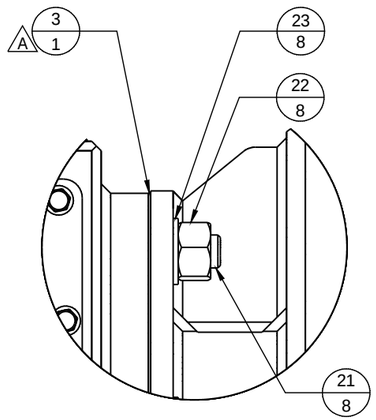


SECTION B-B
SCALE 1 : 8

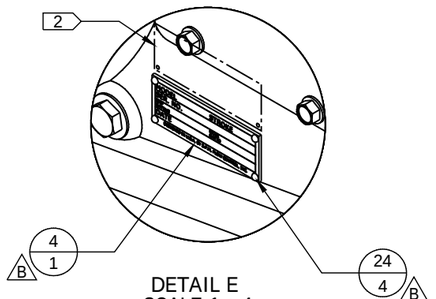




DETAIL C
SCALE 1 : 6



DETAIL D
SCALE 1 : 4



DETAIL E
SCALE 1 : 4

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1 .XX±.01 .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"
.003 PER INCH
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ← ITEM # XX ← QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	J.Marquez	07/09/2012
CHECKED	D.Arnoldy	01/02/2013
APPROVED	M.Dille	1/3/2013
MATERIAL	SEE PART DRAWINGS	
WEIGHT	3340.468	WEIGHT SHOWN FOR REF ONLY
SCALE 1:16	SIZE B (17 x 11)	

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TITLE

SUBASSEMBLY TWS600S POWER END, STYLE IV LEFT HAND, SMALL GEARBOX

SHEET	DWG NO.	REV.
2 OF 2	2A119353LS	B

2A119353LS

FLAG NOTES:

1. INSTALL P100169, OIL SEAL, ORIENTED AS SHOWN.

2. THE SPRAY BAR IS SHOWN WITH THE PINION ROTATING CLOCKWISE. FOR NONSTANDARD PINION ROTATION (COUNTERCLOCKWISE) INSTALL SPRAYBAR ON THE OPPOSITE SIDE AND FLIP THE DIRECTION OF THE DIRECTION ARROW NAMEPLATE.

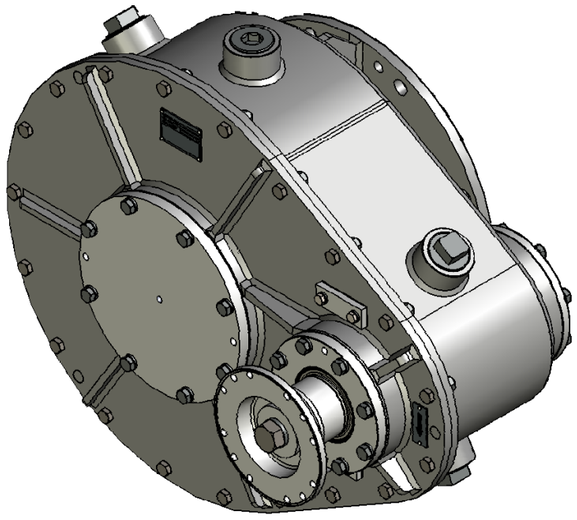
3. PRELOAD ORDER INSTRUCTIONS:
   1. SET SHIM PACK ON BULL GEAR AND TIGHTEN TO .000-.003 PRELOAD.
   2. CENTER PINION LATERALLY IN RELATION TO BULL GEAR.
   3. SET SHIM PACK ON PINION AND TIGHTEN TO .000-.003 PRELOAD.

4. STENCIL ON NAMEPLATE IN 12PT FONT .01 DEEP

   A) PART NO. - REV

   B) SPM - XXXXXX - ## - ###
   WHERE:
   XXXXXX = SPM PO (VENDOR) OR SPM JOB (INTERNAL).
   ## = LINE ITEM (SPM PO) OR 00 (SPM JOB)
   ### = UNIQUE SERIAL NO.

   C) 4.6:1



REVISIONS (SEE PREVIOUS REVISIONS FOR APPROVAL HISTORY)			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL MIGRATION INTO SOLIDWORKS FROM AUTOCAD REV 4. ADDED THE GEARBOX NAMEPLATE AND ASSOCIATED HARDWARE. CHANGED SCREW P/N FROM P14912 TO P111513. BEARING CUP AND CONE WERE COMBINED INTO ASSEMBLY NUMBERS P33700 AND P33699.	6/7/2012	J.MARQUEZ

ITEM NO.	QTY. REQD	PART NUMBER	NOMENCLATURE OR DESCRIPTION	MATERIAL	WT
A 30	2	P33700	BEARING, TAPERED SINGLE ROLLER, 10.13OD X 7.75ID X 1.56W		11.145
A 29	2	P33699	BEARING, TAPERED SINGLE ROLLER, 5.9OD X 2.88ID X 1.84W		7.977
A 28	6	P18055	SCRW/DRV/4 X 3/16/TYPE U		0.001
27	1	P14913	SCRW/HHCS/#1-14UNS X 1.50 Grade 8		0.6673
A 26	24	P13695	1/2-13UNC HHCS x 1.50, Gr B7		0.1266
25	4	P12957	3/8" LOCK WASHER		0.006
24	5	P12641	PLUG/PIPE/SQR HD/2.00 NPT/LOWPRESS		1.356
A 23	4	P111513	SCRW/HHCS/ .38-16UNC X .88		0.0456
22	1	P11038	1" LOCKING WASHER		0.091
21	19	P10660	1/2-13UNC HEX NUT		0.043
20	43	P10456	WSHR/LCK/0.50		0.013
19	1	P103972	PIPE PLUG, 2.00" NPT, HEX SOCKET, STEEL		0.94
18	19	P101903	1/2-13UNC HHCS x 1.75, Gr B7		0.1314
17	1	P100776	FLG/COMPANION/INPUT/4.6:1/RED/		10.690
16	1	P100169	SEAL/OIL/4.60:1 RED/TWS600		0.346
15	1	4P104052	NAMEPLATE/DIRECTION ARROW	Aluminum Sheet	0.022
14	1	4P100124	MACH, WASHER, RETAINER, 4.6:1 GEARBOX	ASTM A36 HR Steel	0.657
13	1	4P100120	CVR/OIL LUBE/RED/4.6:1	ASTM A36 HR Steel	0.417
12	1	4P100117	SPCR/RED/4.6:1	AISI E4140 Steel, 4S18042	0.847
11	1	3P101930	SHIM SET/12/RED/4.6:1	Mild steel	0.732
10	1	3P100126	CAP/PINION/RED/4.6:1	ASTM A36 HR Steel	8.379
9	1	3P100119	PIPE/SPRAY/4.6:1 RD/TWS600	SEE PART DRAWINGS	0.907
8	1	3A101929	SHIM SET/8"/RED/4.6:1	Mild steel	0.804
A 7	1	2P118863	NAMEPLATE/GEARBOX	Aluminum Sheet	0.054
A 6	2	2P118711	GSKT/SPRAY BR FLG/RED/TWS600	NBR (BunaN/Nitrile) 70 Duro	0.009
5	1	2P103273	GEAR/PNN/TWS600/SM/4.6:1	SEE FLAG NOTE 1	52.251
4	1	2P103272	GEAR/BULL/LH/TWS600/SM/4.6:1	AISI E4140 Steel, 100ksi	399.300
3	1	2P100121	RET/BRG/PNN/RED/4.6:1	ASTM A36 HR Steel	6.847
2	1	2P100118	CVR/BRG/RED/4.6:1	ASTM A36 HR Steel	22.252
1	1	1P103322	HSG/RED/TWS/4.6:1/SMALL	SEE PART DRAWINGS	372.121

PARTS LIST

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DECIMALS .X±.1, .XX±.01, .XXX±.005 ANGLES ±0.5° FRACTIONS ± 1/32"
.003 PER INCH
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX / XX ITEM # / QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	J.Marquez	06/07/2012
CHECKED	D.Arnoldy	06/15/2012
ENGINEER	M.Dille	6/21/2012
MATERIAL	SEE PART DRAWINGS	
WEIGHT	930.504	WEIGHT SHOWN FOR REF ONLY
SCALE	1:10	SIZE B (17 x 11)

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TITLE

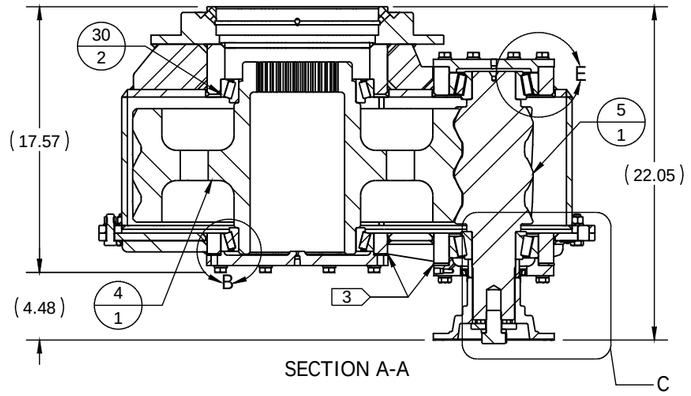
ASSEMBLY GEAR REDUCER, TWS, 4.6:1, SMALL

SHEET	DWG NO.	REV.
1 OF 2	1A103336	A

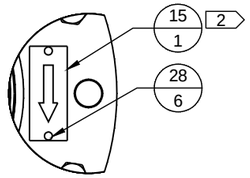
Thursday, June 21, 2012 10:57:51 AM

1A103336

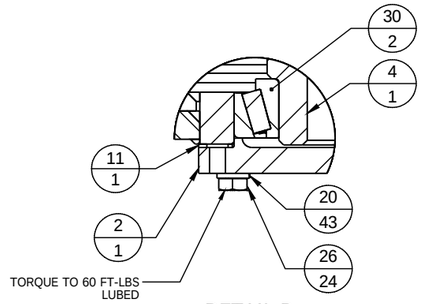
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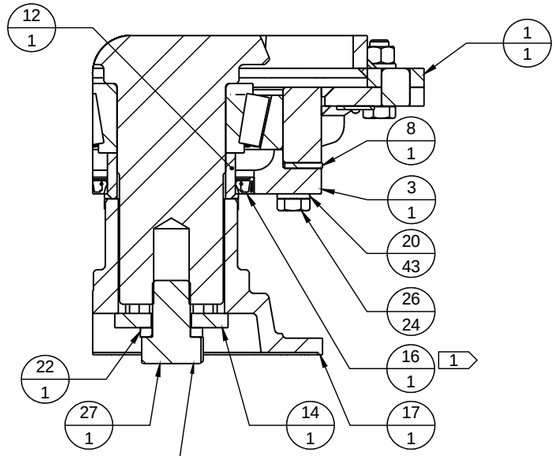
SECTION A-A



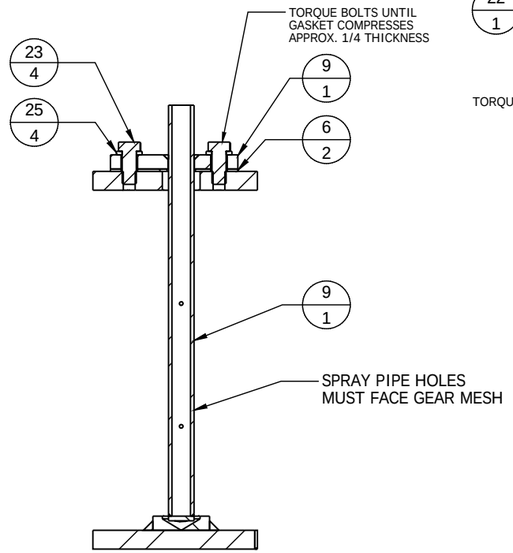
DETAIL H
SCALE 1 : 4



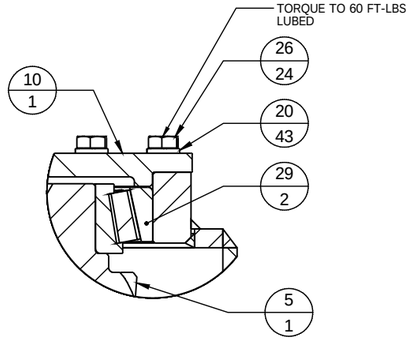
DETAIL B
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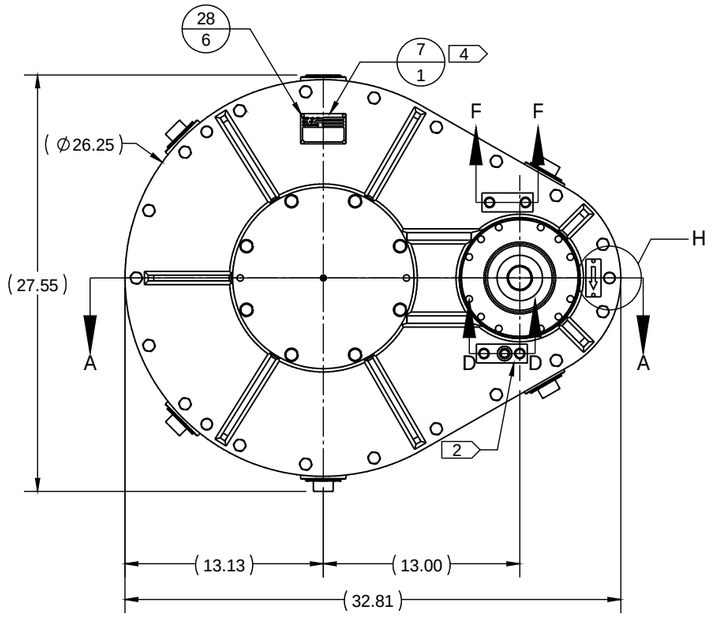
DETAIL C
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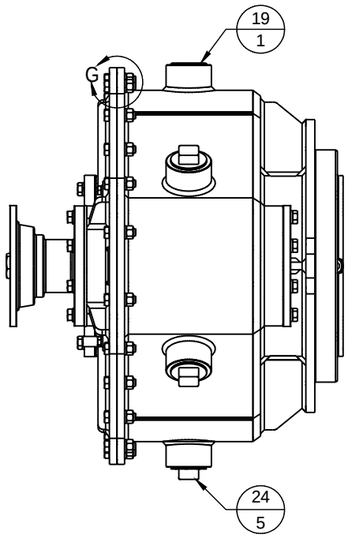


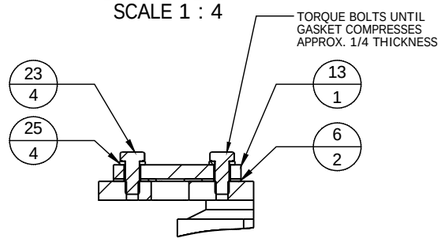
SECTION D-D
SCALE 1 : 4



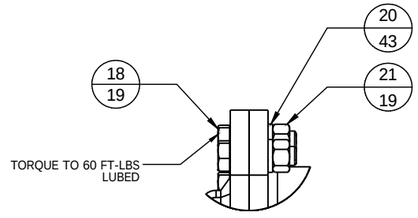
DETAIL E
SCALE 1 : 4







SECTION F-F
SCALE 1 : 4



DETAIL G
SCALE 1 : 4

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1 .XX±.01 .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"
.003 PER INCH
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ITEM # XX QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	J.Marquez	06/07/2012
CHECKED	D.Arnoldy	06/15/2012
ENGINEER	M.Dille	6/21/2012
MATERIAL	SEE PART DRAWINGS	
WEIGHT	930.504	WEIGHT SHOWN FOR REF ONLY
SCALE 1:12	SIZE B (17 x 11)	

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TITLE

ASSEMBLY GEAR REDUCER, TWS, 4.6:1, SMALL

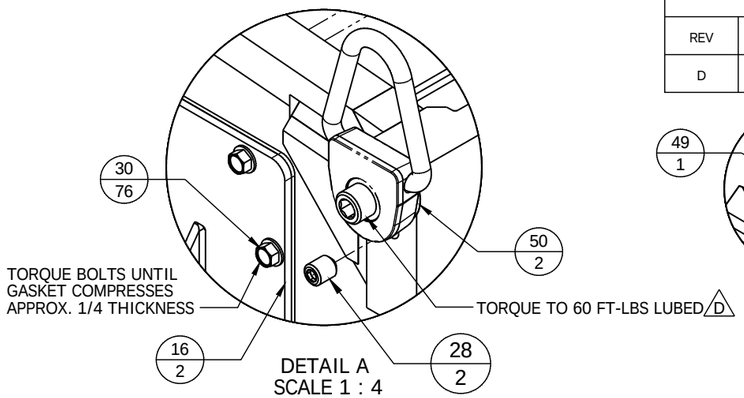
SHEET	DWG NO.	REV.
2 OF 2	1A103336	A

1A103336

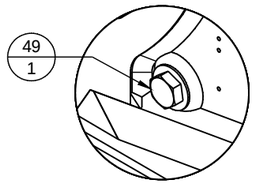
FLAG NOTES:

1. ◇ DENOTES CONNECTING ENDS OF LUBE HOSES
2. INSTALL WRIST PIN BEARING (3P100089) AS SHOWN WITH CENTERLINE STRADDLING CONN ROD TUBE
3. INSTALL OUTER CROSSHEADS WITH RETAINERS FACING OUTBOARD. INSTALL INNER CROSSHEAD WITH RETAINER FACING OPPOSITE GEARBOX
4. TACH DRIVE PARTIALGEAR ASSEMBLY PROCEDURE:
   1. HEAT GEAR 4P100099 TO 250°.
   2. SHRINK FIT 4P100099 TO 4P100094.
   3. INSTALL P10455 TO SECURE 4P100094 TO CRANKSHAFT.
   4. ATTACH GASKET 4P100101 TO COVER 4P100093 WITH BARGE ALL PURPOSE CONTACT CEMENT OR EQUIVALENT.
   5. APPLY BLUE LOCTITE #242 TO THE FEMALE THREADS OF THE CRANKSHAFT AND TORQUE AS SPECIFIED.
5. USE SHIMS AS NECESSARY TO MAINTAIN RETAINER TO BEARING RACE CONTACT
6. SHIM CROSSHEAD GUIDES TO ACHIEVE DIAMETER SHOWN

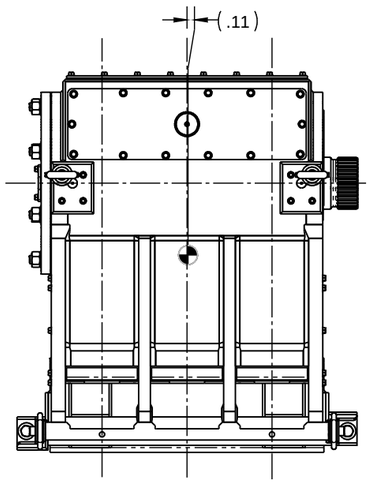
REVISIONS (SEE PREVIOUS REVISIONS FOR APPROVAL HISTORY)				
REV	DESCRIPTION	DATE	EC NUMBER:	PROCESSED BY:
D	ADDED P10455, 4P100094 AND 4P100099 TO BOM. ADDED FLAG NOTE 4 AND ADJUSTED NUMBERING OF FLAG NOTES 5 THRU 7. ADDED TORQUE VALUE NOTE TO LIFTING EYES. REMOVED FLAG NOTE 7.	12/28/2012	7981	J.MARQUEZ

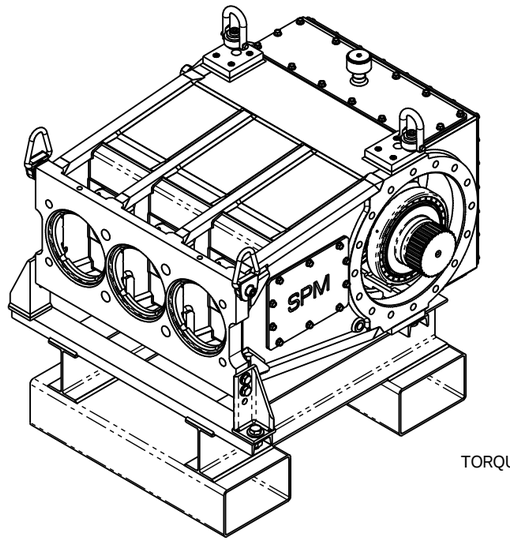


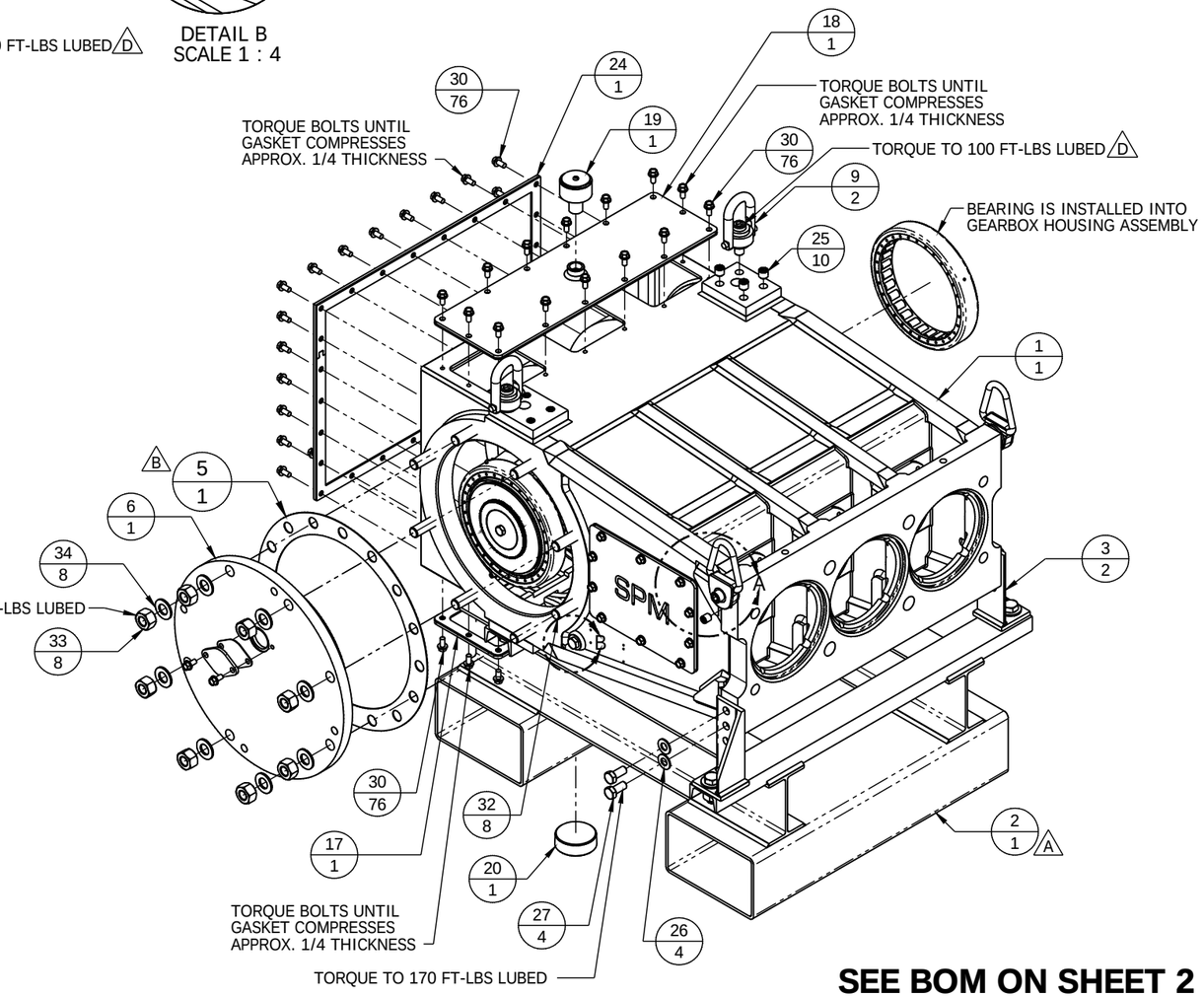
DETAIL A
SCALE 1 : 4

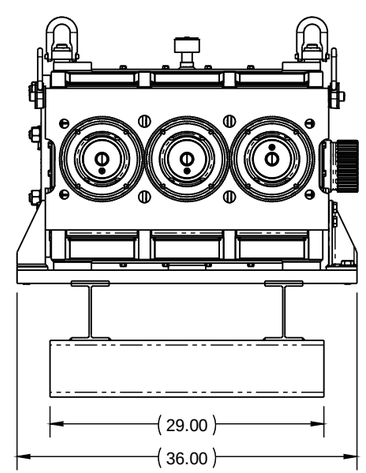


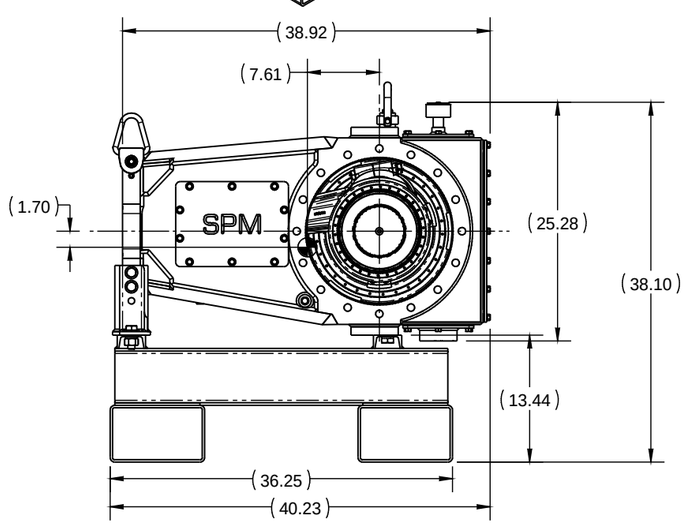
DETAIL B
SCALE 1 : 4











SEE BOM ON SHEET 2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1 .XX±.01 .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"
.003 PER INCH
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ← ITEM # XX ← QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	D.Arnoldy	03/01/2012
CHECKED	D.Arnoldy	01/02/2013
APPROVED	M.Dille	1/3/2013
MATERIAL	SEE PART DRAWINGS	
WEIGHT	2377.464	WEIGHT SHOWN FOR REF ONLY
SCALE	1:16	SIZE B (17 x 11)

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TITLE

SUBASSEMBLY
TWS600S POWER END, STYLE IV
NO GEARBOX, LH DRIVE

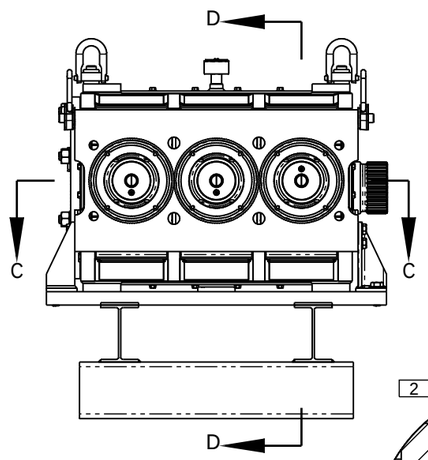
SHEET	DWG NO.	REV.
1 OF 3	2A117260L	D

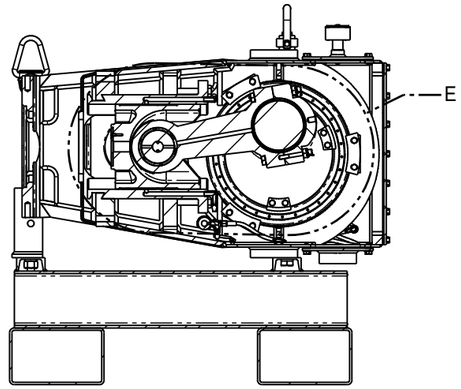
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2A117260L

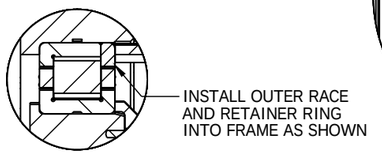
Thursday, January 03, 2013 10:47:08 AM

ITEM NO.	QTY. REQD	PART NUMBER	NOMENCLATURE OR DESCRIPTION	WT (REF ONLY)
			PARTS LIST	
1	1	2P117259	MACHINING/PWR FRAME/TWS600S/STYLE IV	1054.590
2	1	2P119650	WELDMENT, SKID, SHIPPING, 600S	219.490
3	2	2P118501	WLDMNT/MACH/FOOT/MOUNT/3.25"x3.25"x7.38"	4.462
4	6	2P102975	MACHINING, GUIDE, CROSSHEAD, 12.75" LONG	21.712
5	1	2P120837	MACH, GSKT, HSG, BRG, 19.25OD X 15.38ID	0.245
6	1	2P100077	MACHINING, HOUSING, BEARING,19.25 OD	33.392
7	1	2A117695	ASSSEMBLY, CRANKSHAFT, TRIPLEX, 9" CTRS	476.56
8	6	3P103094	MACHINING, RETAINER, BEARING, MAIN, 1"	0.699
9	2	P116672	LIFTING EYE, SWIVEL, 3/4-10NC, 5000LBS	2.66
10	6	4P100084	SHIM KIT, GEAR	
11	14	P101847	FTG/ELL/90/SMXPM/04X04	0.10
12	4	P101782	FTG/CONN/SMXPM/08X08	0.077
13	3	P111960	FTG/CONN/SMxSF/04x04/ORIFICE- .094	0.089
14	3	P101851	ASSEMBLY, HOSE, LUBE, 26" LONG, .25" DIA	0.332
15	2	P114142	ASSEMBLY, HOSE, LUBE, 18" LONG, .25" DIA	0.268
16	2	2A117882	ASSEMBLY, COVER, SIDE, GSKT, 11.94" X 9"	2.736
17	1	2A117883	ASSEMBLY, COVER, BOTTOM, GSKT, 25.25X7.5	14.401
18	1	2A117884	ASSEMBLY, COVER, TOP, GSKT, 25.25" X 7.5	13.671
19	1	P100066	BREATHER, AIR, 3/4-10 NPT	0.37
20	1	P113705	PLUG/PIPE/SQR SOCKET/3.00 NPT/STEEL	2.48
21	3	P101857	ASSEMBLY, HOSE, LUBE, 12" LONG, .25" DIA	0.220
22	1	P101845	FTG/ELL/90/SMXPM/04X04	0.09
23	1	P100065	ASSEMBLY, HOSE, LUBE, 21" LONG, .25" DIA	0.295
24	1	2A117881	ASSEMBLY, COVER, REAR, GSKT, 25.5"x19.25	12.203
25	10	P33186	SCRW/SHSS/.75-10UNC X .75	0.078
26	4	P30307	WSHR/FLT/0.63/HRDND	0.027
27	4	P10454	SCRW/HHCS/ .63-11UNC X 1.38/GR8	0.1885
28	2	P33576	SCRW/SHSS/ .63-11NF X .75/FLAT	0.057
29	1	P10455	SCRW/HHCS/ .50-13UNC X 1.25/B7	0.1118
30	76	P111490	SCRW/FLNG HD/.38-16 x .75/TFLN COAT	0.053
31	12	P111513	SCRW/HHCS/ .38-16UNC X .88	0.0450
32	8	P14878	STUD/ .88-9UNC X 3.00/GR B7	0.5089
33	8	P14881	NUT/HEX/7/8-9UNC/HVY	0.318
34	8	P14893	WSHR/FLT/0.88	0.065
35	12	P111698	SCRW/HHCS/ .63~11UNC X 4.00LG/GR8	0.4232
36	4	P11037	WSHR/LCK/3/4	0.042
37	2	P11036	SCRW/HHCS/ .75-10UNC X 1.25/GR8	0.3113
38	2	P12845	NUT/HEX/ .75-10UNC/HVY-2H/A194-2H	0.209
39	2	P24004	WSHR/FLT/0.75/HRDND	0.071
40	2	P14902	SCRW/HHCS/ .75-10UNC X 2.00/GR B7	0.3667
41	1	4P100094	MACHINING, ADAPTER, GEAR, TACH, 3.5" OD	0.971
42	1	4P100099	MACHINING, GEAR, TACH, DRIVE, 120 TEETH	0.702
43	3	3P100089	MACHINING, BEARING, CROSSHEAD, WRIST PIN	4.080
44	3	2P100108	BRG/ROD/CONN/5.595" OD/4" WIDE	3.197
45	3	3A105905	ASSEMBLY, CROSSHEAD, TWS600S	54.537
46	3	P105906	RING, RETAINER, SNAP, 3.56" BORE	0.074
47	3	1P102967	ASSEMBLY, CONN ROD, TWS600S	44.321
48	3	2P105902	MACHINING, WRIST PIN, SHORT STYLE	14.963
49	1	P14886	PLUG/PIPE/SQR HD/ .50-14NPT/HIPRESS	0.17
50	2	P33530	EYE/LIFTING/SIDE PULL/.625-11/4000 LBS	2.17
51	1	4P100093	MACH, CVR, TACH DRIVE	0.149
52	1	4P100101	GASKET - TACH DRIVE COVER	0.02



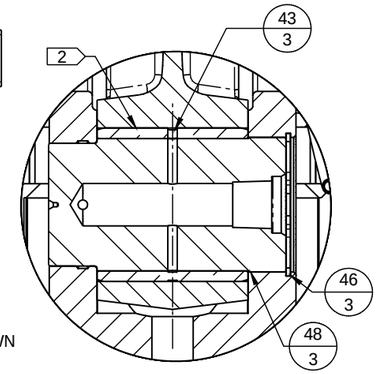


SECTION D-D

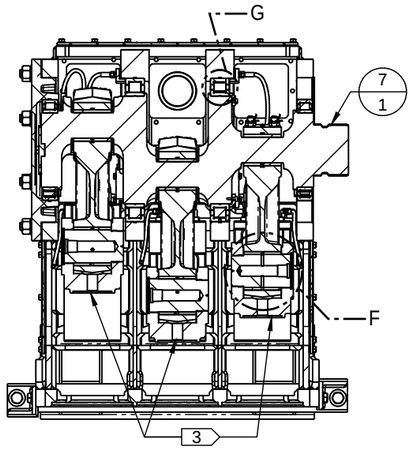


INSTALL OUTER RACE
AND RETAINER RING
INTO FRAME AS SHOWN

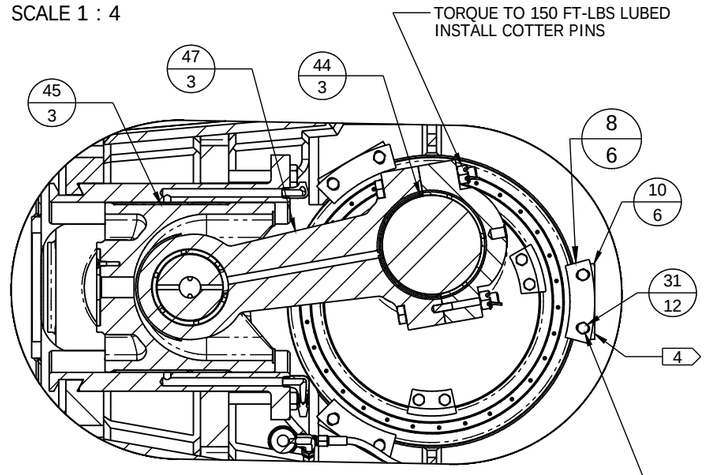
DETAIL G
SCALE 1 : 4



DETAIL F
SCALE 1 : 4



SECTION C-C



DETAIL E
SCALE 1 : 8
2 PLACES

APPLY BLUE LOCTITE #242
TORQUE TO 35 FT-LBS LUBED
APPLY BLUE INSPECTION
LACQUER AFTER TORQUING

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES,
WEIGHTS ARE IN LB. TOLERANCES ARE:

DECIMALS	ANGLES	FRACTIONS
.X±.1	±0.5°	± 1/32"
.XX±.01		
.XXX±.005		

.003 PER INCH

ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.

125 SURFACE ROUGHNESS ALL MACHINED SURFACES

CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ← ITEM # XX ← QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	D.Arnoldy	03/01/2012
CHECKED	D.Arnoldy	01/02/2013
APPROVED	M.Dille	1/3/2013
MATERIAL	SEE PART DRAWINGS	
WEIGHT	2377.464	WEIGHT SHOWN FOR REF ONLY
SCALE 1:16	SIZE B (17 x 11)	

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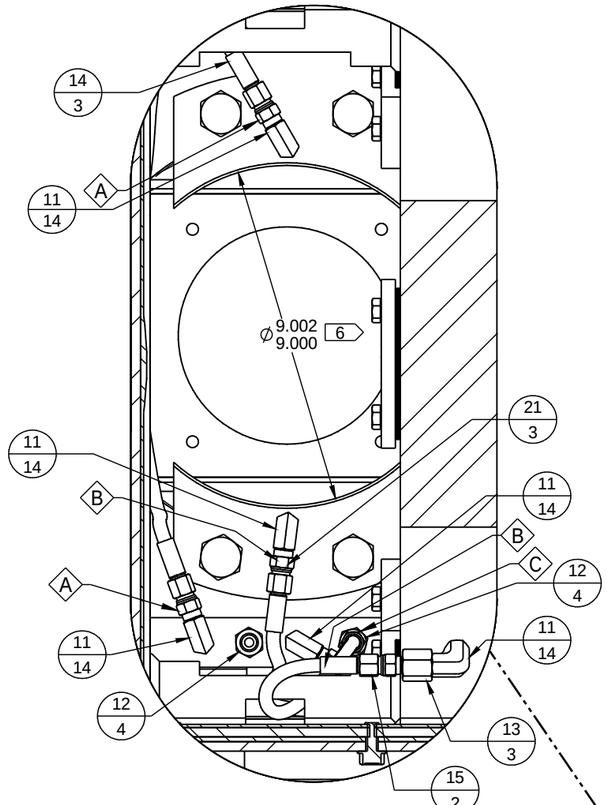
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SUBASSEMBLY
TWS600S POWER END, STYLE IV
NO GEARBOX, LH DRIVE

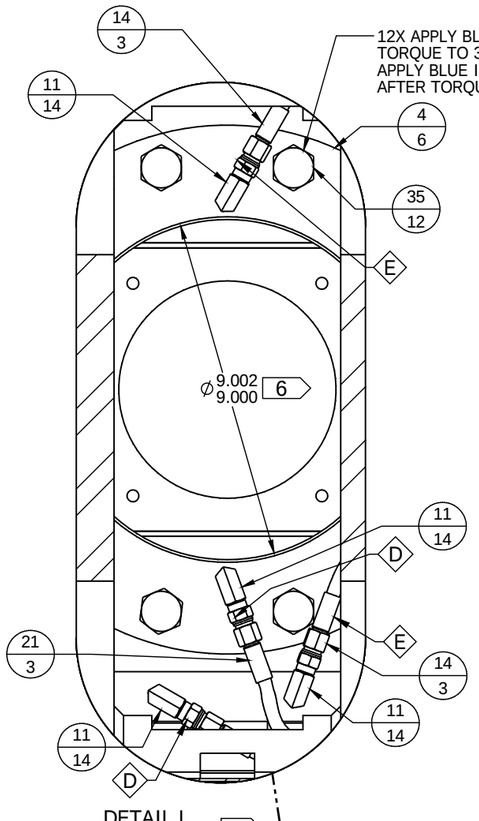
SHEET	DWG NO.	REV.
2 OF 3	2A117260L	D

2A117260L

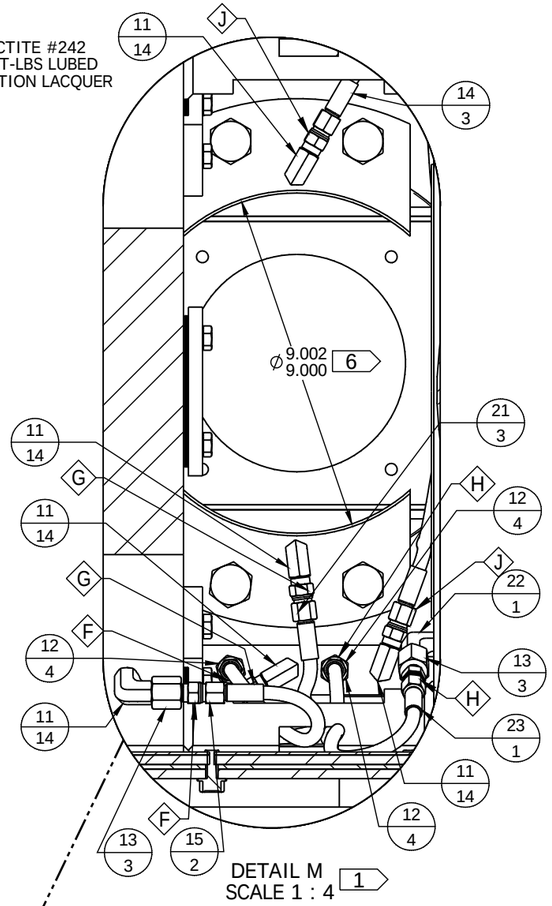
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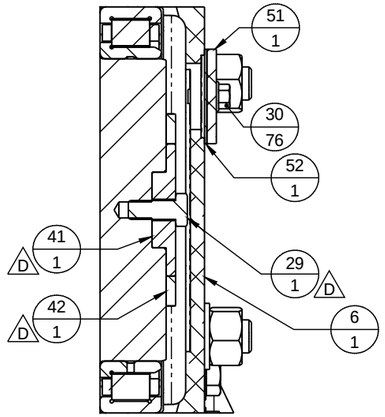
DETAIL K
SCALE 1 : 4 1



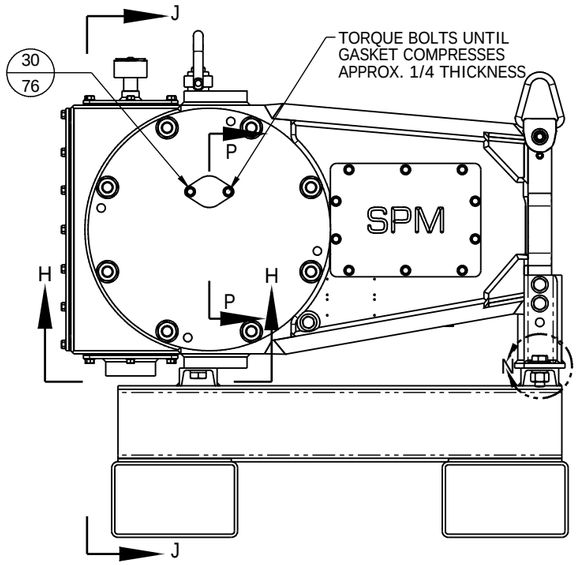
DETAIL L
SCALE 1 : 4 1

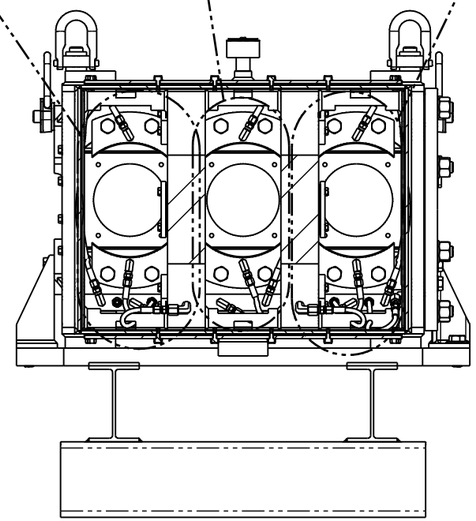


DETAIL M
SCALE 1 : 4 1

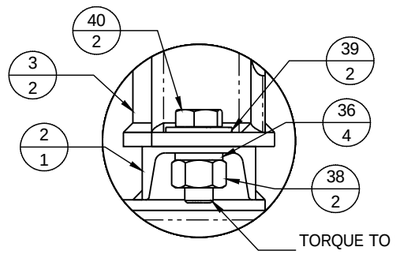


SECTION P-P
SCALE 1 : 4 4

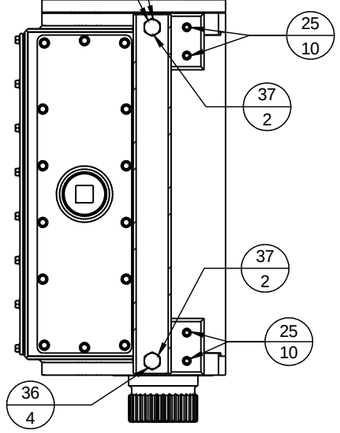




SECTION J-J



DETAIL N
SCALE 1 : 4



SECTION H-H

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1 .XX±.01 .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"
.003 PER INCH
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ← ITEM # XX ← QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	D.Arnoldy	03/01/2012
CHECKED	D.Arnoldy	01/02/2013
APPROVED	M.Dille	1/3/2013
MATERIAL	SEE PART DRAWINGS	
WEIGHT	2377.464	WEIGHT SHOWN FOR REF ONLY
SCALE	1:12	SIZE B (17 x 11)

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TITLE

SUBASSEMBLY
TWS600S POWER END, STYLE IV
NO GEARBOX, LH DRIVE

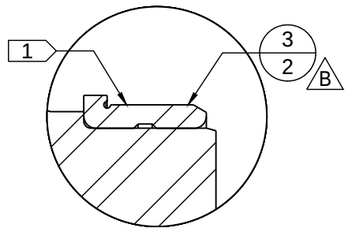
SHEET	DWG NO.	REV.
3 OF 3	2A117260L	D

2A117260L

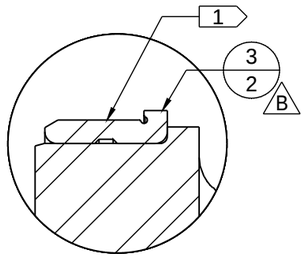
FLAG NOTES:

1. INSTALL BEARING INNER RACES ON CRANKSHAFT AS SHOWN. ENSURE BEARING ASSEMBLIES ARE MATCHED WITH THEIR RESPECTIVE RACES WHEN INSTALLED AT POWER END ASSEMBLY.
2. INSTALL BEARING INNER RACE AND ROLLER ASSEMBLY ON CRANKSHAFT AS SHOWN.
3. WEIGHT OF INSTALLATION CONFIGURATION = 411.36

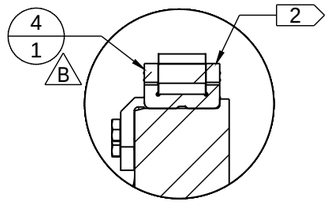
REVISIONS (SEE PREVIOUS REVISIONS FOR APPROVAL HISTORY)			
REV	DESCRIPTION	DATE	APPROVED
B	CORRECT BALLOONS TO MATCH BOM ITEM NUMBER.	10/3/2012	J.MARQUEZ



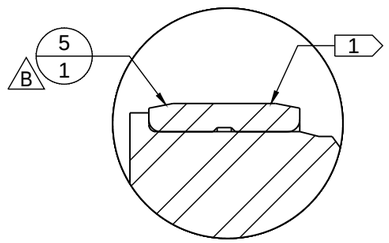
DETAIL E
SCALE 1 : 2



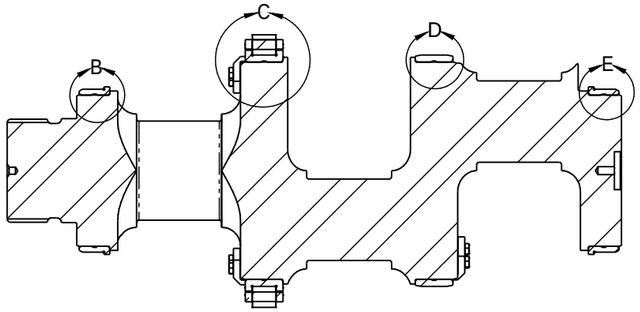
DETAIL B
SCALE 1 : 2



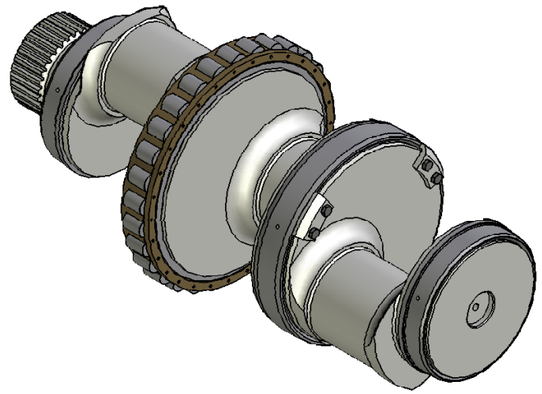
DETAIL C
SCALE 1 : 4

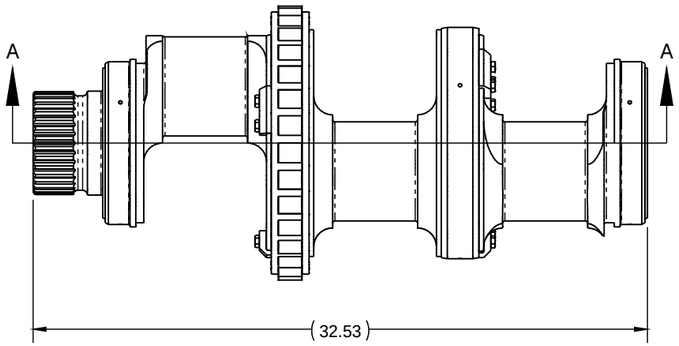


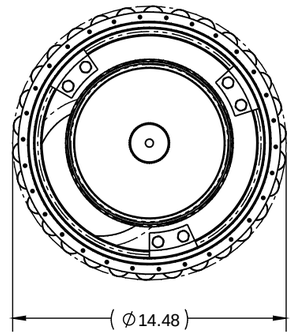
DETAIL D
SCALE 1 : 2

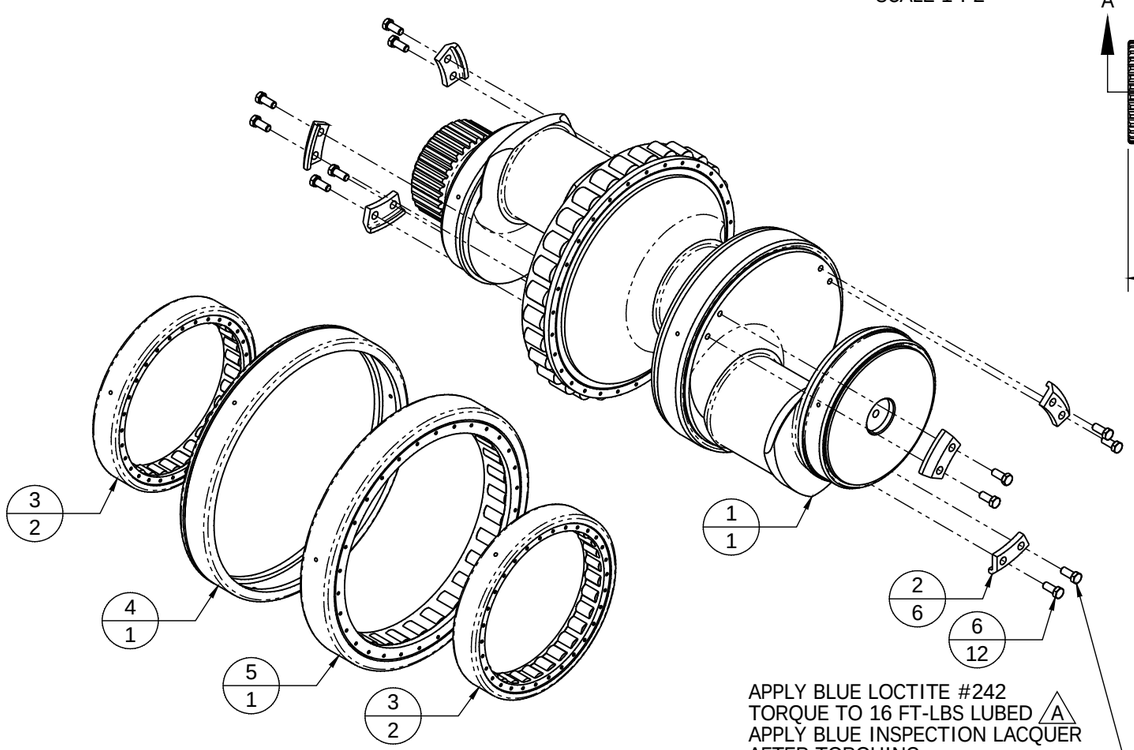


SECTION A-A









ITEM NO.	QTY. REQD	PART NUMBER	NOMENCLATURE OR DESCRIPTION	MATERIAL	WT
6	12	P111513	SCRW/HHCS/ .38-16UNC X .88		0.0450
5	1	P100111	BEARING, STRAIGHT ROLLER, FLOATING		7.49
4	1	P100110	BEARING, STRAIGHT ROLLER, FIXED, 15.25"		25.82
3	2	P100109	BEARING, STRAIGHT ROLLER, FLOATING		3.76
2	6	4P100083	MACHINING, RETAINER, BEARING, MAIN, .63"	SEE PART DRAWINGS	0.281
1	1	1P100080	CRANKSHAFT, TRIPLEX, 6" STROKE, 9" CNTRS	AISI E4140 Steel, 2S115643	368.29

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1 .XX±.01 .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"

.003 PER INCH

ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.

125 SURFACE ROUGHNESS ALL MACHINED SURFACES

CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS: XX ← ITEM # / XX ← QTY
REVISION: X
FLAG: XX
THIRD ANGLE PROJECTION

APPROVALS (CURRENT REVISION)		DATE
PREPARED	D.Arnoldy	02/20/2012
CHECKED		
ENGINEER		6/18/2012
MATERIAL	SEE PART DRAWINGS	
WEIGHT	476.56 [3] WEIGHT SHOWN FOR REF ONLY	
SCALE	1:8	SIZE B (17 x 11)

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TITLE

ASSEMBLY CRANKSHAFT 9" CENTERS, 8" STROKE

SHEET	DWG NO.	REV.
1 OF 1	2A117695	B

Wednesday, October 03, 2012 10:10:05 AM

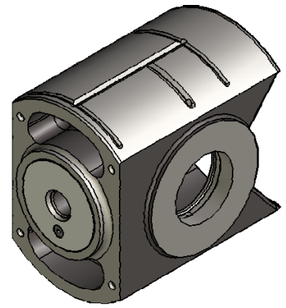
2A117695

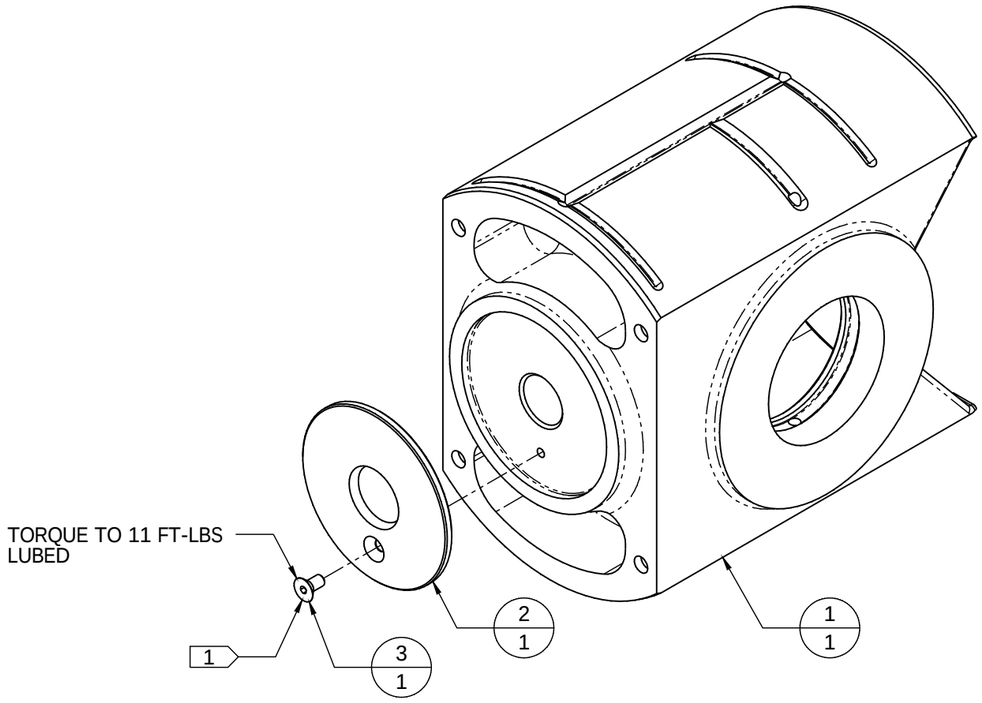
FLAG NOTES:

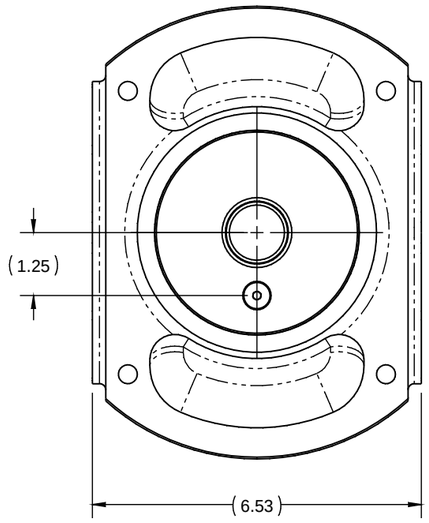
1. FLAT HEAD CAP SCREW TO BE FLUSH WITH OR BELOW SURFACE OF THRUST WASHER (ITEM #2).

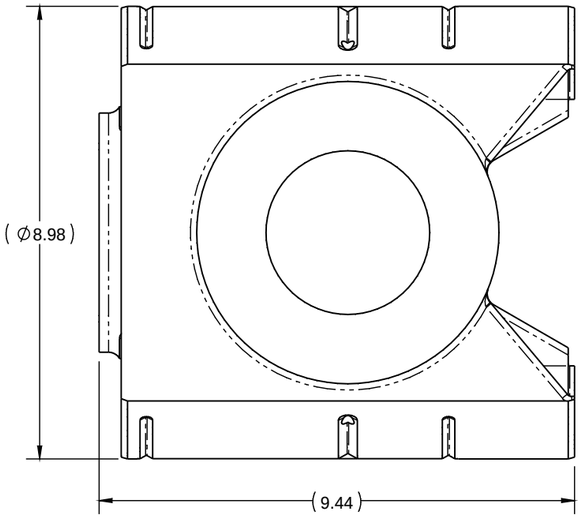
REVISIONS
(SEE PREVIOUS REVISIONS FOR APPROVAL HISTORY)

REV	DESCRIPTION	DATE	APPROVED
A	INITIAL MIGRATION INTO SOLIDWORKS FROM AUTOCAD REV 1. NO OTHER CHANGES.	2/20/2012	E.SNIDER









ITEM NO.	QTY. REQD	PART NUMBER	NOMENCLATURE OR DESCRIPTION	MATERIAL	WT
3	1	P103271	SCRW/FHCS/ .25-20UNC X .50		0.010
2	1	3P104720	MACHINING, WASHER, CROSSHEAD, THRUST	AISI E4140 Steel, 4S18042	0.602
1	1	2P105903	CRSSHD/ WRST PIN STY/ 9"SAD, 3.25" P	SEE PART DRAWING	54.14

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, WEIGHTS ARE IN LB. TOLERANCES ARE:
DECIMALS .X±.1 .XX±.01 .XXX±.005
ANGLES ±0.5°
FRACTIONS ± 1/32"
.003 PER INCH
ALL DIAMETERS CONCENTRIC TO .010 UNLESS OTHERWISE NOTED.
125 SURFACE ROUGHNESS ALL MACHINED SURFACES
CAD GENERATED DRAWING DO NOT MANUALLY SCALE OR UPDATE.

BALLOONS	REVISION	FLAG	THIRD ANGLE PROJECTION
XX ITEM # XX QTY	X	XX	

APPROVALS (CURRENT REVISION)		DATE
PREPARED	E.Snider	02/20/2012
CHECKED	J.Marquez	03/27/2012
ENGINEER	M.Dille	4/16/2012
MATERIAL	SEE PART DRAWINGS	
WEIGHT	54.751	WEIGHT SHOWN FOR REF ONLY
SCALE	1:3	SIZE B (17 x 11)

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TITLE

CROSSHEAD ASSEMBLY TWS600S

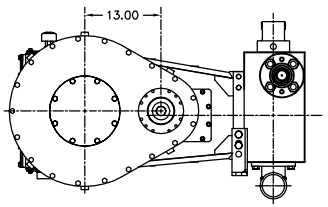
SHEET	DWG NO.	REV.
1 OF 1	3A105905	A

Monday, April 16, 2012 1:10:53 PM

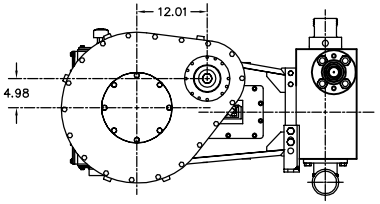
3A105905

NOTES:

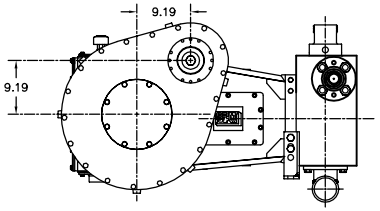
1. ALL POSITIONS USE 600 SHORT GEAR BOX **1A103336** EXCEPT POSITION #17 WHICH REQUIRES 600 STANDARD GEAR BOX **1A100128**.



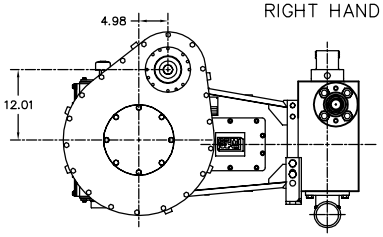
RIGHT HAND 1



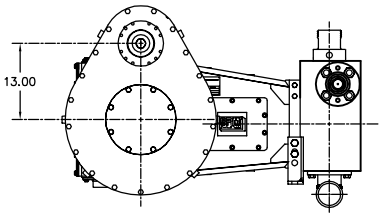
RIGHT HAND 2



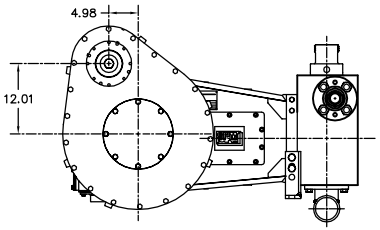
RIGHT HAND 3



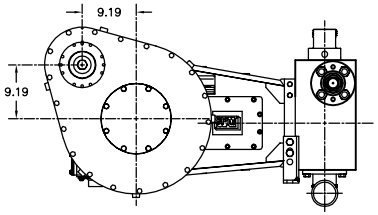
RIGHT HAND 4



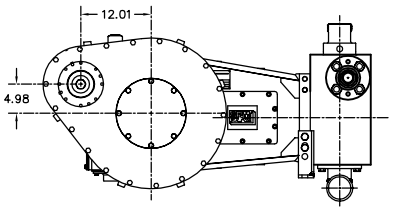
RIGHT HAND 5



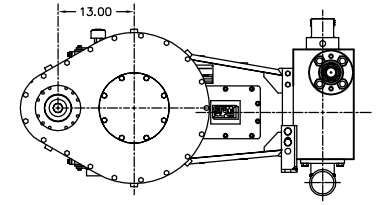
RIGHT HAND 6



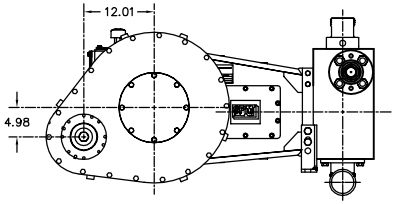
RIGHT HAND 7



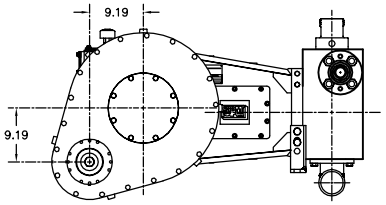
RIGHT HAND 8



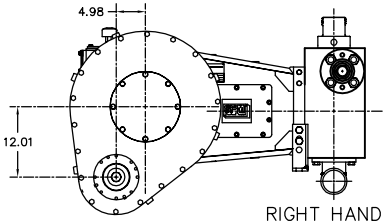
RIGHT HAND 9



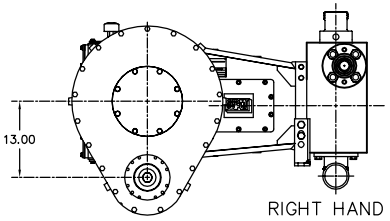
RIGHT HAND 10



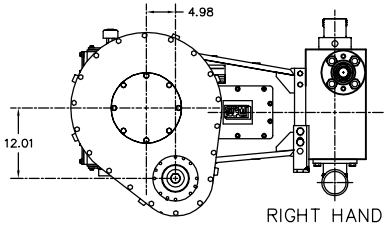
RIGHT HAND 11



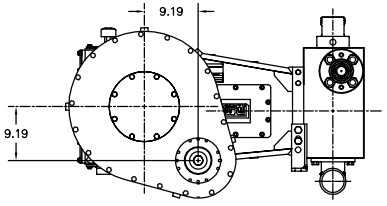
RIGHT HAND 12



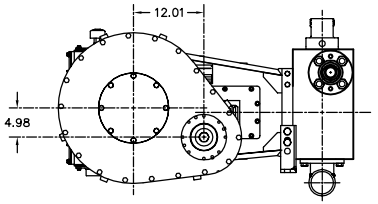
RIGHT HAND 13



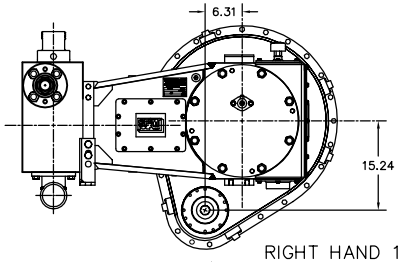
RIGHT HAND 14



RIGHT HAND 15



RIGHT HAND 16



RIGHT HAND 17
(600 STD GEAR BOX ONLY)

600 SHORT PUMP RIGHT HAND

ITEM	QTY	PART NO	DESCRIPTION

DO NOT SCALE DRAWING

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

SPM

7601 WYATT DRIVE
FT WORTH TEXAS 76108-2587

linear tol	fractional	±1/32
	.XX	±.01
	.XXX	±.005
Angular tol		±.30'

All diameters concentric to .010 unless otherwise noted

Scale: .09:1
Date: 3/20/98
Drawn by: DPH
Approved: MDM
Description:

GEAR BOX INSTALLATION POSITIONS
600 SHORT PUMP

SHEET 1 OF 2

125 surface roughness all machined surfaces

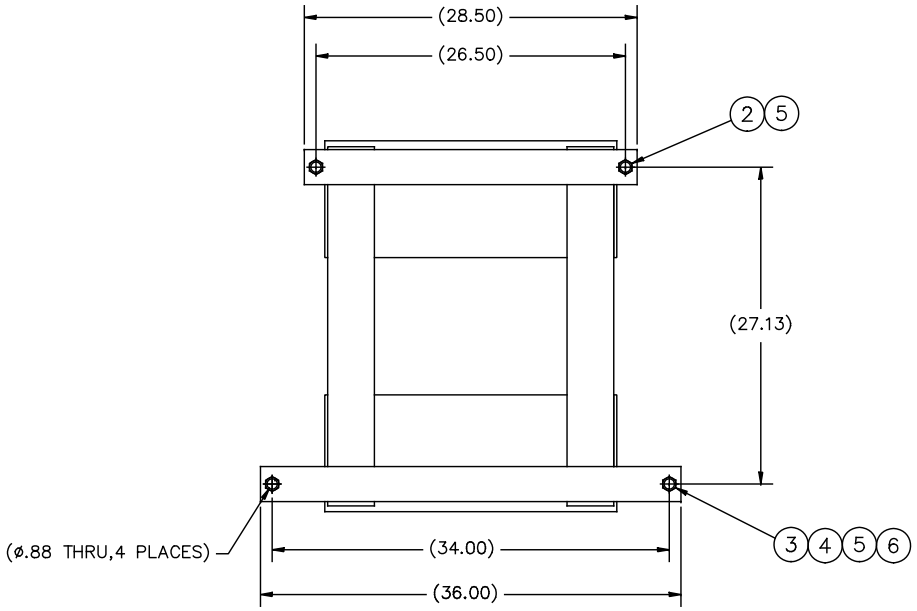
Material:

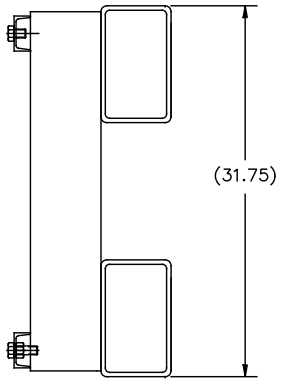
Drawing No: 3L106032

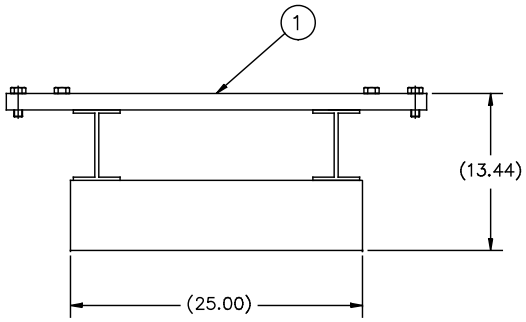
REV.	DESCRIPTION	BY	Date

NOTES:

1. HARDWARE SHOWN TO REPRESENT FASTENER LOCATION BUT, INSTALLED ON POWER END ASSEMBLY.







	ITEM	QTY	PART NO	DESCRIPTION
R2 1	6	2	P24004	3/4" WASHER FLAT
R2 1	5	4	P11037	3/4" WASHER LOCK
R2 1	4	2	P12845	3/4"~10UNC HEAVY HEX NUT
R2 1	3	2	P14902	3/4"~10UNC HHCS x 2.00" LG
R2 1	2	2	P11036	3/4"~10UNC HHCS x 1.25" LG
	1	1	2P111542	SKID WELDMENT

REV.	DESCRIPTION	BY	Date
R2	SEE EC #7133	JRP	5/27/2011
R1	SEE ECN #5552	JLC	6/30/10

DO NOT SCALE DRAWING

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES

linear tol		
	fractional	±1/32
	.XX	±.01
	.XXX	±.005
Angular tol		±30'

All diameters concentric to .010 unless otherwise noted

125 surface roughness all machined surfaces

WEIR SPM

7601 WYATT DRIVE
FT WORTH TEXAS 76108-2587 △

Scale: 1:8 | Weight: | Drawn by: JLC | Date: 6/30/10 | Approved: MD

Description:

SHIPPING SKID ASSY
TWS600S

Material:

Drawing No: 2A113886