

- NOTES:
- TO CONFORM TO NFPA 1901, APPARATUS MANUFACTURER MUST INSTALL SHIFT AND THROTTLE CONTROL INDICATOR LIGHTS ON THE DRIVING COMPARTMENT AND OPERATOR'S PANEL AS PER INDIVIDUAL NFPA REQUIREMENTS. CONSULT LATEST VERSION OF NFPA STANDARD FOR DETAILS.
 - ALL MOUNTING SCREWS TO BE MINIMUM GRADE 5, UNLESS OTHERWISE NOTED.
 - ALL FASTENERS SHALL BE INSTALLED WITH A THREAD LOCKING ANAEROBIC ADHESIVE/SEALANT: LOCKTITE #243 HIGH TEMPERATURE THREAD LOCKER OR EQUIVALENT.
 - PUMP VOLUTE IS FURNISHED IN VERTICAL POSITION STANDARD. VOLUTE CAN ALSO BE FACTORY CONFIGURED FOR LEFT, RIGHT, AND INVERTED DISCHARGE. CUSTOMER CAN ROTATE VOLUTE IN 30° INCREMENTS. THIS MAY REQUIRE RELOCATING COOLING LINES, DRAINS, PRIMING TAP, AND REPLACING VOLUTE GASKET. SEE SHEET 2 FOR VOLUTE ORIENTATIONS.
 - U-TUBE COOLER IS STANDARD ON MOST MODELS. THE ALTERNATE COOLER MUST BE USED WITH GEARBOX AND VOLUTE POSITIONS AS SPECIFIED IN TABLE "D".
 - APPROXIMATE OIL CAPACITY: 1-1/3 QUARTS [1.25L]. CAPACITY IS FOR REFERENCE ONLY; ALWAYS FILL TO BOTTOM OF OIL LEVEL PLUG WITH SAE 50, 80W-90, 75W-80, OR ISO 68 SYNTHETIC.
 - MODEL WEIGHT: 275 LBS [125 KG].
 - REFER TO PL1082 FOR PUMP ASSEMBLY.

WARNING

ALL WIRING AND INSTALLATION DETAILS MUST CONFORM TO ALL APPLICABLE NFPA AND SAW STANDARDS. VERIFY OPERATION OF PUMP ENGAGED INDICATOR LIGHTS AND INTERLOCKS BEFORE PLACING APPARATUS IN SERVICE. EXCEEDING THESE LIMITS OR FAILURE TO FOLLOW THE RECOMMENDATIONS OUTLINED ON THIS DRAWING COULD DAMAGE THE PUMP AND RESULT IN PERSONAL INJURY:

MAX HYDRODYNAMIC PRESSURE = 400 PSIG (2.76 MPA)
MAX HYDROSTATIC PRESSURE (IRON) = 600 PSIG (4.14 MPA)
MAX HYDROSTATIC PRESSURE (BRONZE) = 500 PSIG (3.45 MPA)

DRIVE LINE RECOMMENDATIONS

APPARATUS BUILDER SUPPLIED DRIVELINES SHALL BE OF APPROPRIATE SIZE TO MATCH THE CHASSIS AND PUMP REQUIREMENTS WITH INDIVIDUAL JOINT CANCELLATION AND PHASING BEFORE AND AFTER THE PUMP. DRIVESHAFT BALANCE (INCLUDING YOKES) SHALL NOT EXCEED THE RECOMMENDED LIMIT OF EITHER THE DRIVESHAFT OR CHASSIS TRANSMISSION MANUFACTURER'S SPECIFICATIONS. DRIVESHAFT FULL RANGE OPERATING SPEEDS SHALL NOT EXCEED 42% OF ITS CRITICAL SPEED. DRIVELINE SHALL BE INSTALLED PER SAE UNIVERSAL JOINT AND DRIVESHAFT DESIGN MANUAL, PUBLICATION # AE-7. ALL DRIVELINES MUST CONFORM TO HALE BULLETIN SB90. U-JOINT ANGLES SHOULD BE NO LESS THAN 1°; THE MAXIMUM ALLOWABLE ANGLE AND TUBE DIAMETER SHOULD BE CONFIRMED WITH THE MANUFACTURER OF THE DRIVELINE FOR THE PARTICULAR APPLICATION.

HALE TYPE RSD SERIES PUMP INSTALLATION

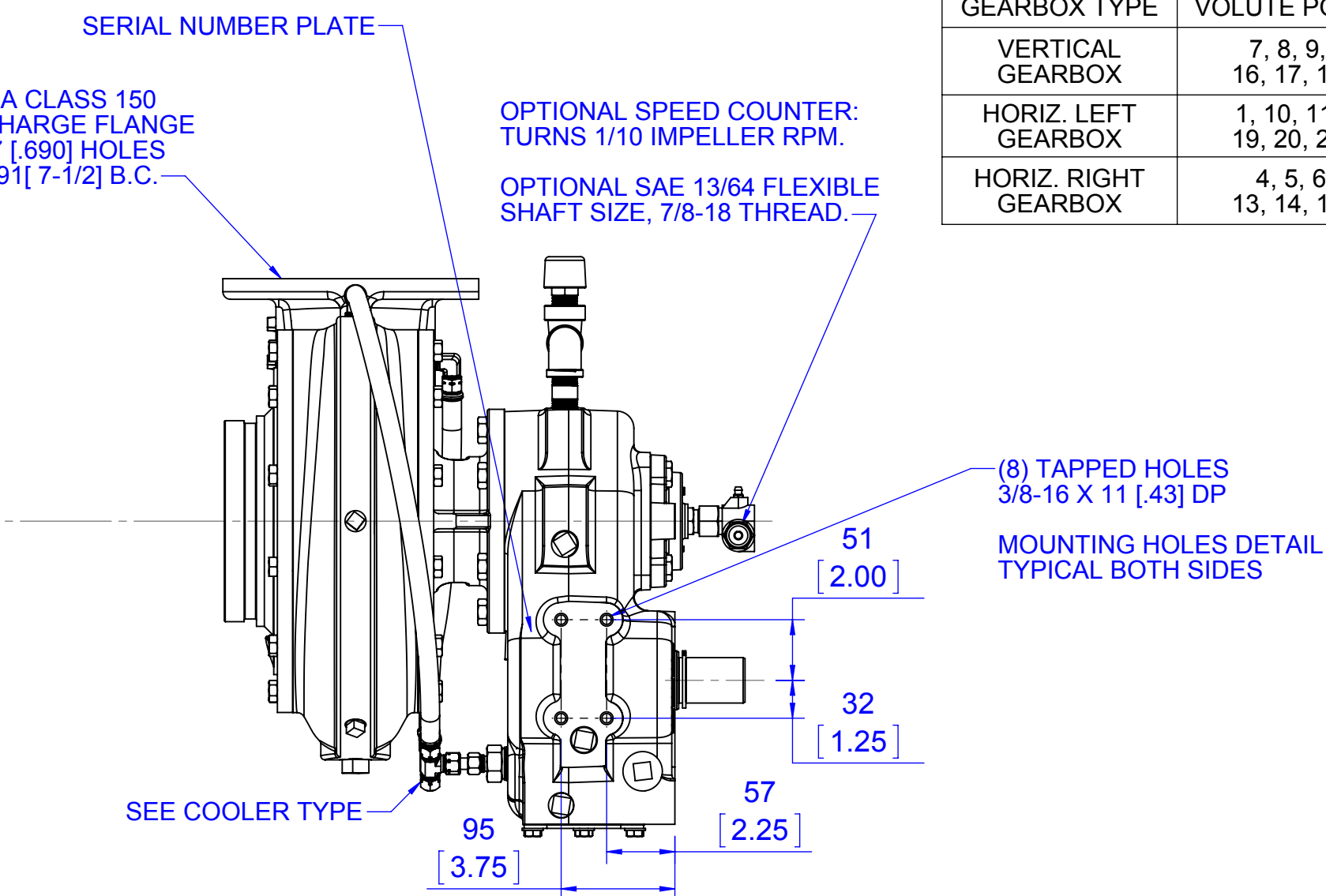
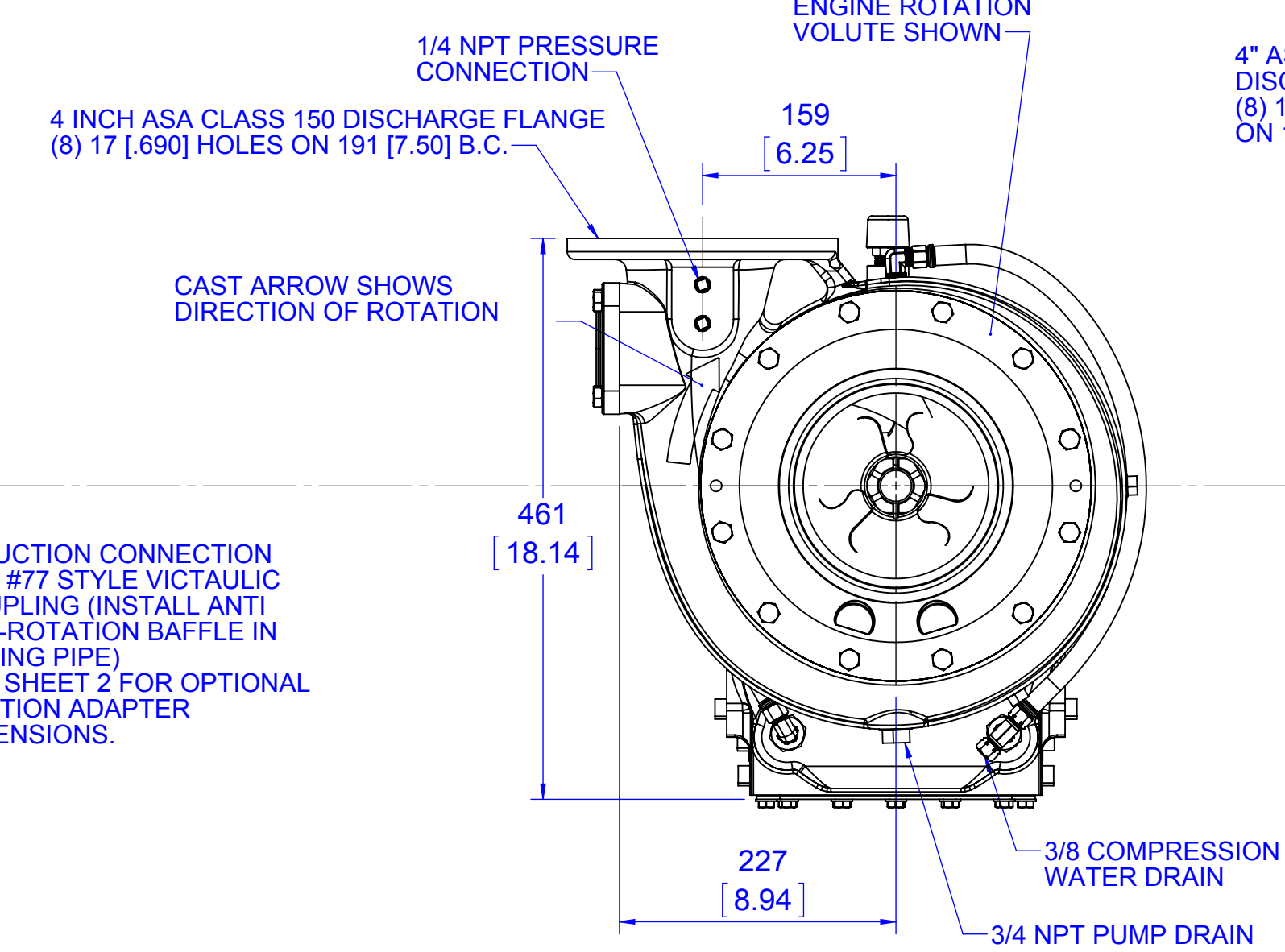
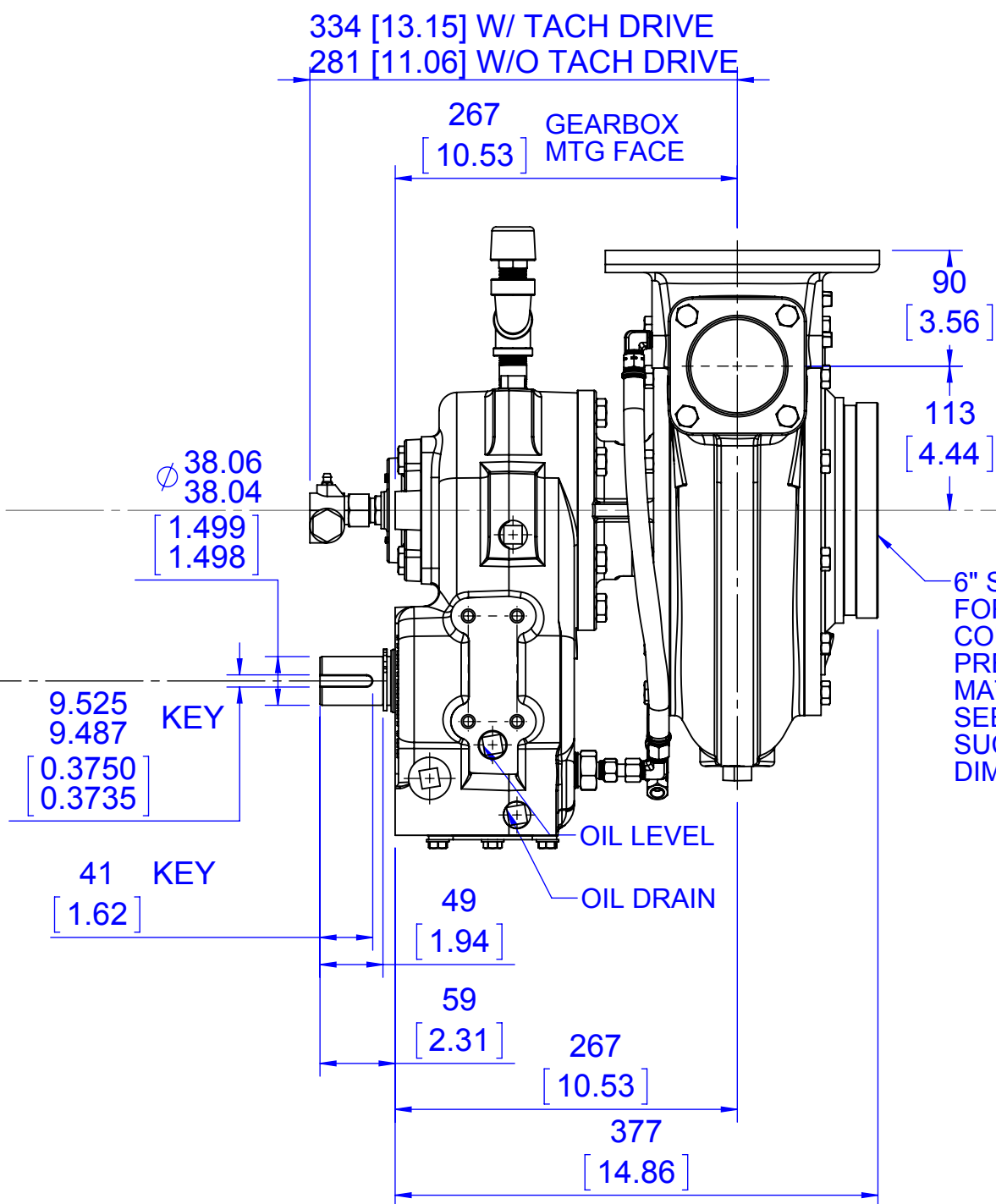
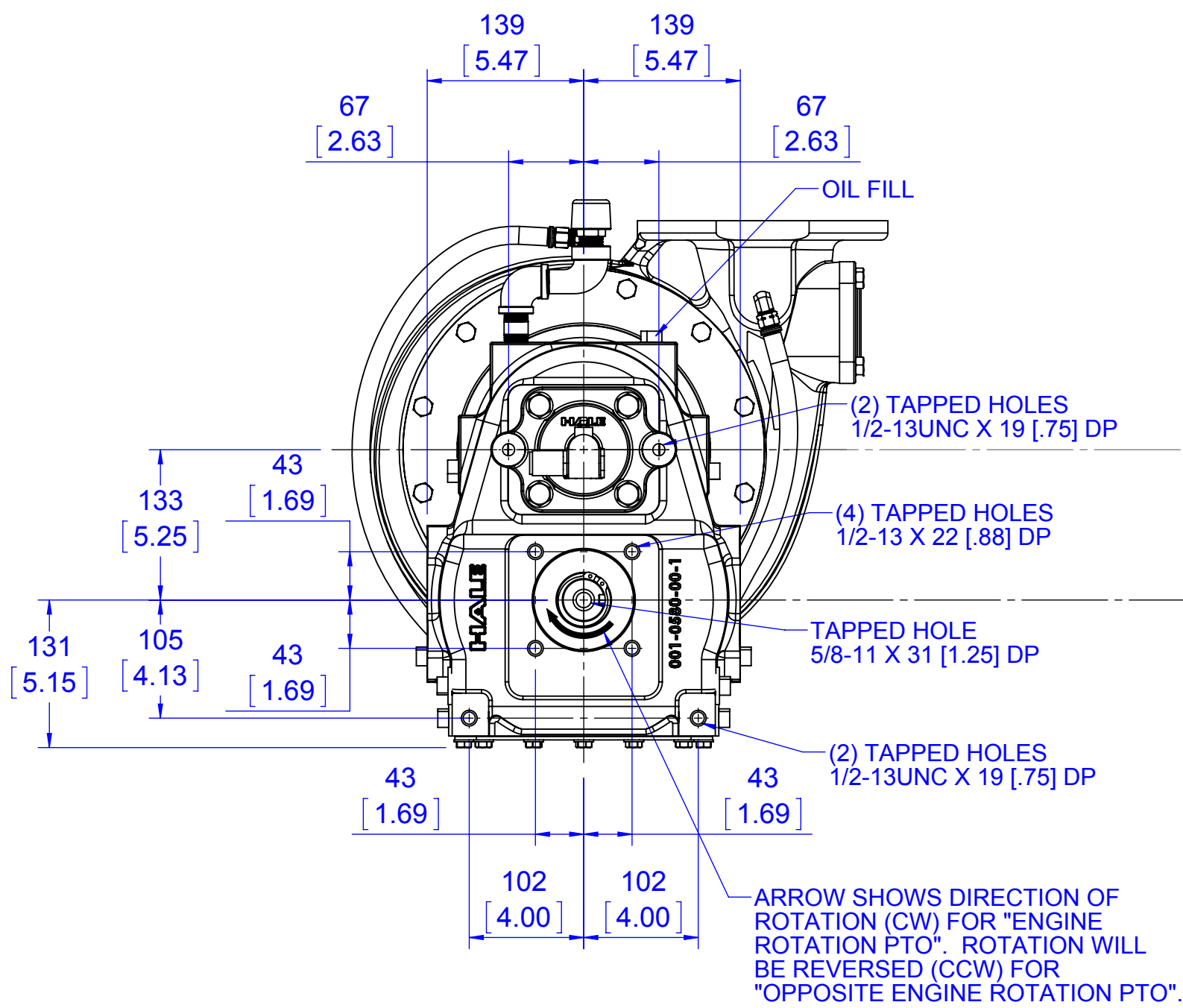
PROJECTION: 

TABLE "A" - "K" PORT FLANGE OPTIONS	
BLANK (STANDARD)	
1-1/4" NPT	
2" NPT	
2-1/2" NPT	
3" NPT	
TRV & TRV-L	
ALLOY OR MAGNESIUM ANODE*	
OPEN PORT (NO FLANGE SUPPLIED)	
* ANODE REQUIRES SPACER. SEE PL1082 FOR PART NUMBER DETAILS.	

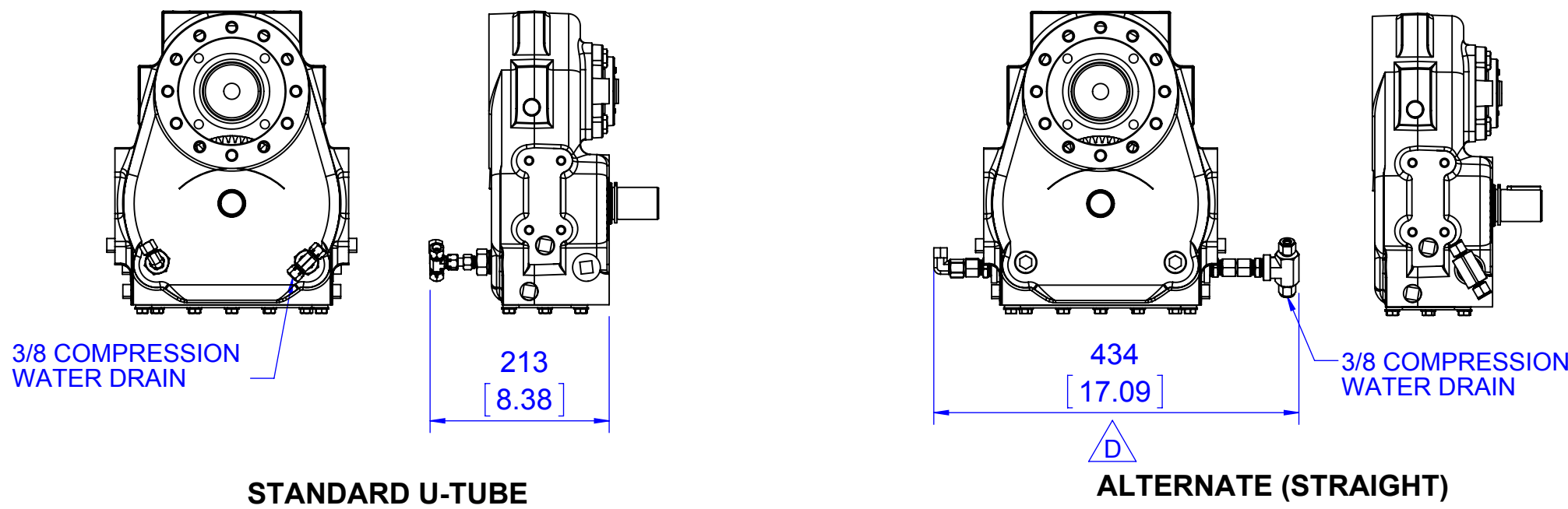
TABLE "B" - HALE TYPE RSD/RSD-GB PUMP MODEL IDENTIFICATION	
THE HALE TYPE RSD/RSD-GB PUMP IS AVAILABLE WITH MULTIPLE DRIVE RATIOS TO ADAPT TO A WIDE VARIETY OF APPLICATIONS (SEE TABLE "C"). THE RATING, RATIO AND DRIVE UNIT TYPE DETERMINE THE MODEL NUMBER. FOR EXAMPLE:	
RSD IDENTIFICATION (GPM)	RSD IDENTIFICATION (L/S)
THE MODEL NUMBER FOR AN RSD RATED AT 1000 GPM WITH A DRIVE RATIO OF 2.16 AND HALE DRIVE UNIT WOULD BE:	THE MODEL NUMBER FOR AN RSD RATED AT 5000 (LPM) WITH A DRIVE RATIO OF 2.16 AND HALE DRIVE UNIT WOULD BE:
PUMP TYPE RSD 100 -21	PUMP TYPE RSD 500 M -21 DRIVE RATIO (2.16 = 21)
RATED CAPACITY - GPM	RATED CAPACITY - LPM
DRIVE RATIO (2.16 = 21)	DENOTES METRIC RATING
BE SURE TO INCLUDE THE MODEL NUMBER AND SERIAL NUMBER WHEN ORDERING PARTS OR REQUESTING INFORMATION. THE MODEL / SERIAL NUMBER PLATE IS LOCATED ON TOP OF GEAR DRIVE AS SHOWN IN DRAWING.	

TABLE "C" - GEAR RATIOS			
PUMP RATIO		DRIVE TYPE	MAXIMUM INPUT RPM
RSD*-12	1.24	PTO	4400
RSD*-14	1.40		3930
RSD*-15	1.59		3560
RSD*-18	1.80		3000
RSD*-20	1.97		2710
RSD*-21	2.16		2550
RSD*-23	2.37		2320
RSDM*-12	1.24	DIRECT ENGINE DRIVE	4400
RSDM*-14	1.40		3930
RSDM*-15	1.59		3560
RSDM*-18	1.80		3000
RSDM*-20	1.97		2710
RSDM*-21	2.16		2550
RSDM*-23	2.37		2320
*RATED CAPACITY - GPM, LPM, OR L/S			
RSD PUMP RATED CAPACITY:			
750, 1000, 1250 AND 1500 GPM @ 150 PSI NFPA 1901 RATED			
3000, 4000, 5000 AND 6000 LPM @ 150 PSI NFPA 1901 RATED			
RSD-GB PUMP RATED CAPACITY:			
80 AND 90 (L/S) @ 1.3 MPA GB6245 RATED			

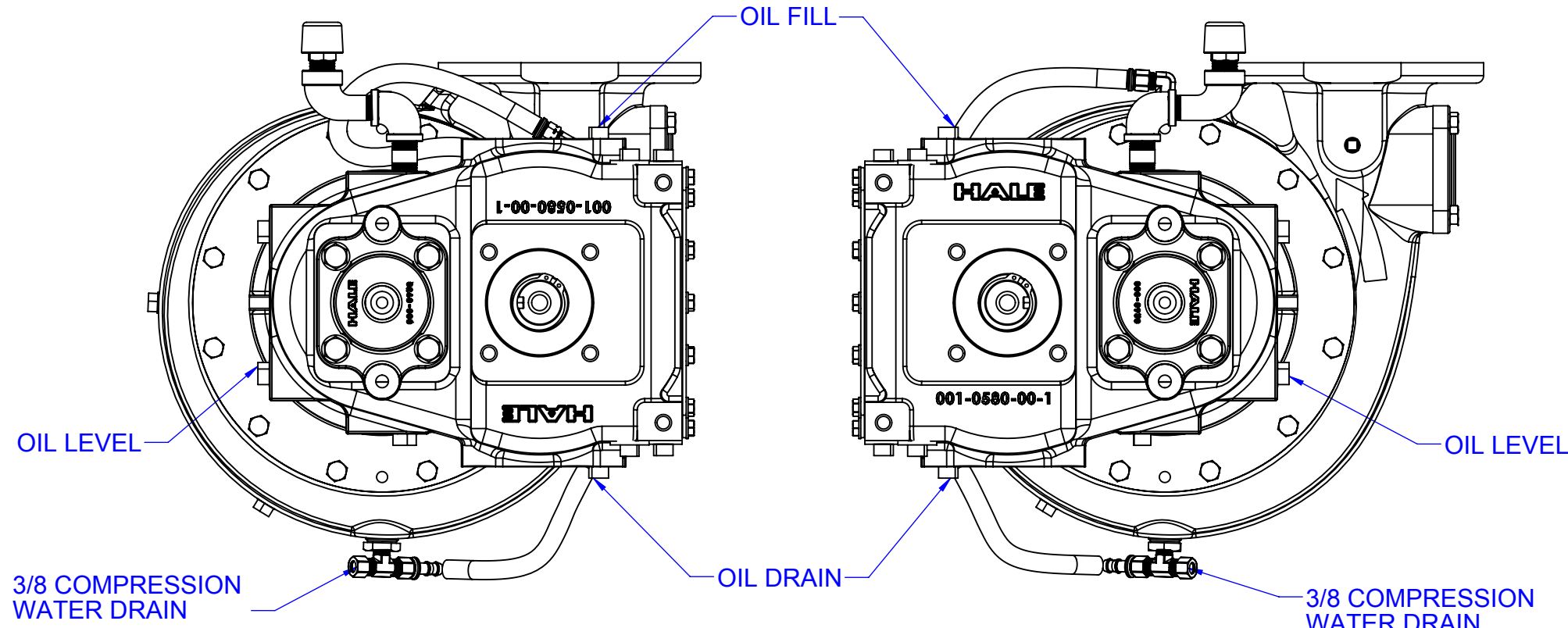
TABLE "D" - ALTERNATE COOLER	
GEARBOX TYPE	VOLUTE POSITION
VERTICAL GEARBOX	7, 8, 9, 10, 16, 17, 18, 19
HORIZ. LEFT GEARBOX	1, 10, 11, 12, 19, 20, 21, 22
HORIZ. RIGHT GEARBOX	4, 5, 6, 7, 13, 14, 15, 16



GEARBOX COOLER TYPE

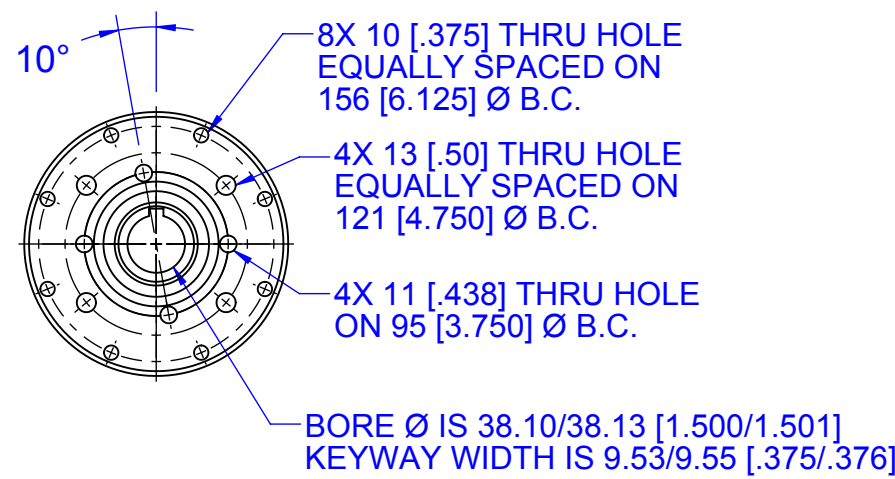


GEARBOX ORIENTATION



DRIVE FLANGE

FLANGE P/N 115-1710-00-0



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS [INCHES ARE FOR REFERENCE, ONLY] TOLERANCE FOR MILLIMETER DIMENSIONS:

X: ±1
X.X: ±0.5
X.XX: ±0.25
X.XXX: ±0.125
ANGLES: ±0.25°
SURFACE TEXTURE IN µm Ra REMOVE ALL SHARP EDGES, 0.25MAX

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PROJECT	

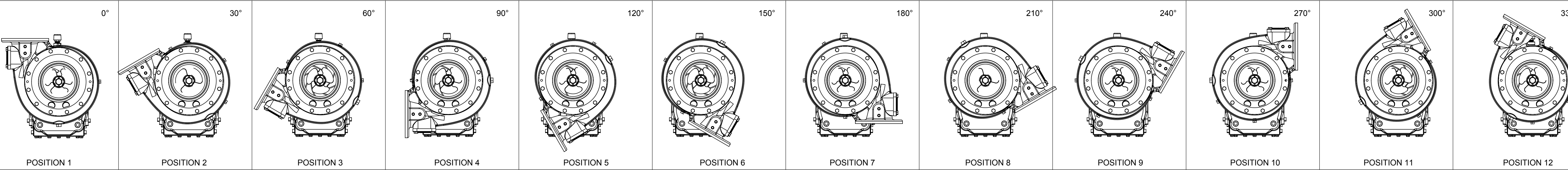
HALE GODIVA class1	
TITLE	
HALE TYPE RSD SERIES PUMP	
DRAWN	JRP
APPROVED	JRH
DATE	20JAN2009
SIZE	D
SCALE	1:5
DRAWING NUMBER	PL1091
REV	D
SHEET	1 OF 2

REVISIONS					
ECN	REV.	ZONE	CHANGED FROM	BY	DATE
CFL3297	C	--	REDRAWN IN SOLIDWORKS; REDRAWN ON FSG BORDER; ADDED INDUCER TO ALL RATINGS	JRH	18SEP2014
CFL3660	D	L4	UPDATED ALTERNATE COOLER MODEL LENGTH TO 434 [17.09]	KTN	01MAR2016

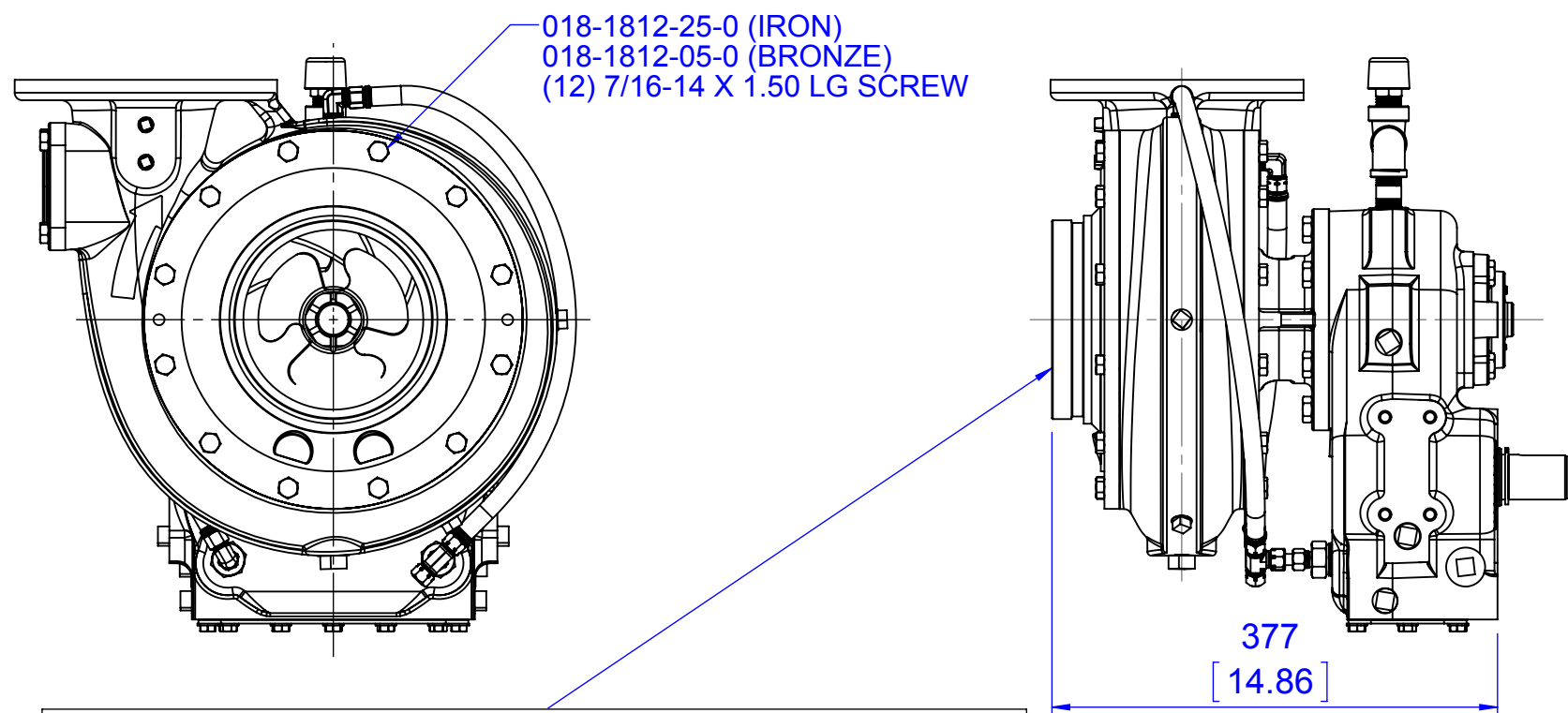
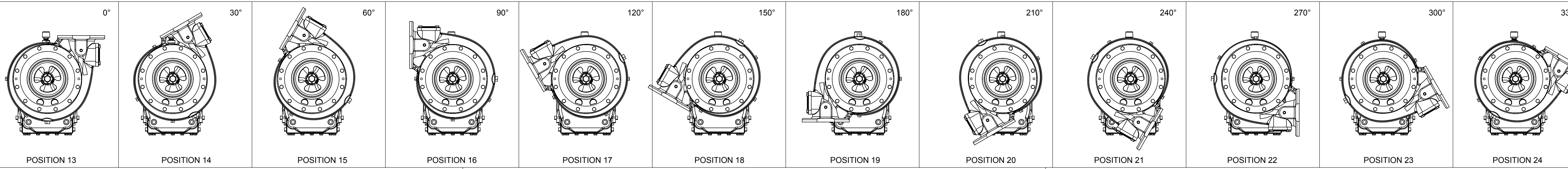
HALE TYPE RSD SERIES PUMP INSTALLATION
SUCTION OPTIONS AND PUMP ORIENTATIONS

PROJECTION: 

ENGINE ROTATION VOLUTE POSITION

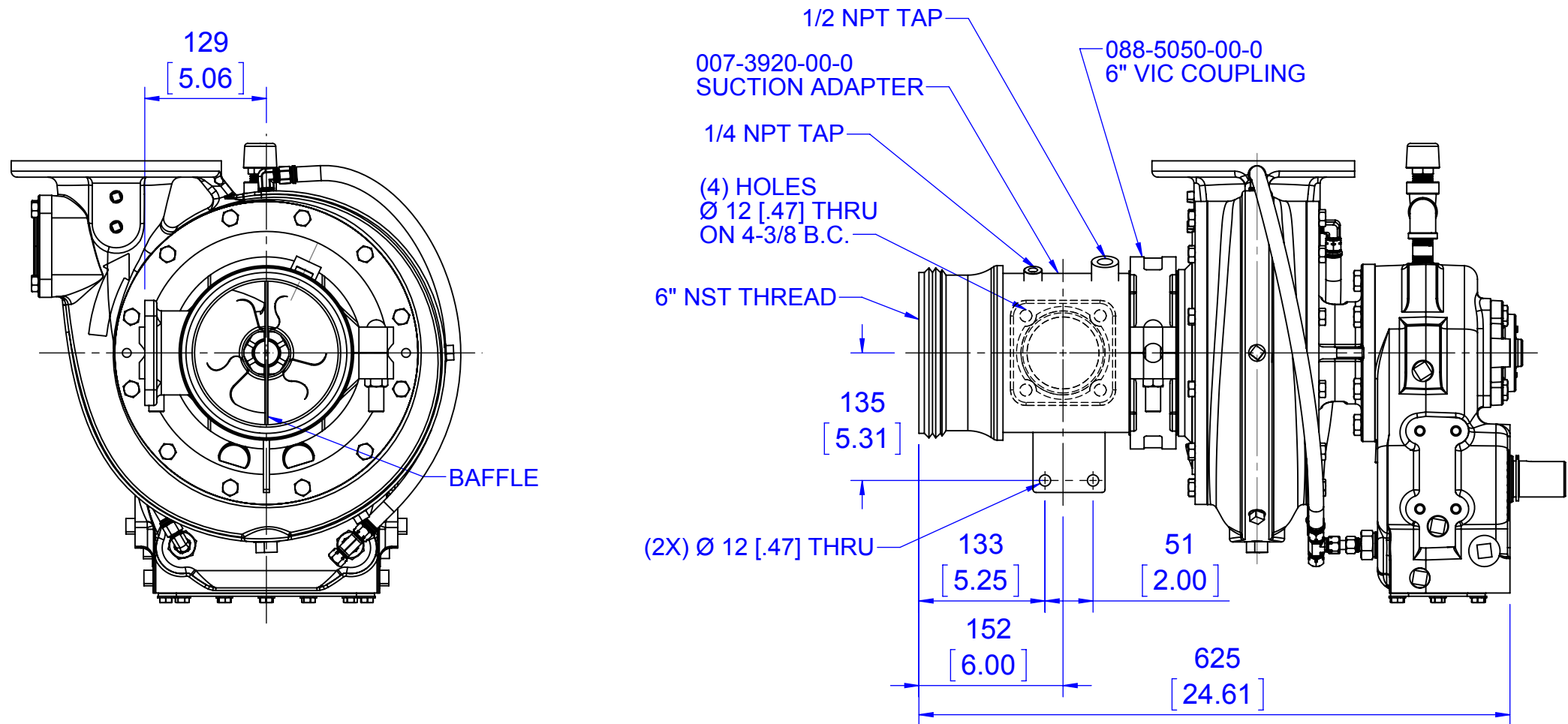


OPPOSITE ENGINE ROTATION VOLUTE POSITION

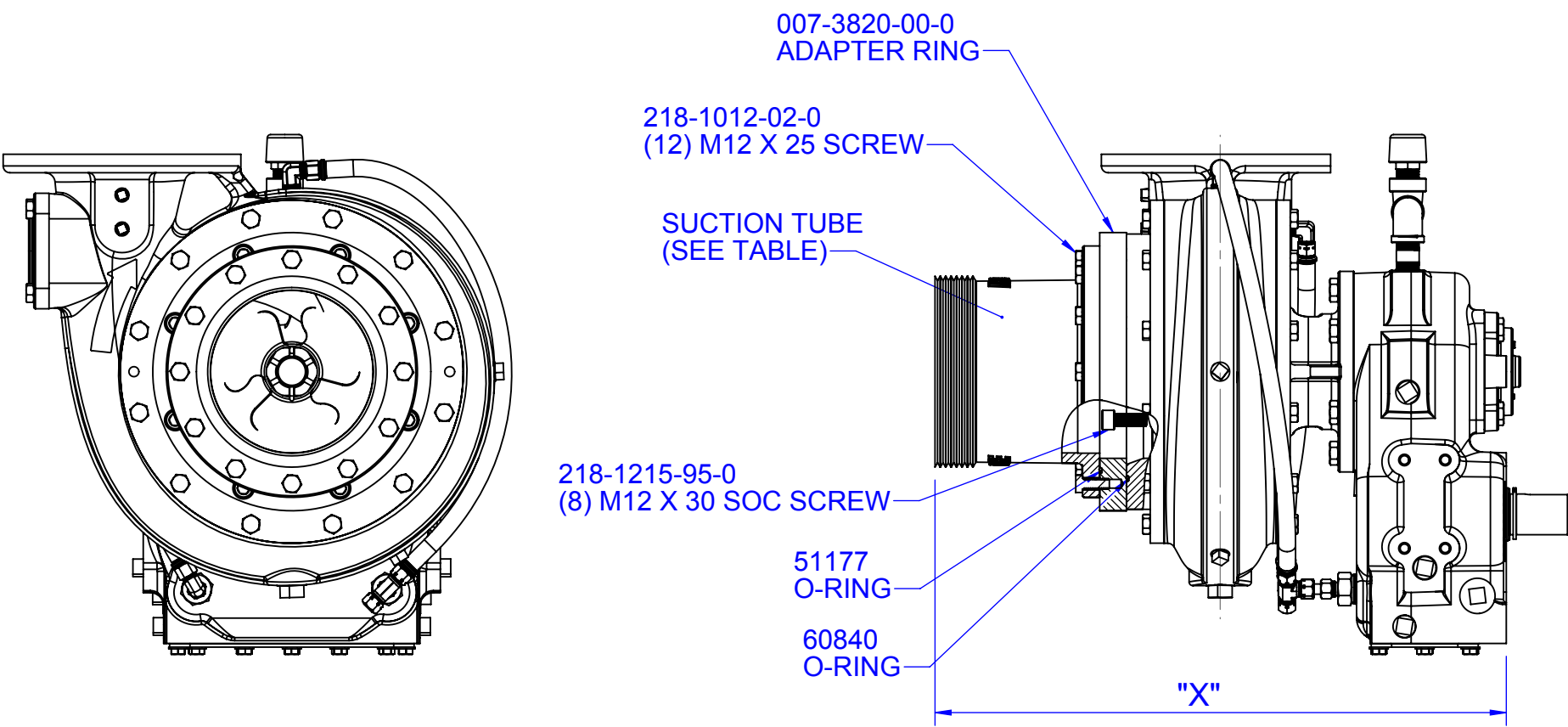


SUCTION HEAD			
ADAPTER	IRON	750-1250 GPM	1500 GPM
	BRONZE	002-5181-00-0	002-5401-00-0
CLEARANCE RING		002-5181-01-0	002-5401-01-0
		321-5080-00-0	321-0040-00-0

6" VICTAULIC CONNECTION



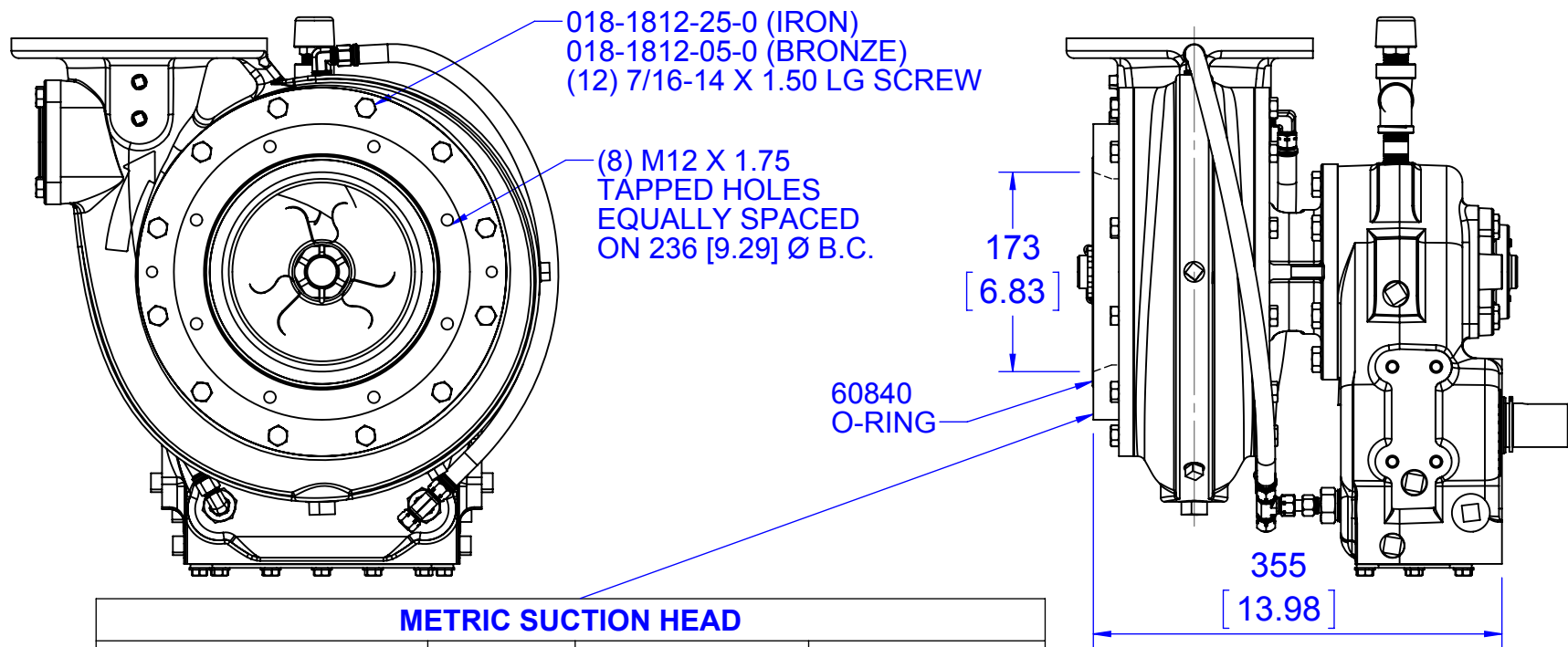
6" NST WITH 115 FLANGE SST SUCTION ADAPTER
(REQUIRES 6" VICTAULIC ADAPTER)



TYPE	TUBE LENGTH	"X"	P/N (IRON)	P/N (BRONZE)
5" NST - SHORT	152 [6]	553 [21]	007-0020-00-0	007-0020-00-1
5" NST - LONG	229 [9]	610 [24]	007-0120-00-0	007-0120-00-1
6" NST - SHORT	152 [6]	553 [21]	007-0030-00-0	007-0030-00-1
6" NST - LONG	229 [9]	610 [24]	007-0130-00-0	007-0130-00-1

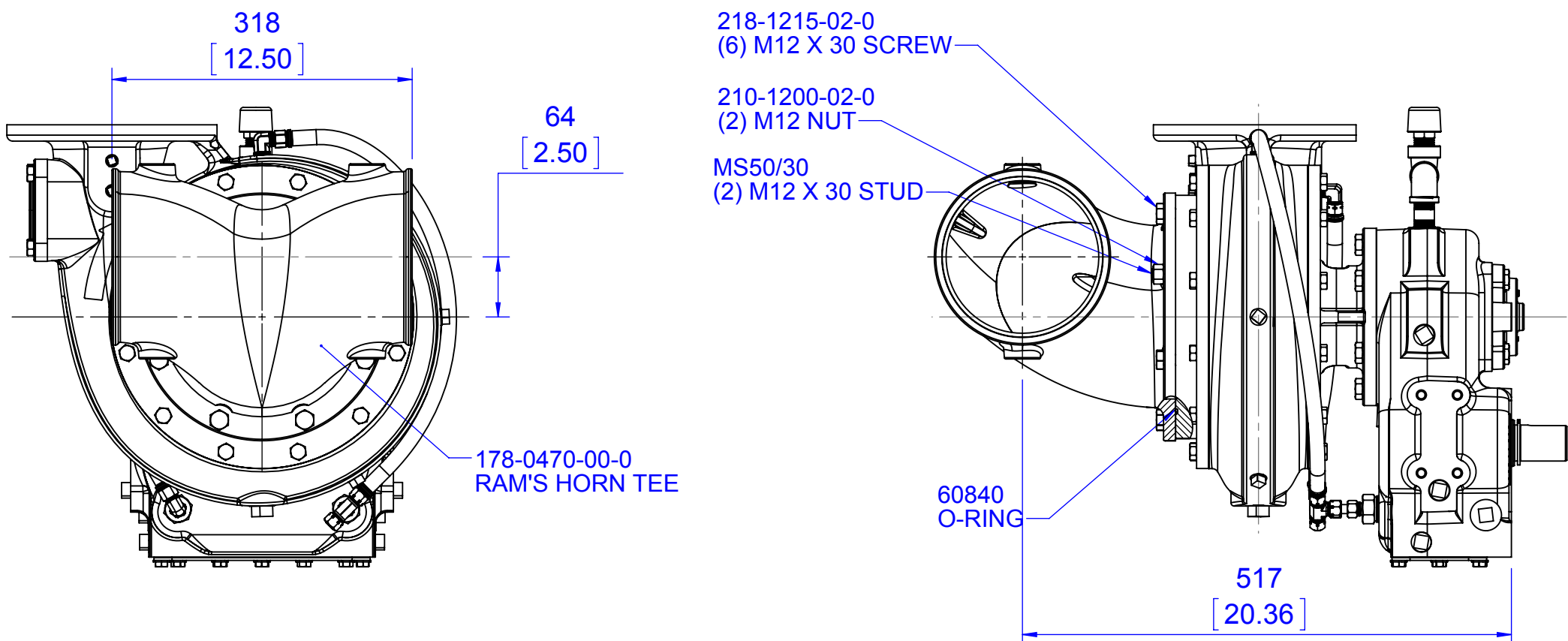
5" NST SUCTION TUBE NOT RECOMMENDED FOR 1500 GPM RATED PUMPS.

NST CONNECTION
REQUIRES METRIC SUCTION HEAD



METRIC SUCTION HEAD			
ADAPTER	IRON	750-1250 GPM	1500 GPM
	BRONZE	002-5580-00-0	002-5570-00-0
CLEARANCE RING		002-5580-01-0	002-5570-01-0
		321-5080-00-0	321-0042-00-0

METRIC SUCTION HEAD



RAM'S HORN WELD TEE - 6" SST
REQUIRES METRIC SUCTION HEAD

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X.X: ±0.5
X.XX: ±0.25
X.XXX: ±0.125
ANGLES: ±0.25°
SURFACE TEXTURE IN µm Ra
REMOVE ALL SHARP EDGES, 0.25MAX

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MATERIAL	
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HALE GODIVA <i>Class 1</i>	
TITLE HALE TYPE RSD SERIES PUMP	
DRAWN JRP	SIZE D
APPROVED JRH	DRAWING NUMBER PL1091
DATE 20JAN2009	REV D
SCALE 1:9	SHEET 2 OF 2

REVISIONS					
ECN	REV.	ZONE	CHANGED FROM	BY	DATE
CFL3660	D	--	SEE SHEET 1	KTN	01MAR2016
				APVD	ALG