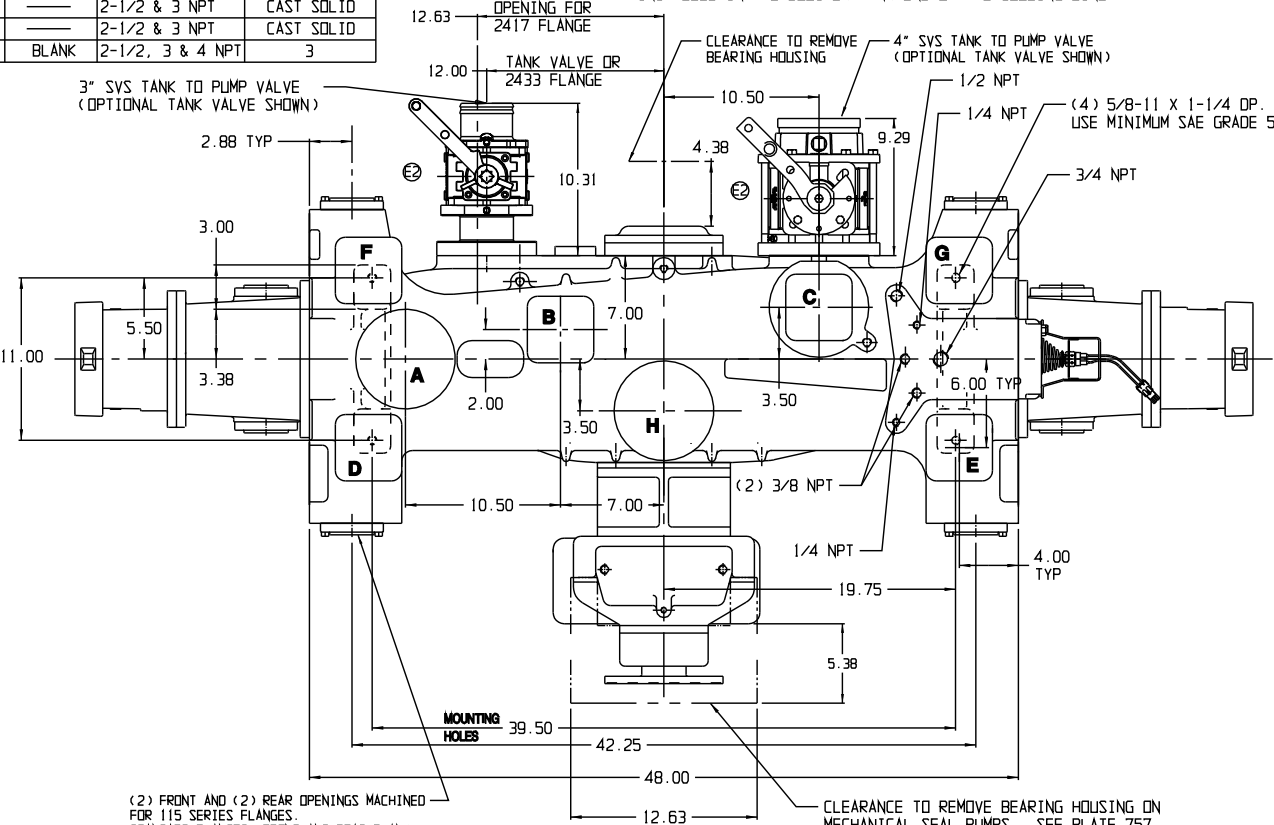


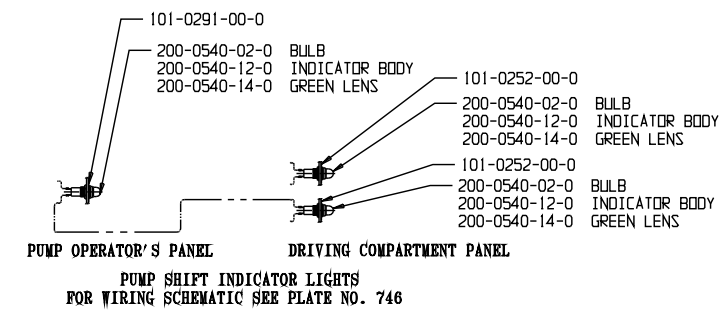
OPTIONAL DISCHARGE FLANGES			
STANDARD	OPTIONAL	STD. CAST HOLE	
A	BLANK	2-1/2, 3 & 4 NPT	4
B	BLANK	1-1/4, 2, 2-1/2 & 3 NPT	3
C	BLANK	2-1/2, 3 & 4 NPT	3
D	---	2-1/2 & 3 NPT	CAST SOLID
E	---	2-1/2 & 3 NPT	CAST SOLID
F	---	2-1/2 & 3 NPT	CAST SOLID
G	---	2-1/2 & 3 NPT	CAST SOLID
H	BLANK	2-1/2, 3 & 4 NPT	3

**NOTES**

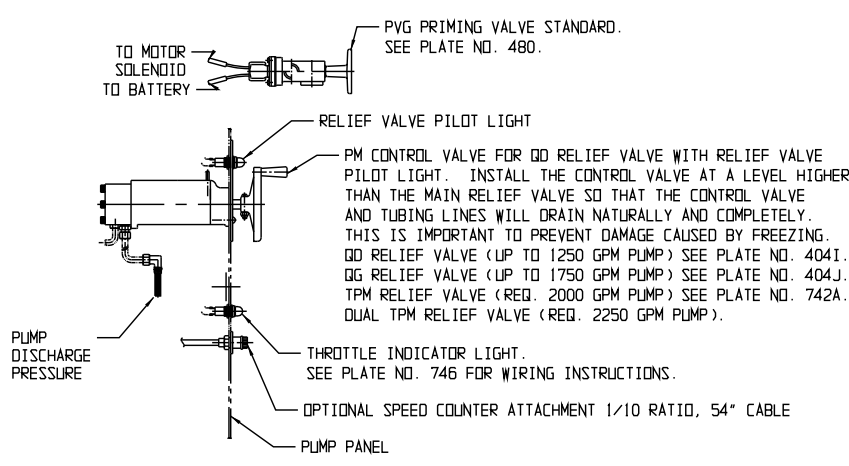
- REFER TO HAILE PUMP/ENGINE COMBINATION LIST TO SELECT PROPER RATIO TO MATCH PUMP WITH ENGINE.
- WEIGHT OF STANDARD QMAX 1500 G.P.M. PUMP AS SHOWN LESS PRIMING PUMP. = 1400 LBS.
- = CENTER OF GRAVITY.
- IMPELLER SHAFT SEAL - PACKING STANDARD, MECHANICAL SEAL OPTIONAL.
- FOR PUMP COOLING AN ADDITIONAL 3/8 LINE SHOULD BE INSTALLED BETWEEN THE PUMP DISCHARGE AND BOOSTER TANK. THIS COOLING LINE SHOULD BE CONTROLLED BY A PANEL MOUNTED BALL VALVE AND A CHECK VALVE (HAILE P/N: 038-1550-00-0 OR EQUIV.) INSTALLED IN THE BOOSTER TANK END OF THE COOLING LINE.



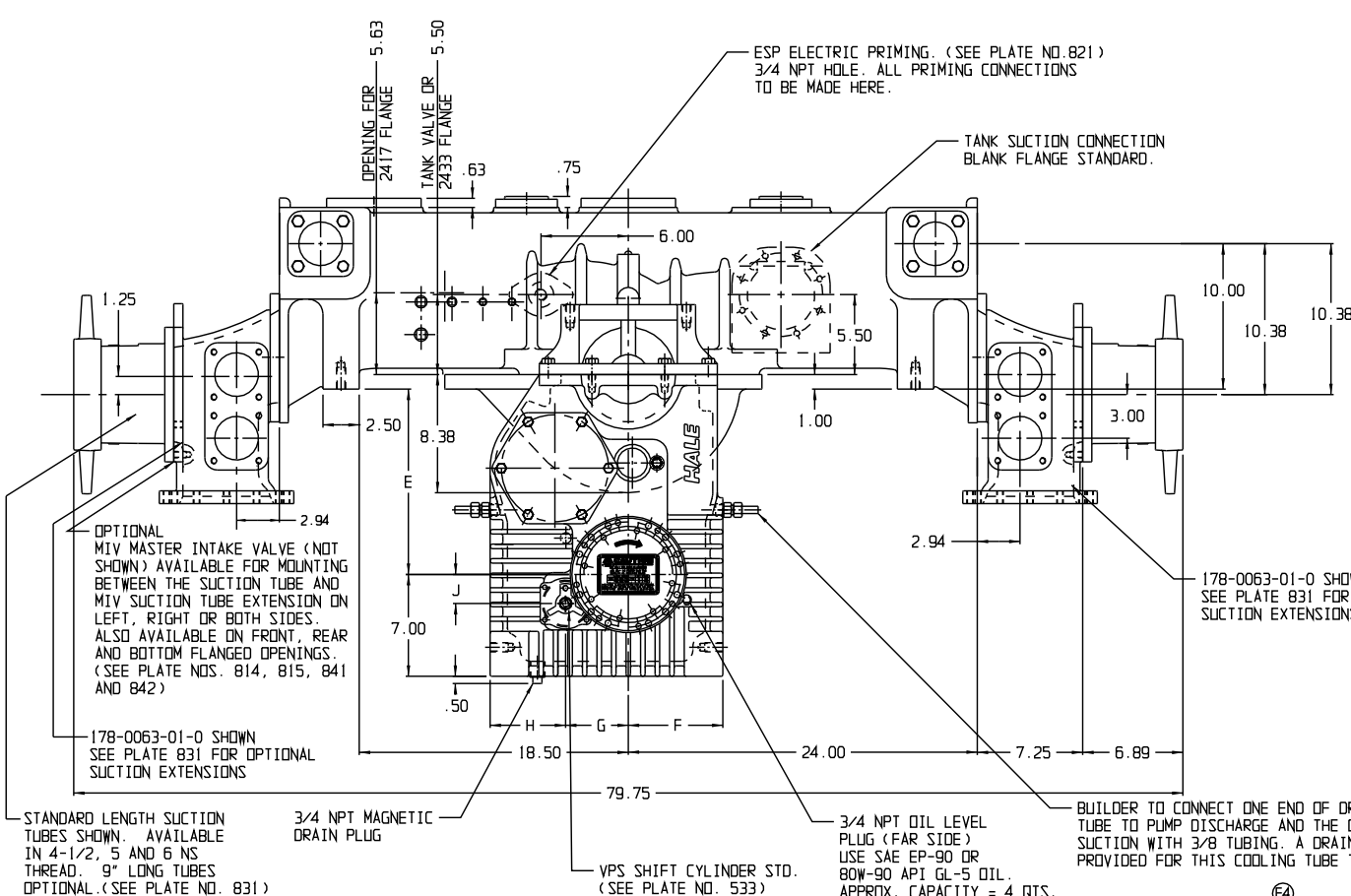
(2) FRONT AND (2) REAR OPENINGS MACHINED FOR 115 SERIES FLANGES.  
STANDARD FLANGES: FRONT AND REAR BLANK  
OPTIONAL FLANGES: 2-1/2 NPT AND 3 NPT



PUMP OPERATOR'S PANEL  
DRIVING COMPARTMENT PANEL  
PUMP SHIFT INDICATOR LIGHTS  
FOR WIRING SCHEMATIC SEE PLATE NO. 746



PUMP DISCHARGE PRESSURE



**PLATE NO. 913AE**

PUMP MODEL	GEAR RATIO	DIMENSIONS				
		E	F	G	H	J
QMAX*-23R	2.28	12.38	6.50	4.31	5.19	2.00
QMAX*-21R	2.05	12.56				
QMAX*-19R	1.86	12.75				
QMAX*-17R	1.71	12.94				
QMAX*-15R	1.58	13.13				

\* RATED CAPACITY 1000, 1250, 1500, 1750, 2000 AND 2250 GPM

EXAMPLE: THE MODEL NUMBER FOR A 1500 GPM RATED PUMP WITH A 2.28 GEAR RATIO AND A FRONT MOUNTED GEARBOX WOULD BE QMAX150-23R.

**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.

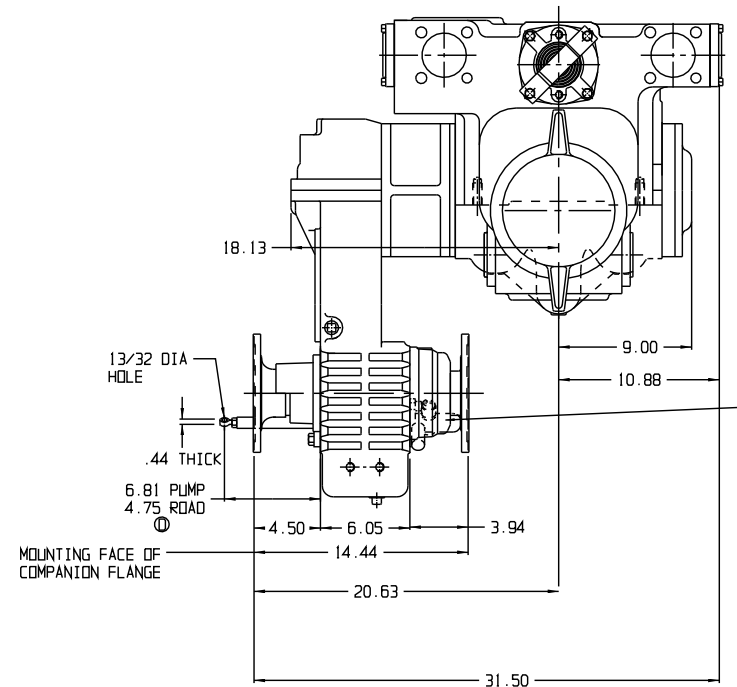
**WARNING**

EXCEEDING THESE LIMITS OR FAILURE TO FOLLOW THE RECOMMENDATIONS OUTLINED ON THIS DRAWING COULD DAMAGE THE GEARBOX AND RESULT IN PERSONAL INJURY.  
QMAX MIDSHIP MAXIMUM PUMP PRESSURE (HYDROSTATIC = 600 PSI & HYDRODYNAMIC = 400 PSI)  
2HP HIGH PRESSURE PUMP MAXIMUM PUMP PRESSURE (HYDROSTATIC & HYDRODYNAMIC) = 1000 PSI  
MAXIMUM POWER INPUT FOR PUMPING = 450 HP.  
MAXIMUM TORQUE ON PUMP SHAFT = 2300 LBS-FT  
MAXIMUM GEARBOX SHAFT TORQUE (ROAD) = 16,000 LBS-FT

PUMP MODEL	QMAX*-23R	QMAX*-21R	QMAX*-19R	QMAX*-17R	QMAX*-15R
MAX GEARBOX INPUT RPM	2280	2530	2780	3030	3280

SEE HAILE TORQUE LIMIT CHART F-72 FOR ADDITIONAL DATA.

OPTIONAL DISCHARGE FLANGES			
STANDARD	OPTIONAL	STD. CAST HOLE	
A	BLANK	2-1/2, 3 & 4 NPT	4
B	BLANK	1-1/4, 2, 2-1/2 & 3 NPT	3
C	BLANK	2-1/2, 3 & 4 NPT	3
D	---	2-1/2 & 3 NPT	CAST SOLID
E	---	2-1/2 & 3 NPT	CAST SOLID
F	---	2-1/2 & 3 NPT	CAST SOLID
G	---	2-1/2 & 3 NPT	CAST SOLID
H	BLANK	2-1/2, 3 & 4 NPT	3



STANDARD FLANGES  
THE HAILE COMBINATION FLANGES ARE SIZED FOR SPICER 1600, 1700 AND 1800 SERIES FLANGES.  
1600 SERIES WITH 6-5/8 DIA FEMALE PILOT, USE (B) 3/8 DIA SAE GRADE 8 SCREWS.  
1700 SERIES WITH 7-3/4 DIA FEMALE PILOT, USE (B) 3/8 DIA SAE GRADE 8 SCREWS.  
1800 SERIES WITH 7-3/4 DIA FEMALE PILOT, USE (12) 7/16 DIA SAE GRADE 8 SCREWS.

ECO NO	REV	CHANGED FROM	BY	DATE	APVD	ECO NO	REV	CHANGED FROM	BY	DATE	APVD
1110	E1	REMOVED SPLINE OPTION	CTG	02-23-12	JRP	0374	A	RELEASE FOR PRODUCTION	DPL	7-23-99	RET
1110	E2	OPTIONAL SVS VALVES	CTG	02-23-12	JRP	00-446	B	UPDATED DRAWING	DJK	4-18-00	MAL
1110	E3	VPS SHIFT CYL. STD.	CTG	02-23-12	JRP	99-197	C	ADDED OPTIONAL OUTPUT	KSM	4-25-06	MAL
1110	E4	COOLING TUBE NOTES	CTG	02-23-12	JRP	1040	D	DIMENSION UPDATE	DPS	12-7-10	PRV