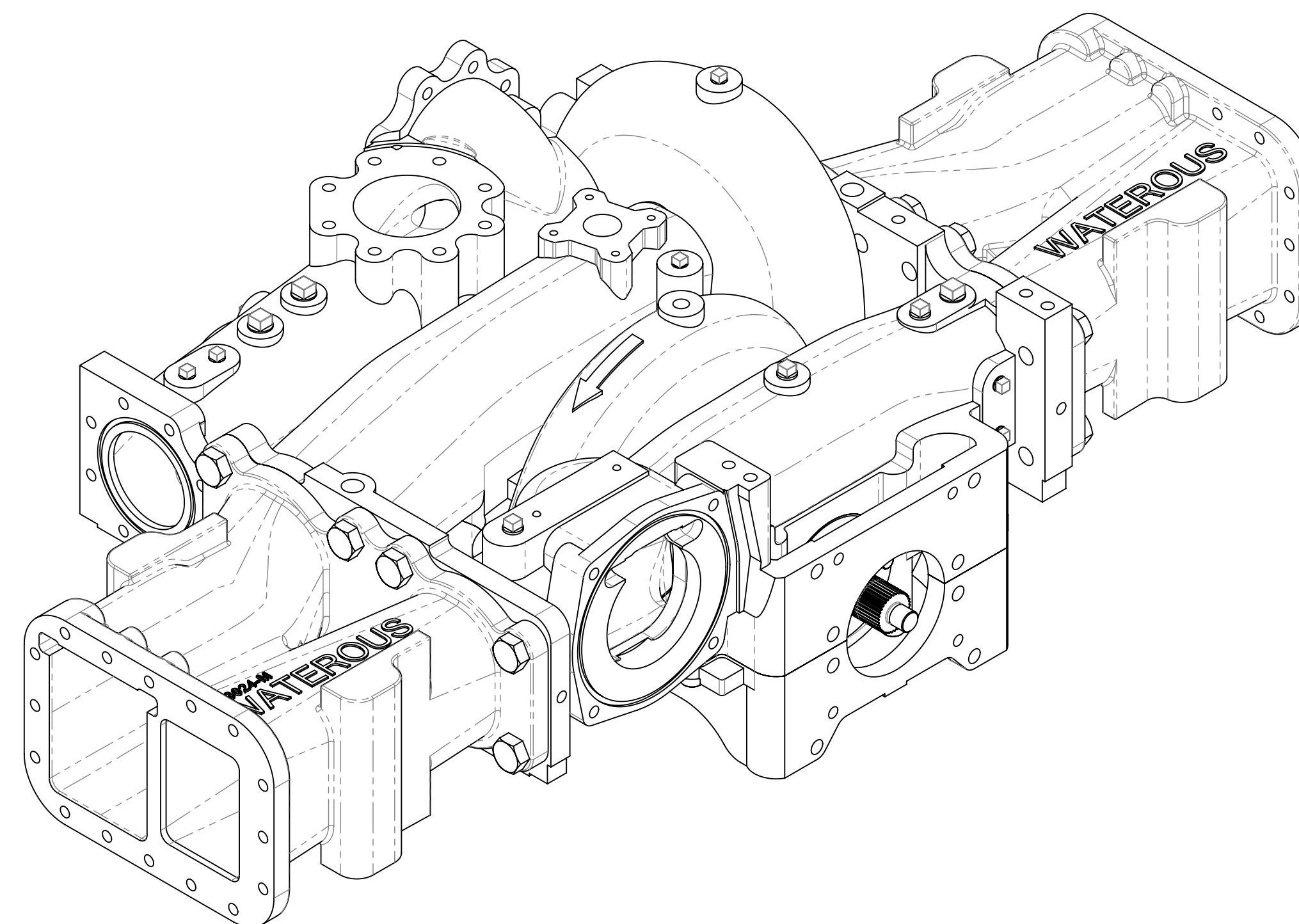


CS Series Fire Pump Dimensional Drawings Pump Models: CS and CSU

Feature	See Page
Basic Pump Body Without Transmission	3
Optional Rear Intake Adapters	4
Intake Fitting Options	5
Tank to Pump Flange Options	6
Discharge Connections	7
Pump with Transmission	See Table on Page 2

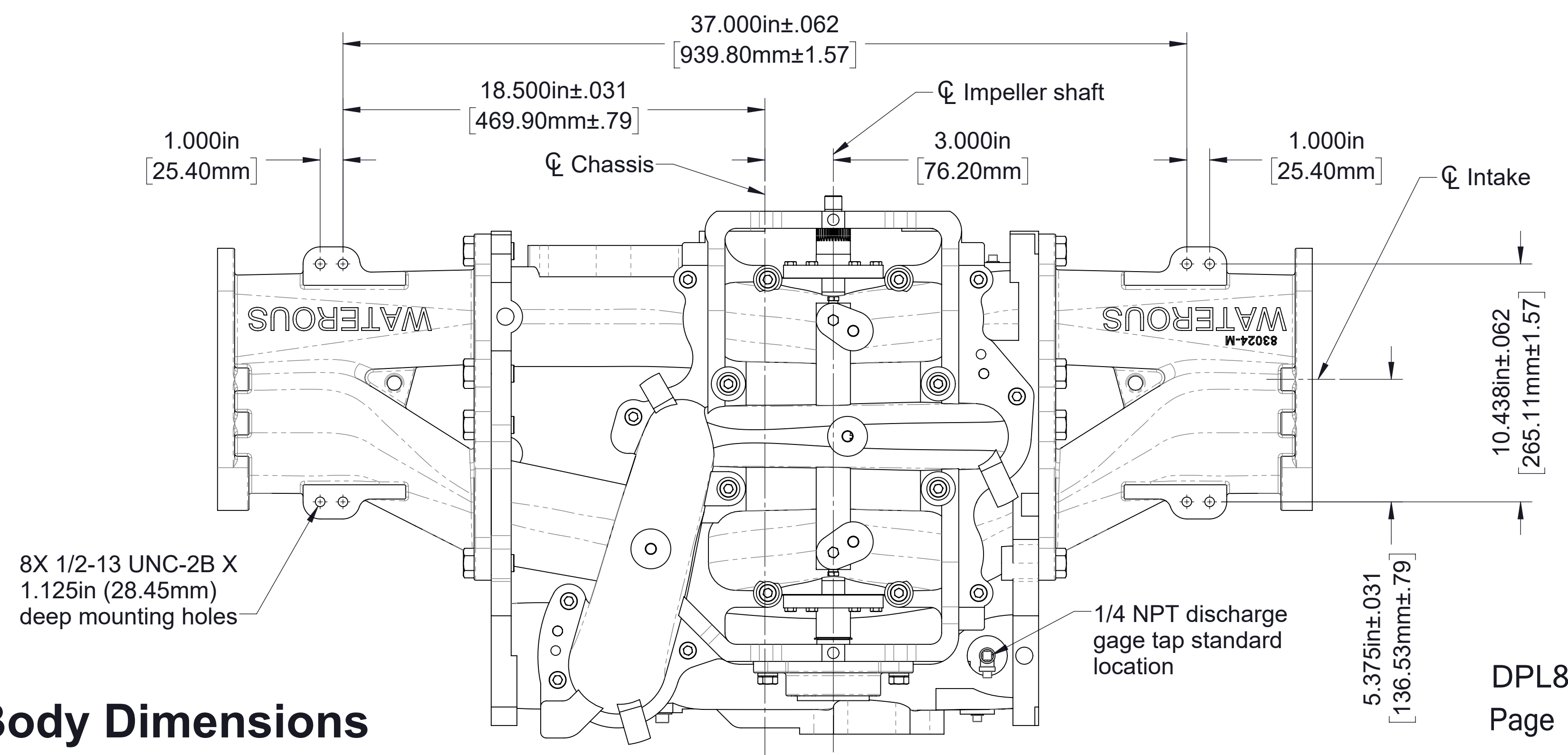
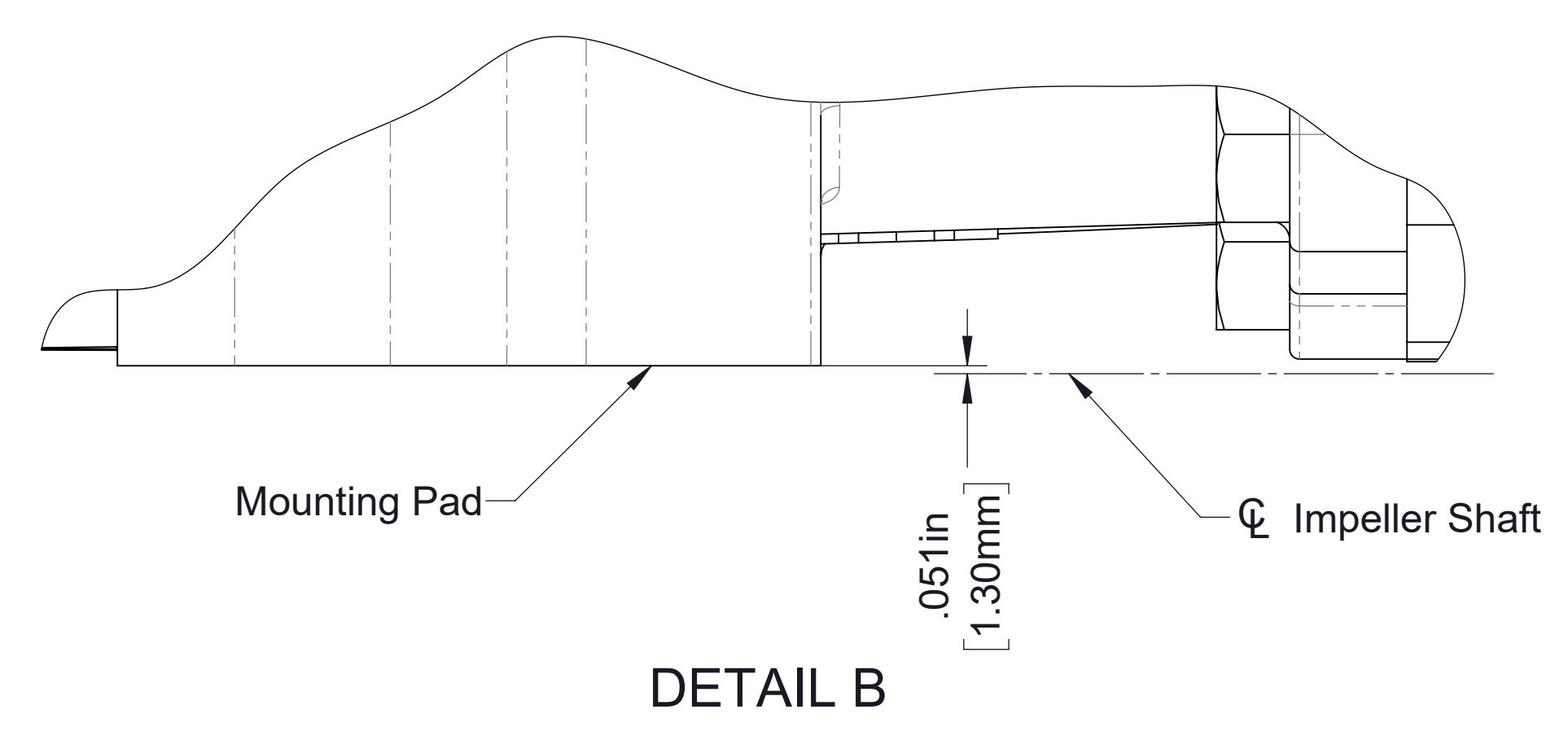
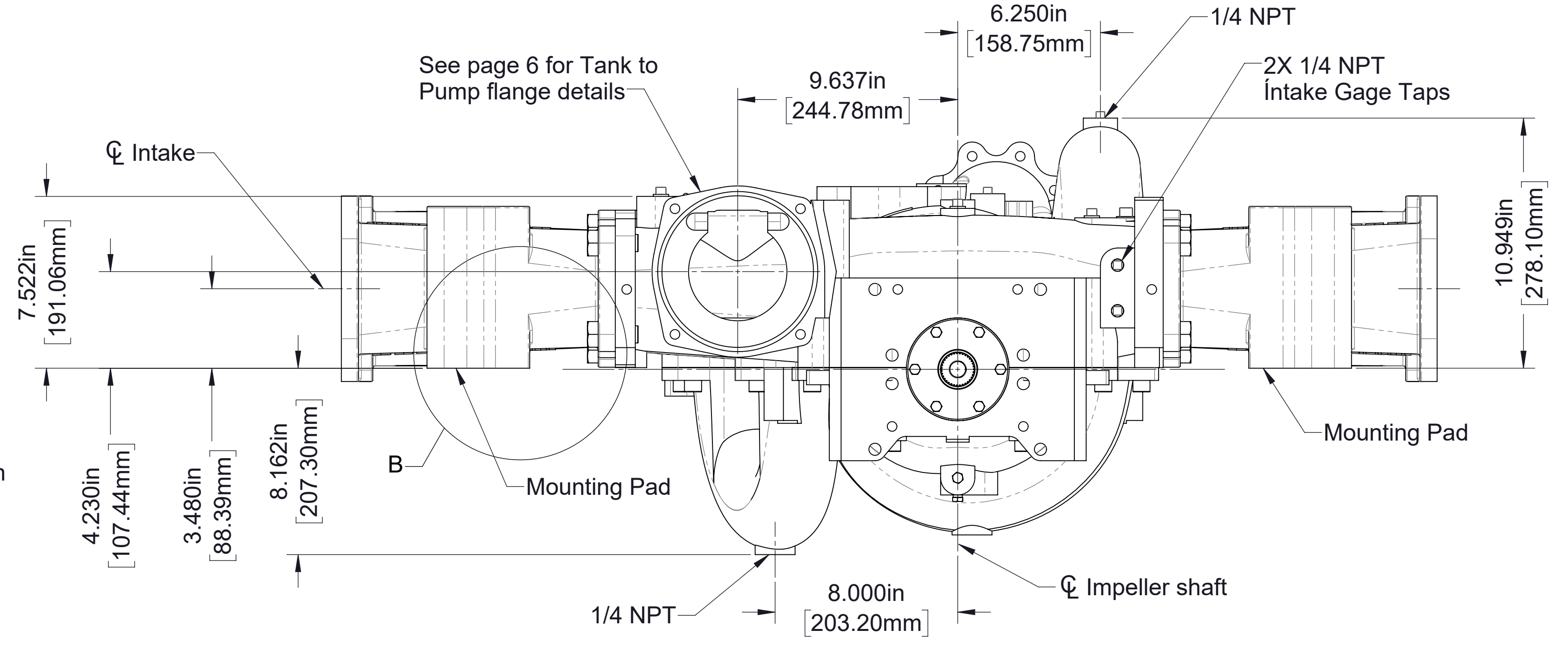
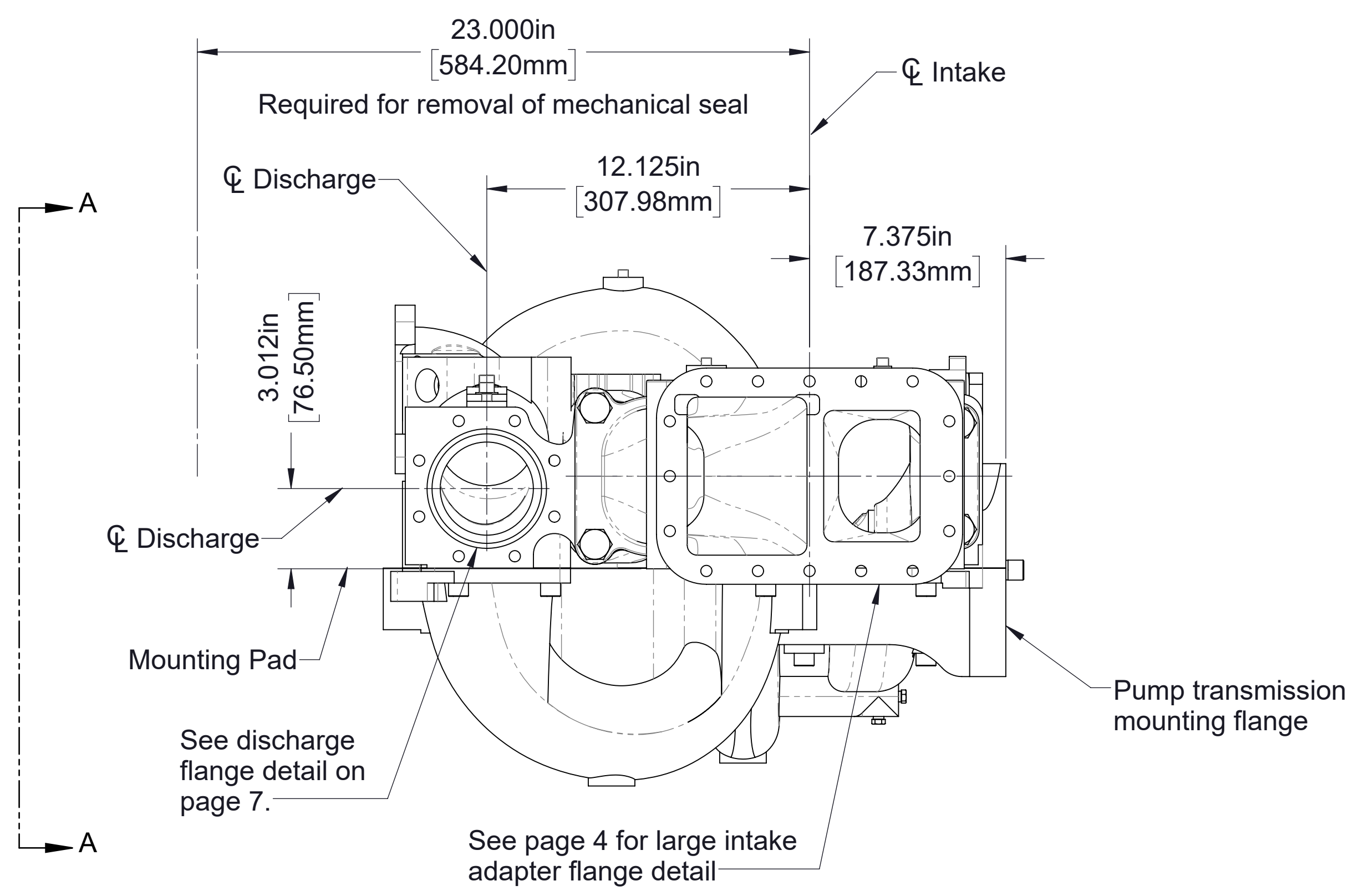
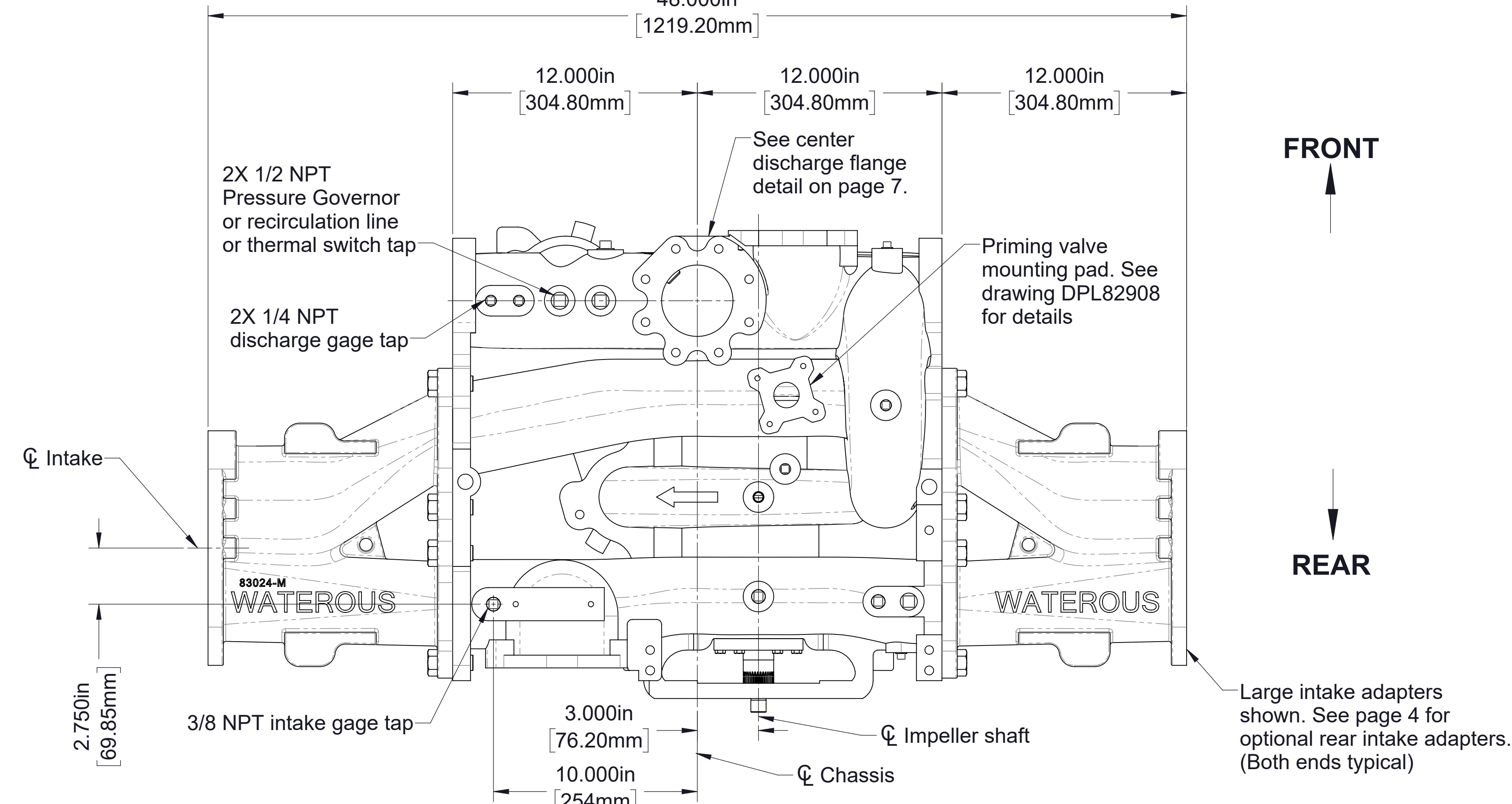
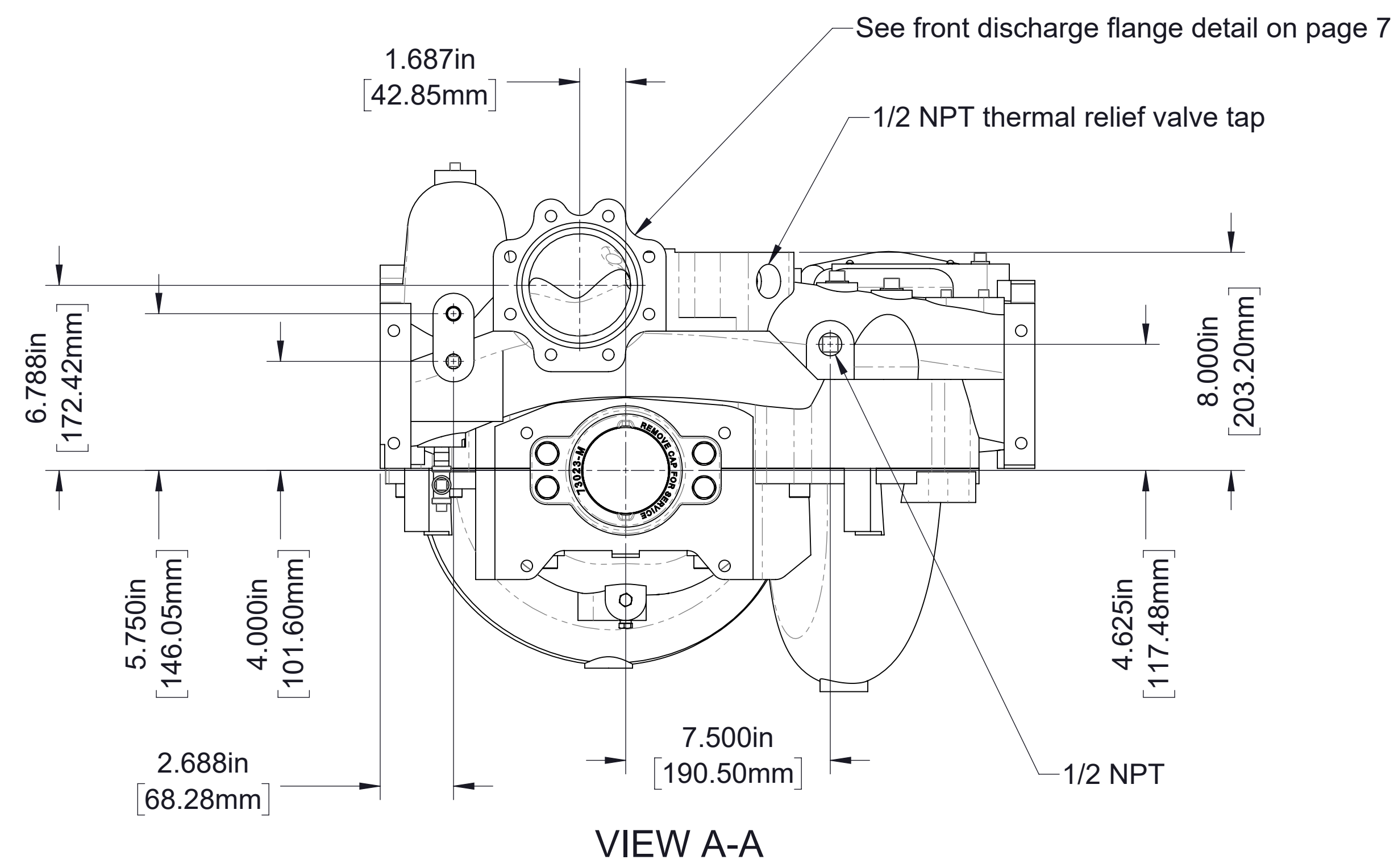


Note: Pump must be installed in accordance with Waterous Installation Instructions.

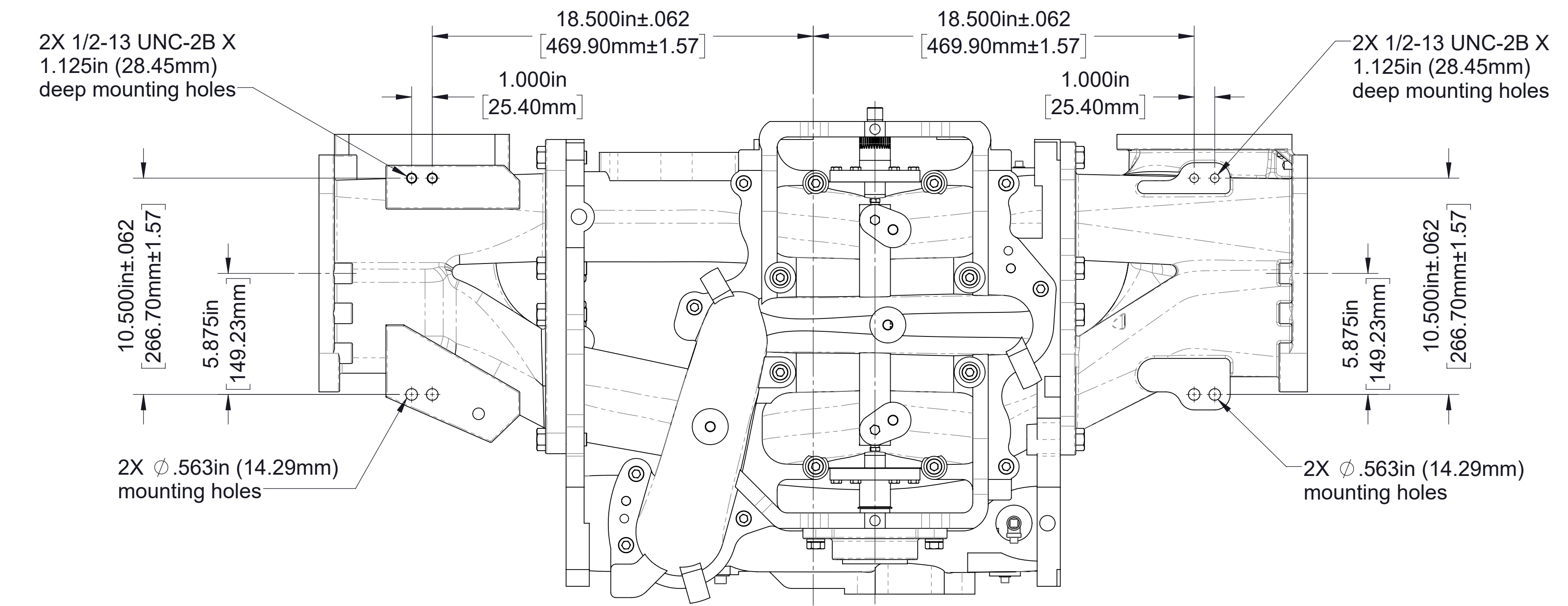
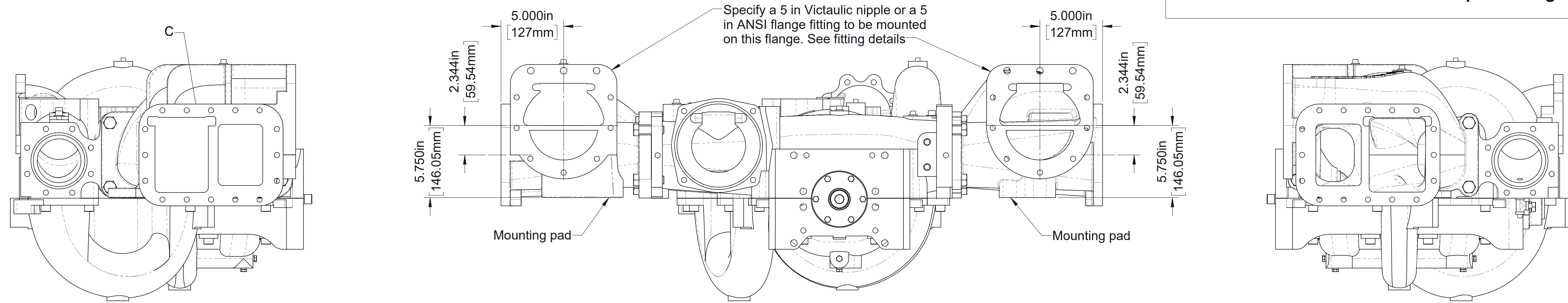
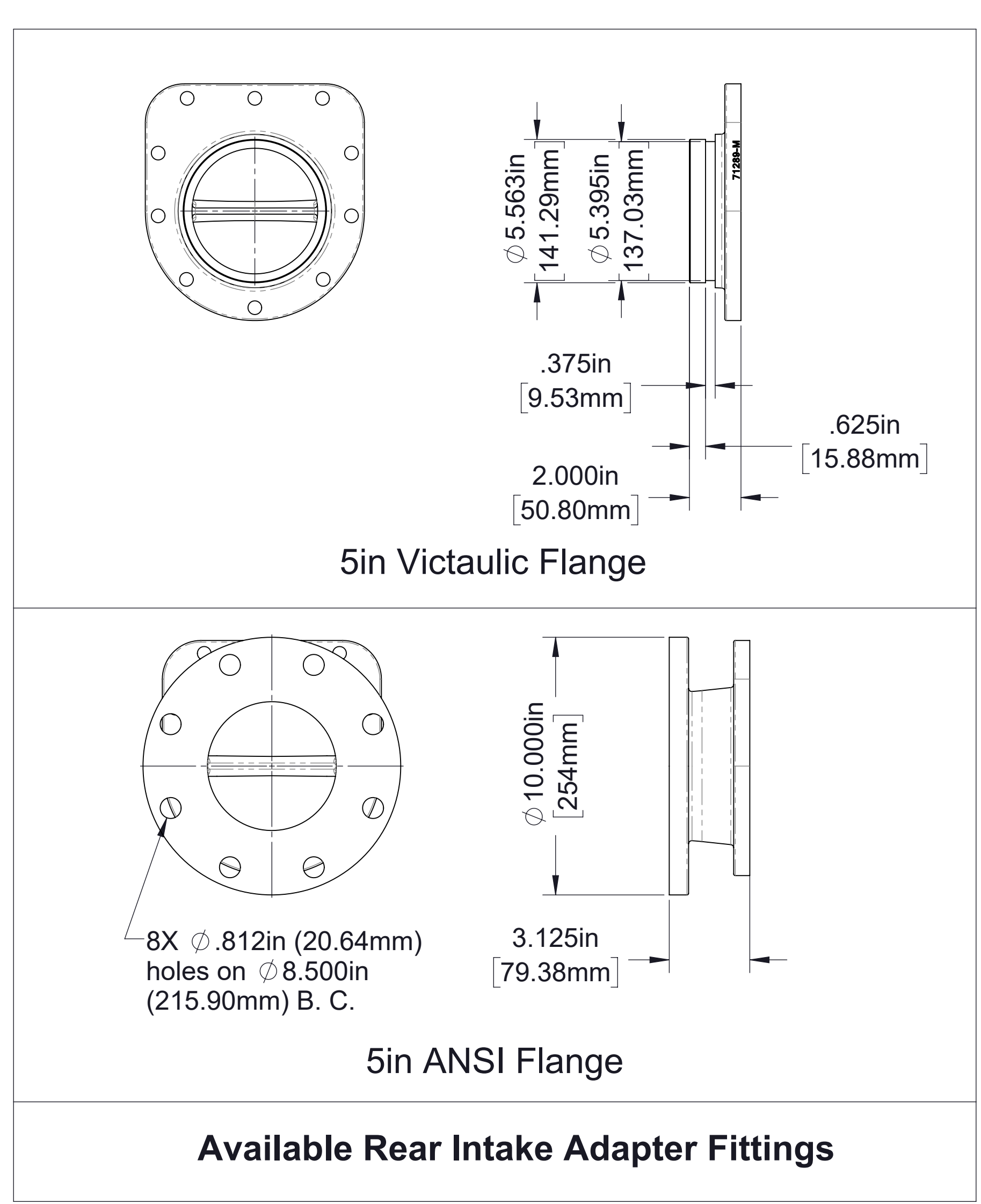
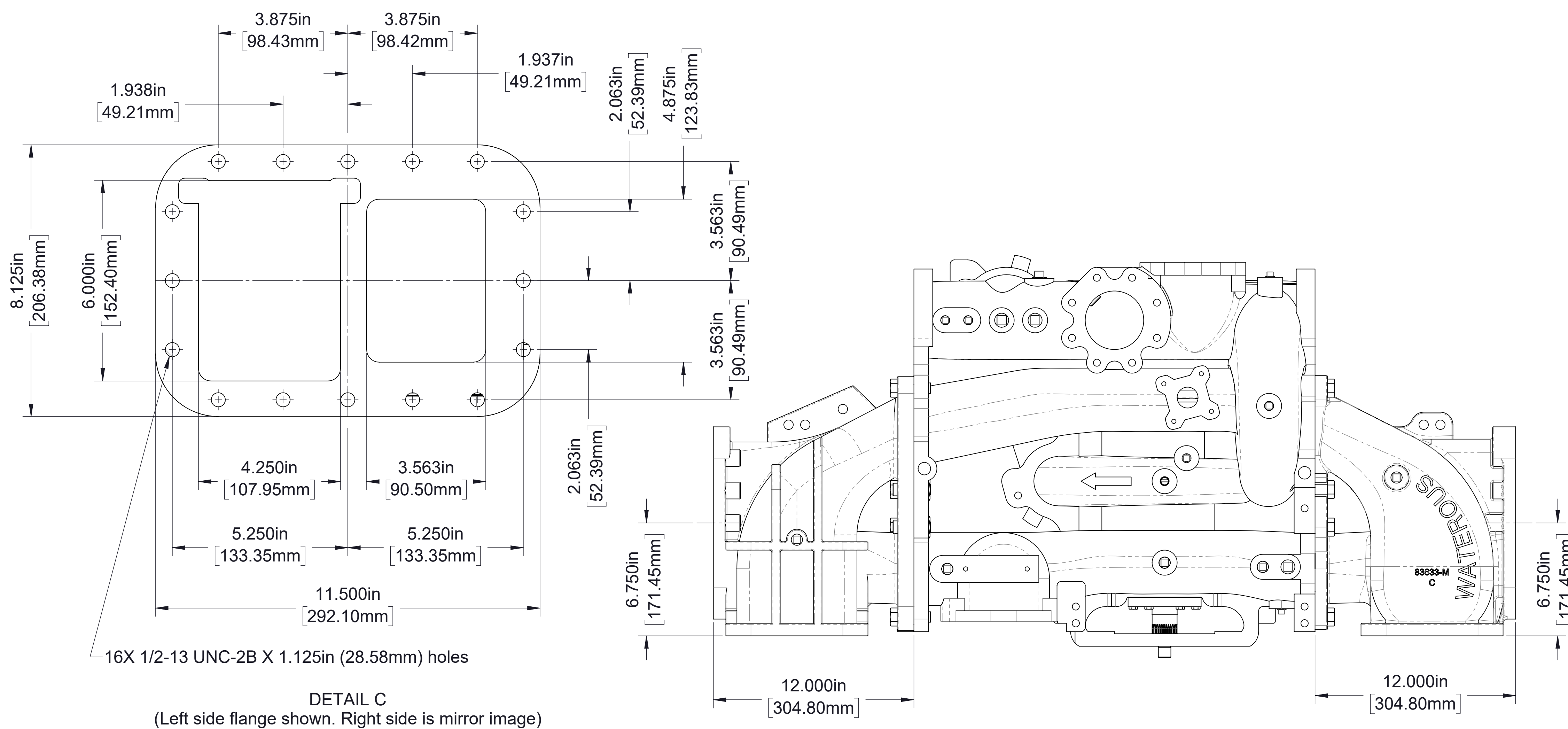
Transmission					Pump		See Page
Type	Transmission Mounting on Pump	Input Rotation (1)	Driveline Type	Hydraulic Pump Mounting Provision	Pump and Transmission Model		
					CS	CSU	
C20 Series Chain Drive, Split Shaft	Rear	CW	Input and Output Shaft	No	CSC20B CSC20C CSC20D CSC20E CSC20F	CSUC20B CSUC20C CSUC20D CSUC20E CSUC20F	8, 12
				Yes			9, 12
			Input Shaft Only	No	CSC20B CSC20C CSC20D CSC20E CSC20F	CSUC20B CSUC20C CSUC20D CSUC20E CSUC20F	10, 12
				Yes			11, 12
	Front	See DPL83130					
K Series (Heavy Duty) Two Gear, PTO Driven	Rear	CW	N/A	N/A	CSK	--	13
K Series (Extra Heavy Duty) Two Gear, PTO Driven	Rear	CW	N/A	N/A	--	CSUK	14
PA Series Chain Drive, PTO Driven	Rear	CW	N/A	N/A	CSPA	CSUPA	15
QC Series Chain Drive, PTO Driven	Rear	CCW	N/A	N/A	CSQC	CSUQC	16
D Series Directly from a PTO	Front	CW	N/A	N/A	CSD	CSUD	17
	Rear	CCW	N/A	N/A	CSD	CSUD	18

Note:

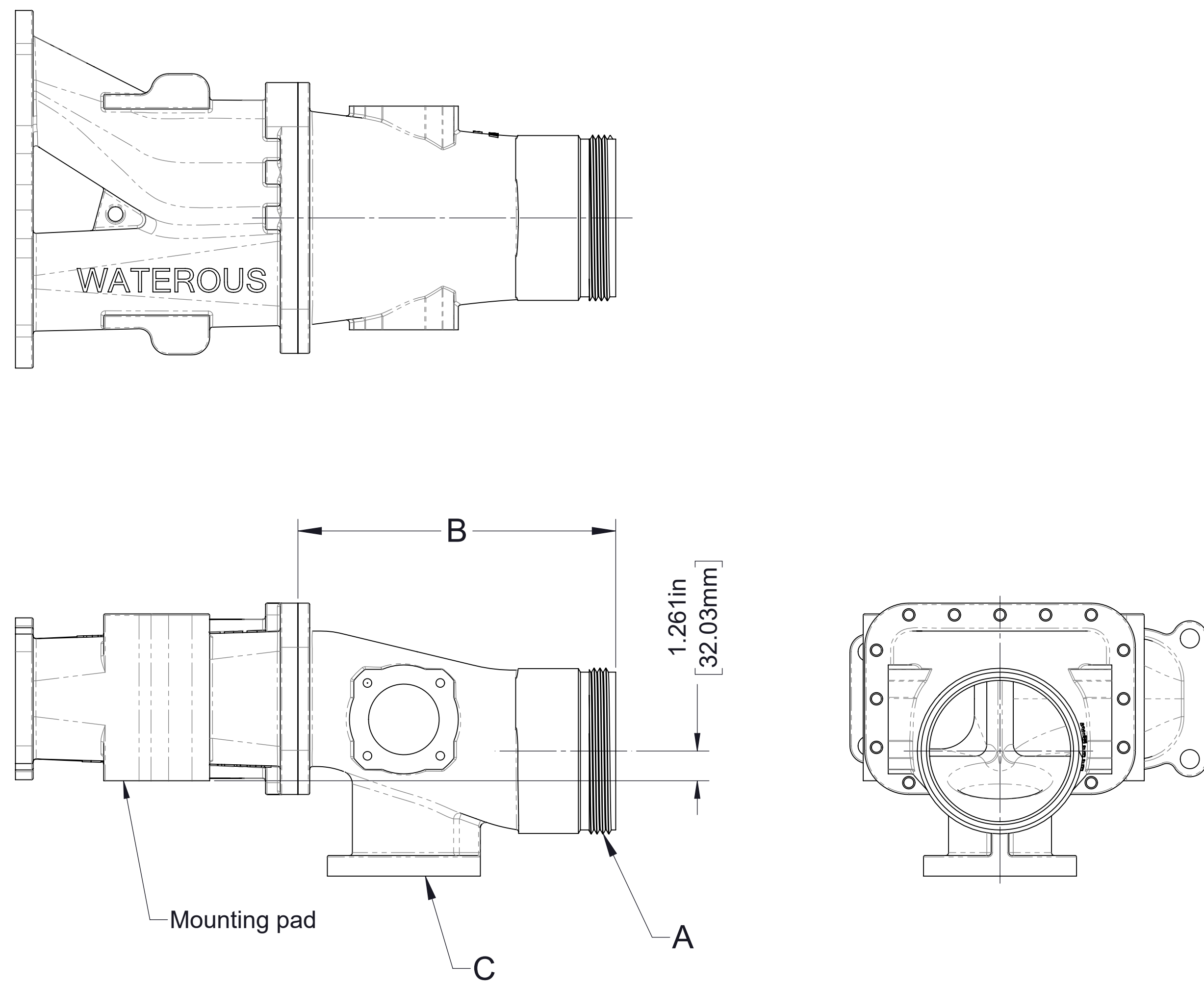
1. Input rotation is viewed looking directly at the transmission input shaft.



CS/CSU Body Dimensions

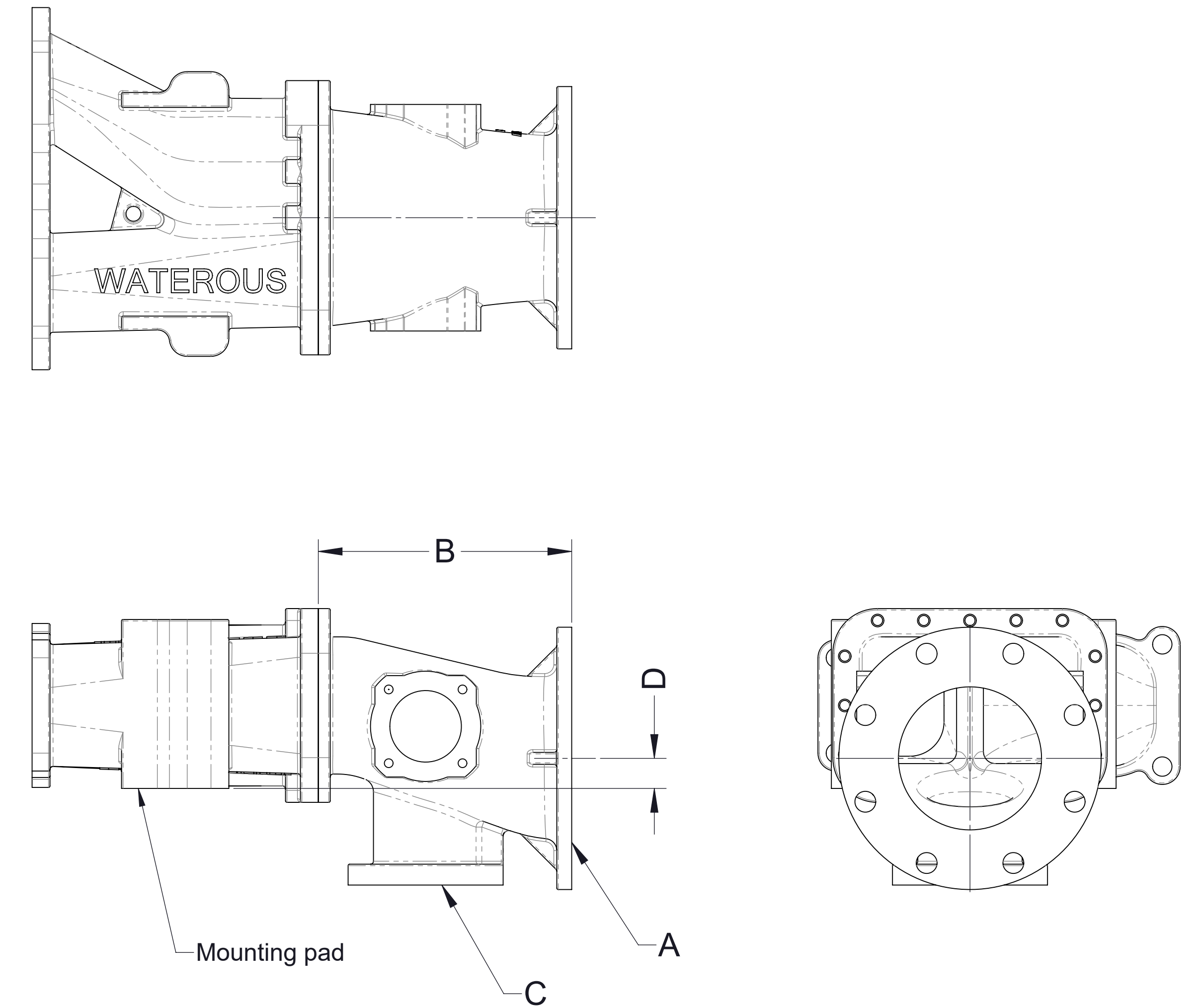


Optional Rear Intake Adapters
Available with 5.000in ANSI flange or 5.000in Victaulic Nipple



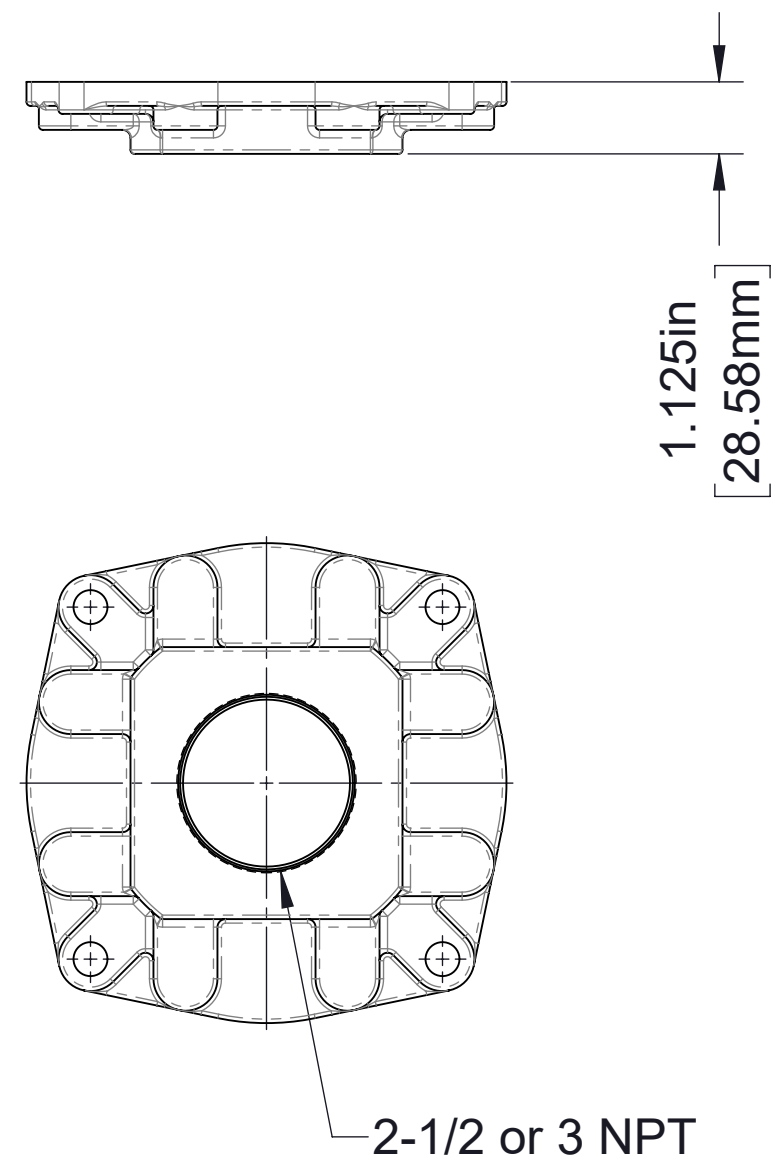
Type	End Size "A"	Length "B"	Bottom Flig "C"	Relief Valve	Part No.
Threaded	5 in NH	13.500in 342.90mm	3-1/2 in 8-bolt	No	82768
		15.000in 381.00mm	3-1/2 in 8-bolt	No	82767
	6 in NH	10.500in 266.70mm	3-1/2 in 8-bolt	No	81929
			No	Yes	82164
		5 in ANSI	Yes	82167	
		13.500in 342.90mm	3-1/2 in 8-bolt	No	81916
			No	Yes	82173
		5 in ANSI	Yes	82174	
		15.000in 381.00mm	3-1/2 in 8-bolt	No	81915
			No	Yes	82163
	5 in ANSI	Yes	82166		

Threaded Intake Fitting
81916 shown

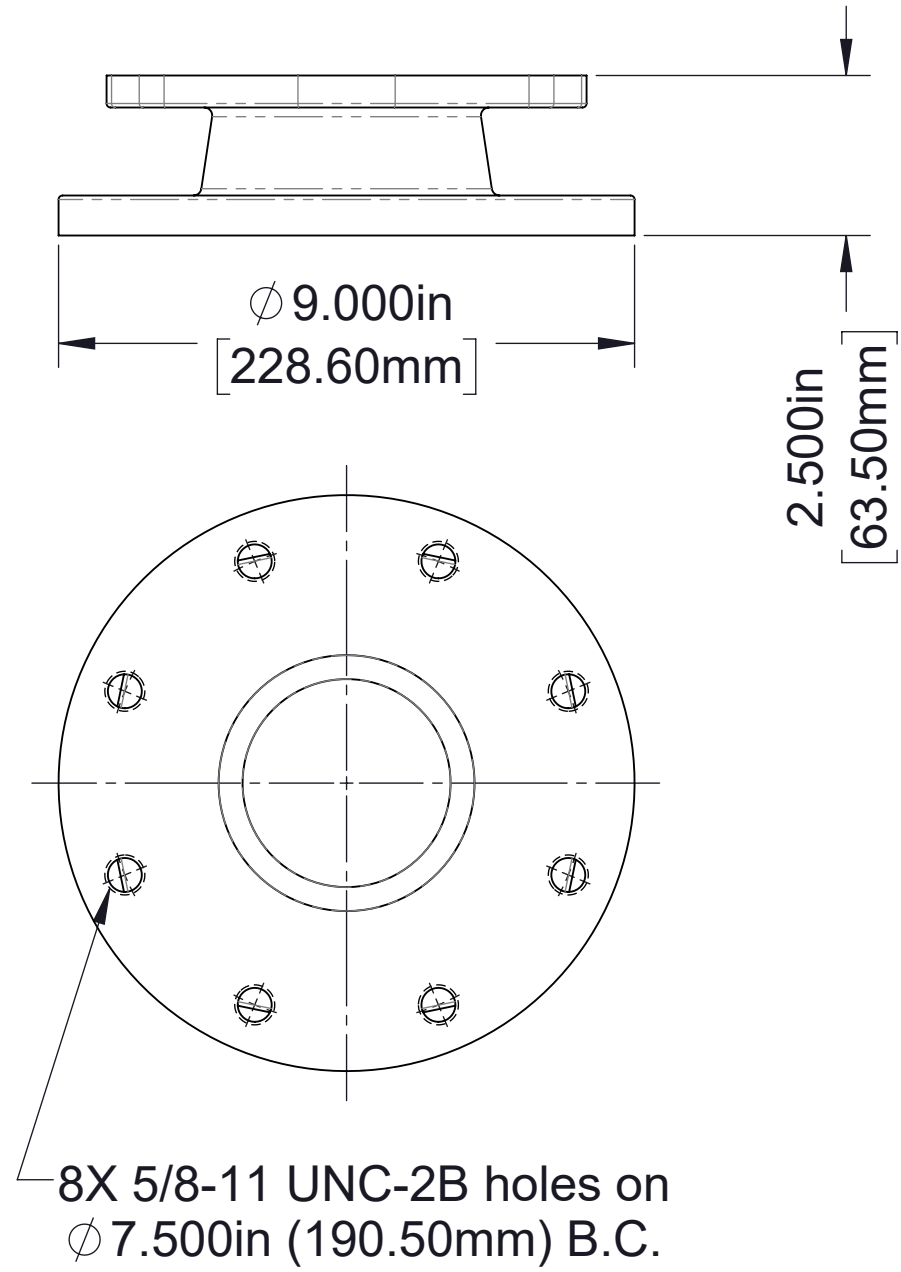


Type	End Size "A"	Length "B"	Bottom Flig "C"	"D"	Relief Valve	Part No.
Flanged	6 in ANSI	6.750in 171.45mm	2-1/2 in 4-bolt	1.980in 50.29mm	No	82289
			No		Yes	82301
			5 in ANSI	Yes	82302	
		10.625in 269.88mm	3-1/2 in 8-bolt	1.261in 32.03mm	No	82011
			No		Yes	82165
			5 in ANSI	Yes	82168	

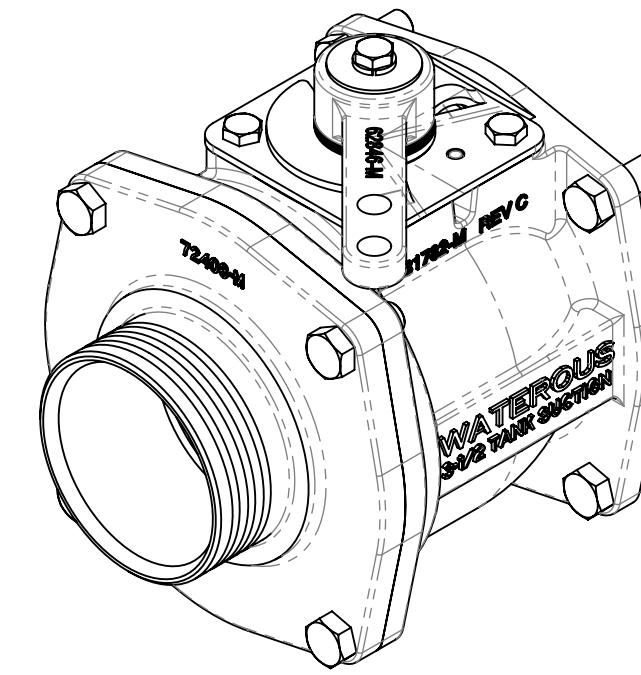
Flanged Intake Fitting
82011 shown



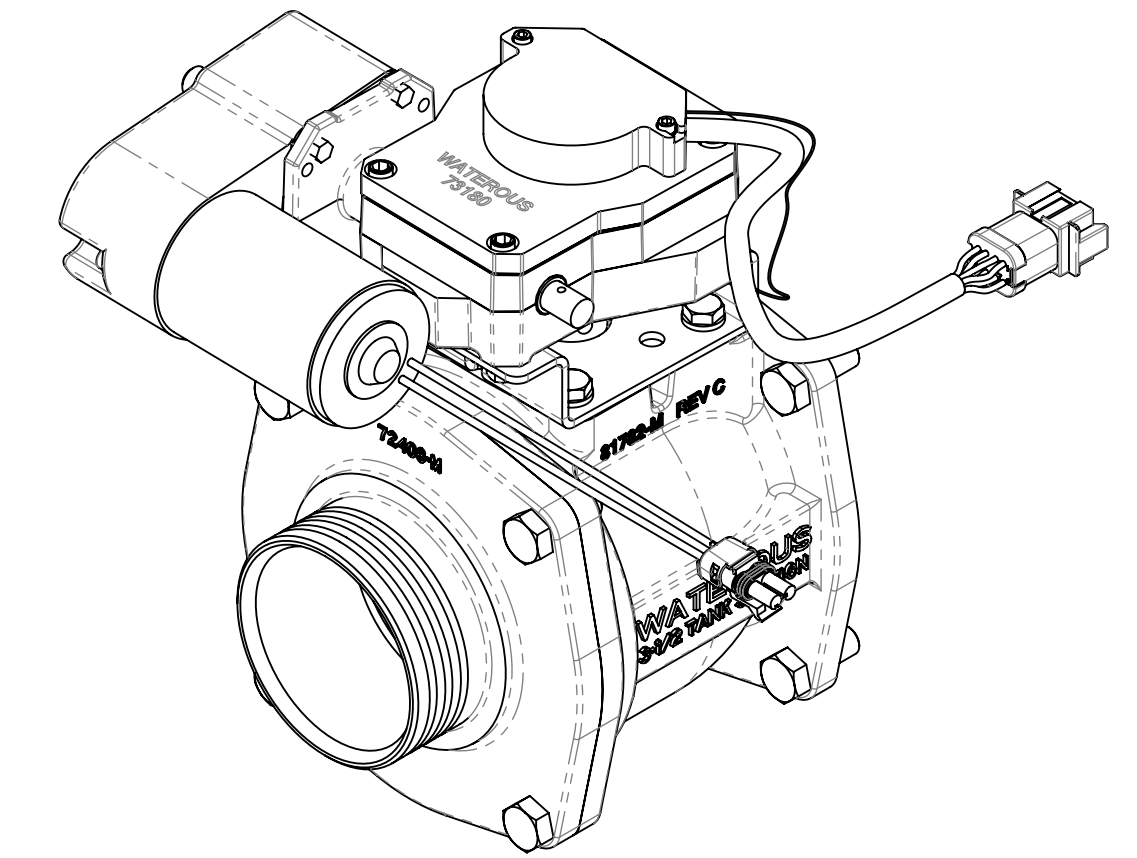
Tapped flange



4 in ANSI Flange.
(Not available with PA transmission)

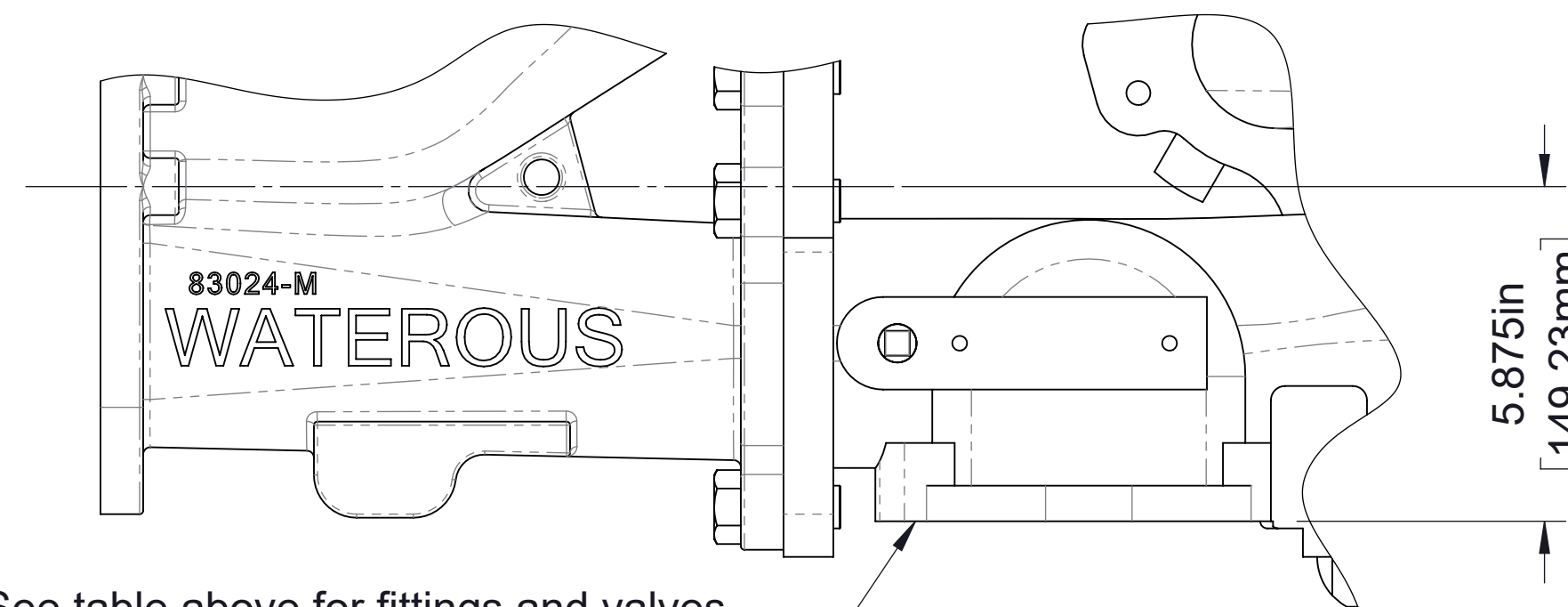


Manual tank to pump valve.
See DPL81962 for ordering details

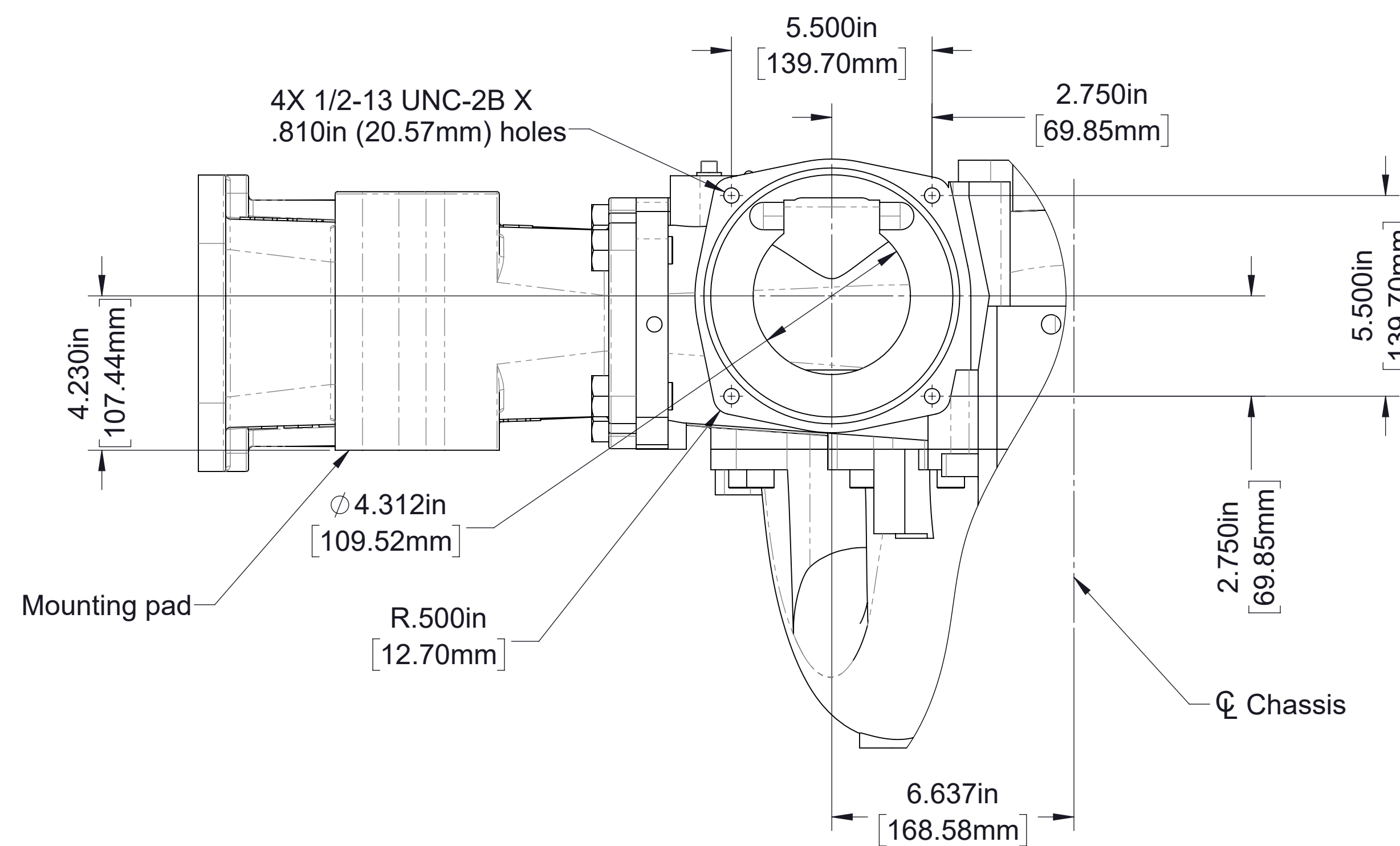


Electric tank to pump valve with rotary actuator.
See DPL82771 for ordering details

Optional Tank To Pump Flange Fittings and Valves

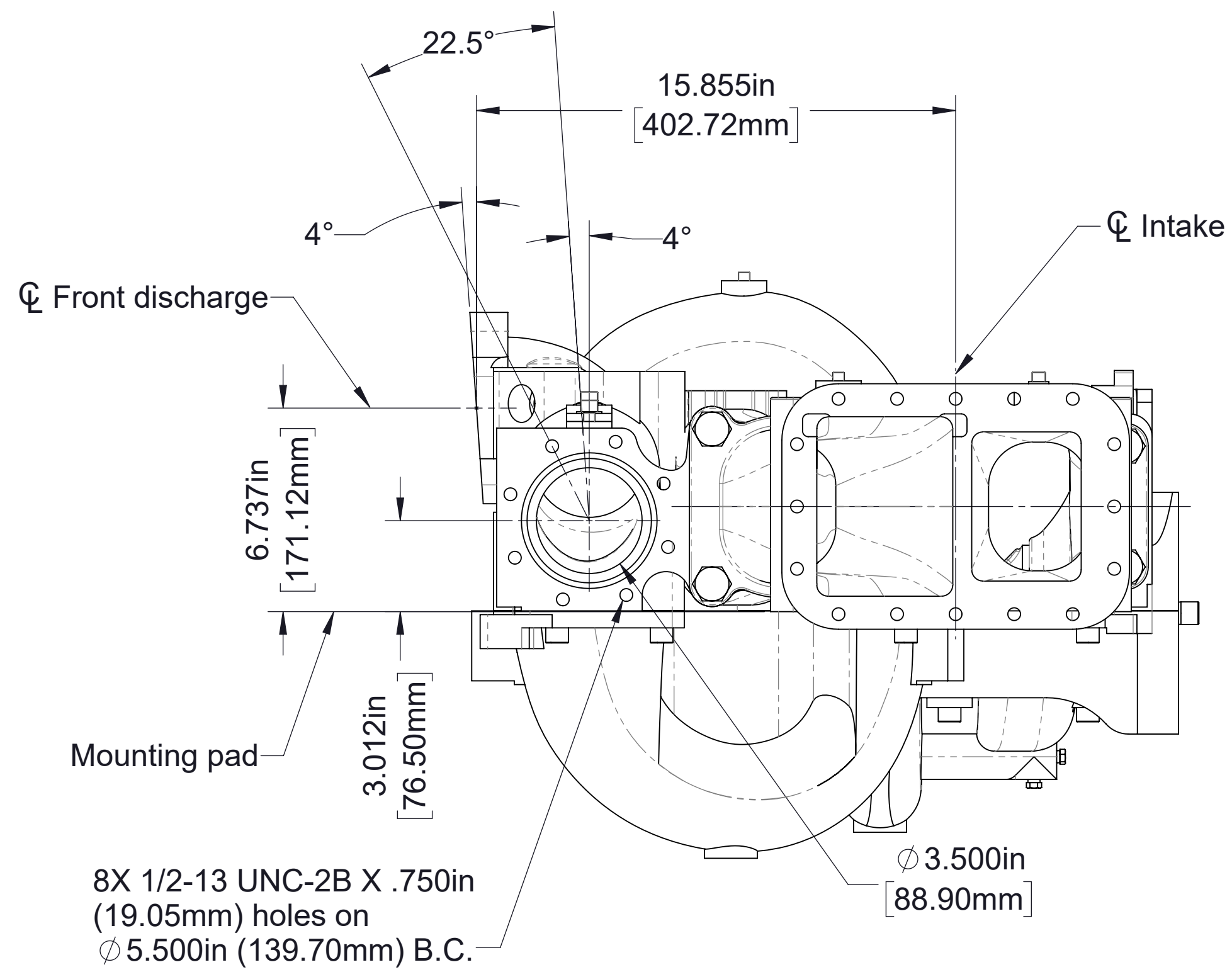


See table above for fittings and valves which may be mounted on this flange. (Flange may be ordered blank without fittings or valves.)



Tank To Pump Flange

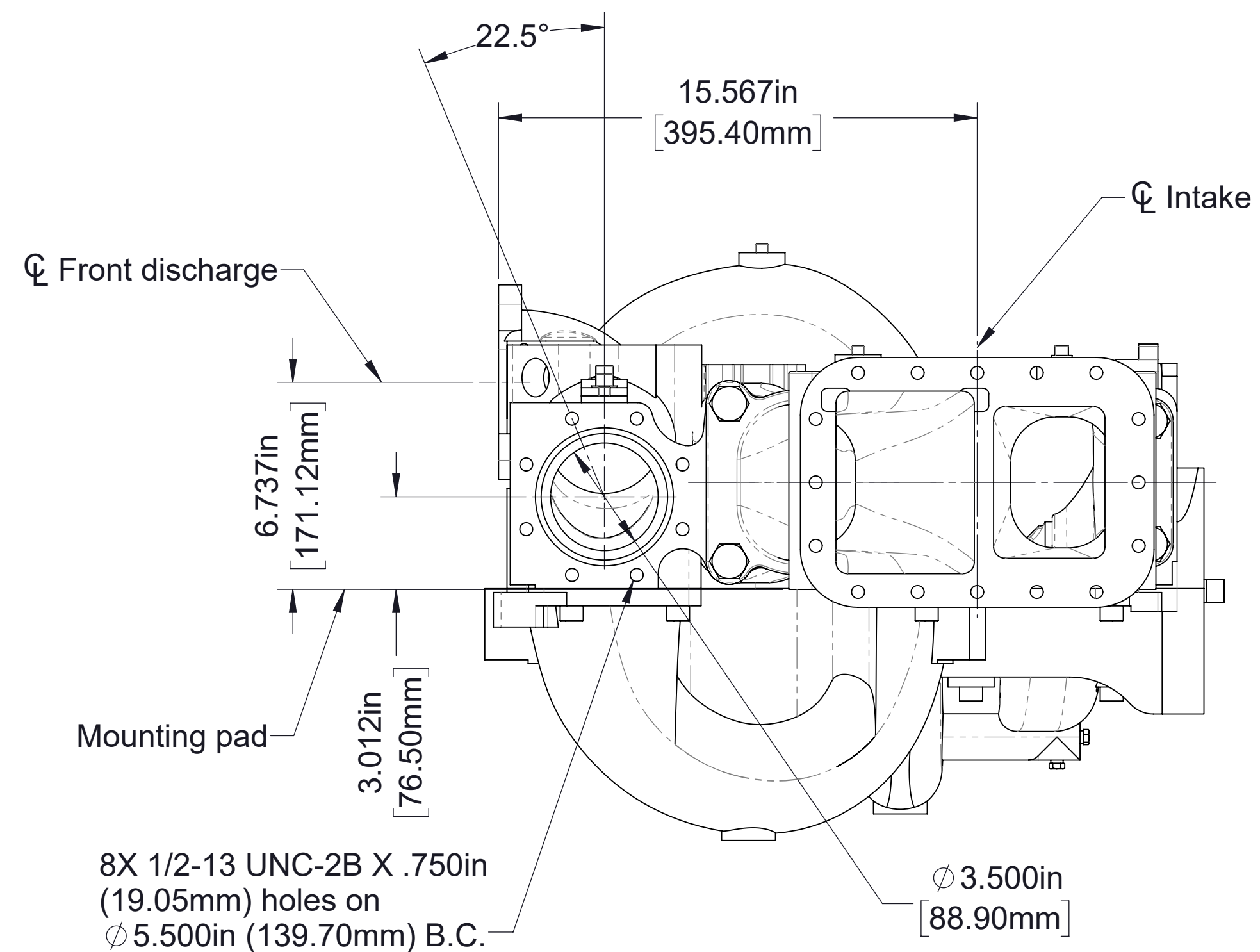
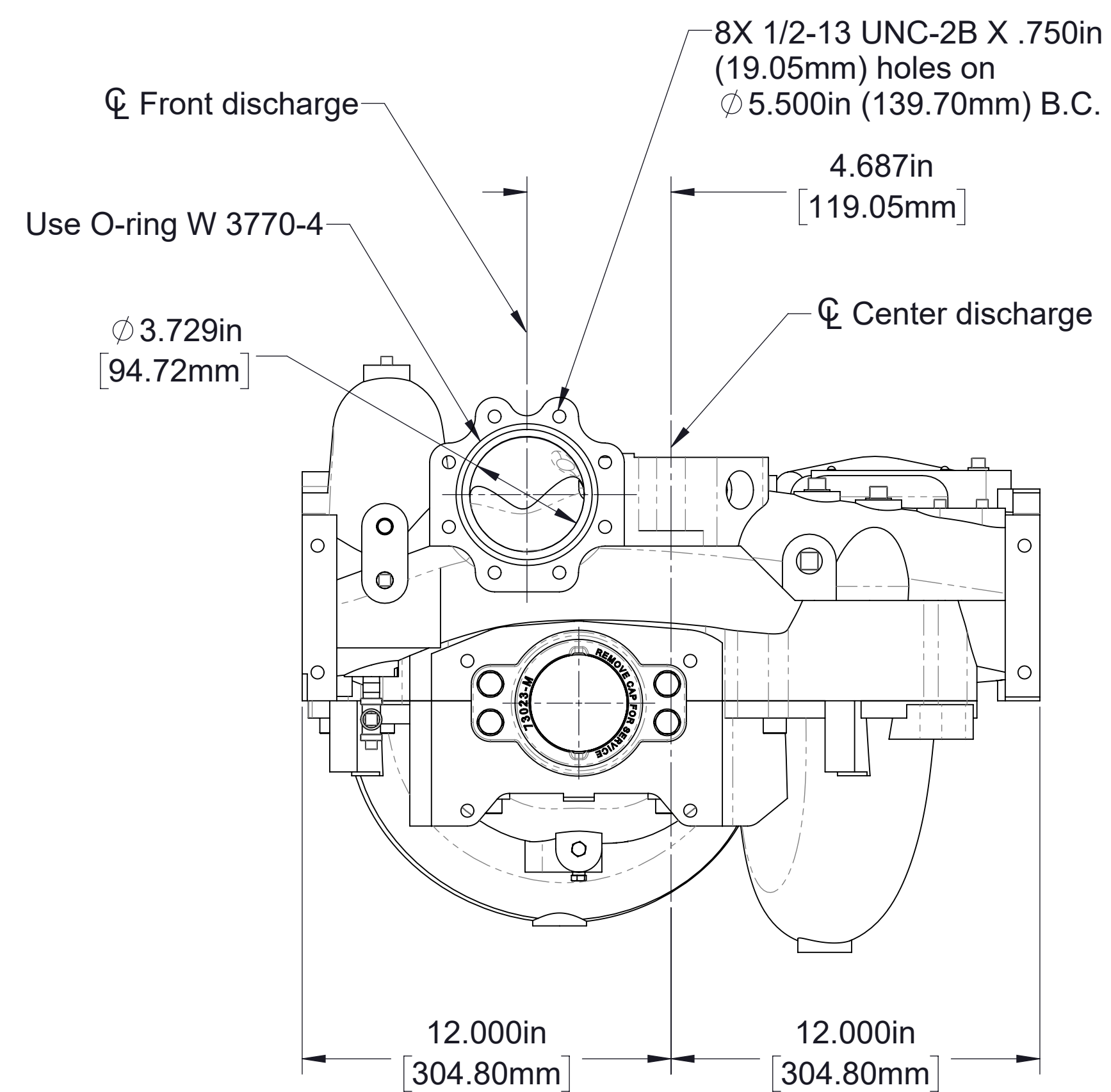
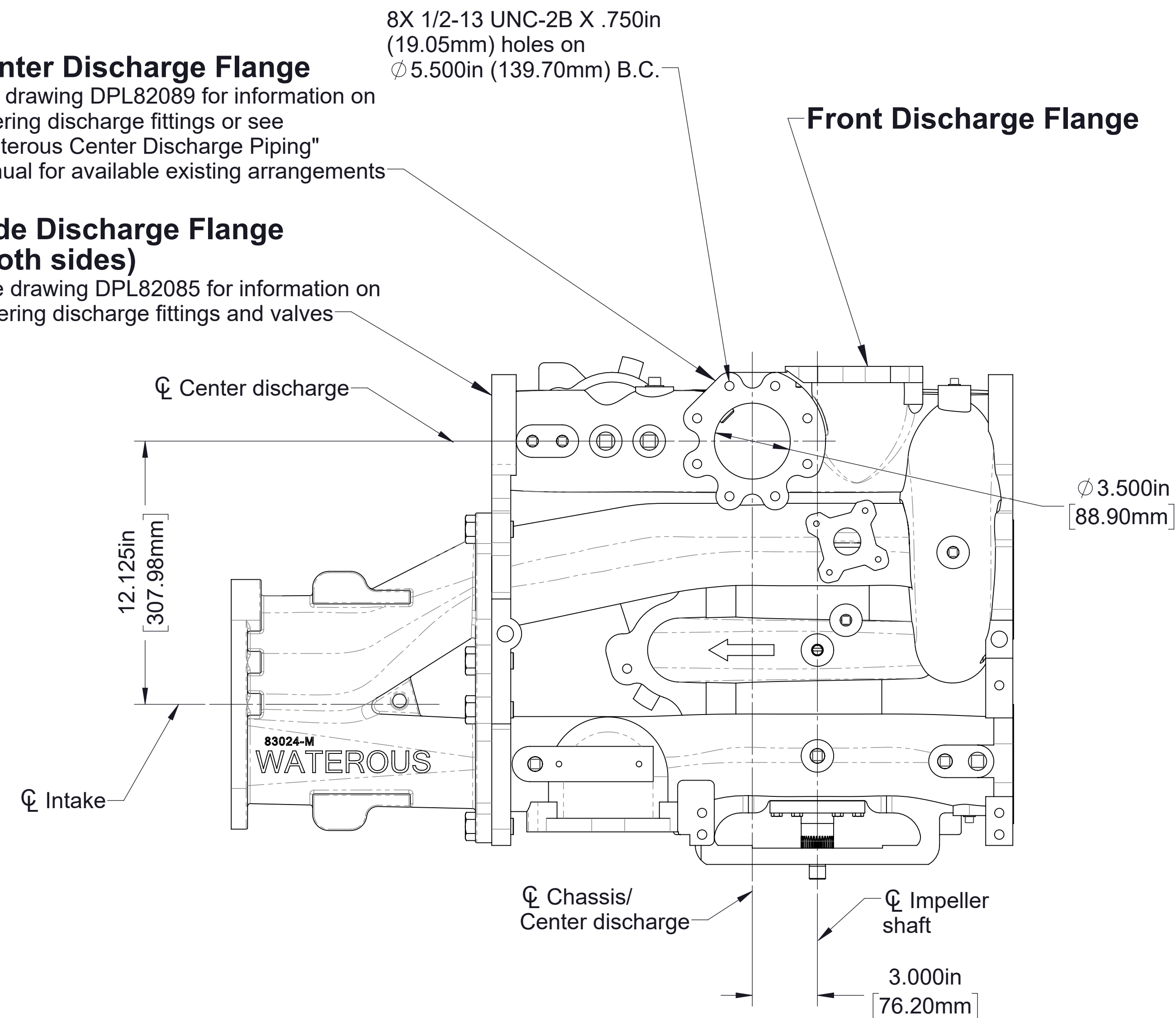
Use O-ring W37108-4
Available with or without check valve



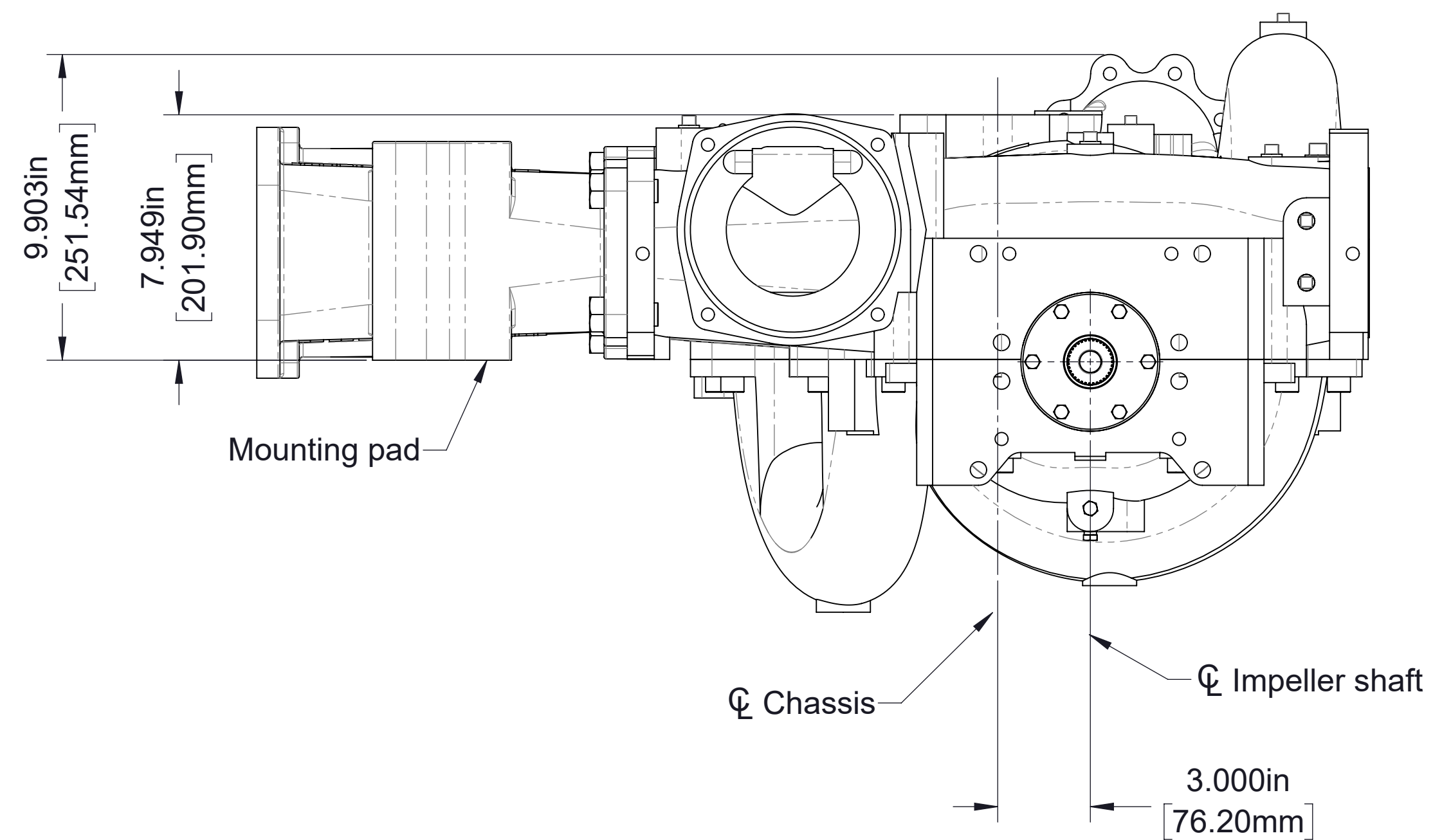
Angle Compensated Side and Front Discharge

Center Discharge Flange
 See drawing DPL82089 for information on ordering discharge fittings or see "Waterous Center Discharge Piping" manual for available existing arrangements

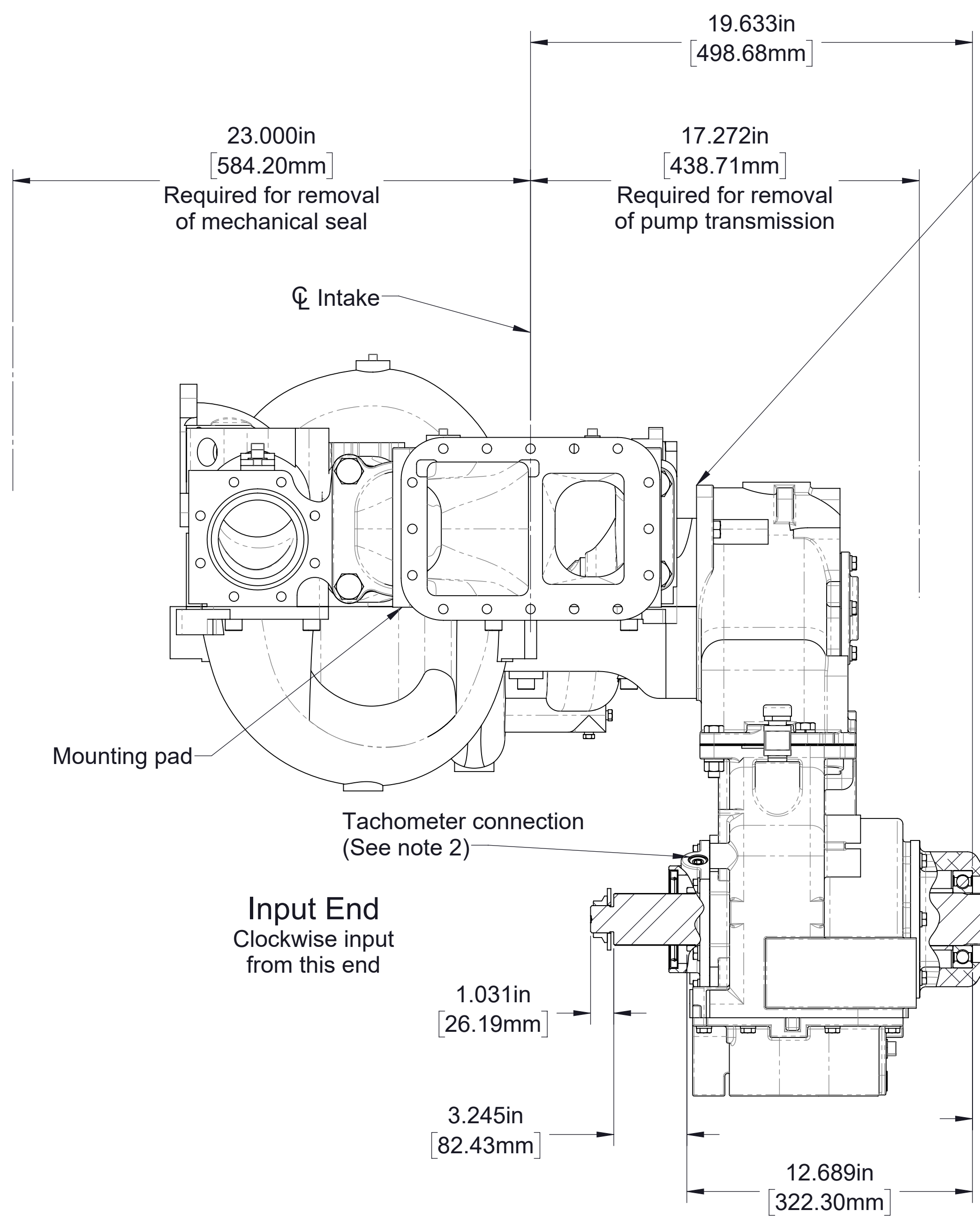
Side Discharge Flange (Both sides)
 See drawing DPL82085 for information on ordering discharge fittings and valves



Non-Angle Compensated Side and Front Discharge



Discharge Connections
 See drawing DPL82085 for information on ordering discharge fittings and valves

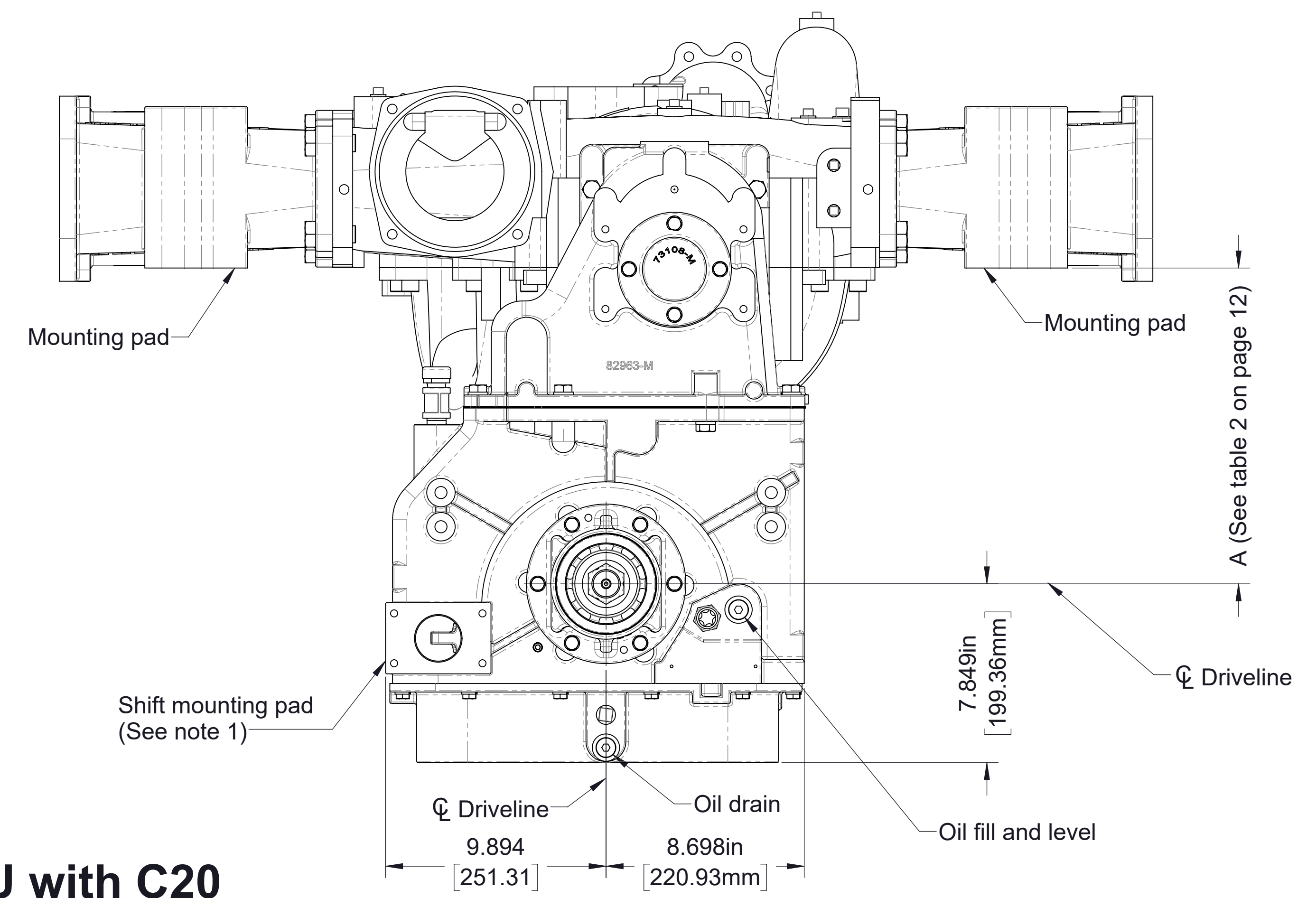
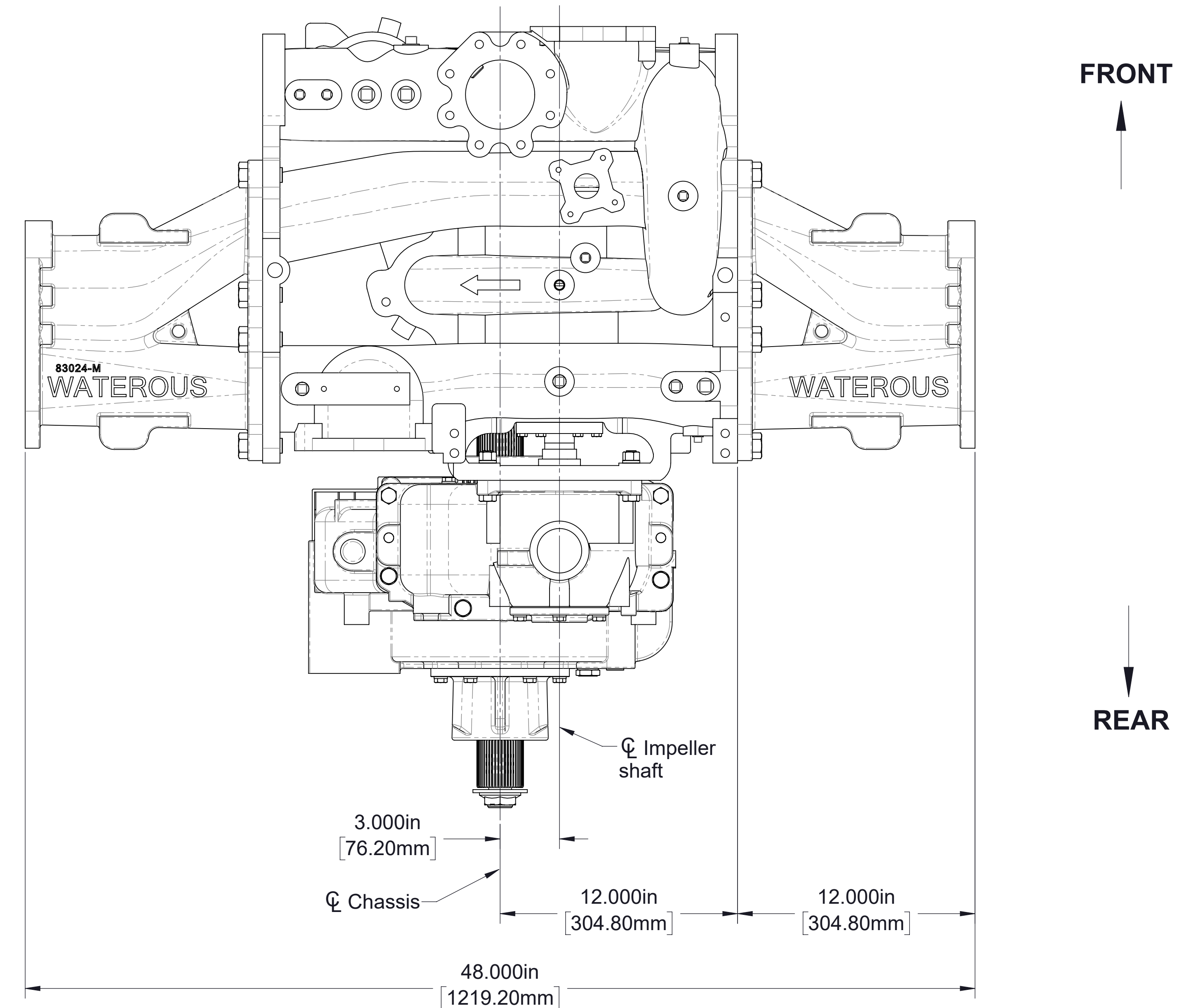


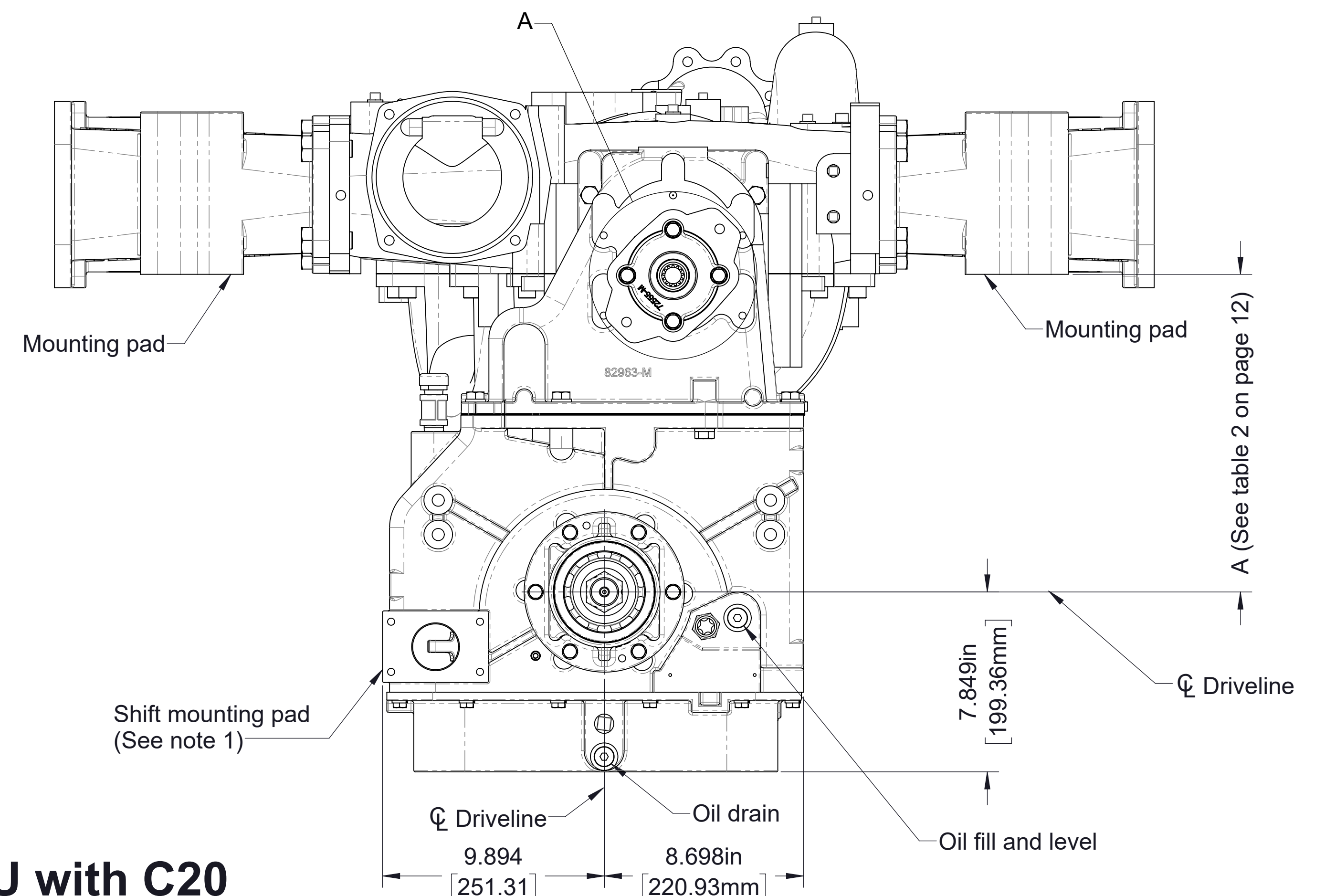
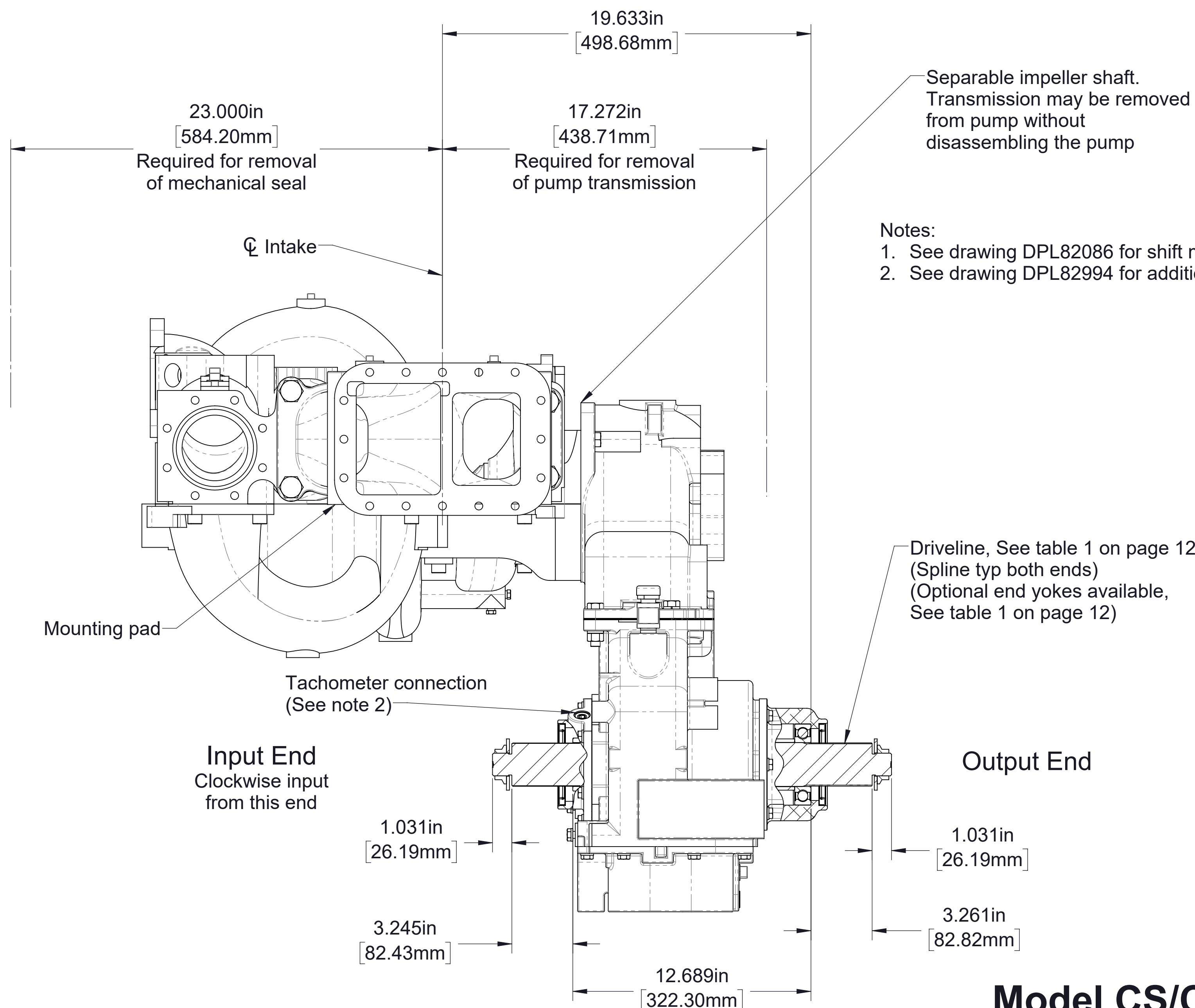
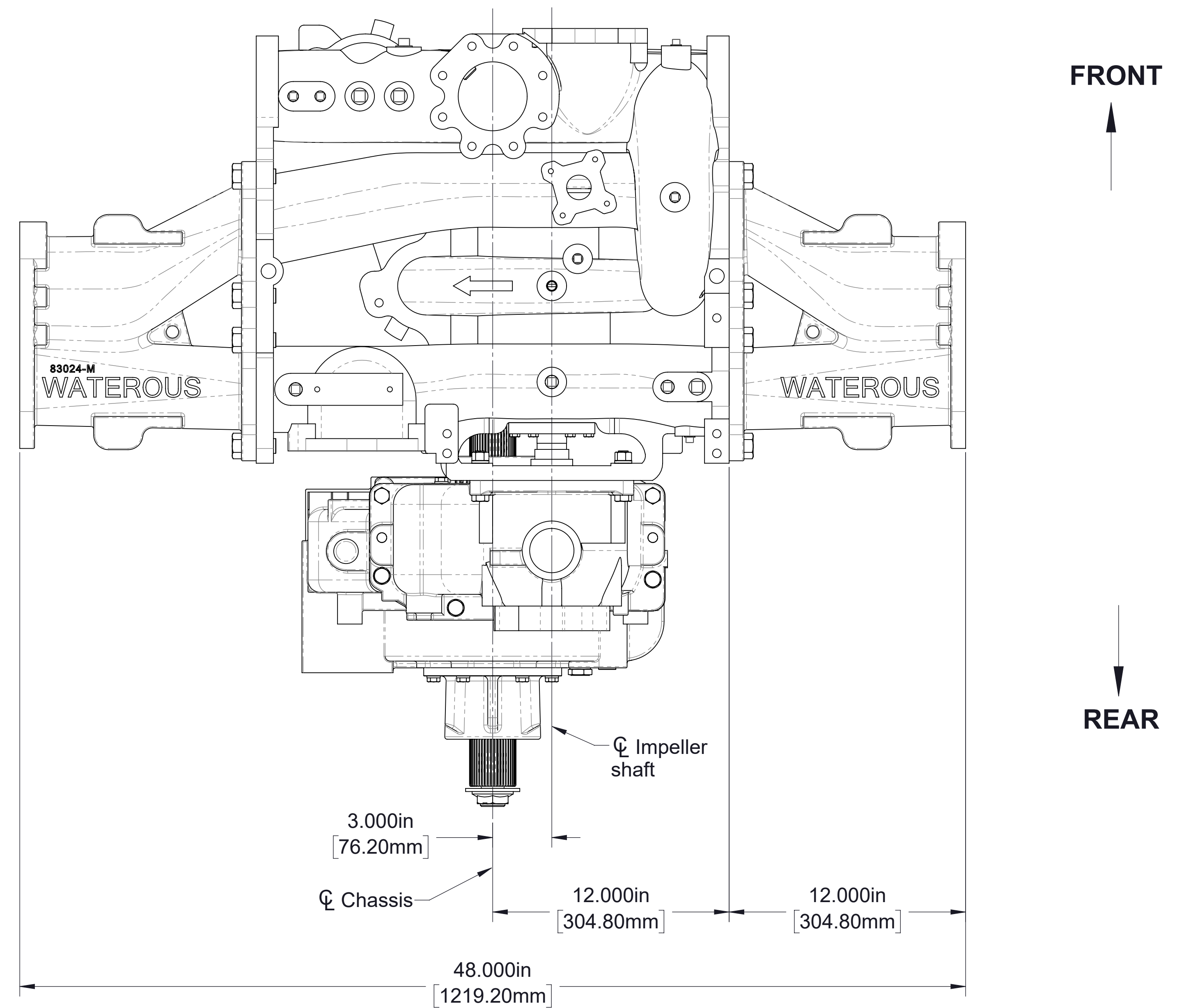
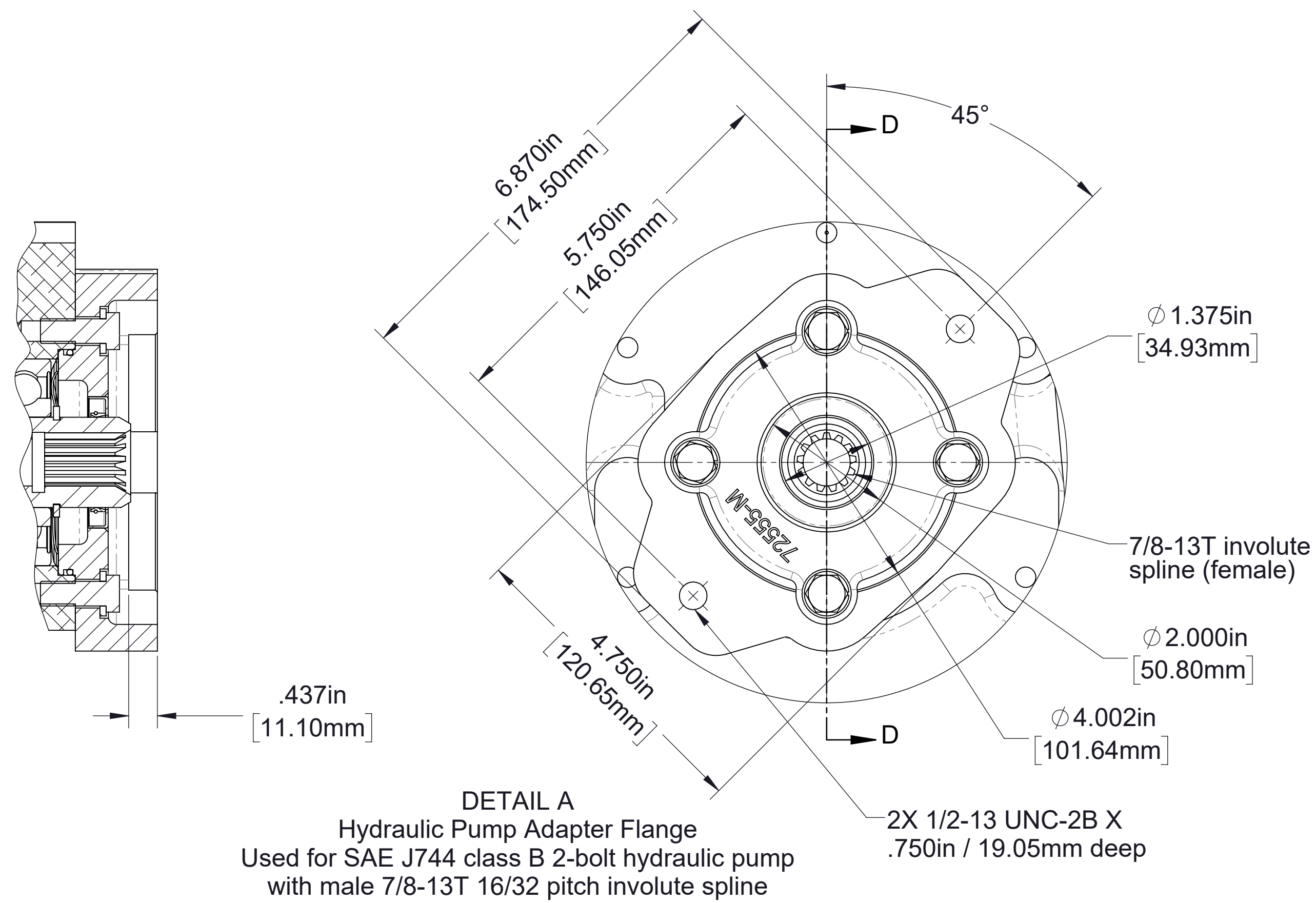
Separable impeller shaft.
Transmission may be removed from pump without disassembling the pump

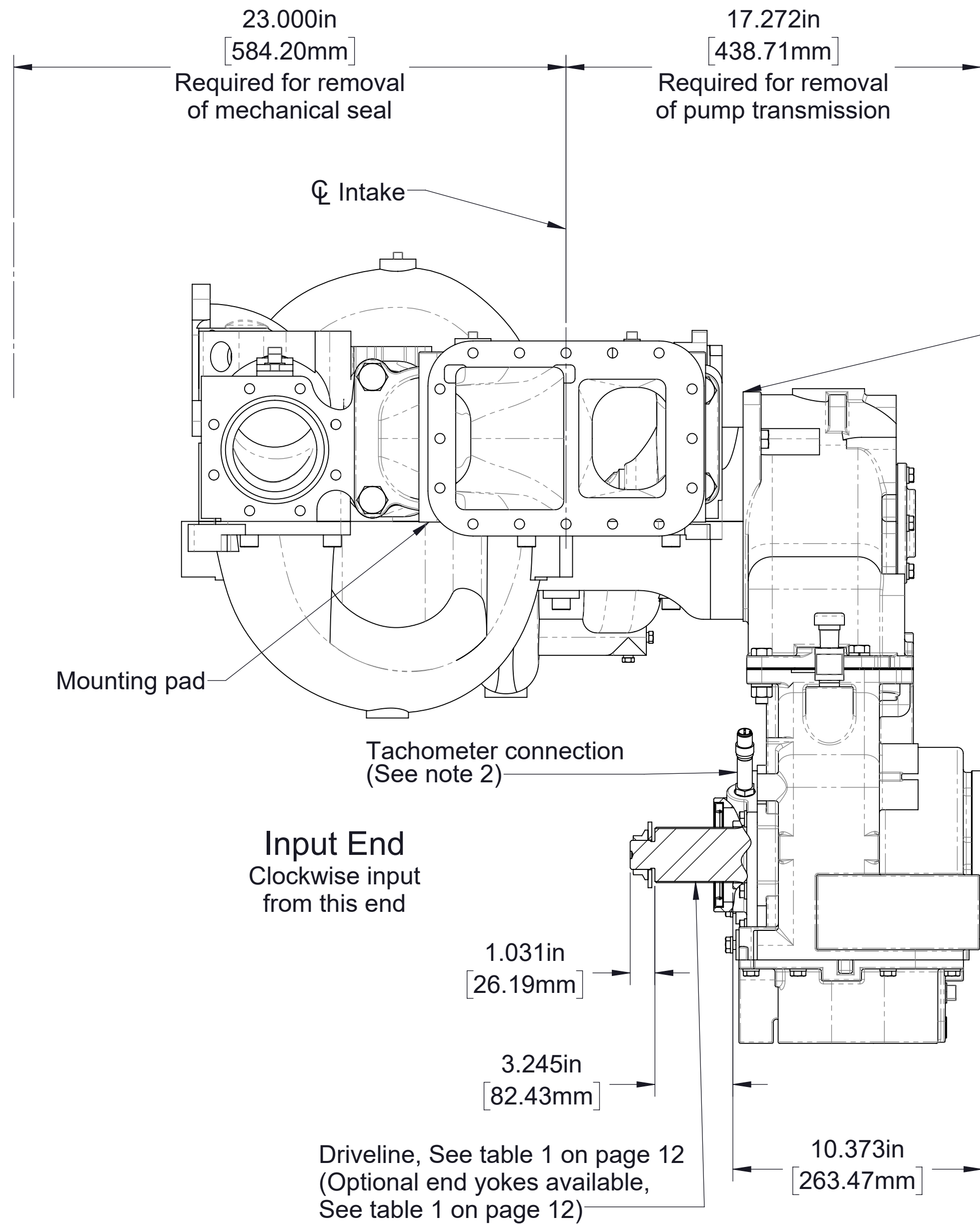
- Notes:
1. See drawing DPL82086 for shift mounting pad details
 2. See drawing DPL82994 for additional details of tachometer connection

Driveline, See table 1 on page 12 (Spline typ both ends) (Optional end yokes available, See table 1 on page 12)

Model CS/CSU with C20
Input and Output Shaft
Model CSC20C, 2.27 ratio shown

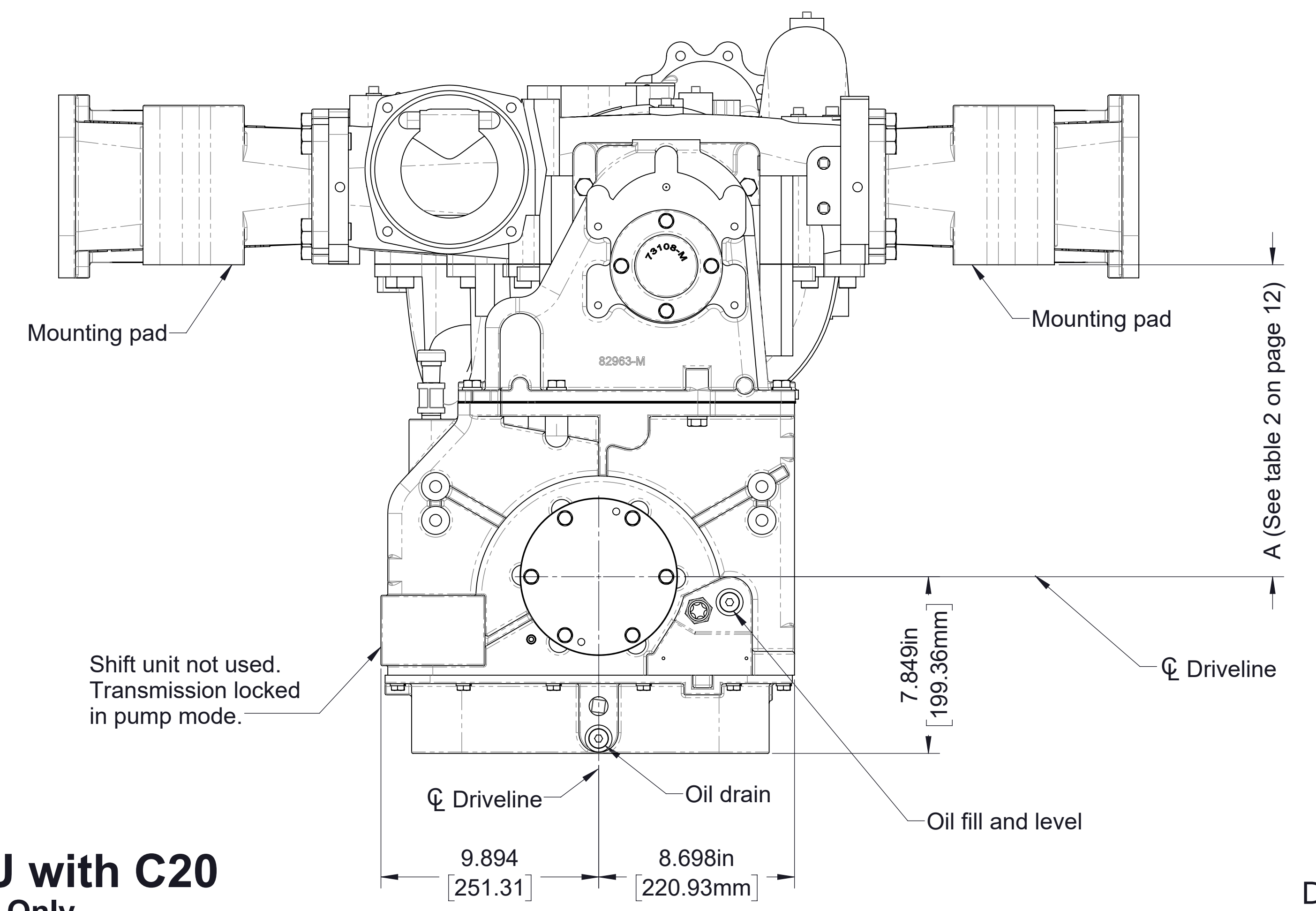
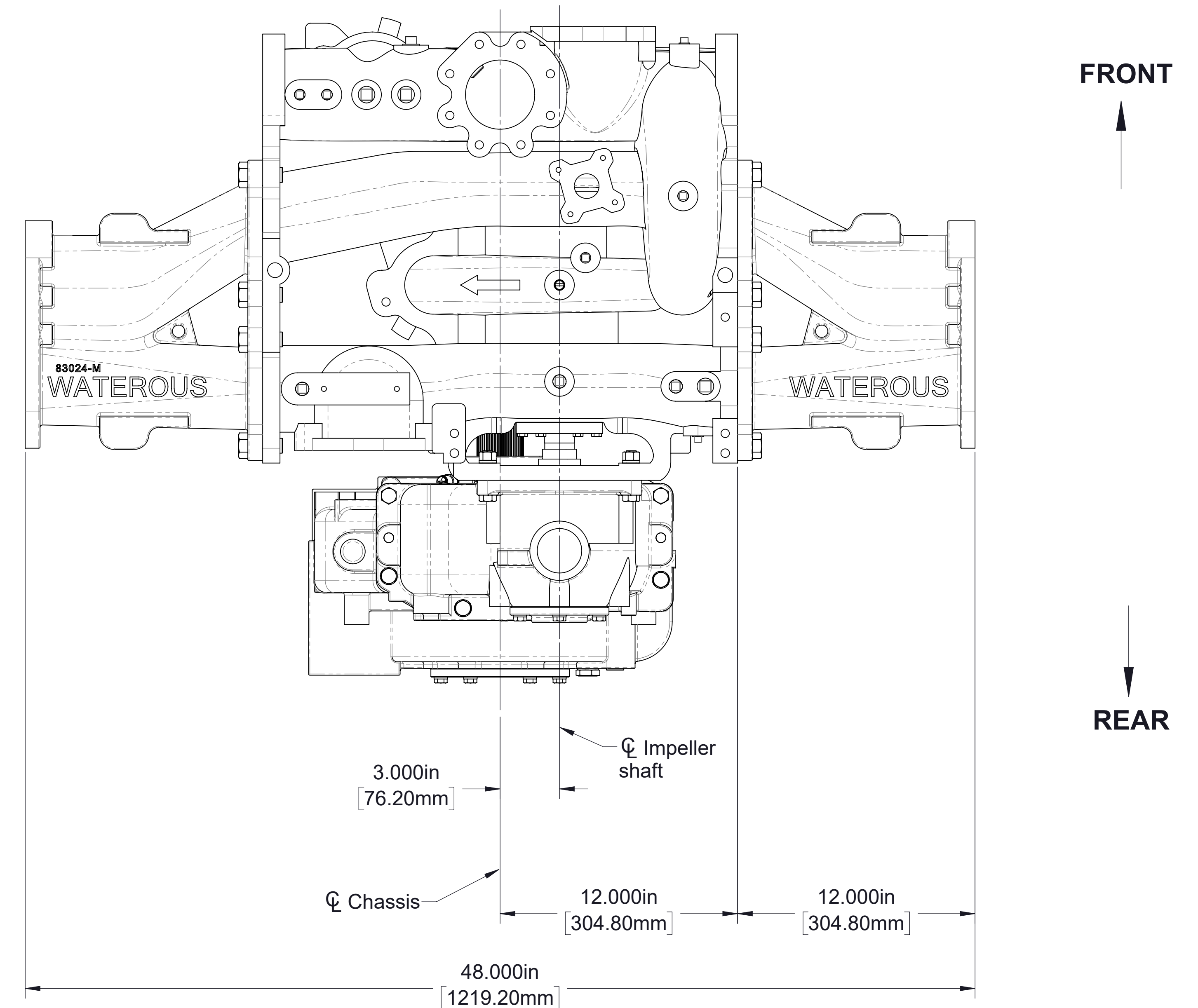




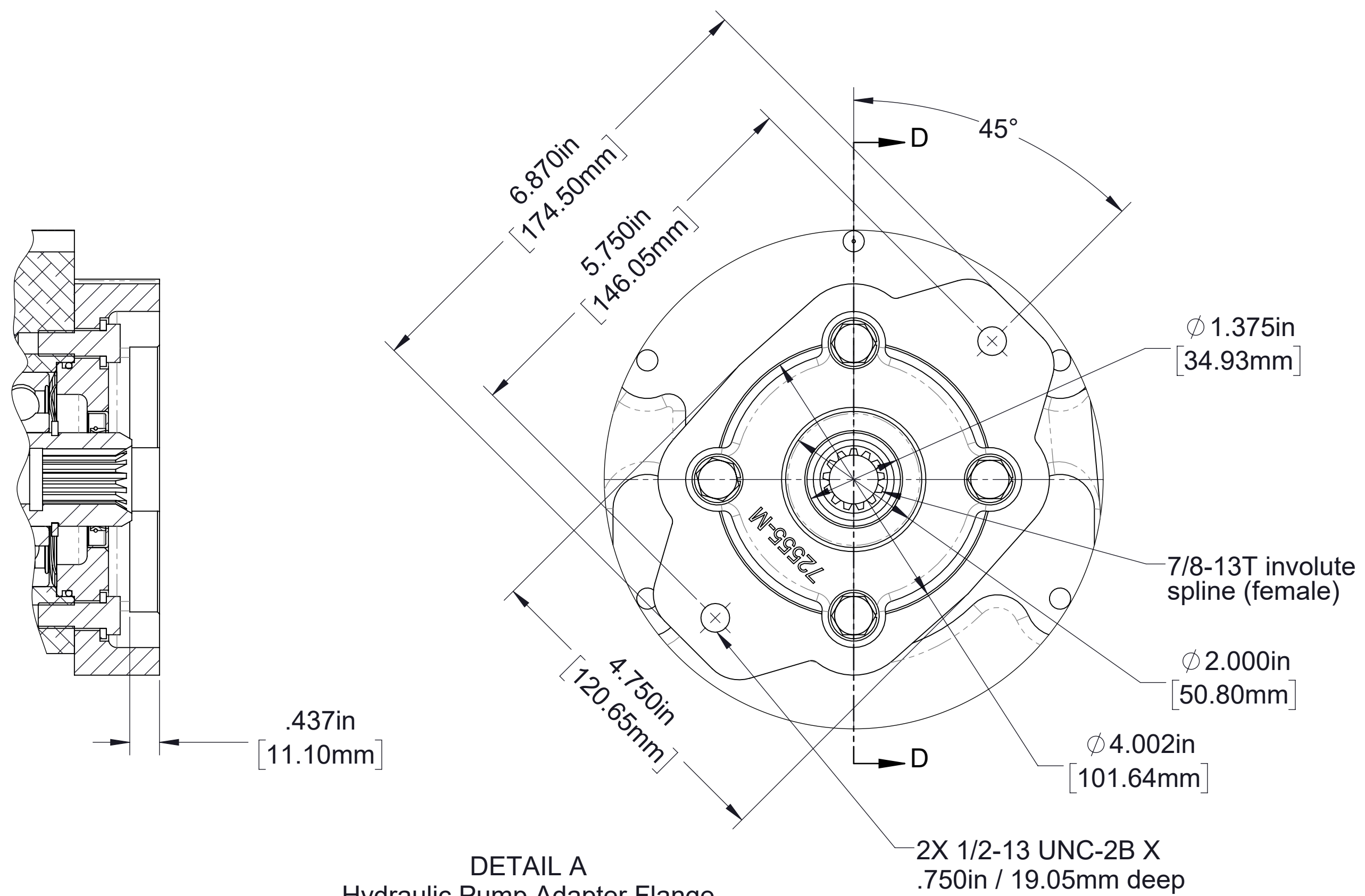


Notes:
 1. See drawing DPL82086 for shift mounting pad details
 2. See drawing DPL82994 for additional details of tachometer connection

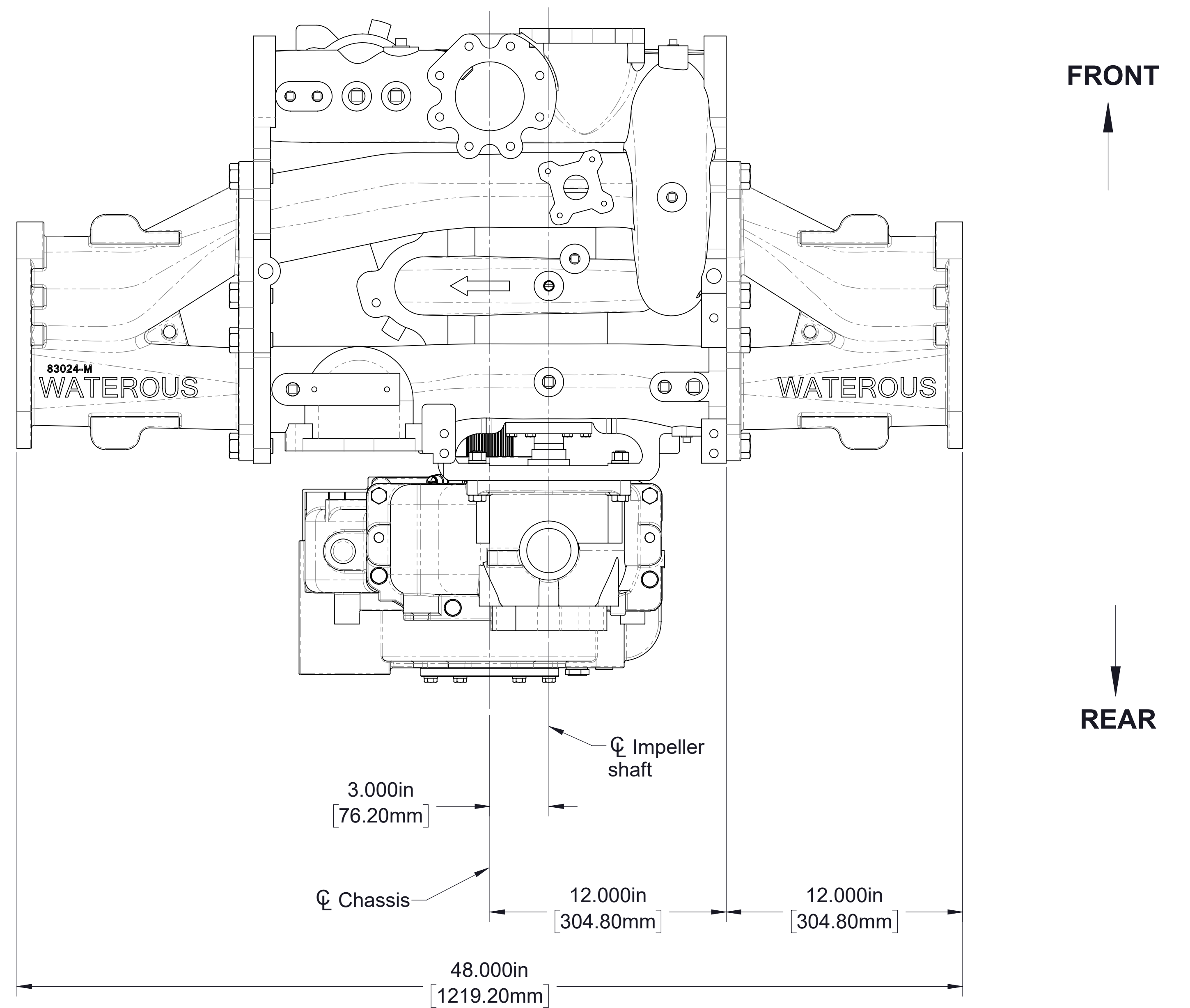
Separable impeller shaft.
 Transmission may be removed from pump without disassembling the pump



Model CS/CSU with C20
Input Shaft Only
 Model CSC20C, 2.27 ratio shown

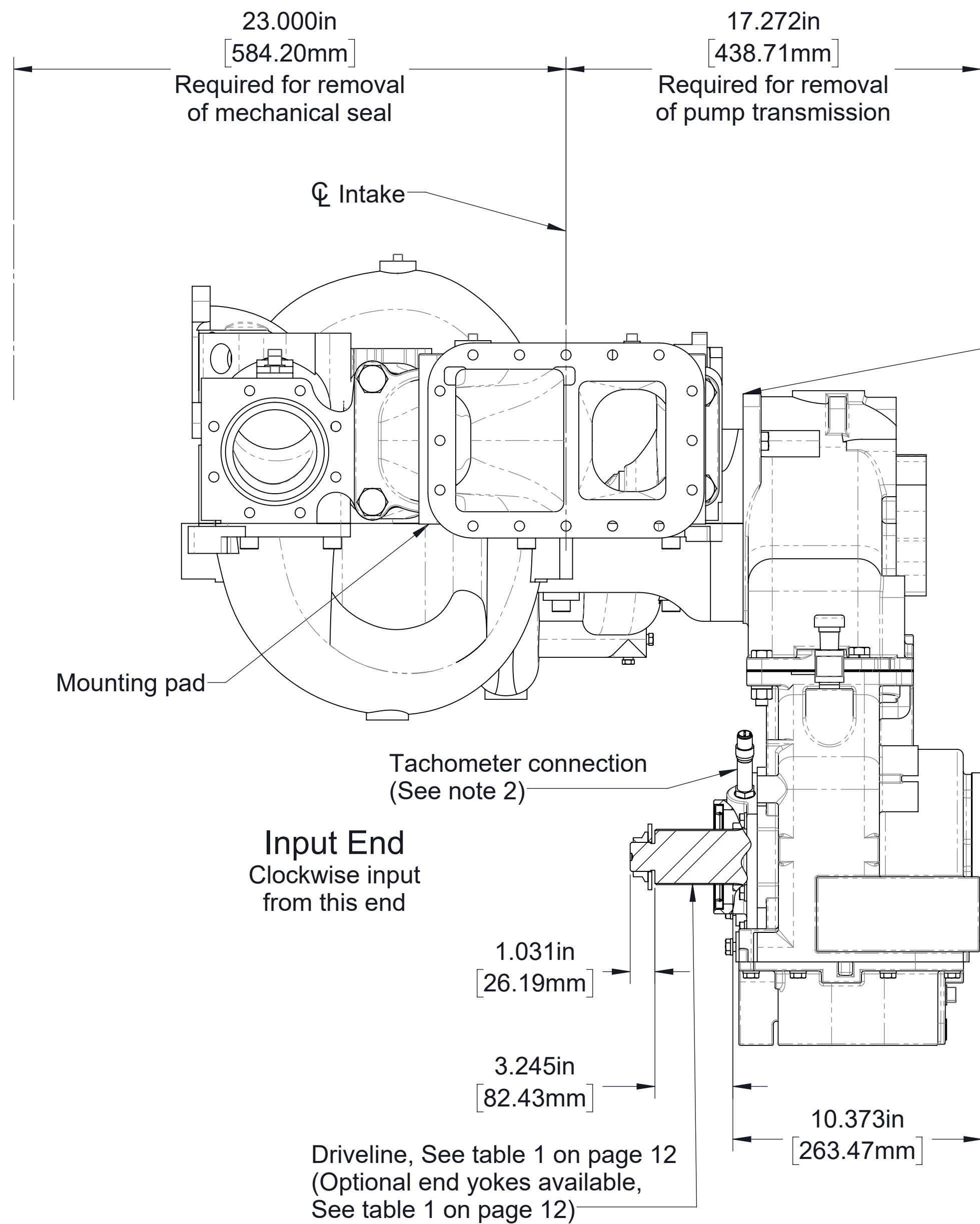


DETAIL A
Hydraulic Pump Adapter Flange
Used for SAE J744 class B 2-bolt hydraulic pump
with male 7/8-13T 16/32 pitch involute spline



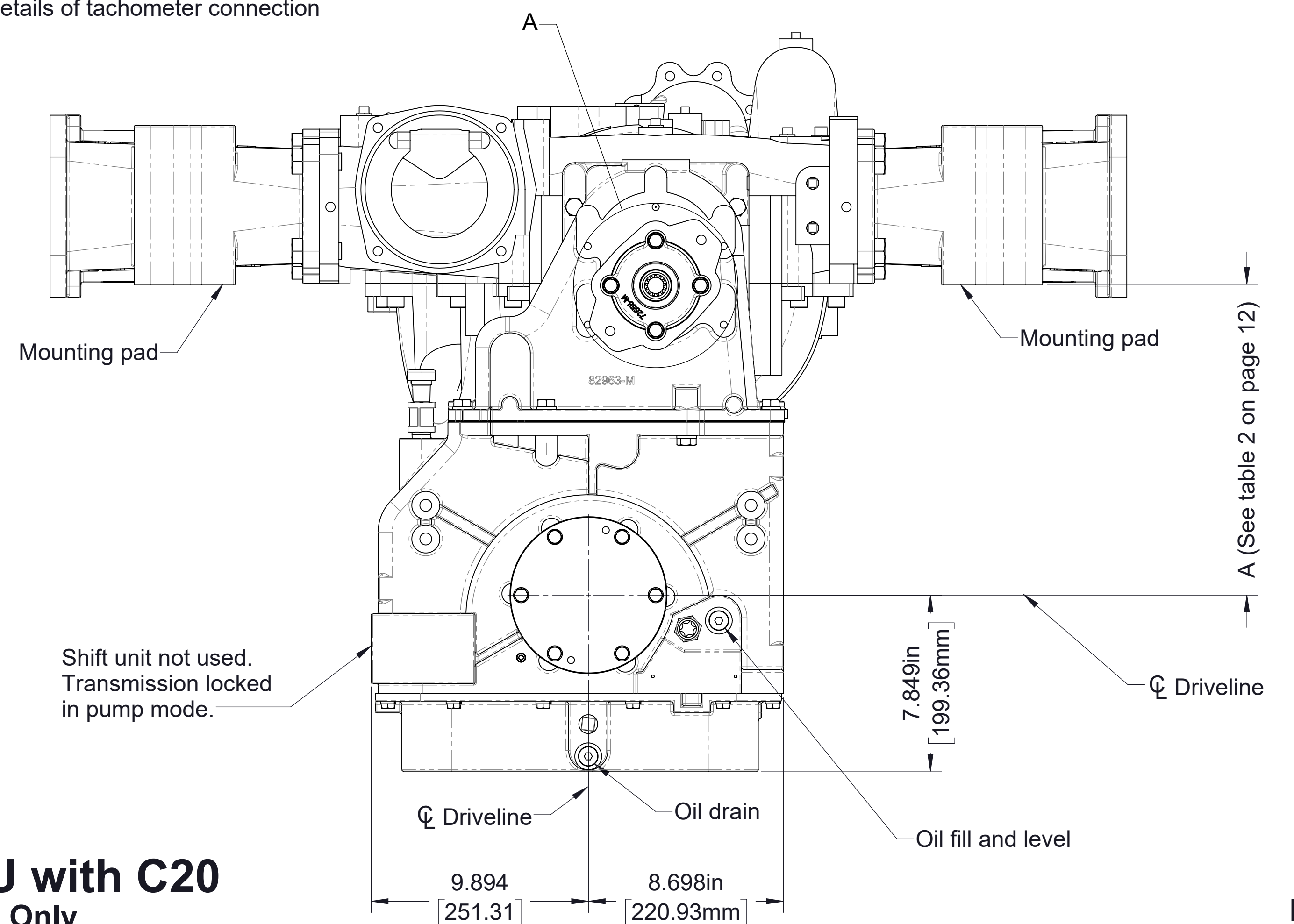
FRONT

REAR



- Notes:
1. See drawing DPL82086 for shift mounting pad details
2. See drawing DPL82994 for additional details of tachometer connection

Separable impeller shaft.
Transmission may be removed
from pump without
disassembling the pump



Model CS/CSU with C20
Input Shaft Only
With optional hydraulic motor mount provision
Model CSC20C, 2.27 ratio shown

Table 1 - Available Driveline/Models							
Driveline			Optional End Yokes and Companion Flanges Available from Waterous				
Type	Size	Spline	Yoke		Cross and Bearing Kit	Companion Flange	
			Spicer Series	Part No.		Spicer Series	Part No.
Extra Heavy Duty	2.35 Inch	2.35-46T Involute	1710 BP	V 2837	V 2839	1480/1610	V 3719
			1810 BP	V 2838	V 2840	1650/1710	V 3619
			1710 HR	V 4101	--	--	--
			1810 HR	V 4102	--	--	--
			SPL140	V 3388	V 3389	--	--

Table 2 - Available Ratios					
Dimension A					
Drive to Driven Ratio	All dimensions shown as inch/millemeter				
	C20B	C20C	C20D	C20E	C20F
1.27	12.310/312.45	14.363/364.82	14.876/377.85	16.912/429.56	18.943/481.15
1.41	11.891/302.03	13.950/354.33	14.982/380.54	17.022/432.36	19.053/483.95
1.48	12.377/314.38	13.929/353.80	14.958/379.93	17.002/431.85	19.032/483.41
1.58	12.256/311.30	13.807/350.70	14.893/376.91	16.881/428.78	18.912/480.36
1.69	12.341/313.46	13.890/352.81	14.927/379.15	16.974/431.14	19.012/482.90
1.79	12.009/305.03	14.096/358.04	15.123/384.12	17.178/436.32	19.219/488.16
1.88	12.180/309.37	13.741/349.02	14.768/375.11	16.824/427.33	18.860/479.04
1.97	12.357/313.87	13.921/353.59	14.963/380.06	17.021/432.33	19.063/484.20
2.03	11.947/303.45	14.035/356.49	15.079/383.01	17.137/435.28	19.183/487.25
2.27	12.291/312.19	13.862/352.09	14.907/378.64	16.971/431.06	19.022/483.16
2.46	11.922/304.60	14.093/357.96	15.138/384.51	17.205/437.01	19.256/489.10

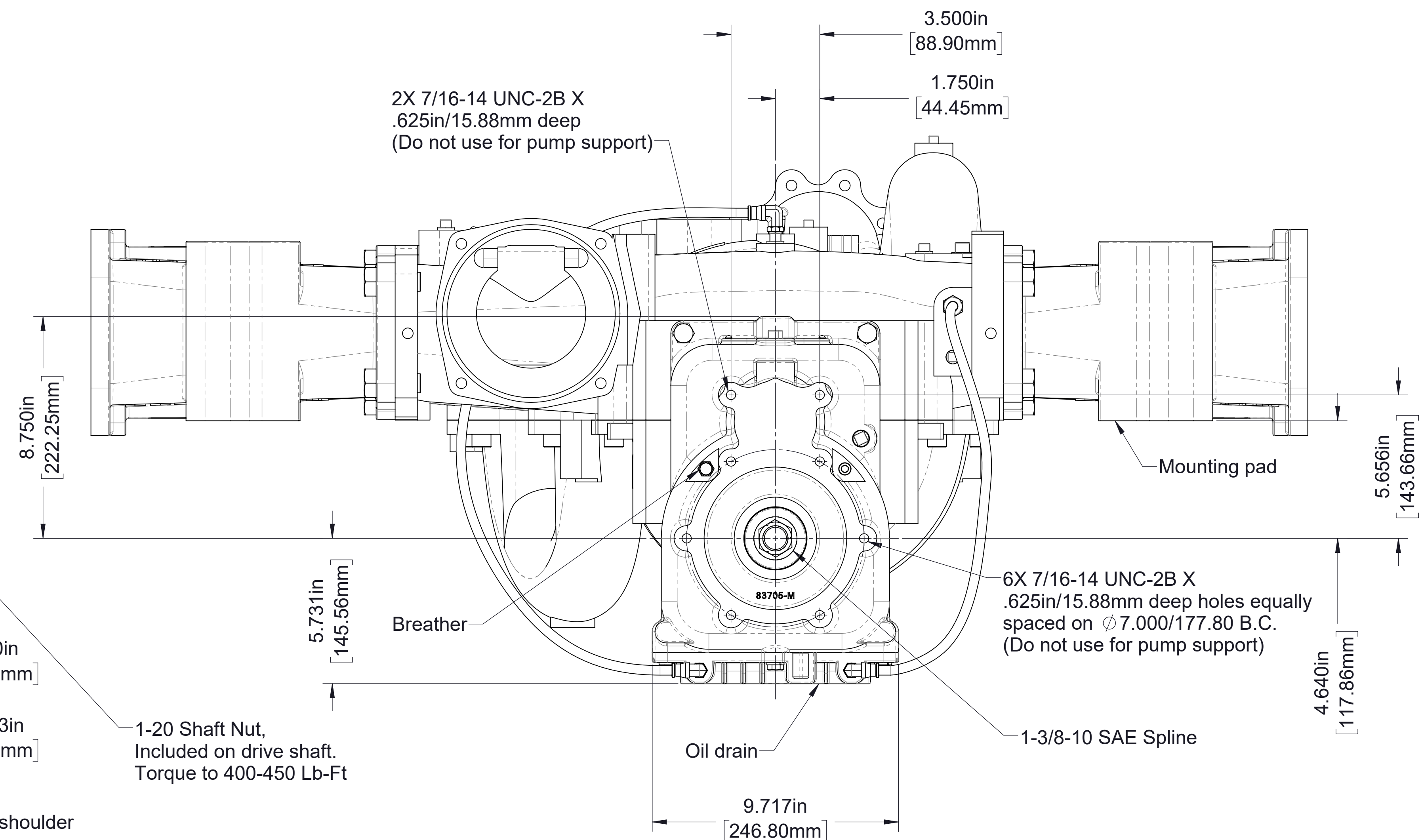
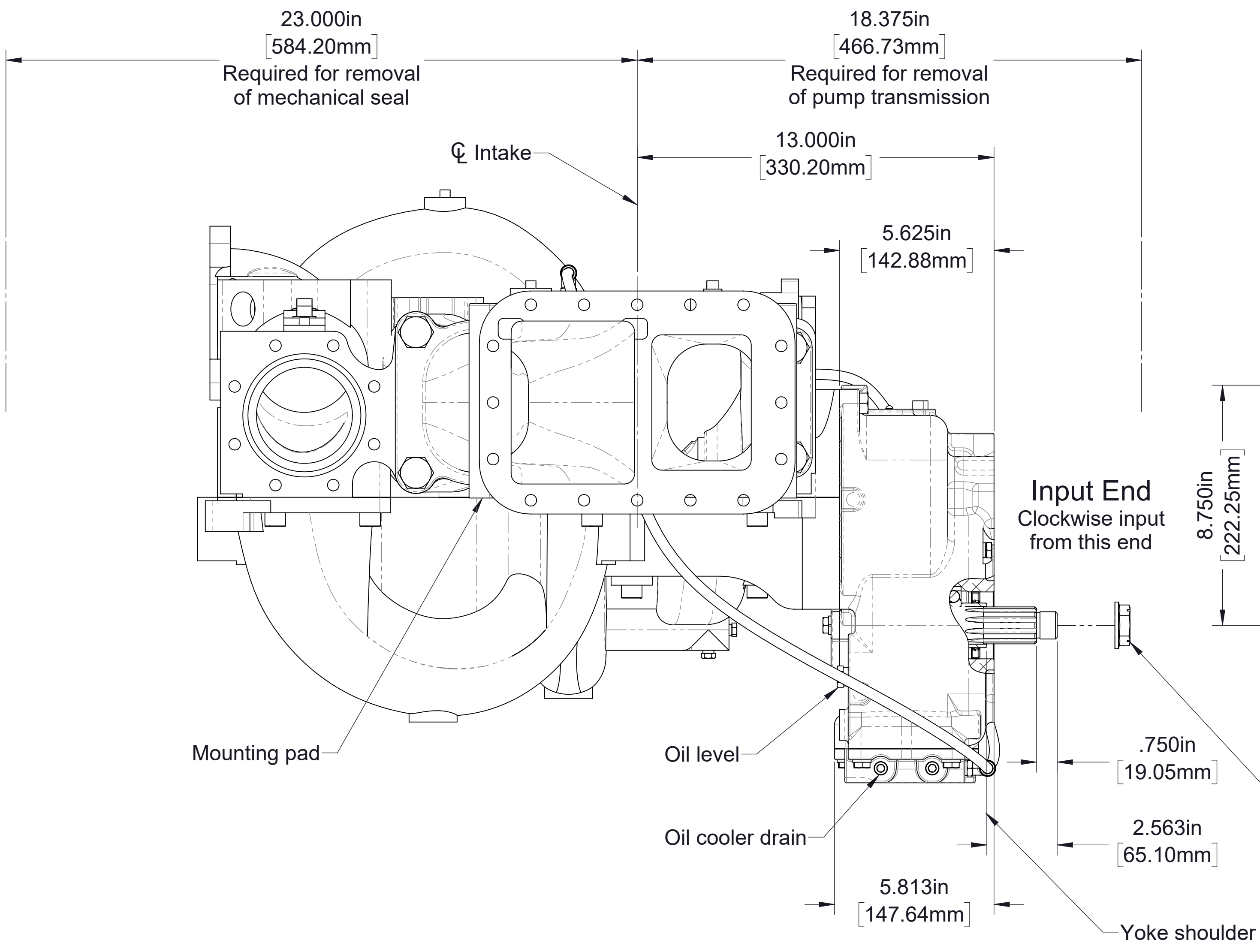
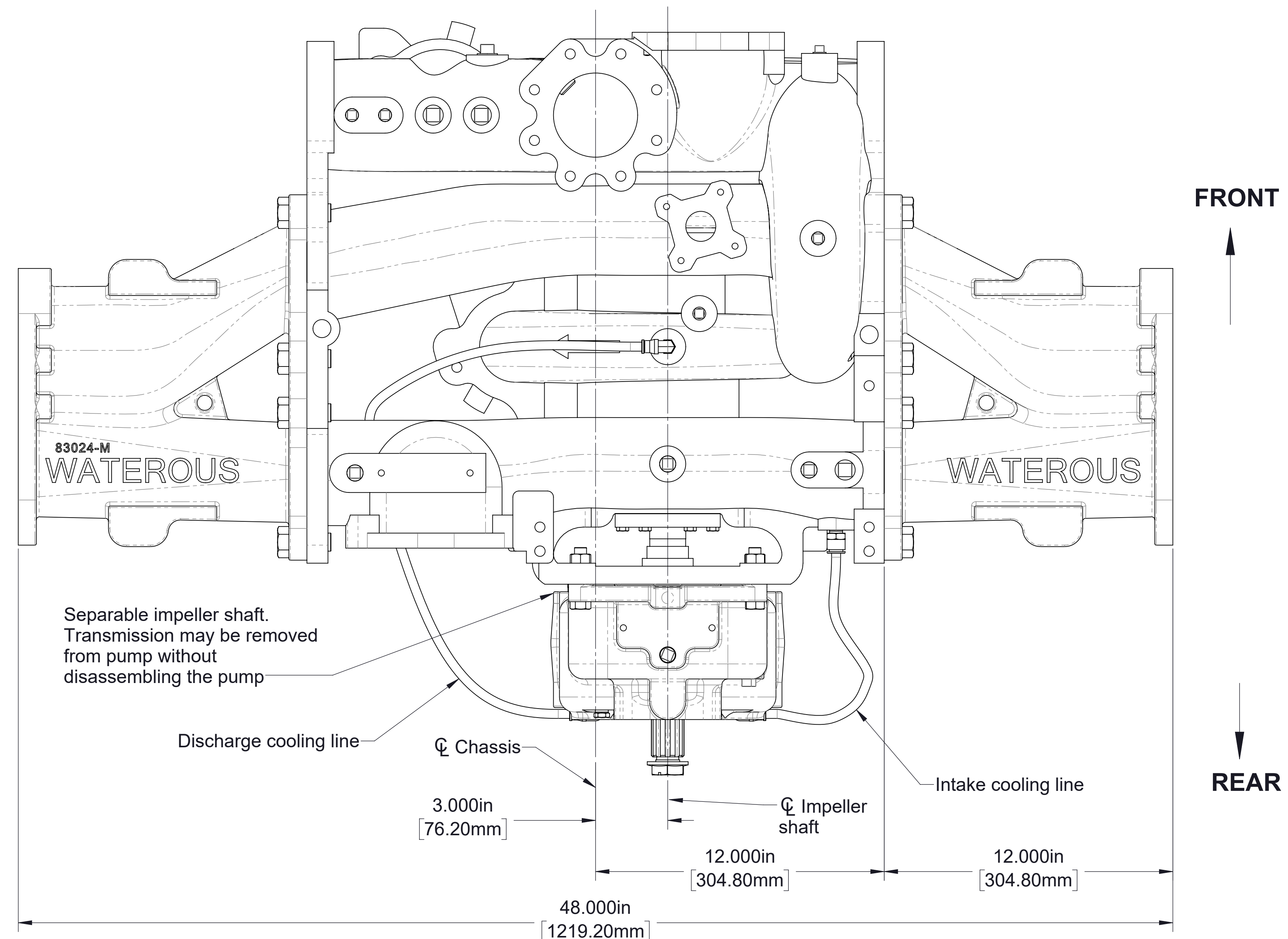
Notes:

1. See drawings DPL82084-1, DPL82084-2, and DPL82084-5 for pressure control systems.
2. Driveline spline typical on both ends. Optional end yokes are available.
3. See drawing DPL82994 for additional details of C20 series transmission.

C20 Data Tables

CSK available as follows				
Model	Input	Location	Mounting	Available Ratios
Heavy Duty K	Clockwise	Rear	Vertical	1.16
				1.30
				1.38
				1.56
				1.65
				1.88
				2.14
				2.45
				2.83

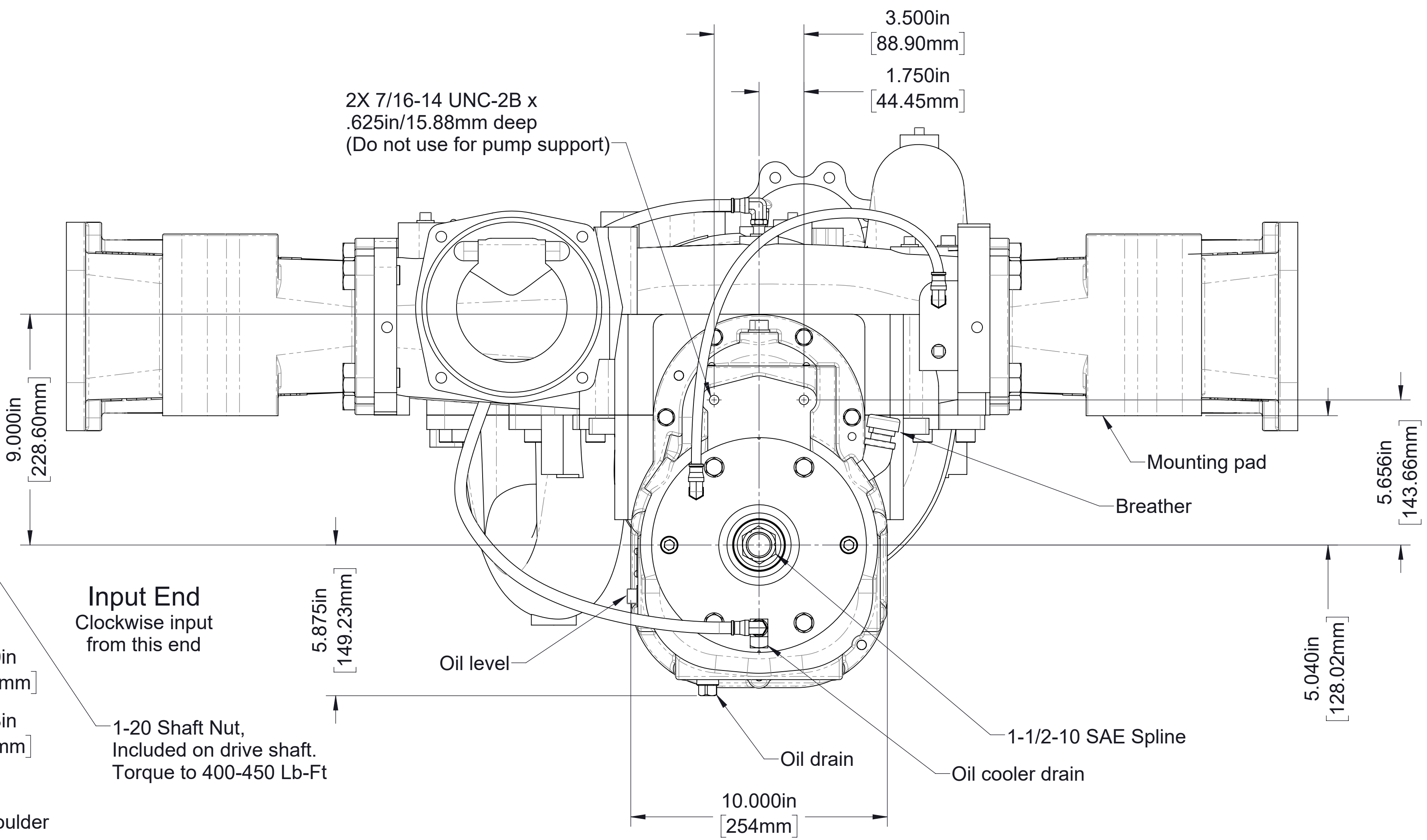
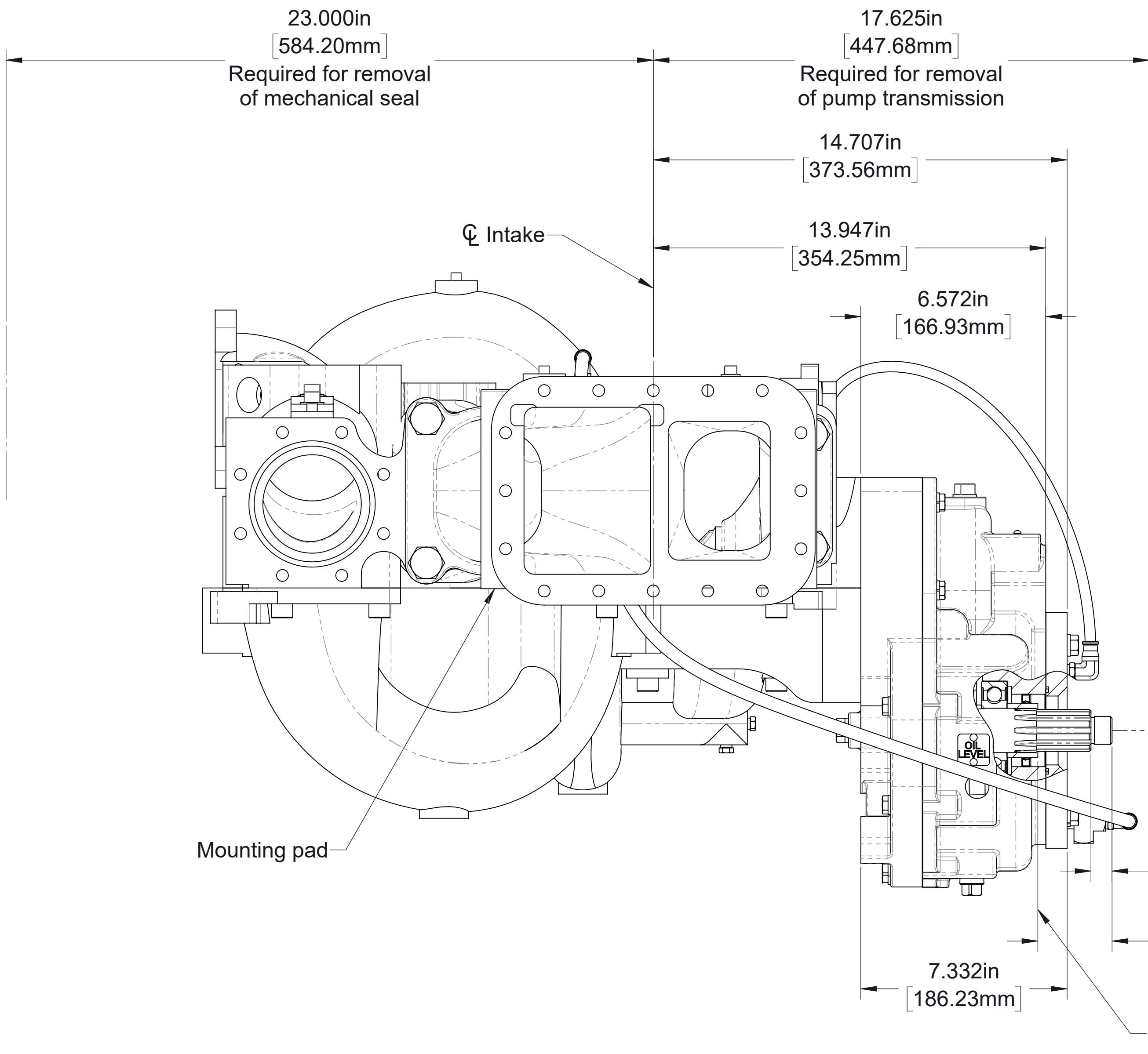
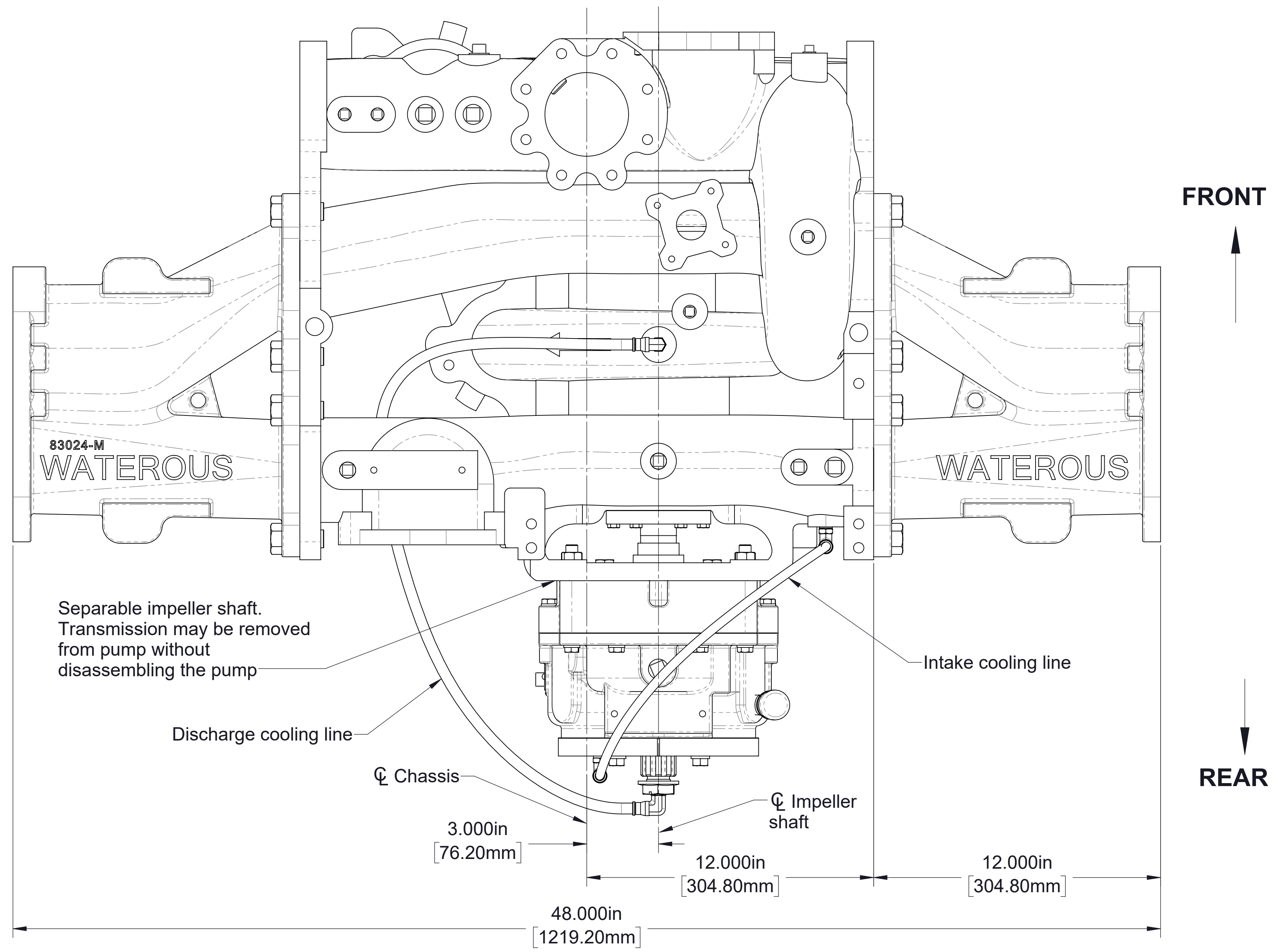
Note:
1. See drawings DPL82084-1, 82084-2, and DPL82084-5 for pressure control systems.



Model CS with K

CSUK available as follows				
Model	Input	Location	Mounting	Available Ratios
Extra Heavy Duty K	Clockwise	Rear	Vertical	1.27
				1.42
				1.69
				2.00
				2.12
				2.56

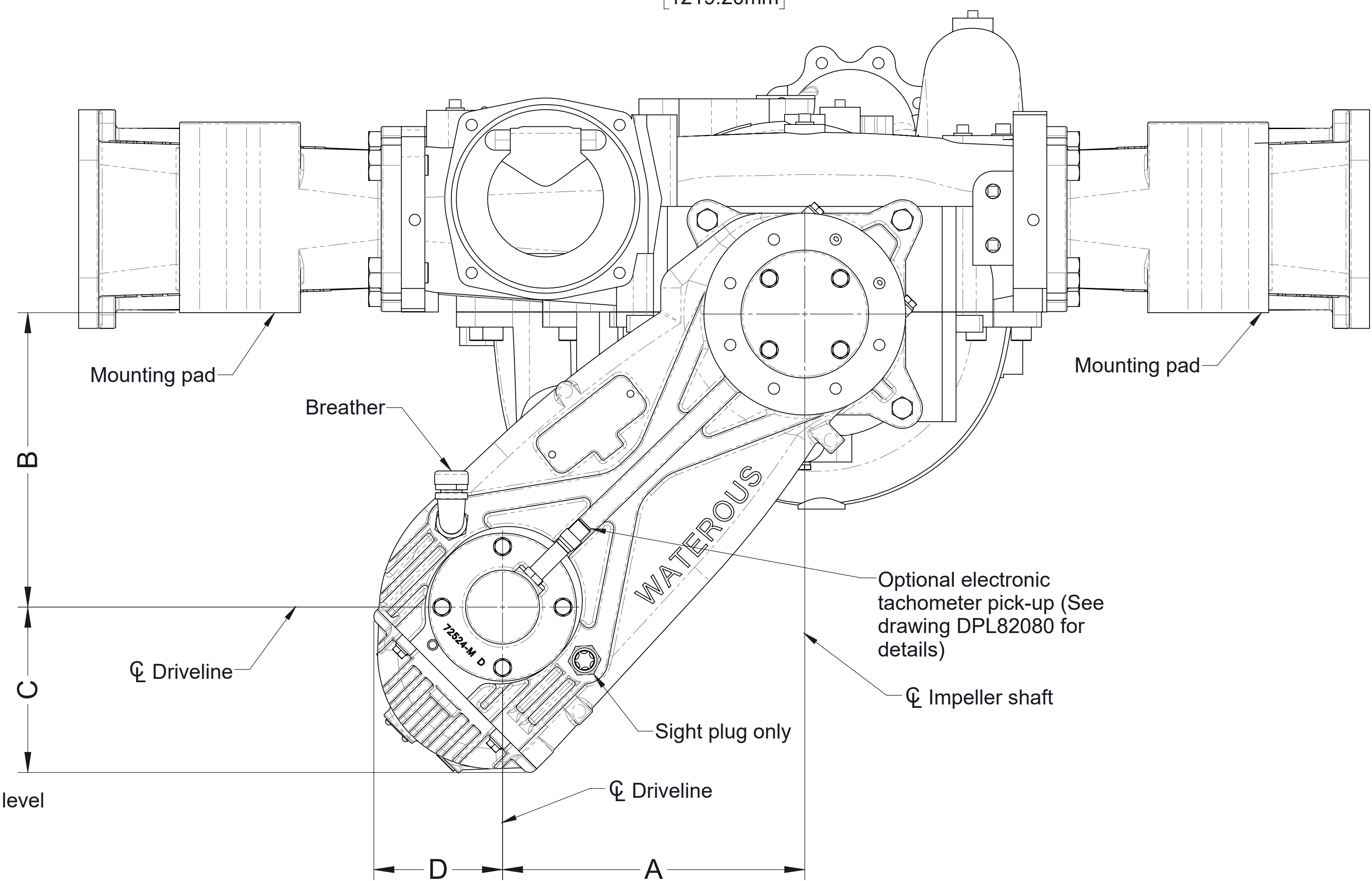
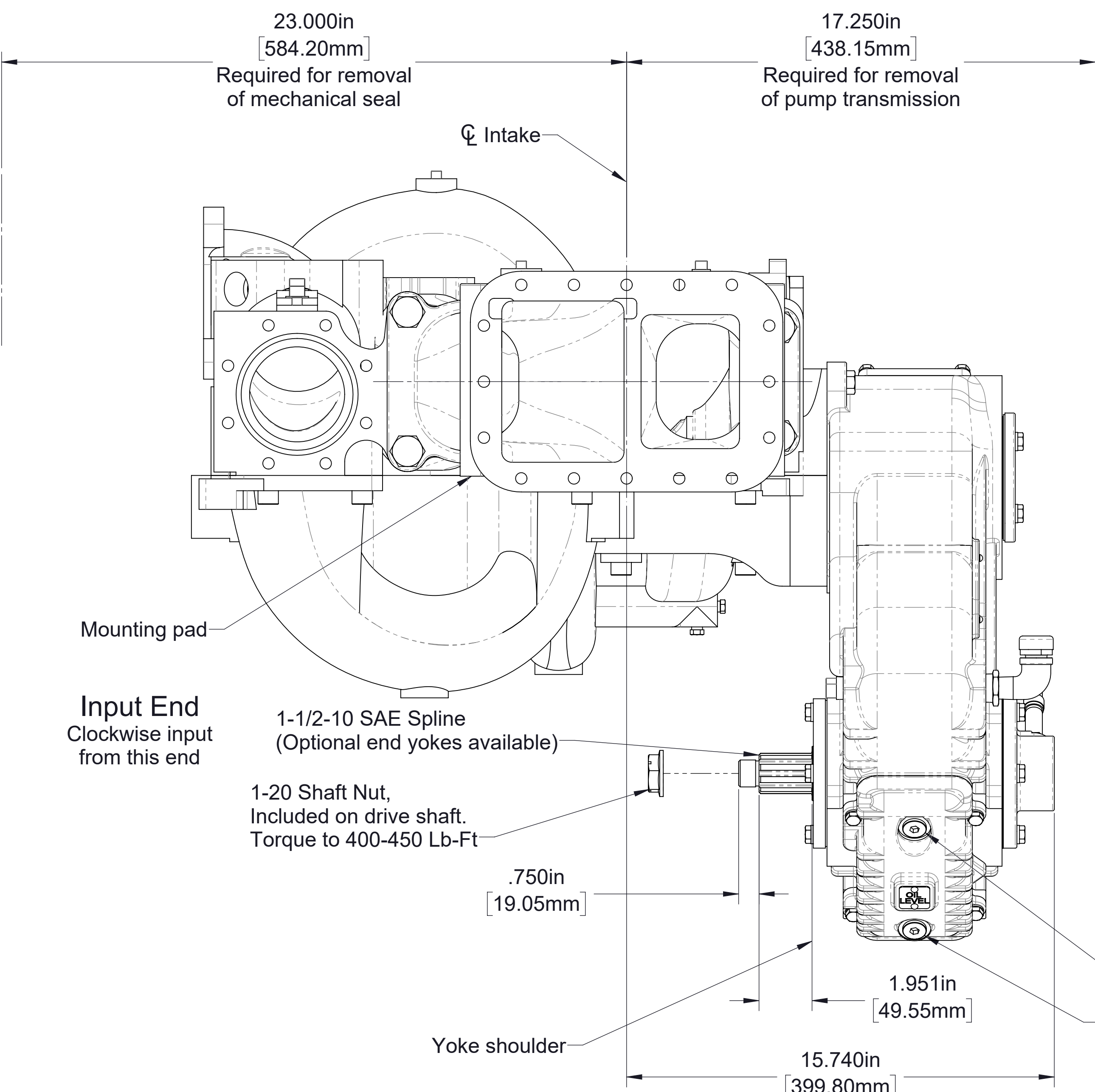
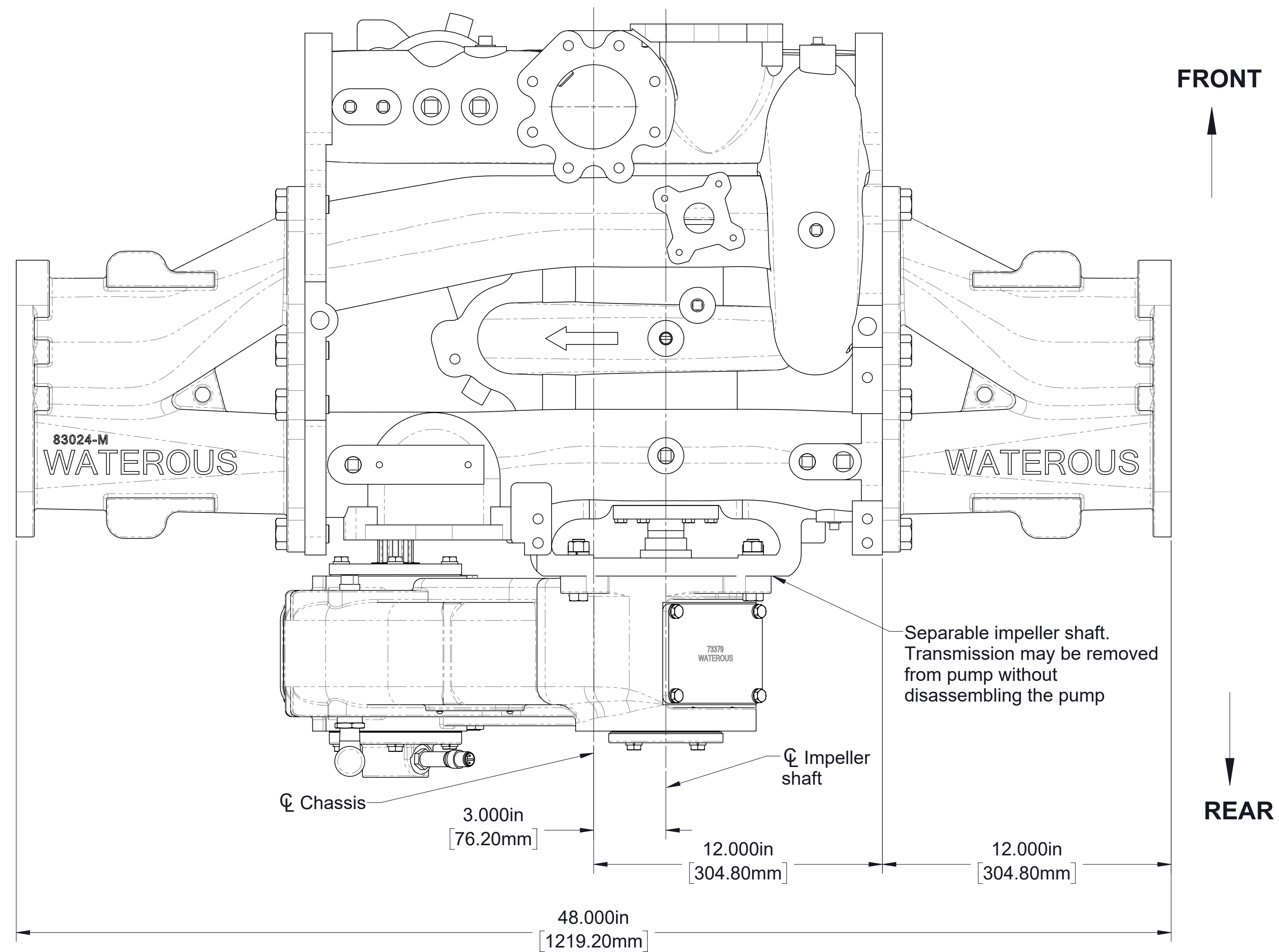
Note:
1. See drawings DPL82084-2 and DPL82084-5 for pressure control systems.



Model CSU with K

Drive Line		Ratio	Dim A	Dim B	Dim C	Dim D
Size	Spline					
1-1/2 in	1-1/2-10 SAE	1.00	11.442in 290.62mm	11.251in 285.77mm	5.855in 148.71mm	4.582in 116.39mm
		1.70	11.288in 286.71mm	10.994in 279.25mm	6.111in 155.22mm	4.737in 120.32mm
		1.90	11.269in 286.24mm	10.975in 278.77mm	6.130in 155.70mm	4.755in 120.79mm
		2.10	11.239in 285.46mm	10.945in 278.00mm	6.160in 156.46mm	4.786in 121.56mm

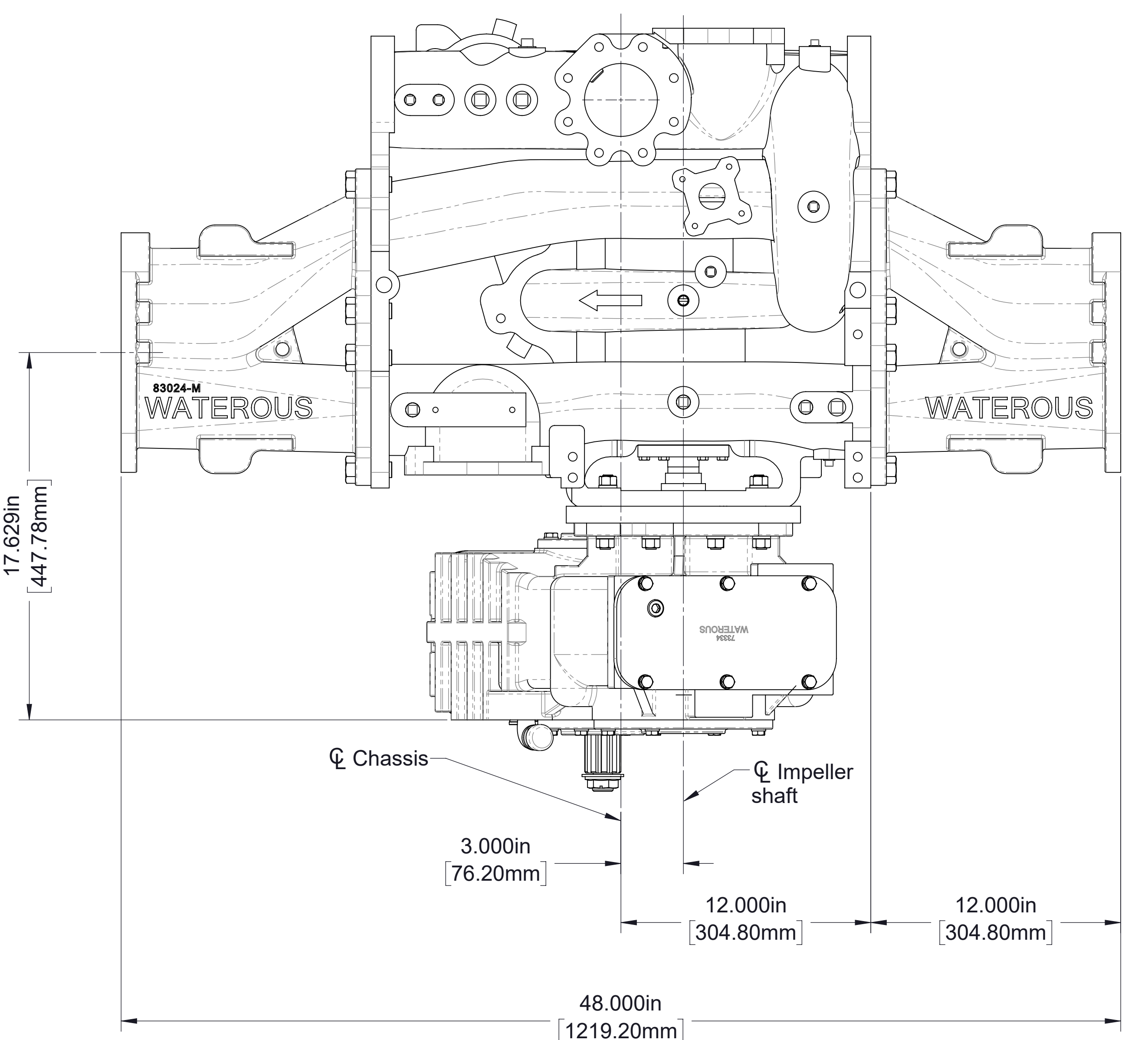
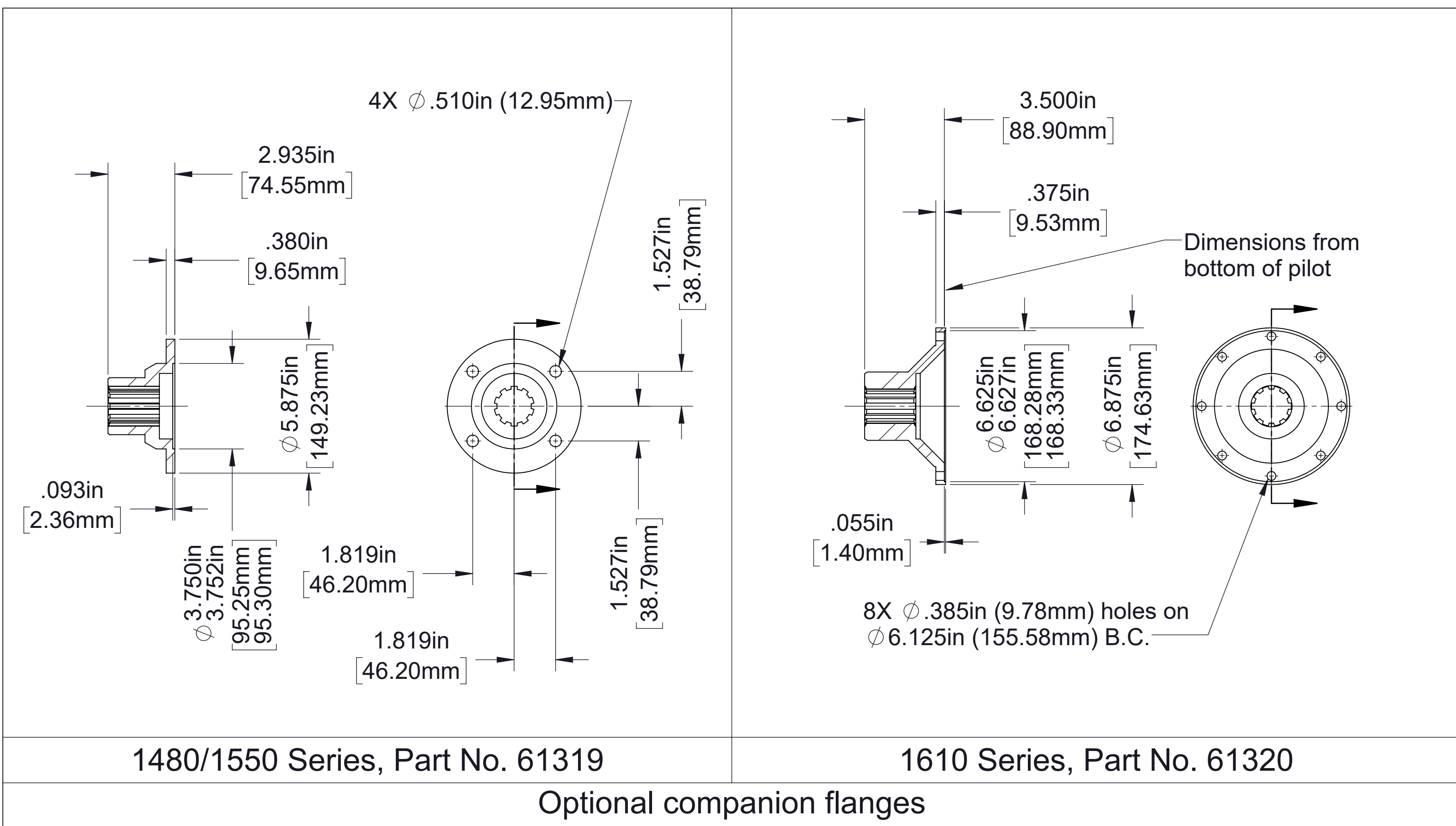
Notes:
 1. See drawing DPL82080 for additional details of PA transmission
 2. See drawings DPL82084-1, DPL82084-2, and DPL82084-5 for pressure control systems.



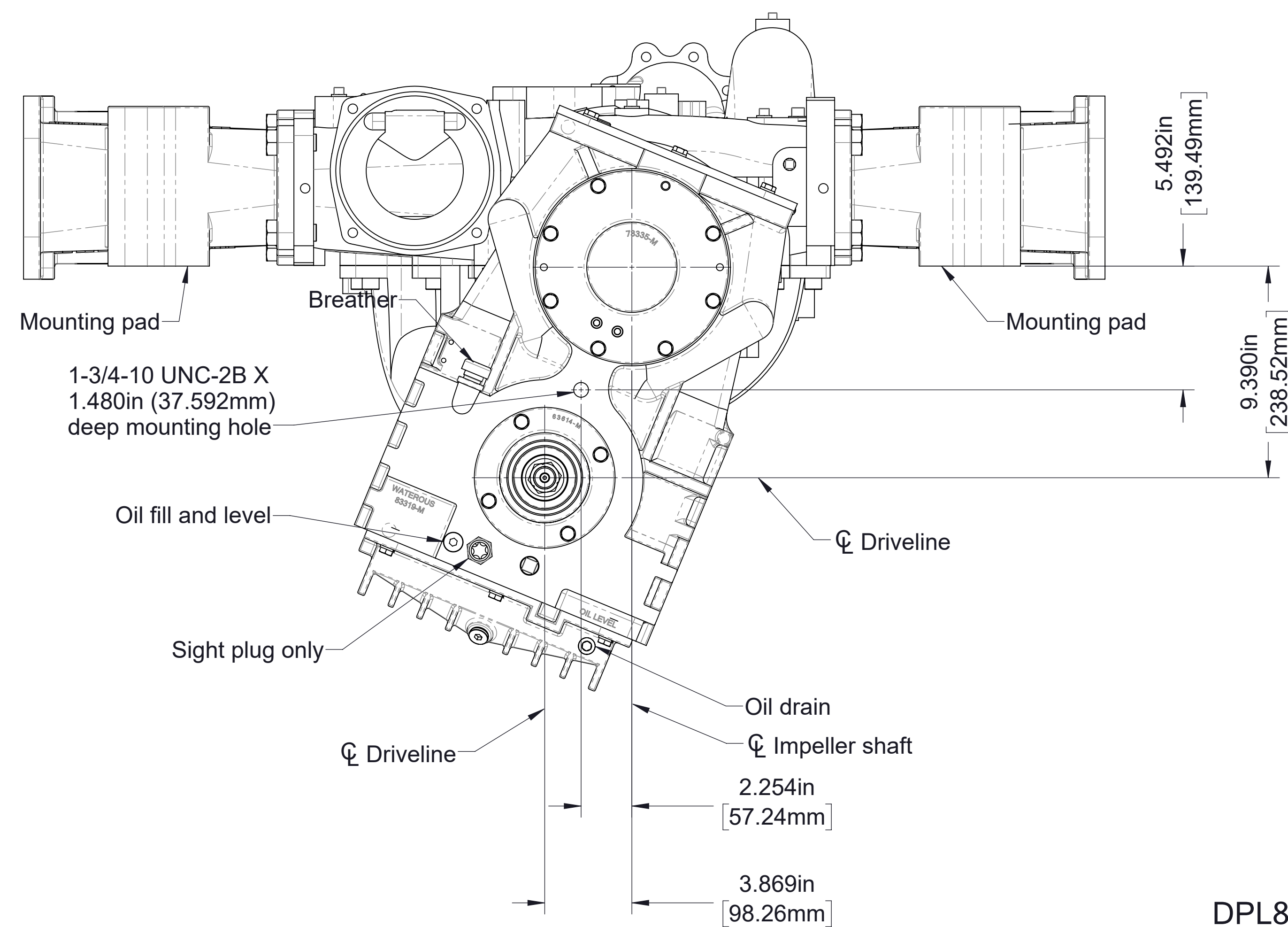
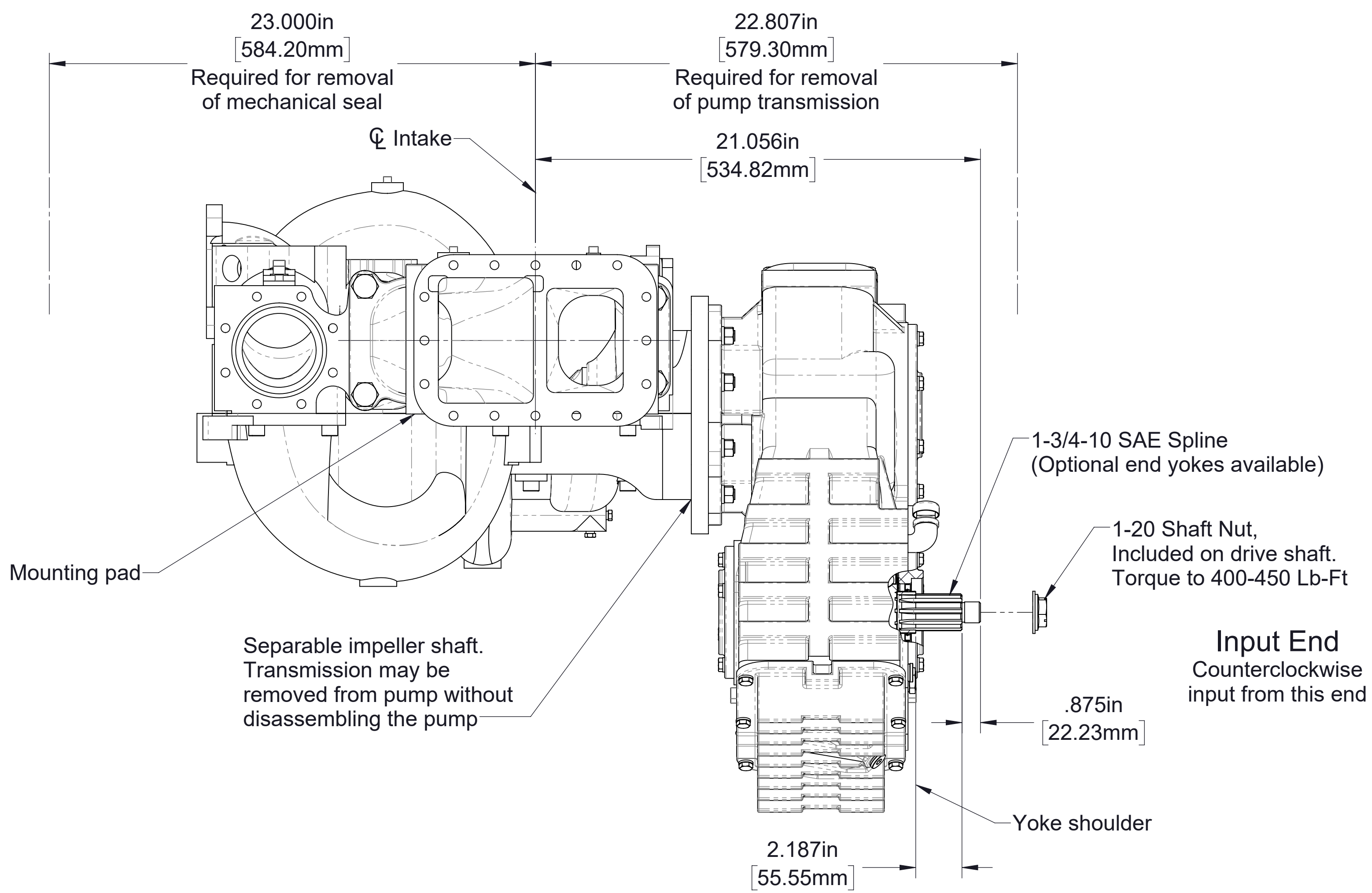
Model CS/CSU with PA

FRONT

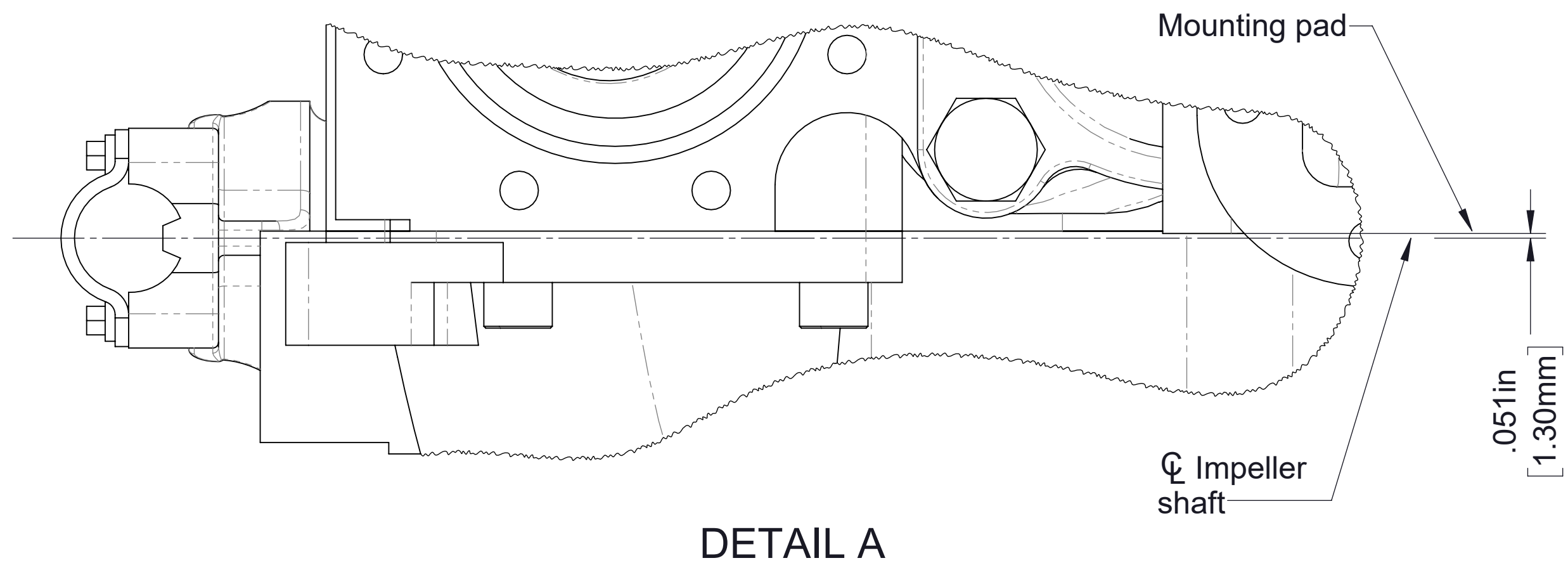
REAR



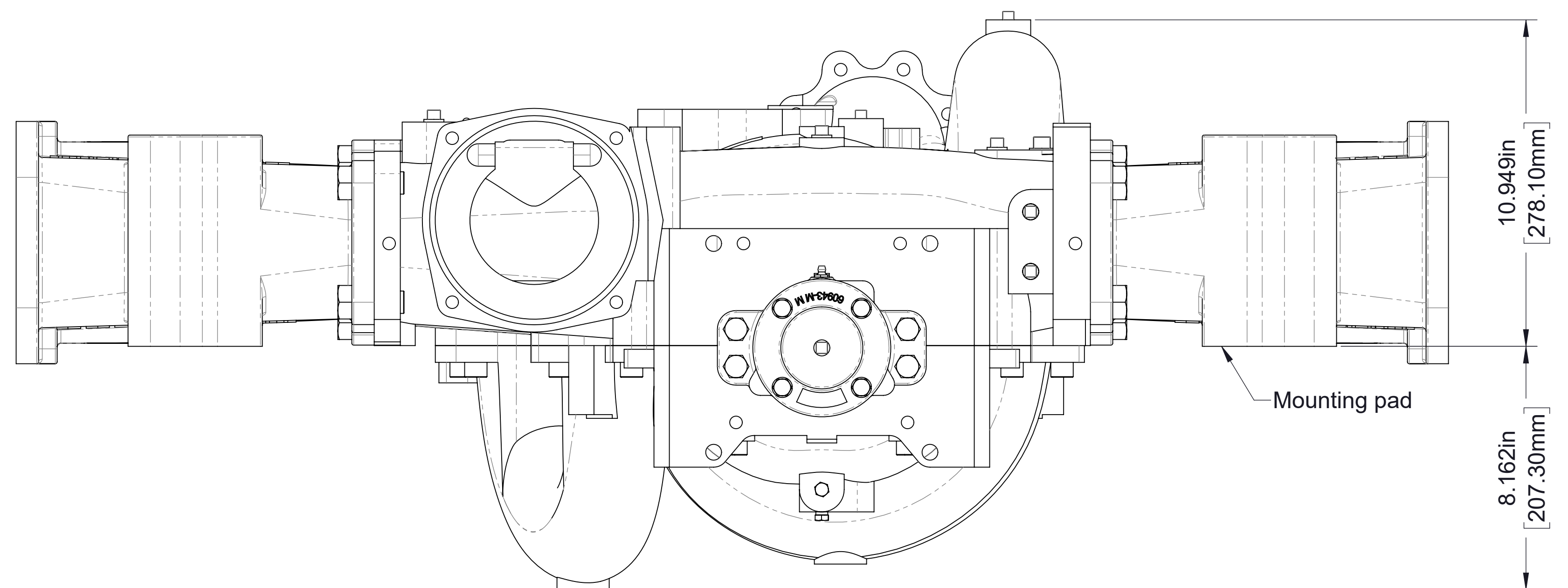
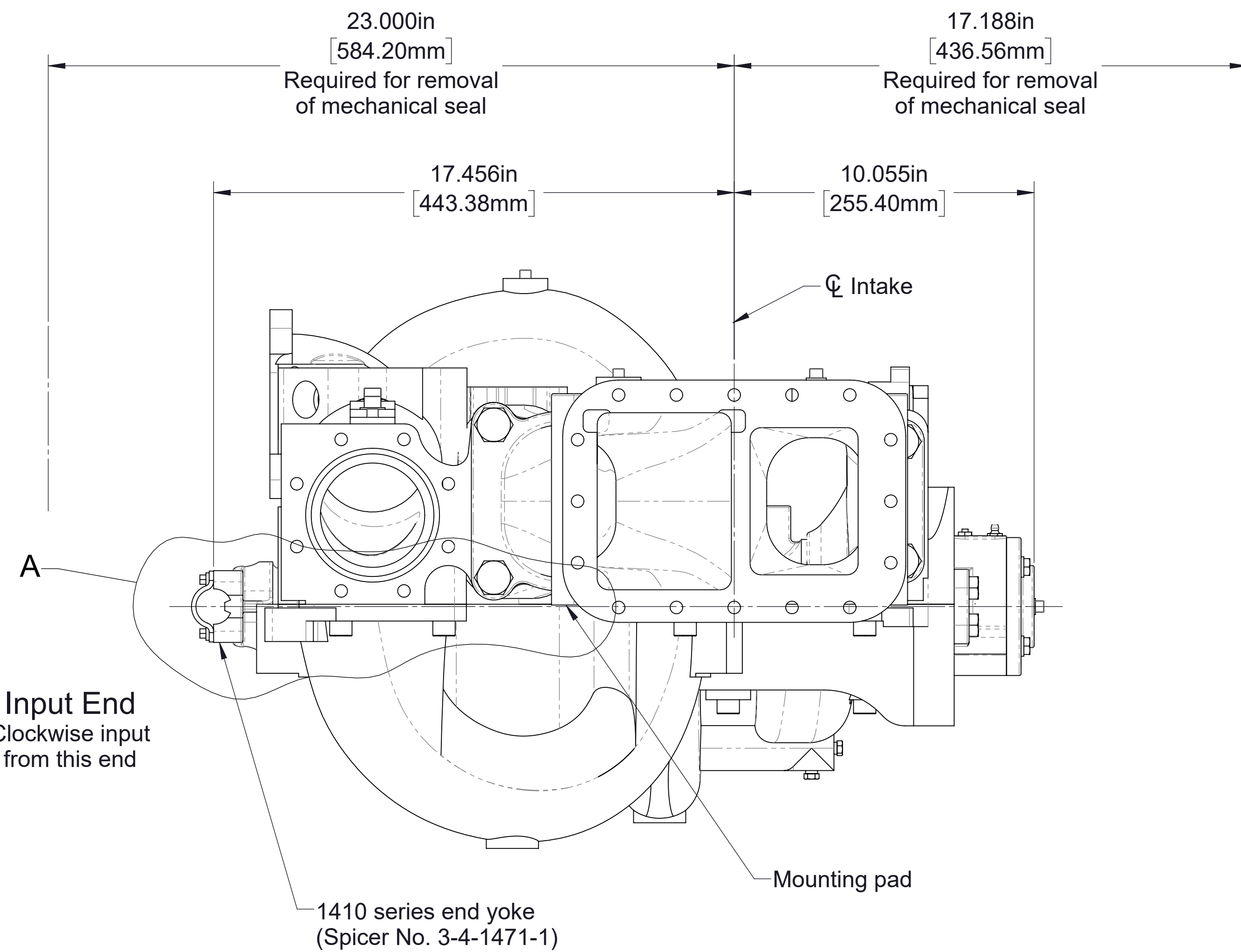
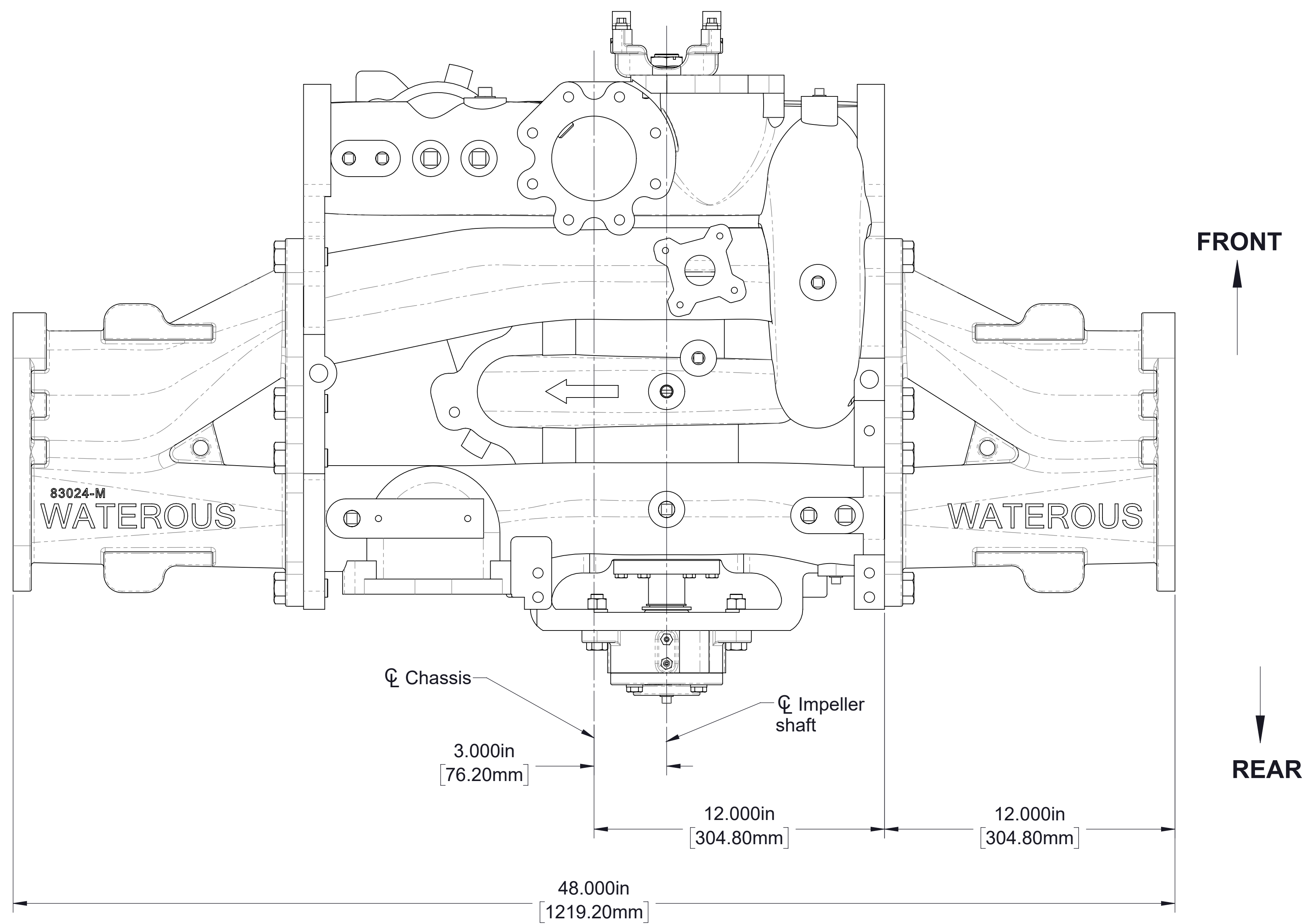
Note:
 1. See drawings DPL82084-1, DPL82084-2, and DPL82084-5 for pressure control systems.



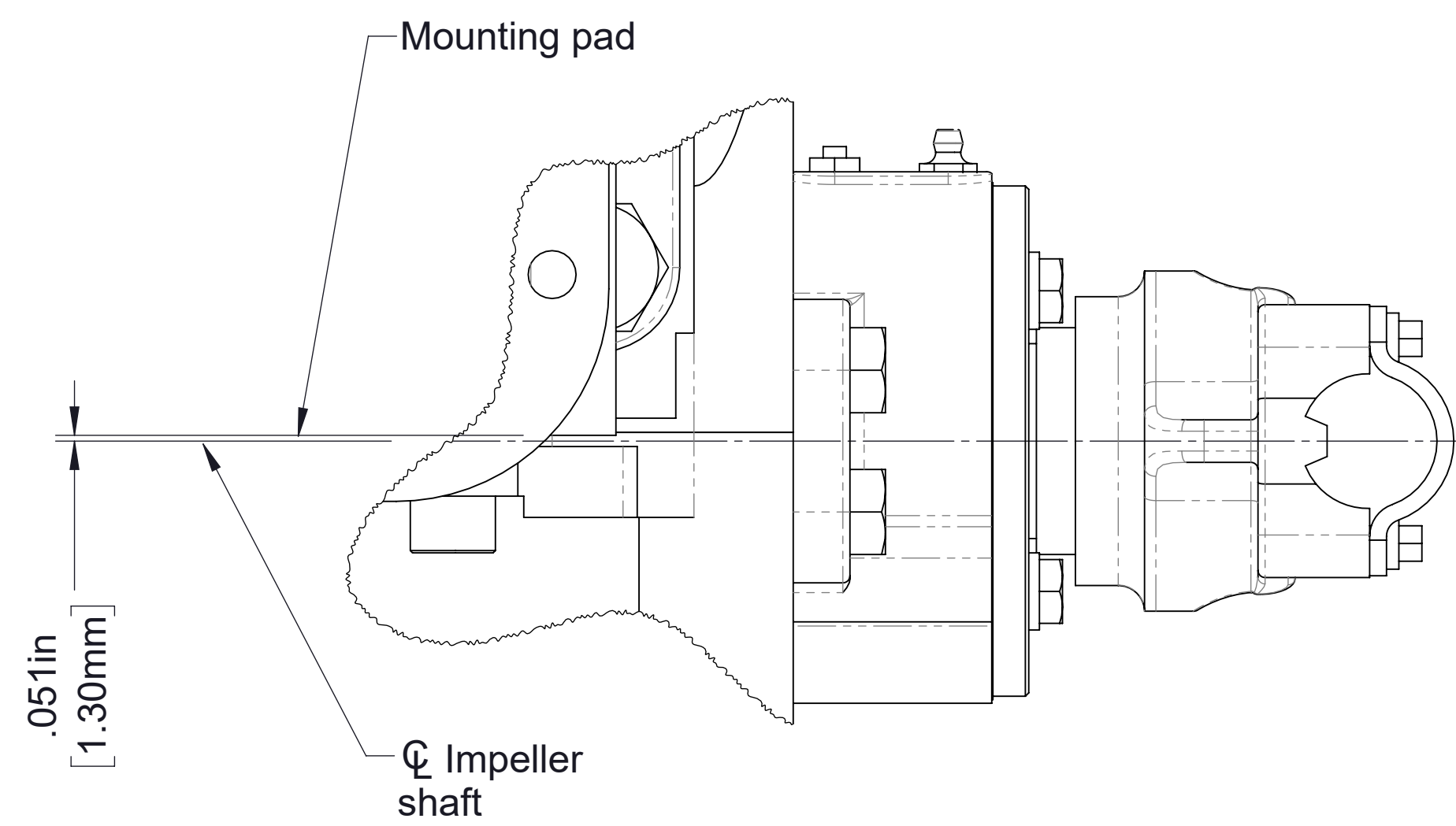
Model CS/CSU with QC



Note:
1. See drawings DPL82084-1, DPL82084-2, and DPL82084-5 for pressure control systems.

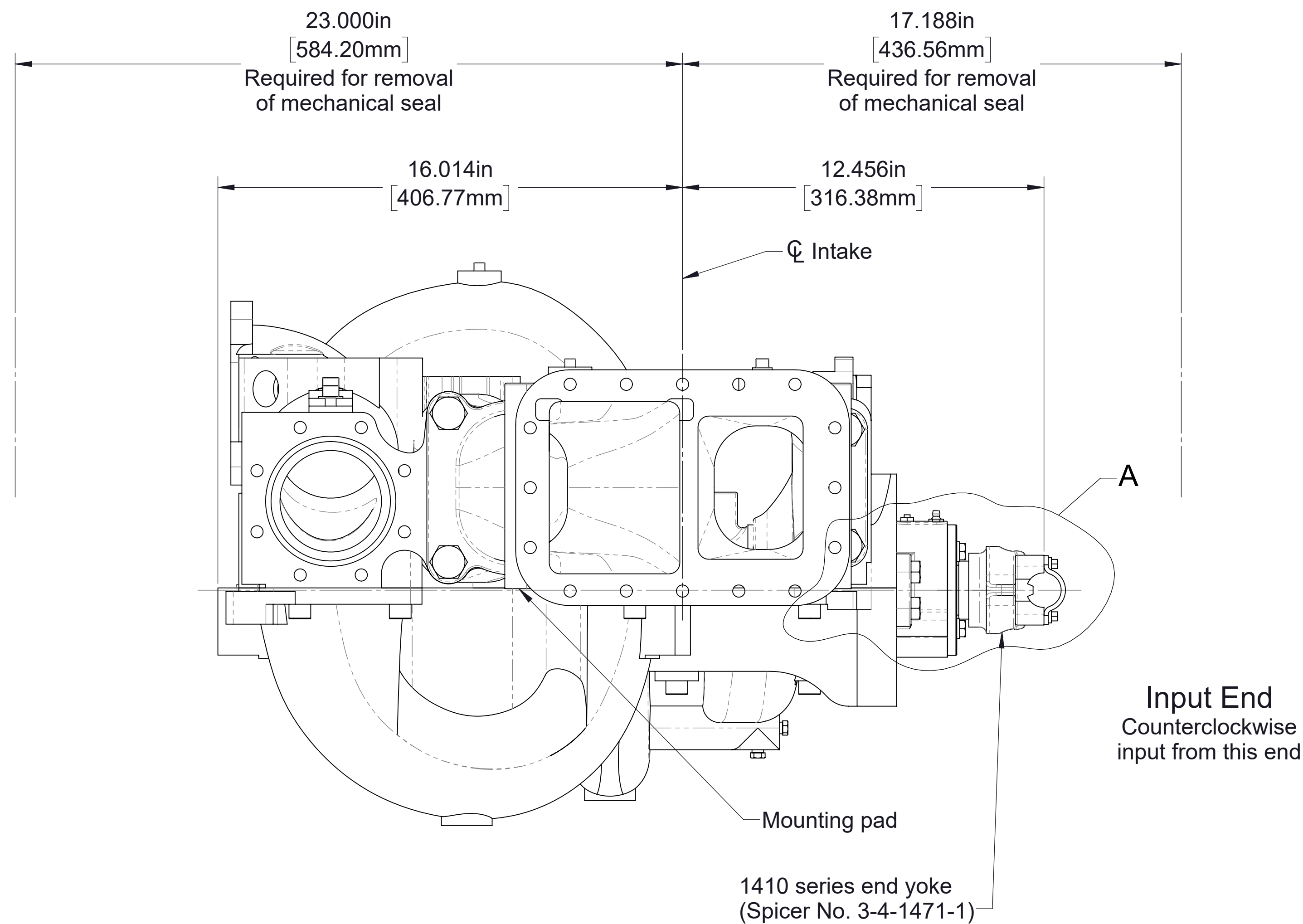


Model CSD/CSUD (Front Drive)
To be used with TC20 series or other full torque PTO

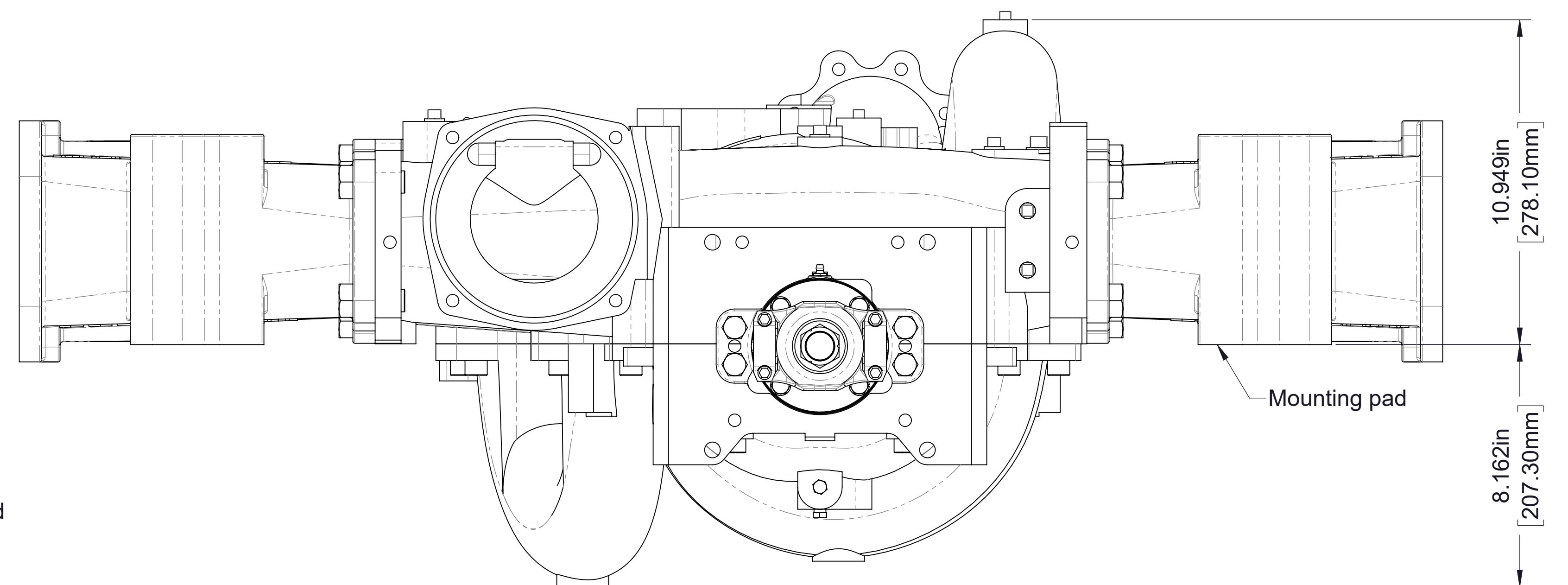
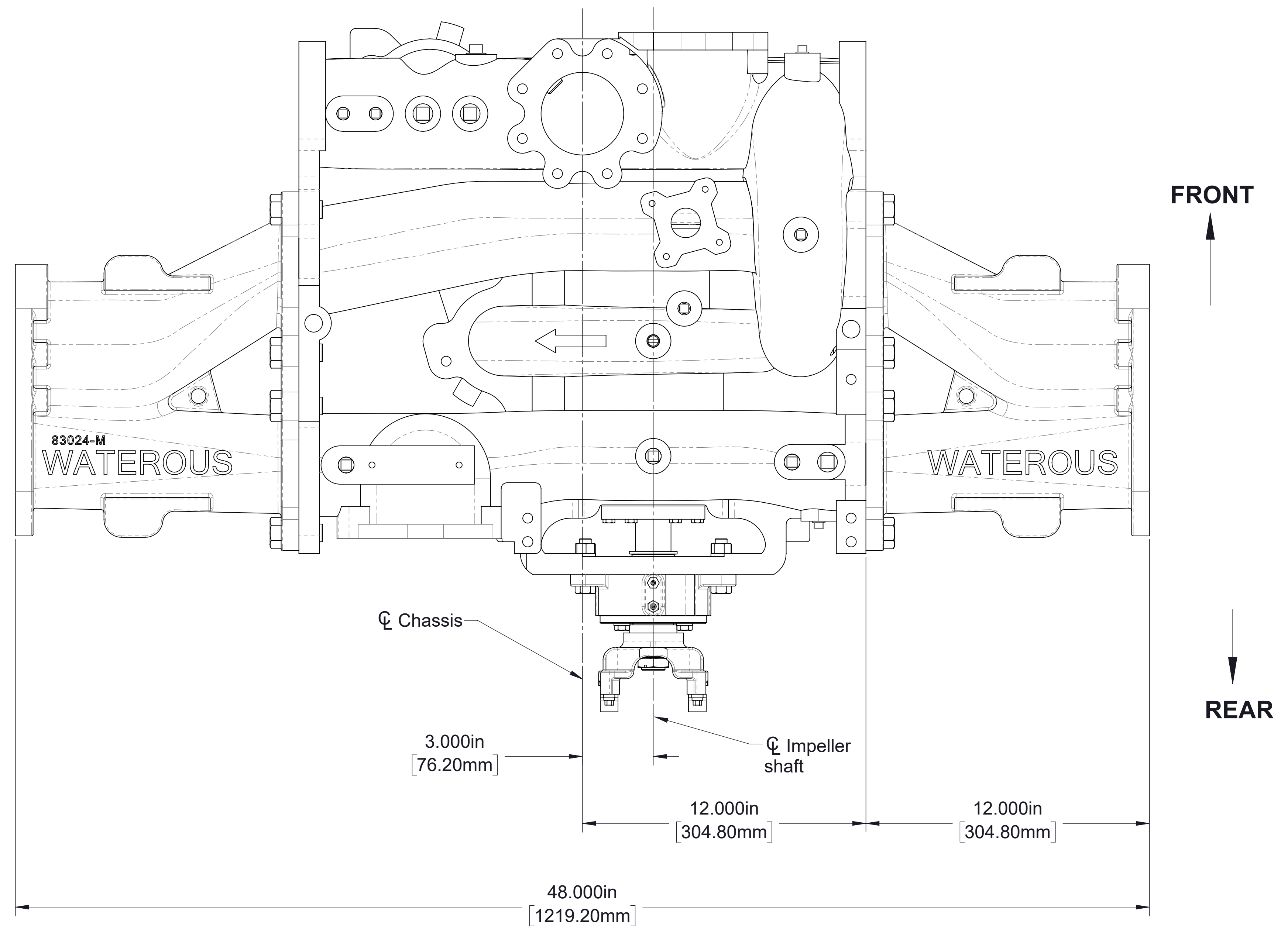


DETAIL A

Note:
1. See drawings DPL82084-1, DPL82084-2, and DPL82084-5 for pressure control systems.



Input End
Counterclockwise
input from this end



Model CSD/CSUD (Rear Drive)
To be used with TC20 series or other full torque PTO