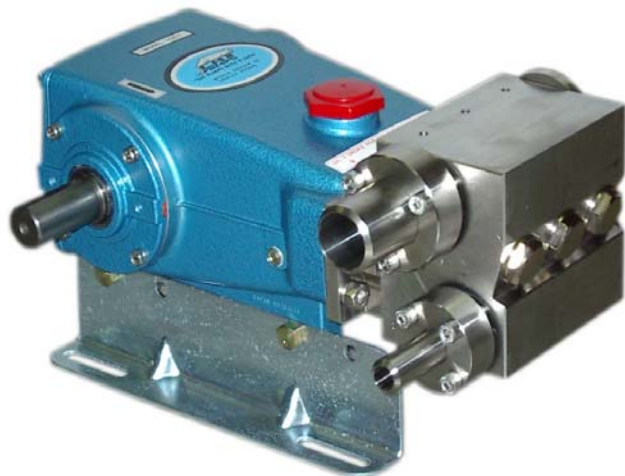




15 Frame Plunger Pump

1951

316 Stainless Steel
Model

**Patented Design specifically for
Liquid Carbon Dioxide**

FEATURES

Superior Design

- Triplex Plunger design gives smoother flow.
- Plunger seals are lubricated by the liquid being pumped.
- Requires no additional seal flushing liquids.
- High pressure inlet capability.
- Specifically configured pump head ensures that pumped fluid is maintained in a liquid state, even when pumping close to the vapour curve. Internal head design minimises inefficiencies due to liquid compressibility (patent applied for.)
- Reduces the need for a primary (booster) pump or a subcooler.
- Oil bath crankcase assures optimum drive-end lubrication.
- Close tolerance concentricity of the ceramic plungers maximises seal life.

Quality Materials

- UNS 31603 Stainless Steel manifold for liquid and process compatibility, strength and corrosion resistance.
- Special concentric, high density, polished ceramic plungers are abrasion resistant and provide extended seal life.
- Elastomers selected to minimise the effects of vapour absorption.
- Die cast aluminium crankcase provides high strength, minimum weight and precision tolerance control.
- Chrome-moly crankshaft gives unmatched strength and surface hardness.
- Oversized crankshaft bearings with greater loading capacity mean longer life.

Easy Maintenance

- Head is easily serviced without dismantling crankcase, requiring less time and effort.
- Quick-disconnect weld pipe connections enable the head to be removed quickly and easily without disturbing insulated pipework.
- Valve assemblies are accessible without disturbing piping, for quick service.

SPECIFICATIONS

	U.S. Measure	Metric
Maximum Volume Flow Rate	5 GPM	19 L/M
Maximum Discharge Pressure	100 to 1450 PSI	7 to 100 BAR
Maximum Pump Speed	480 RPM	480 RPM
Maximum Inlet Pressure	-5 to 500 PSIG	-0.35 to 35 BARG
Liquid Temperature range	-22°F to 160°F	-30°F to 71°C
Bore	0.945"	24mm
Stroke	1.180"	30mm
Crankcase Oil Capacity	42 oz.	1.26 L
Inlet Ports (2)	1" NB Schd 40 Butt Weld Prep	
Discharge Ports (2)	1" NB Schd 40 Butt Weld Prep	
Pulley Mounting	Either side	Either side
Shaft Diameter	1.180"	30mm
Weight	71lb	32 Kg

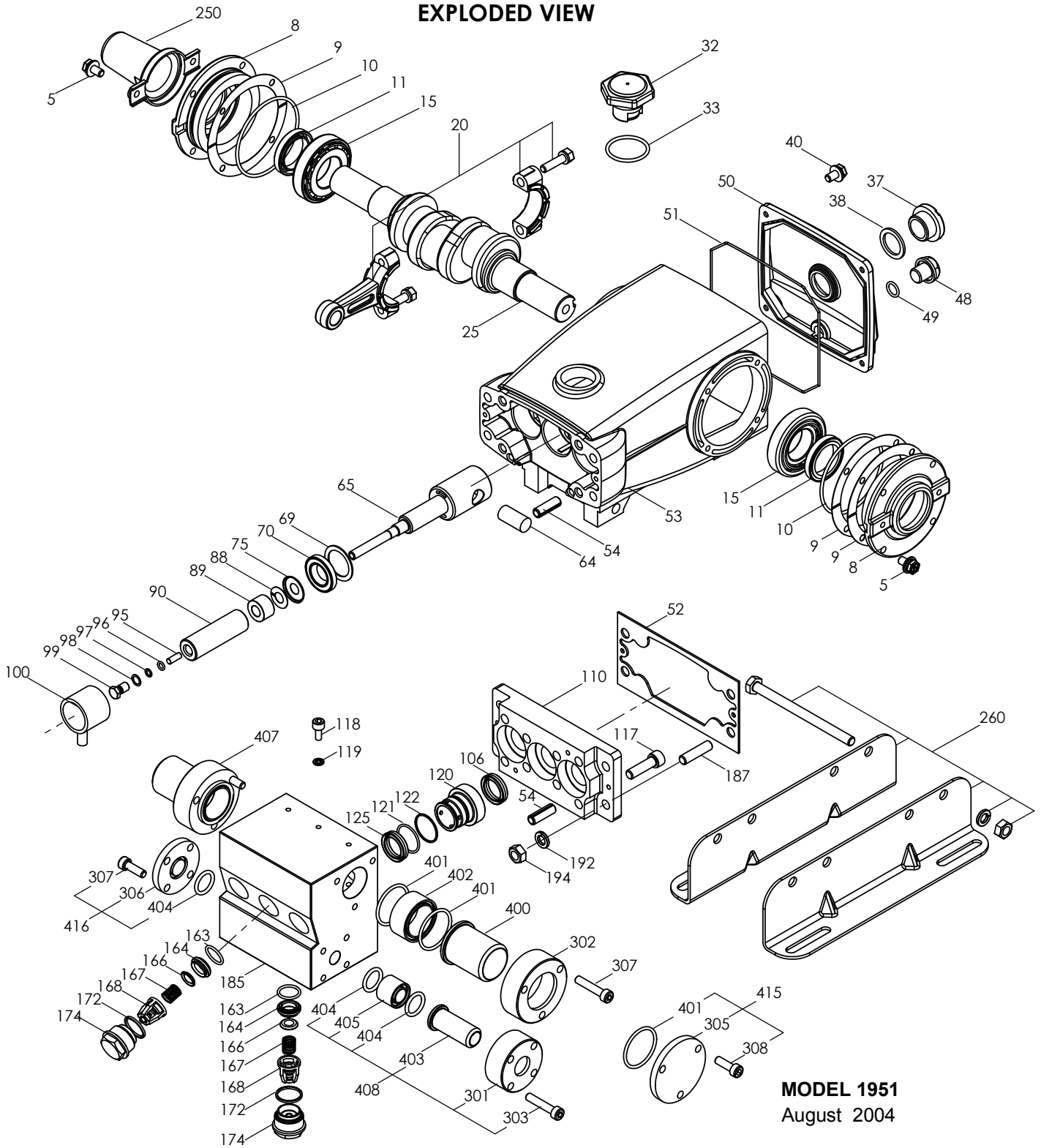
For information on Liquid CO₂ and on the recommended ways of setting up your system, please refer to Cat Pumps technical report entitled 'Pumping liquid CO₂'. For Power and speed requirements, please consult with Cat Pumps.

"Customer confidence is our greatest asset"

PARTS LIST

ITEM NO.	PART No.	MATERIAL	DESCRIPTION	QTY.
2	50146	STL	Key (M7 x 40)	1
5	700957	S	Screw, Sems (M6 x 16)	8
	700960	S	Washer (M6)	8
	15849	S	Washer, Lock	8
8	43496	AL	Case, Bearing	2
9	43520	FBR	Shim, Bearing	0-6
10	11340	NBR	O-Ring, Bearing Case	2
11	43495	NBR	Seal, Crankshaft Oil	2
15	39060	STL	Bearing	2
20	48600	TNM	Rod, Connecting	3
25	43494	FCM	Camshaft	1
32	43211	ABS	Cap, Oil Filler	1
33	14177	NBR	O-Ring, Oil Filler Cap	1
37	92241	POM	Gauge, Bubble Oil (C/W-Washer)	1
38	44428	NBR	Washer, Oil Gauge	1
40	700956	S	Screw, Sems (M6 X20)	4
	700960	S	Washer (M6)	4
	15849	S	Washer, Lock	4
48	25625	STCP	Plug, Oil Drain	1
49	23170	NBR	O-Ring, Drain Plug	1
50	43491	AL	Cover, Rear	1
51	44834	NBR	O-Ring, Rear Cover	1
52	702867	FBR	Gasket, Insulating	1
53	43488	AL	Crankcase	1
54	27488	S	Pin, Guide	2
64	43507	CM	Pin, Plunger Rod	3
65	43501	SZZ	Rod, Plunger	3
69	43504	STZP	Washer, Oil Seal	3
70	43500	NBR	Seal, Plunger Rod Oil	3
75	43506	SS	Slinger, Barrier	3
88	45675	SS	Washer, Keyhole	3
89	45879	SS	Spacer, Plunger	3
90	43552	CC	Plunger, Ceramic	3
95	43236	SS	Stud, Retainer (M6)	3
96	43235	PTFE	Back-up Ring, Plunger Retainer	3
97	17399	NBR	O-Ring, Plunger Retainer	3
98	44041	SS	Gasket, Plunger Retainer	3
99	44031	SS	Retainer, Plunger	3
100	702881	AC	Retainer, seal (Anti-icing)	3
106	702680	SFTB	Seal, Low Pressure	3
110	702457	SS	Plate, Seal Support	1
117	87951	S	Screw, Hex Socket Head (M10x30)	8
118	702869	SS	Screw, Hex Socket Head (M6x10)	3
119	702880	STL/NBR	Seal Washer	3
120	702459	SS	Case, Low Pressure Seal	3
121	702674	NBR	O-Ring, Spacer	3
122	44614	PTFE	Back-up Ring, Spacer	3
125	702680	SFTB	Seal, High Pressure	3
163	702450	NBR	O-Ring, Seat	6
164	702460	SS	Seat, Valve	6
166	43721	SS	Valve	6
167	43751	S	Spring, Valve	6
168	44564	PVDF	Retainer, Valve Spring	6
172	702660	SFTB	Seal Washer, Valve Plug	6
174	702458	SS	Valve Plug	6
185	702456	SS	Manifold, Inlet / Discharge	1
187	44005	S	Stud, Manifold (M10 x 45)	4
192	15847	S	Washer, Lock (M10)	4
194	81258	S	Nut, Hex (M10)	4
250	30764	NY	Shaft Protector	1
260	30613	STZP	Rail, Angle Assy	1
301	702483	SS	Ring, Flange (Discharge)	1-2
303	701240	S	Bolt, Hex Socket Head (M8 X 20)	0-7
302	702479	SS	Ring, Flange (Inlet)	2
305	702481	SS	Plate, Blank (Inlet Port)	0-1
306	702485	SS	Plate, Blank (Discharge Port)	0-1
307	703032	S	Bolt, Hex Socket Head (M8 X 40)	7-14
400	702480	SS	Pipe, Inlet (Weld Prep)	2
401	702663	NBR	O-Ring, Inlet Flange	4
402	702478	SS	Spacer, Face Seal (Inlet Flange)	2

EXPLODED VIEW

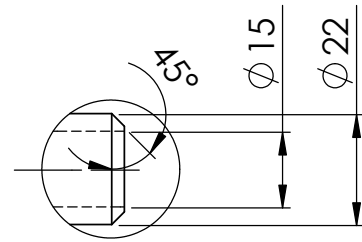


MODEL 1951
August 2004

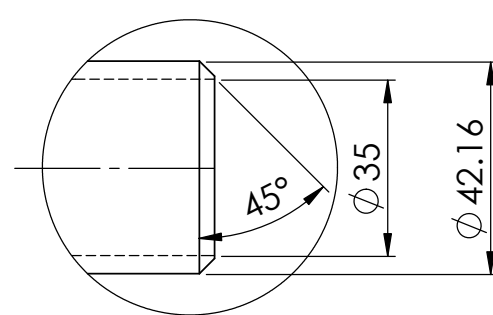
403	702484	SS	Pipe, Discharge (Weld Prep)	1-2
404	702664	NBR	O-Ring, Discharge Flange	3-4
405	702482	SS	Spacer, Face Seal (Discharge Flange)	1-2
407	702661		Assembly, Inlet Flange (inclds: 302, 307, 400, 401, 402)	1-2
408	702662		Assembly, Discharge Flange (inclds: 301, 303, 403, 404, 405)	1-2
415	702671		Assembly, Inlet Port Blank (inclds: 305, 308, 401, Optional)	1
416	702672		Assembly, Discharge Port Blank (inclds: 306, 307, 404, Optional)	1
	702362	NBR/PTFE	Kit, Seal (inclds: 106, 121, 122, 125)	1
	702360	NBR/PTFE/S	Kit, Valve (inclds: 163, 164, 166, 167, 168, 172)	2

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AC=Acetal AL=Aluminium CC=Ceramic CM=chrome-moly
 EPDM=Ethylene Propylene Diene Monomer FBR=Fibre (various) FCM=Forged Chrome-moly NBR=Medium Nitrile (Buna-N) NY=Nylon
 PTFE=Polytetrafluoroethylene (Teflon®) POP=Polypropylene PVDF=Fluoroplastic (High Strength) S=304SS SS=316SS
 SFTB=Special Blend (Teflon®) STL=Steel STCP=Steel/Chrome Plated STZP=Steel/Zinc Plated SSZZ=316SS/Zamak TNM=High strength alloy

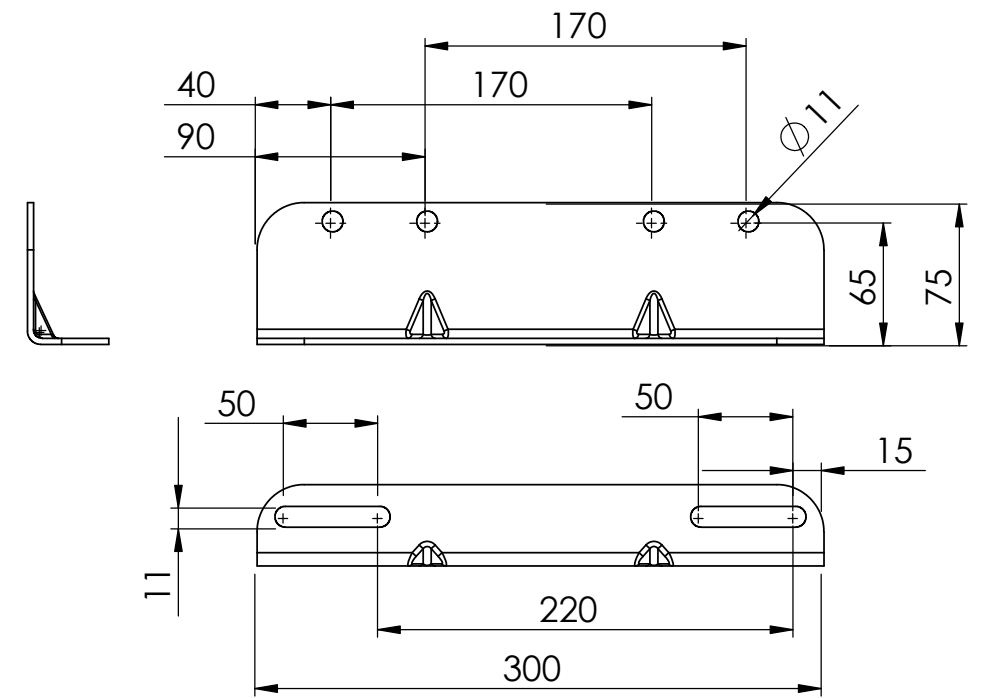
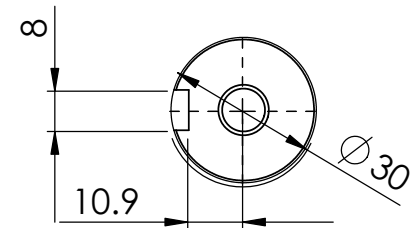
DETAIL A
DISCHARGE
BUTT WELD PIPE



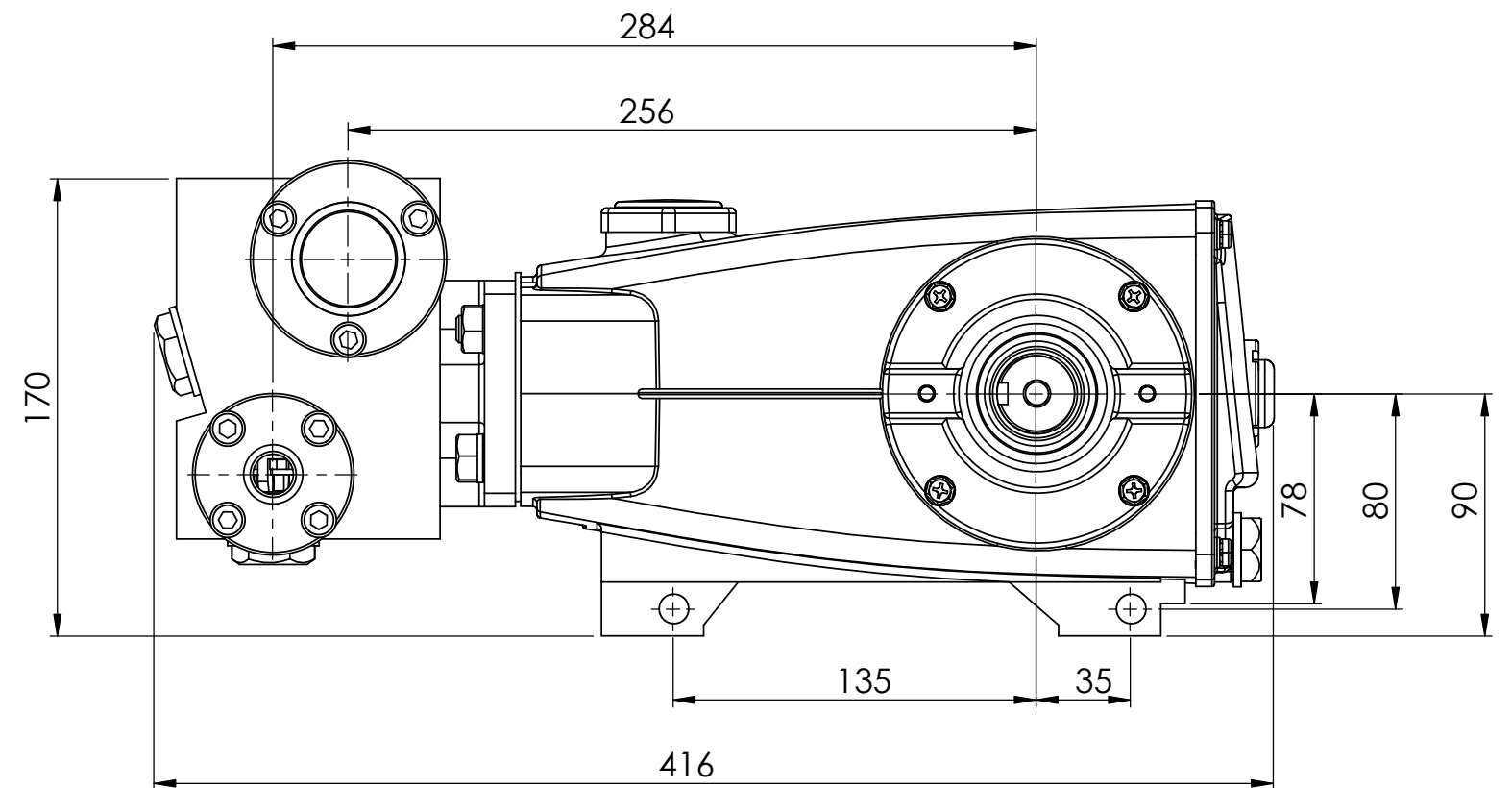
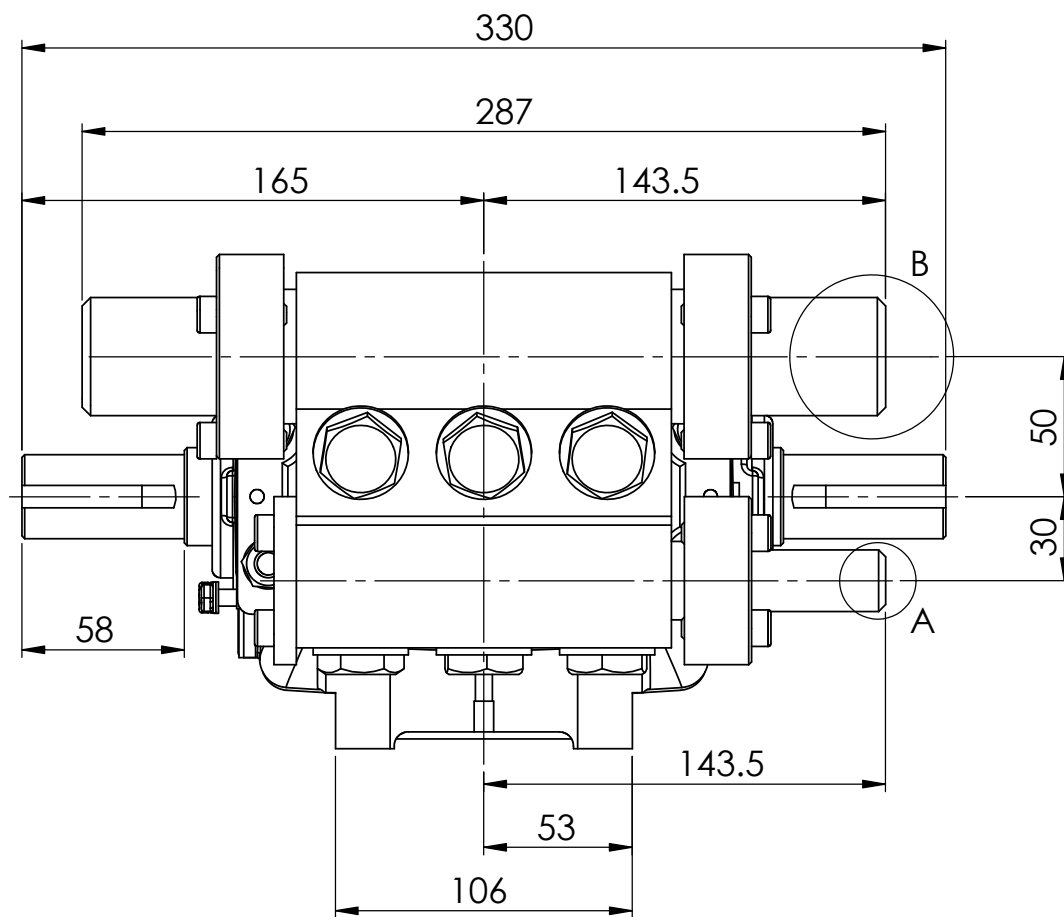
DETAIL B
INLET
BUTT WELD PIPE

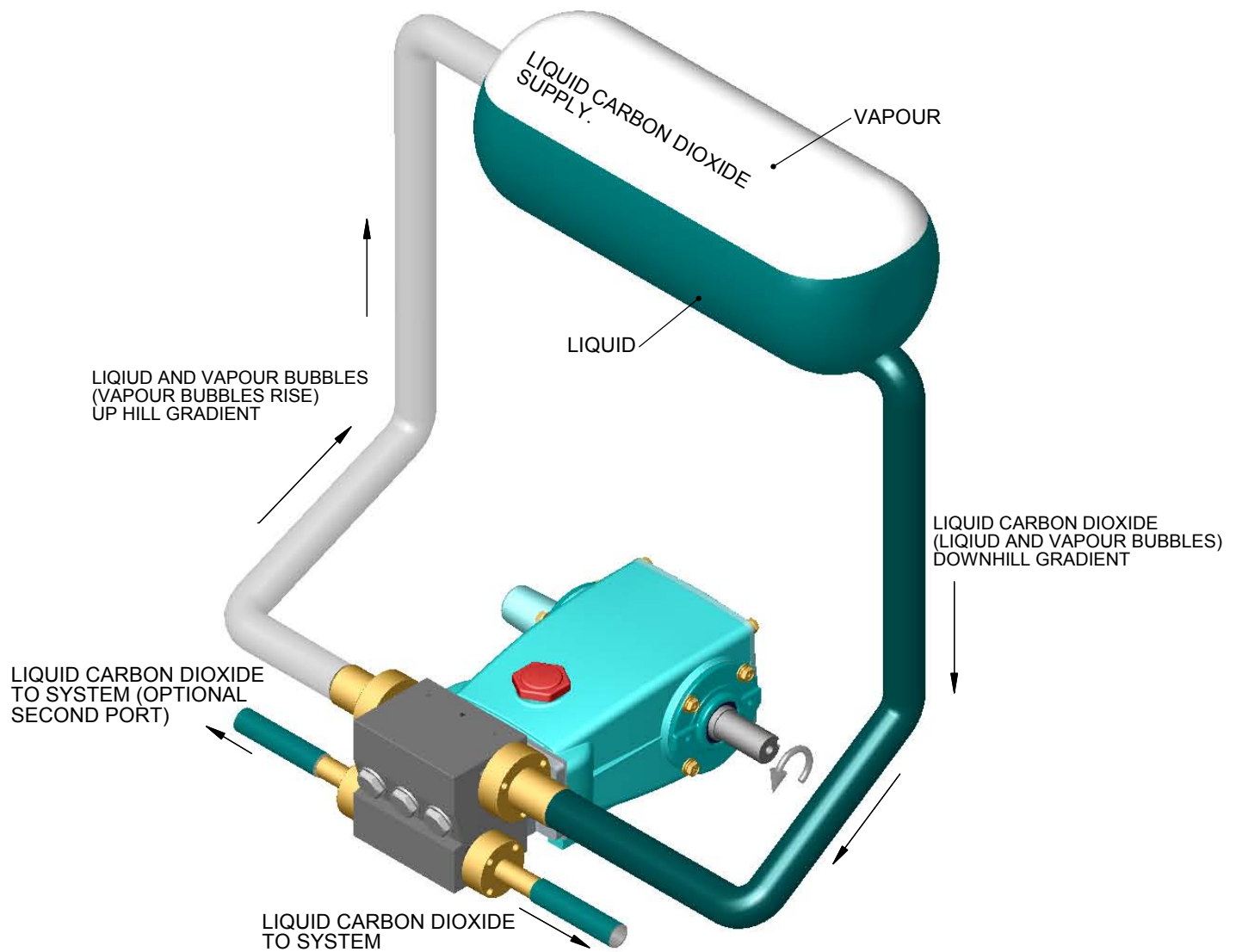


SHAFT DETAILS

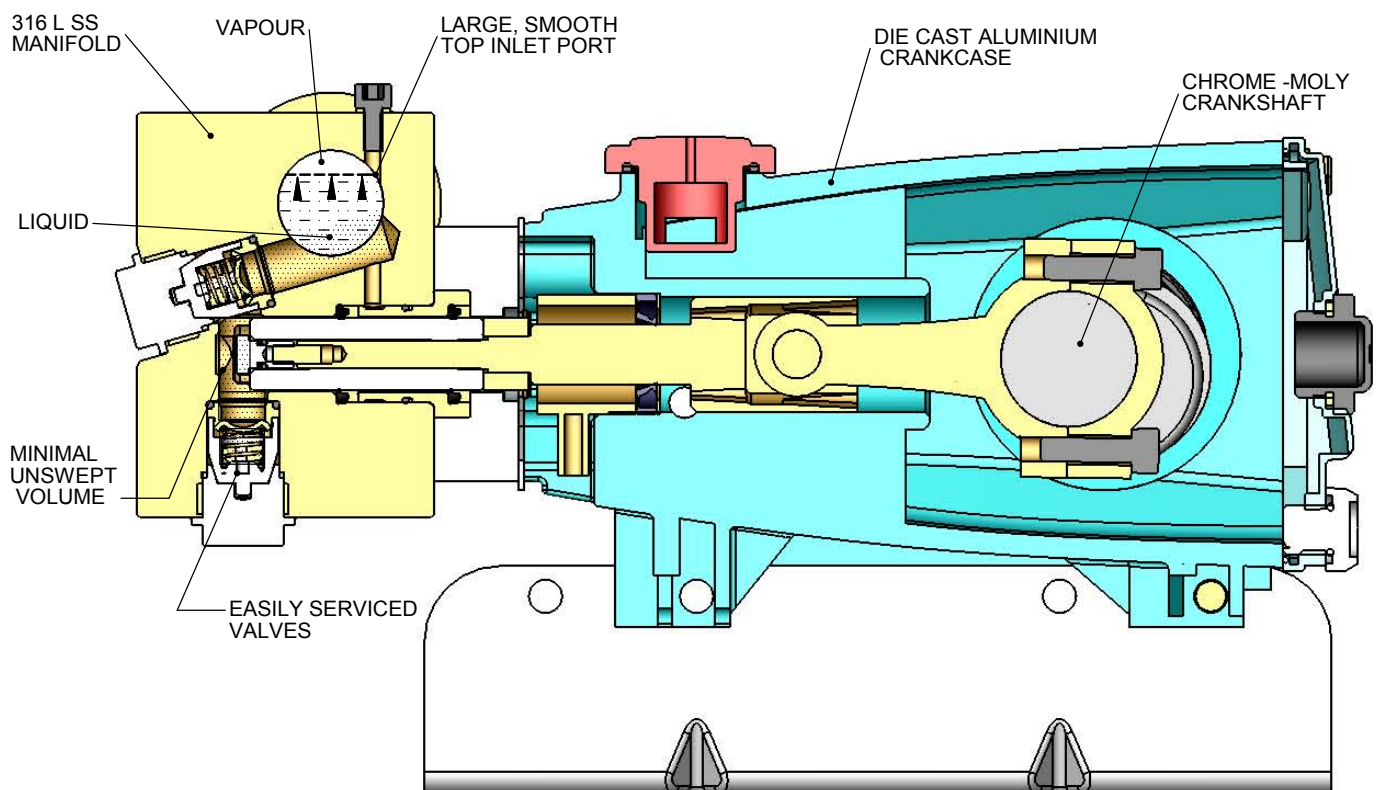


RAIL DIMENSIONS



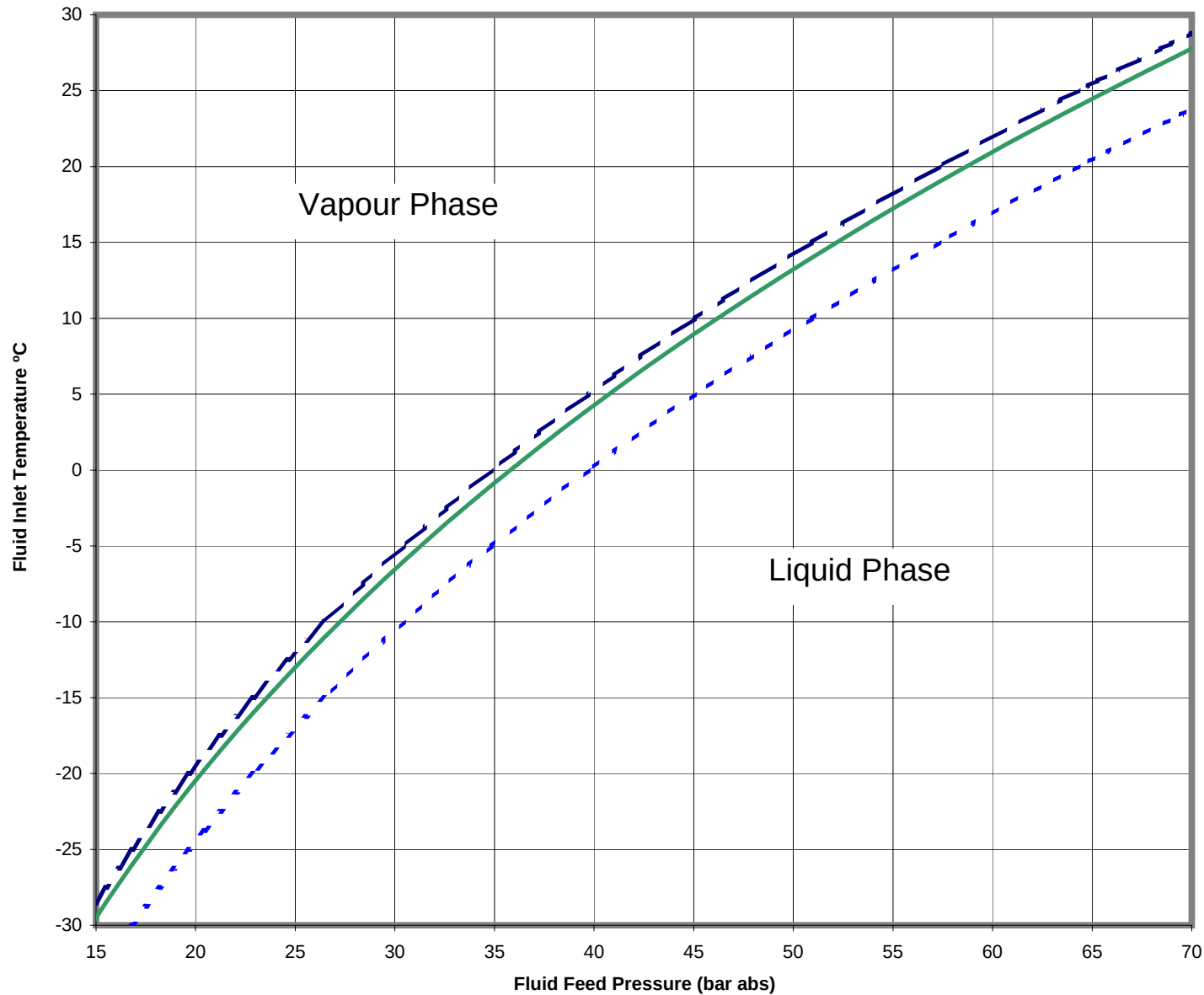


SCHEMATIC INSTALLATION DIAGRAM



PUMP CROSS SECTION

Maximum Pump Inlet Temperature vs Feed Pressure - Carbon Dioxide



Limiting Pressure and Temperature at inlet of Cat Pumps model 1951

- Liquid/Vapour Phase
- Maximum inlet temperature, vented inlet
- - - Maximum inlet temperature, unvented inlet

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