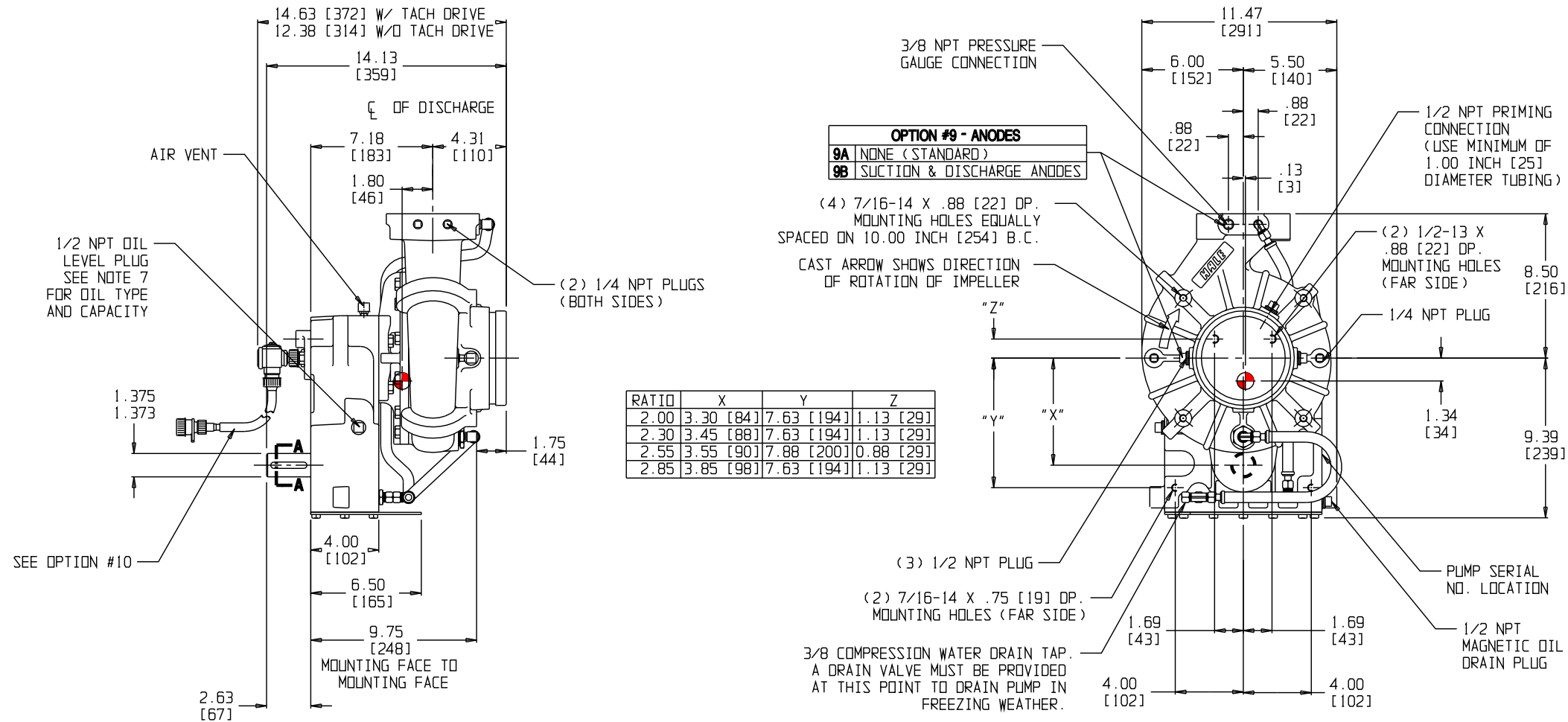


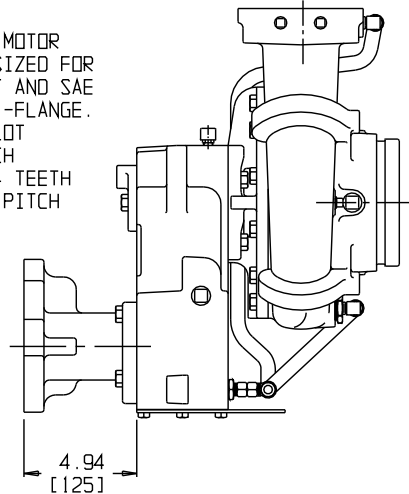
HALE TYPE AP PUMP SERIES

SINGLE-STAGE HIGH VOLUME ATTACK PUMP

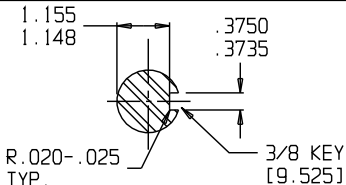







MODEL APH HYDRAULIC PUMP DRIVE

HYDRAULIC MOTOR ADAPTER, SIZED FOR SAE 2 BOLT AND SAE 4 BOLT "C"-FLANGE. FEMALE PILOT DIA: 5 INCH SPLINE: 14 TEETH 12/24 DIA PITCH



MODEL AP - POWER TAKE-OFF DRIVE

OPTION #10 - TACHOMETER DRIVE		INPUT SHAFT DETAIL
10A	NONE	
10B	SPEED COUNTER CONNECTION TURNS 1/10 IMPELLER RPM	
10C	SPEED COUNTER CONNECTION WITH SAE 13/16 FLEXIBLE SHAFT SIZE, 7/8-18 THREAD	
OPTION #4 - PUMP ROTATION		
		
4A ENGINE ROTATION (CLOCKWISE ROTATION)	4B OPPOSITE ENGINE ROTATION (COUNTERCLOCKWISE ROTATION)	
OPTION #6 - VOLUTE POSITION (SEE NOTE 4)		
		
6A VERTICAL DISCHARGE (STANDARD)	6B RIGHT SIDE DISCHARGE	6C LEFT SIDE DISCHARGE

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 STD. FOR DETAILS.
- ALL MOUNTING SCREWS TO BE MINIMUM SAE GRADE 5, UNLESS OTHERWISE NOTED.
- ALL FASTENERS SHALL BE INSTALLED WITH A THREAD LOCKING ANAEROBIC ADHESIVE/SEALANT: LOCTITE #246 HIGH TEMPERATURE THREAD LOCKER OR EQUIVALENT.
- PUMP VOLUTE IS FURNISHED IN VERTICAL POSITION STANDARD. VOLUTE CAN ALSO BE FACTORY CONFIGURED FOR LEFT AND RIGHT DISCHARGE. CUSTOMER CAN ROTATE VOLUTE IN 30° INCREMENTS. THIS MAY REQUIRE RELOCATING COOLING LINES, DRAINS, PRIMING TAP, AND REPLACING VOLUTE GASKET.
- APPROXIMATE OIL CAPACITY: 1-3/4 QUARTS (1.7 L). CAPACITIES ARE FOR REFERENCE ONLY; ALWAYS FILL TO BOTTOM OF OIL LEVEL PLUG WITH SAE EP-90 OR 80W-90 API GL-5 OIL.
- MODEL WEIGHT: HYDRAULIC PUMP DRIVE (APH) - 142 LBS (64 KG) PTO DRIVE (AP) - 130 LBS (59 KG)
- DIMENSIONS ARE IN INCHES AND [MILLIMETERS].
- REFER TO PLATE NO. 753 FOR PUMP CROSS-SECTION.

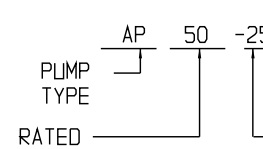
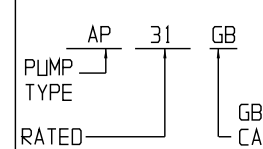
9)  REPRESENTS CENTER OF GRAVITY (COG)

ECO NO	REV	CHANGED FROM	BY	DATE	APVD
0879	A	REDESIGNED PL750BB	JRP	03-09-09	MAL
1037	B1	REMOVED INVERTED DISCHARGE & GEARBOX; REMOVED HORIZONTAL GEARBOX	JRP	11-29-10	PRW
1037	B2	600 PSIG HYDRODYNAMIC; ADDED BRONZE PRESSURE	JRP	11-29-10	PRW

OPTION #3 - PUMP RATIO			DRIVE TYPE	MAXIMUM INPUT RPM
3A	AP * -20	2.00	PTO	3670
3B	AP * -23	2.30		3190
3C	AP * -25	2.55		2880
3D	AP * -28	2.85	HYDRAULIC	2580
3E	APH * -20	2.00		3670
3F	APH * -23	2.30		3190
3G	APH * -25	2.55		2880

* RATED CAPACITY - GPM OR L/S

AP PUMP RATED CAPACITY:
350, 450 AND 500 GPM @ 150 PSI NFPA 1901 RATED
AP-GB/LS PUMP RATED CAPACITY:
31 L/S @ 13 MPa GB6245 RATED
32 L/S @ 13 MPa - NOT GB6245 RATED

AP IDENTIFICATION (GPM)	AP-GB IDENTIFICATION (L/S)
THE MODEL NUMBER FOR AN AP RATED AT 500 GPM WITH A DRIVE RATIO OF 2.55 AND HALE DRIVE UNIT WOULD BE:	THE MODEL NUMBER FOR AN AP RATED AT 31 (L/S) WITH A DRIVE RATIO OF 2.55 AND HALE DRIVE UNIT WOULD BE:
 PUMP TYPE RATED CAPACITY - GPM DRIVE RATIO (2.55 = 25)	 PUMP TYPE RATED CAPACITY - L/S DRIVE RATIO (2.55 = 25) GB FOR 31 LPS PUMPS CAPABLE OF GB6245-2006 LS FOR 32 LPS PUMPS

BE SURE TO INCLUDE THE MODEL NUMBER AND SERIAL NUMBER WHEN ORDERING PARTS OR REQUESTING INFORMATION. THE MODEL / SERIAL NUMBER PLATE IS LOCATED ON BOTTOM OF GEAR DRIVE AS SHOWN IN DRAWING.

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 POWER INPUT FOR PUMPING = 100 HP [75 KW]

MAX HYDRODYNAMIC PRESSURE = 400 PSIG [2.76 MPa]
MAX HYDROSTATIC PRESSURE (IRON) = 600 PSIG [4.14 MPa] (B)
MAX HYDROSTATIC PRESSURE (BRONZE) = 500 PSIG [3.45 MPa]

IN PUMP OPERATION THERE IS SUBSTANTIAL TORQUE IMPOSED ON THE PTO AND OTHER PUMP DRIVE COMPONENTS. EACH DRIVE COMPONENT MANUFACTURER MUST APPROVE THE TORQUE LOADS FOR ALL PUMPING APPLICATIONS. REFER TO LIMIT CHART NO. F-72 AND I-91 FOR ADDITIONAL DATA.

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. DRIVE SHAFT BALANCE (INCLUDING YOKES) SHALL NOT EXCEED THE RECOMMENDED LIMIT OF EITHER THE DRIVE SHAFT OR CHASSIS TRANSMISSION MANUFACTURER'S SPECIFICATIONS. DRIVE SHAFT 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.

PLATE NO. 750CB
(SHEET 1 OF 2)

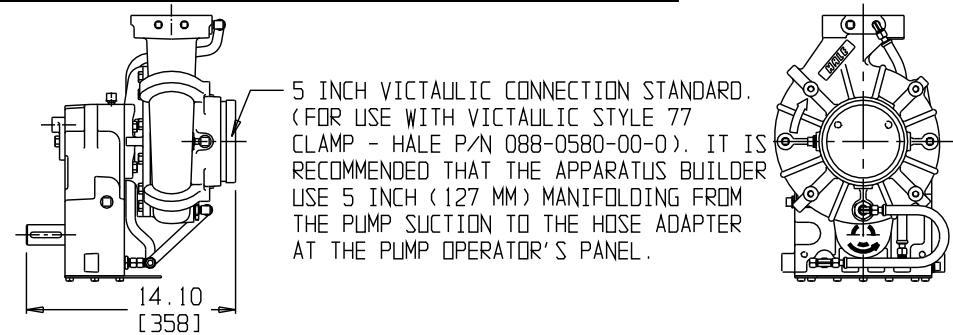


HALE PRODUCTS, INC.
A Unit of IDEX Corporation
Conshohocken, PA 19428 USA

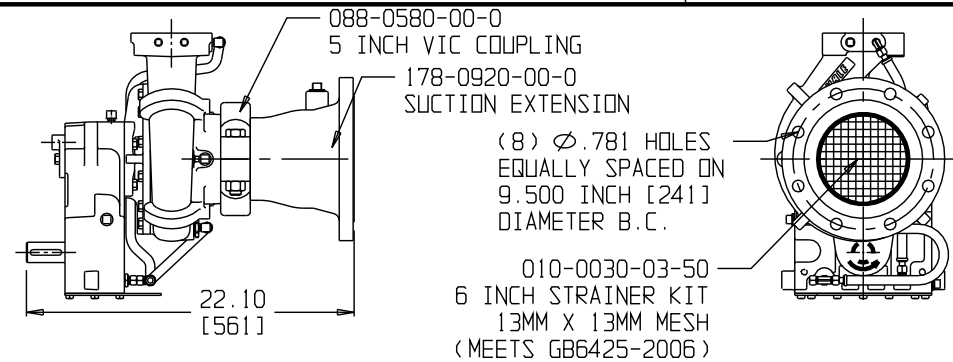
NOT TO BE REPRODUCED OR USED TO MAKE OTHER DRAWINGS OR MACHINERY.	CHECKED	JRP	DATE 03-09-09	SIZE B	SCALE: NTS
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HALE TYPE AP PUMP SERIES SUCTION & DISCHARGE CONNECTION OPTIONS

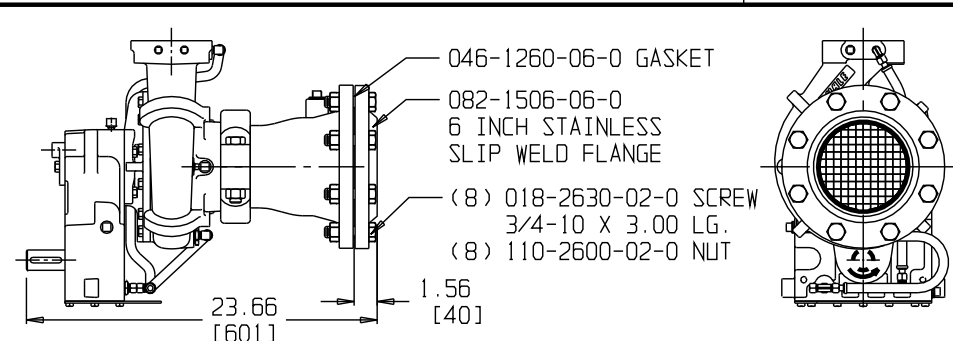
OPTION #7 - SUCTION CONNECTION



OPTION 7A - 5 INCH VICTAULIC CONNECTION (STANDARD)

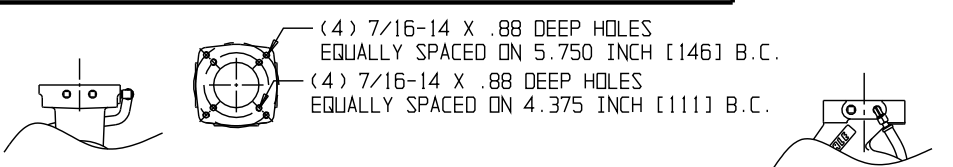


OPTION 7B - 6 INCH ASA SUCTION EXTENSION WITH STRAINER

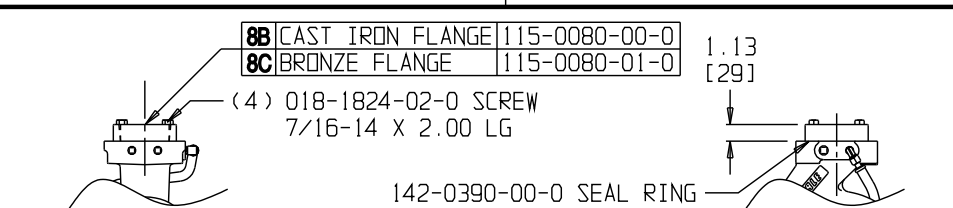


OPTION 7C - 6 INCH ASA SUCTION EXTENSION WITH STRAINER & SLIP WELD FLANGE

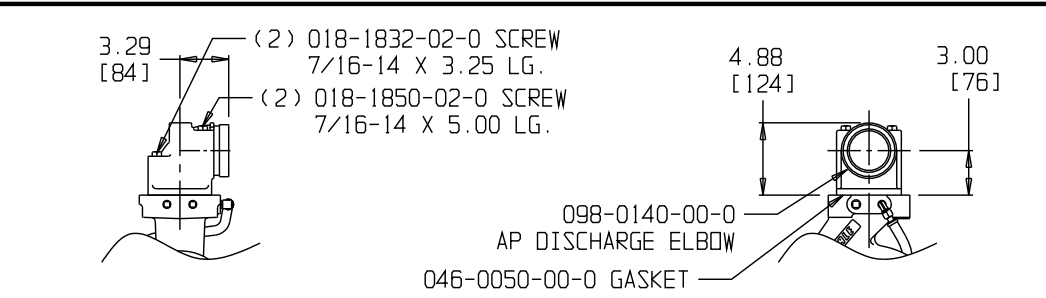
OPTION #8 - DISCHARGE CONNECTION



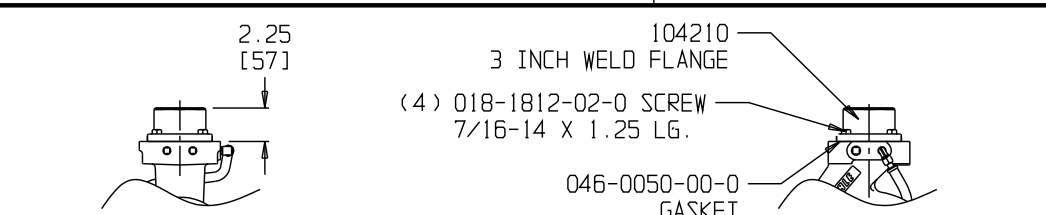
OPTION 8A - OPEN 115 FLANGE (STANDARD)



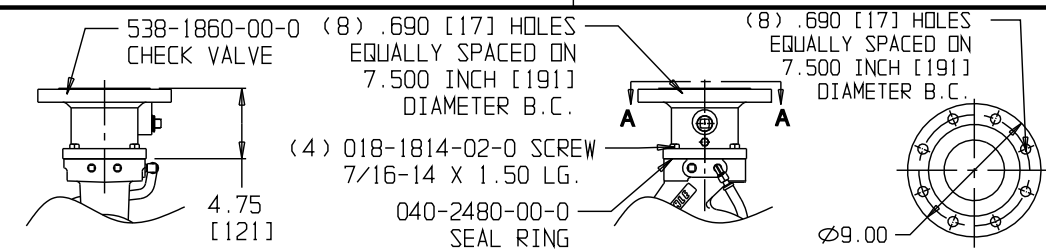
OPTION 8B & 8C - 3 INCH NPT FLANGE



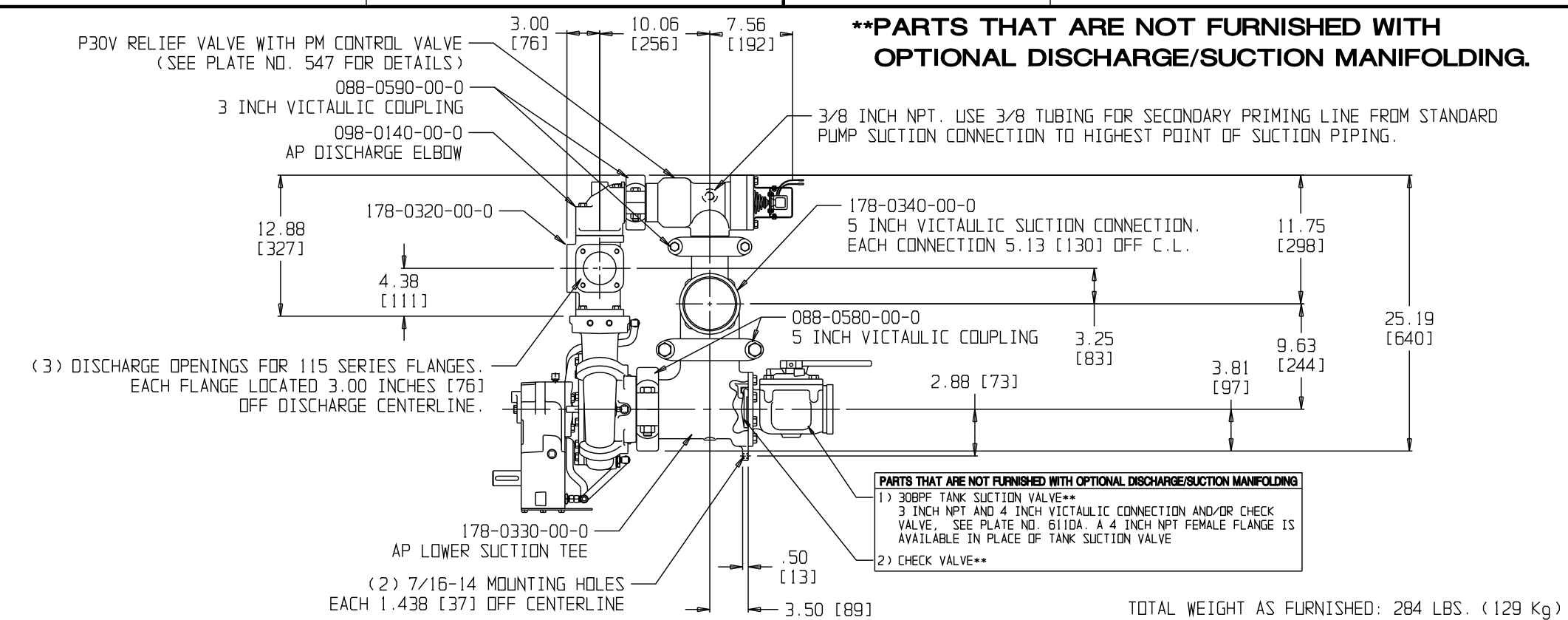
OPTION 8D - 3 INCH VICTAULIC ELBOW CONNECTION



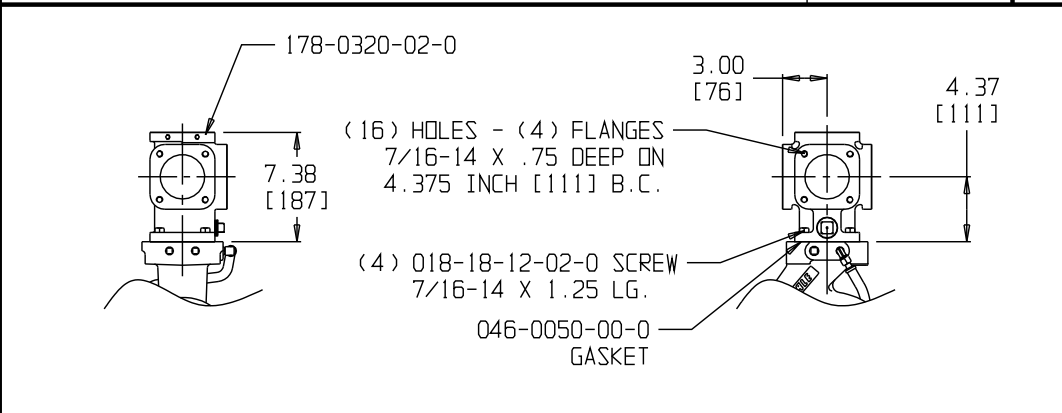
OPTION 8E - 3 INCH STAINLESS WELD FLANGE



OPTION 8F - 4 INCH ASA CHECK VALVE

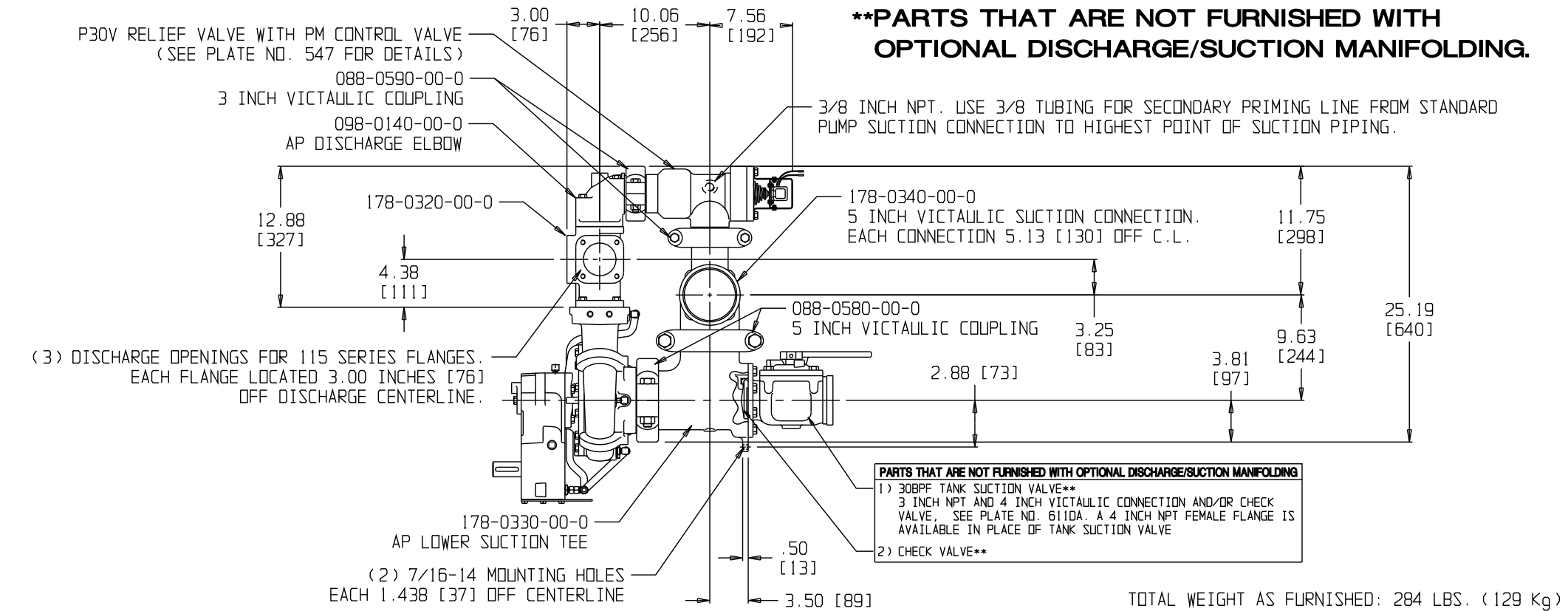


OPTION 8G - 4 INCH ASA CHECK VALVE WITH SLIP WELD FLANGE



OPTION 8H - MINI MANIFOLD

****PARTS THAT ARE NOT FURNISHED WITH OPTIONAL DISCHARGE/SUCTION MANIFOLDING.**



OPTIONS 8I & 8J - MINI MANIFOLD WITH RELIEF VALVE AND SUCTION CONNECTION

ECO NO	REV	CHANGED FROM	BY	DATE	APVD
		SEE SHEET 1 OF 2			

TOTAL WEIGHT AS FURNISHED: 284 LBS. (129 Kg)