

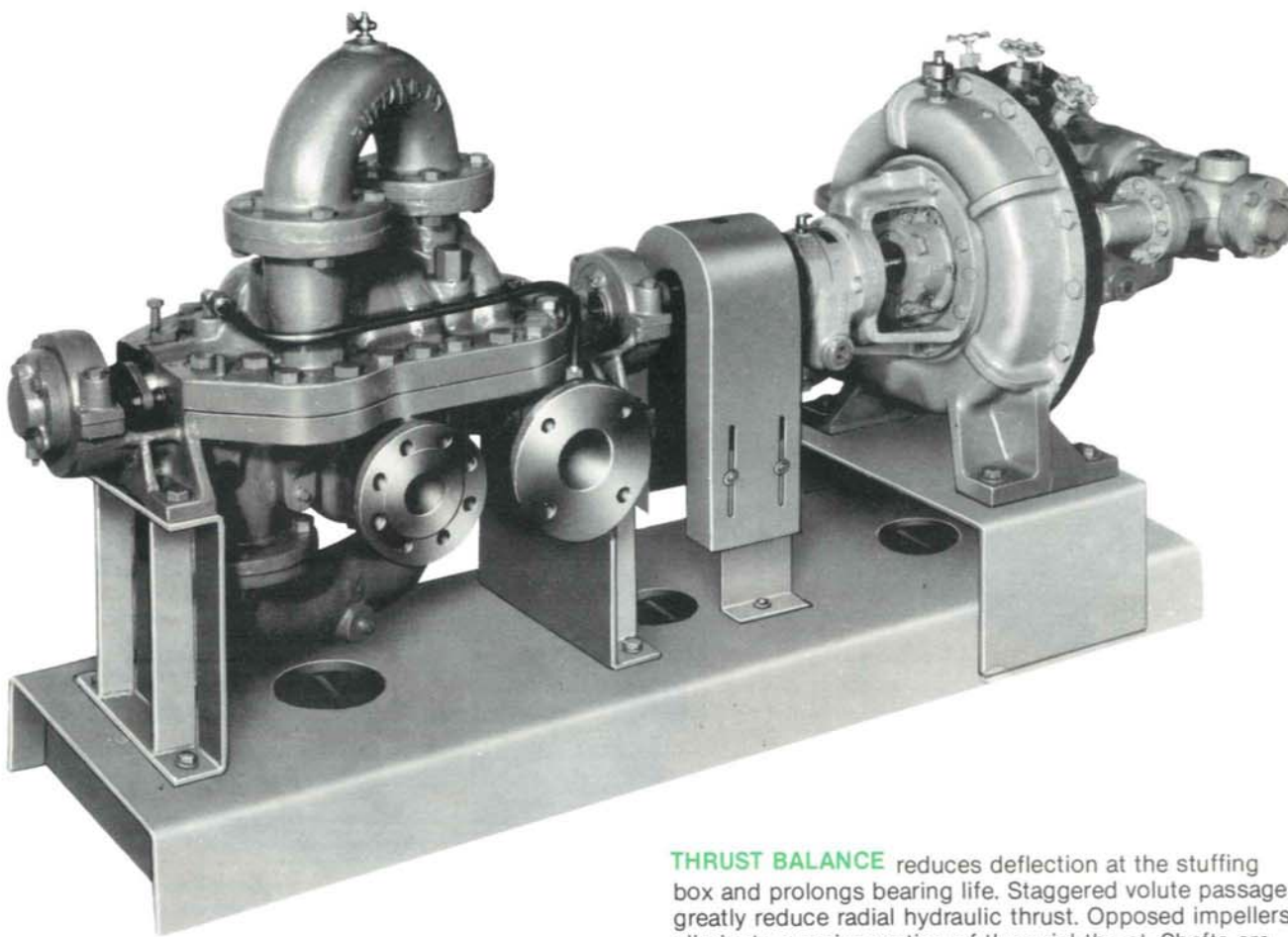
HORIZONTALLY SPLIT CASE
MULTISTAGE PUMPS

CLASS "RR"

for boiler feed and medium pressure service

HORIZONTALLY SPLIT CASE MULTISTAGE PUMPS CLASS "RR"

These pumps incorporate many advanced design innovations based upon over 100 years of hydraulic and mechanical engineering experience.



CASINGS, split on the horizontal centerline, facilitate inspection, maintenance and removal of the entire rotating element without disturbing piping or alignment.

SUPPORTS, close to the centerline, prevent thermal expansion and contraction from creating alignment problems with subsequent stuffing box and bearing maintenance.

THRUST BALANCE reduces deflection at the stuffing box and prolongs bearing life. Staggered volute passages greatly reduce radial hydraulic thrust. Opposed impellers eliminate a major portion of the axial thrust. Shafts are sized to provide less than .002" deflection at the stuffing box faces. Selected bearings provide a minimum average life of 10 years.

PERMANENT INTERNAL ALIGNMENT is assured by bearing brackets cast integrally with the lower half of the casing. These brackets are bored in the same machining operation as the boring of upper and lower halves of the pump casing. New adjustable design brg. housings, held in place and adjusted with cap screws.

SPECIFICATIONS

CASING — D.I. horizontally split with flanged suction and discharge openings in lower half. All internal parts can be inspected or removed without disturbing piping or driver alignment. Centerline supports equalize thermal expansion around the shaft. Staggered volute passages reduce radial loading.

IMPELLERS — Bronze. Enclosed single suction type. Opposed for hydraulic balance. One piece castings are accurately machined, balanced and keyed to shaft.

WEARING RINGS — Renewable bronze labyrinth type have tongue and groove fit. Wearing rings maintain proper running clearance with the impellers and restrict leakage from discharge to suction chambers.

DIAPHRAGM — Bronze. Renewable liner forms close running clearance to the stainless steel spacer sleeve between stages.

SHAFT — High tensile (AISI-4150) Steel. Protected with renewable 17-4 PH sleeves through stuffing boxes. Sized to provide less than .002" deflection at the stuffing box faces.

STUFFING BOX — provided with die-formed rings of non-asbestos packing suitable for high temperature service. The lower pressure box (nearest to suction flange) is provided with a split glass filled teflon seal cage and a renewable bronze throat bushing. The high pressure box has a pressure breakdown chamber which is bled to suction pressure.

GLAND — Bronze. Smothering type. Positioned by stainless steel studs and nuts.

BEARING — Duplex angular contact ball type. Mounted back to back. External labyrinth combination flinger and seal keep moisture and dirt out of the bearing housing.

COUPLING — All metal. Flexible type.

BASEPLATE — Structural ribbed fabricated steel. Ample size grout holes are provided.

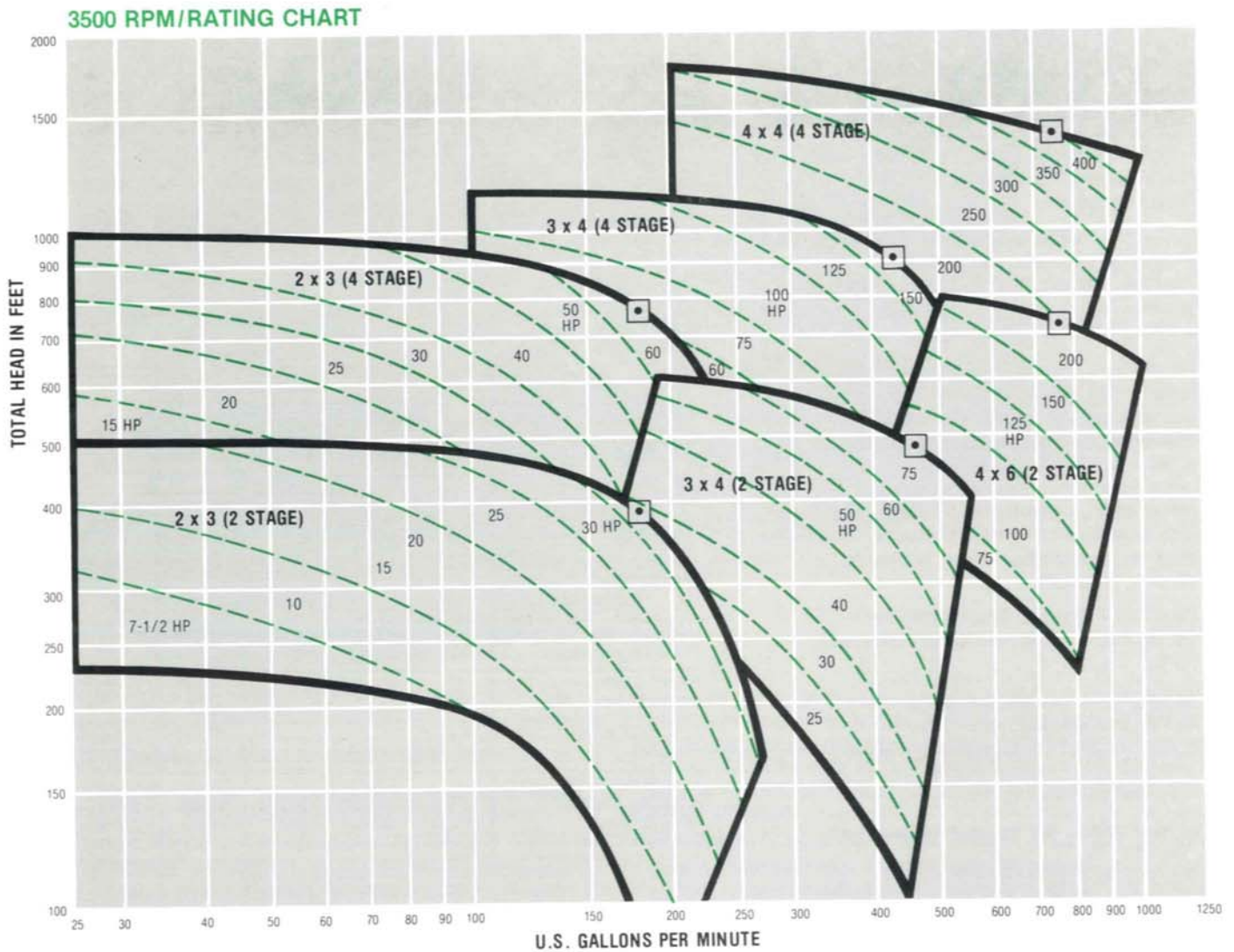
MATERIALS OF CONSTRUCTION

PART	BRONZE FITTED	CAST IRON	STAINLESS FITTED
Casing	D.I.	D.I.	D.I.
Impellers	Bronze	Cast Iron	316 S.S.
Shaft	AISI-4150	AISI-4150	Aquamet 22
Stuffing box sleeves	17-4 PH	17-4 PH	17-4 PH
Casing wearing rings	Bronze	Cast Iron	304 S.S.
Throat bushings	GFT	GFT	GFT
Glands	Bronze	Cast Iron	Cast Iron
Seal cages (split)	GFT	GFT	GFT
Diaphragms	Bronze	Cast Iron	304 S.S.
Diaphragm bushings	Bronze	Cast Iron	Carbon-graphite
Interstage sleeves	303 S.S.	303 S.S.	316 S.S.
Packing	Non-Asbestos		
Coupling	Falk T20		
Bedplate	Structural formed steel, ribbed for rigidity with grout hole		

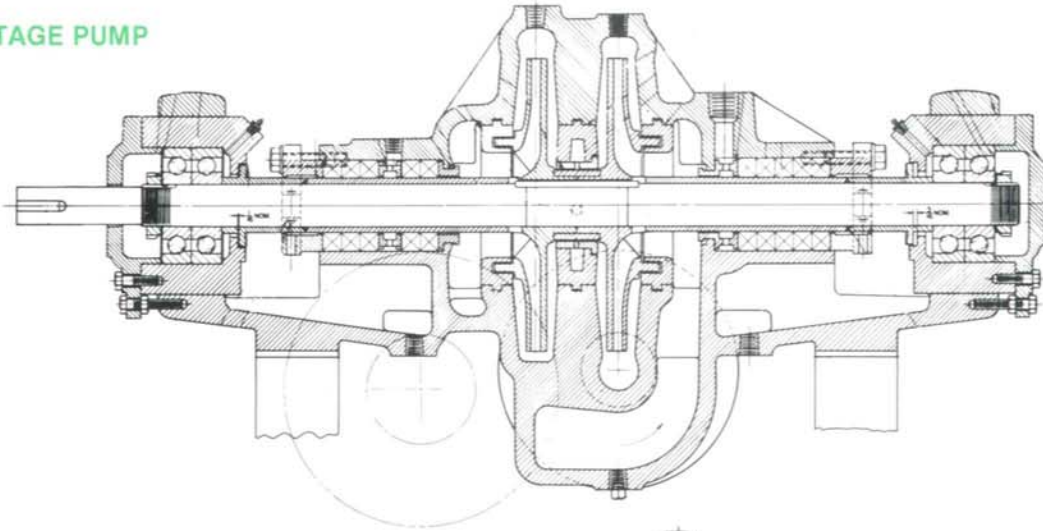
GENERAL PUMP DATA

PUMP SIZE — Discharge x Suction Inches	2 x 3	2 x 3	3 x 4	3 x 4	4 x 6	4 x 6	
CLASS	RR	RR	RR	RR	RR	RR	
No. of STAGES	2	4	2	4	2	4	
SHAFT (SLEEVE) DIAMETER Through Stuffing Box — Inches	1.500	1.500	1.750	1.750	2.000	2.125	
SHAFT DIAMETER At Coupling — Inches	1.062	1.062	1.250	1.250	1.468	1.687	
Standard PRESSURE PSI	WORKING	250	500	300	600	400	750
	HYDROSTATIC	375	750	450	900	600	1125
MINIMUM (METAL) CASING Thickness — Inches	7/16	7/16	1/2	1/2	9/16	9/16	
PACKING RING Size — Inches	1/2	1/2	1/2	1/2	1/2	1/2	
SEAL CAGE WIDTH — Inches	L.P.-0.625 H.P.-1.062	L.P.-0.625 H.P.-1.062	L.P.-0.625 H.P.-1.187	L.P.-0.625 H.P.-1.187	L.P.-0.625 H.P.-1.187	L.P.-0.750 H.P.-1.750	
Arrangement of Packing in Stuffing Box from Throat to Gland S = SEAL CAGE	2-S-3 0-S-5	2-S-3 0-S-5	2-S-3 0-S-5	2-S-3 0-S-5	2-S-3 0-S-5	2-S-3 0-S-5	
SKF DESIGNATIONS	THRUST BEARING	7306BG	7306BG	7307BG	7307BG	7408BG	7309BG
	GUIDE BEARING	7306BG	7306BG	7307BG	7307BG	7408BG	7309BG

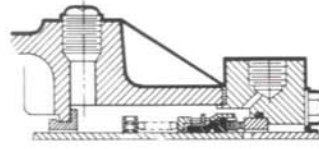
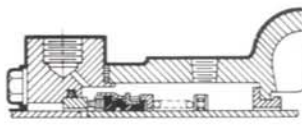
HORIZONTALLY SPLIT CASE MULTISTAGE PUMPS CLASS "RR"



TWO STAGE PUMP

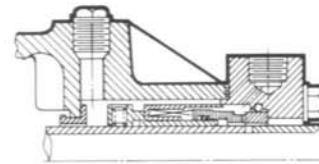
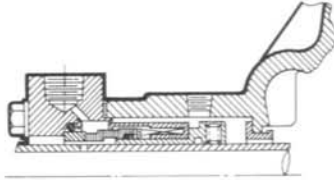


JOHN CRANE TYPE 1
MECH. SEAL INSTALLATION
LOW PRESSURE



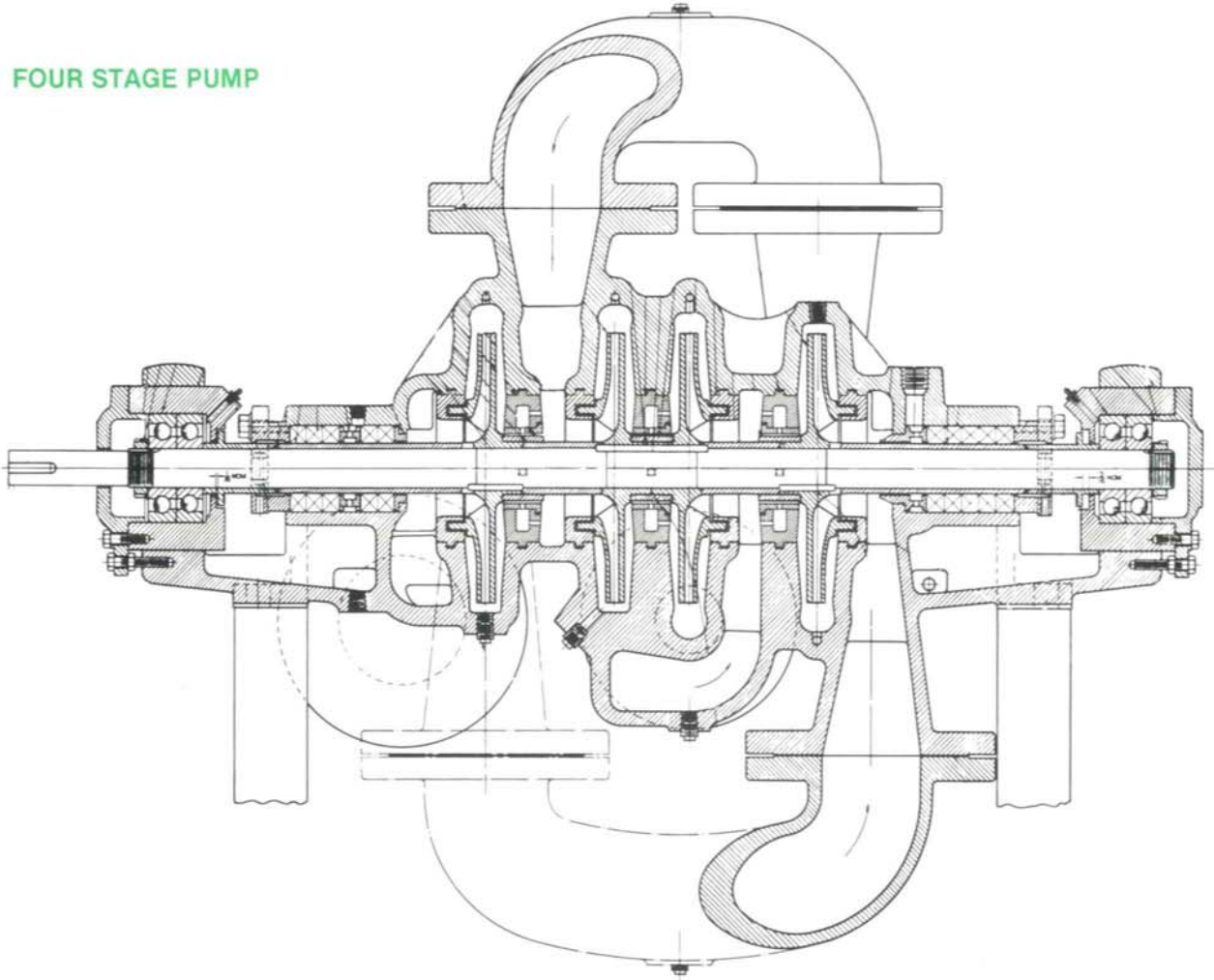
JOHN CRANE TYPE 1
MECH. SEAL INSTALLATION
HIGH PRESSURE

JOHN CRANE 8B1T
MECH. SEAL INSTALLATION
LOW PRESSURE

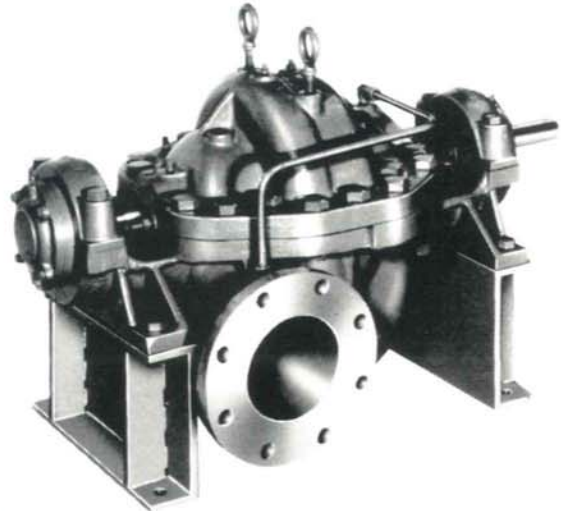


JOHN CRANE 8B1T
MECH. SEAL INSTALLATION
HIGH PRESSURE

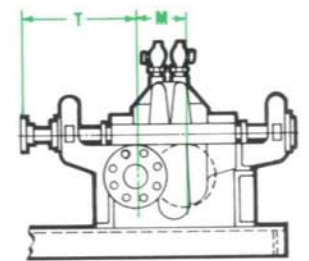
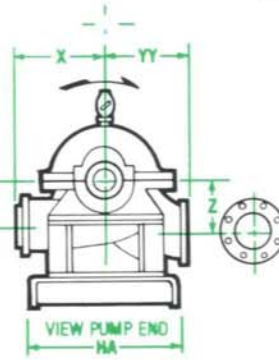
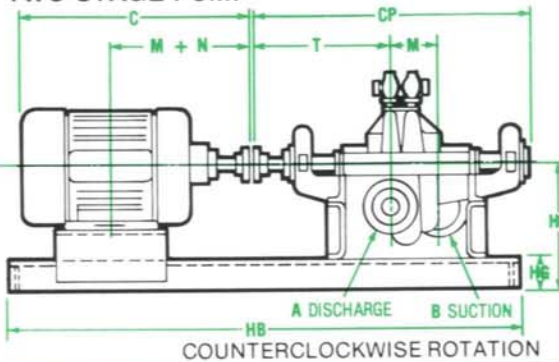
FOUR STAGE PUMP



HORIZONTALLY SPLIT CASE MULTISTAGE PUMPS CLASS "RR"

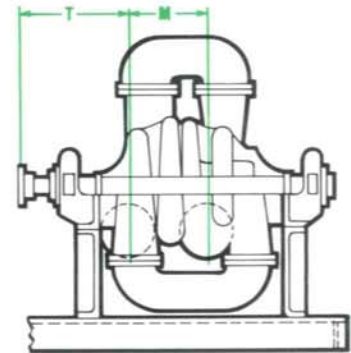
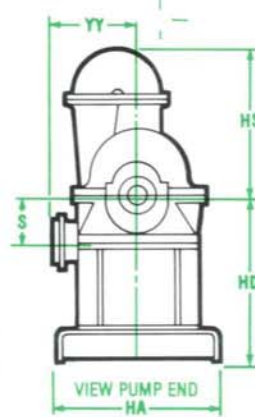
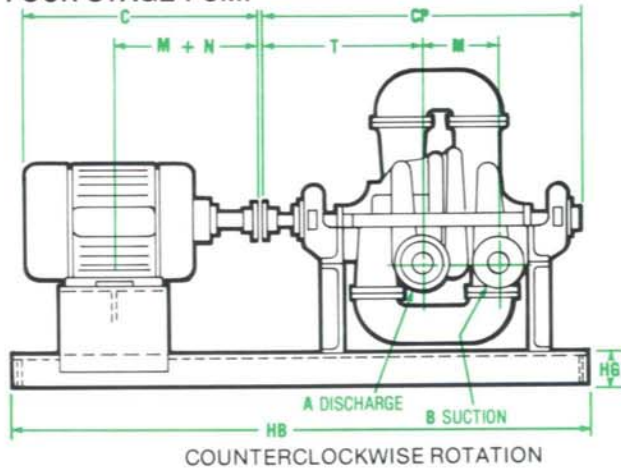


TWO STAGE PUMP



CLOCKWISE ROTATION

FOUR STAGE PUMP



CLOCKWISE ROTATION

DIMENSIONS

SIZE	No. of Stages	A	B	CP	M	S	T C.C.W.	T C.W.	X	YY	Z	HA	HB	HD	HG	HS
2	2	2	3	30	5-3/8	5	15-3/8	12-1/4	8-3/8	7	4-1/2	15	49-3/4	13-3/8	4	—
3	2	3	4	31-7/16	6-1/8	5-3/4	15-11/16	12-1/16	9-1/2	8-1/4	5-3/8	19	67	17-5/8	4-1/2	—
4	2	4	6	37-1/8	8	6-1/4	18-7/8	13-7/8	13	11-1/2	6-1/4	22	78	20-1/2	6	—
2	4	2	3	38-1/8	8-5/8	4-1/2	19-5/8	13-1/4	8-1/2	8-1/2	—	19	67	20-1/2	4-1/2	15-1/4
3	4	3	4	42-3/16	11-5/8	5-3/4	21-3/16	12-1/16	9-1/2	9-1/2	—	22	78	25-1/2	6	16-7/8
4	4	4	6	51-3/4	15-1/4	6-1/4	26-1/4	14	13	13	—	22	95-1/2	29-1/2	6	20-5/8

MOTOR DIMENSIONS

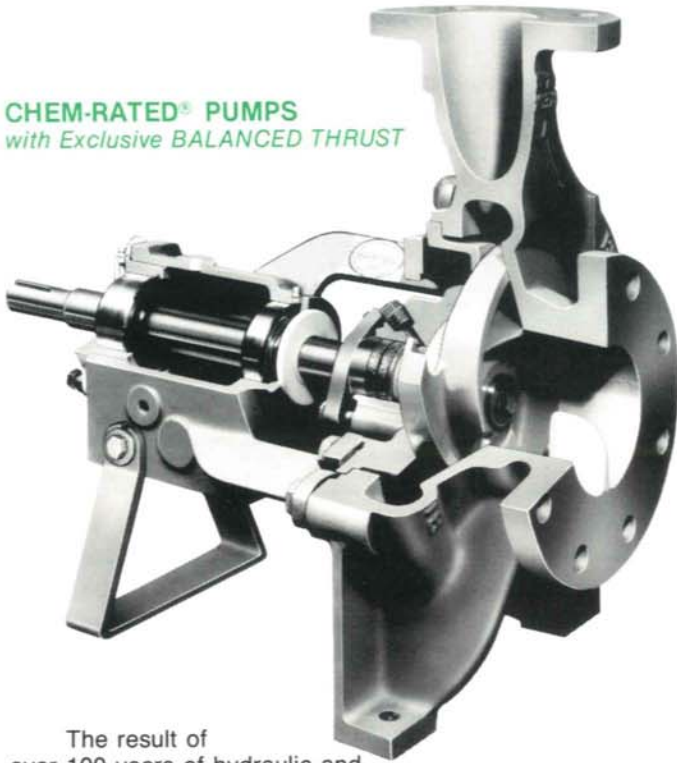
Motor Frame	M + N	C
145T	7	12-3/16
182T	7-3/4	14-3/8
184T	8-1/4	15-3/8
213T	9-5/8	17-7/8
215T	10-3/8	19-7/16
254T	12-3/8	22-3/4
256T	13-1/4	24-5/8
284TS	12-3/4	25-1/4
284T	14-1/8	26-5/8
286TS	13-1/2	26-3/4
286T	14-7/8	28-1/8
324TS	14-1/4	28-1/8
324T	15-3/4	29-5/8
326TS	15	29-5/8
326T	16-1/2	31-1/8
364TS	15-1/4	30-3/4
364T	17-3/8	32-7/8
365TS	15-3/4	31-3/4
365T	17-7/8	33-7/8
404TS	17	33-1/2
404T	20	36-1/2
405TS	17-3/4	35
405T	20-3/4	38
444TS	19-1/2	38-1/2
444T	23-1/4	42-1/4
445TS	20-1/2	40-1/2
445T	24-1/4	44-1/2
447TS	22-1/4	39-9/16
447T	26	43-5/16
449TS	24-3/4	44-9/16
449T	28-1/2	48-5/16

FLANGE DIMENSIONS

"B" SUCTION SIZE 150 # SERIES FLANGE	3		4		6			
	Outside Diameter	7-1/2		9		11		
Bolt Circle Diameter	6		7-1/2		9-1/2			
No. & Size of Bolts	4 — 5/8		8 — 5/8		8 — 3/4			
Thickness	3/4		15/16		1			
"A" DISCHARGE SIZE 300 # SERIES FLANGE	2		3		4 2 STG.		4* 4 STG.	
	Outside Diameter	6-1/2		8-1/4		10		10
Bolt Circle Diameter	5		6-5/8		7-7/8		7-7/8	
No. & Size of Bolts	8 — 5/8		8 — 3/4		8 — 3/4		8 — 7/8	
Thickness	7/8		1-1/8		1-1/4		1-5/8	
Diameter of Raised Face	4-3/16		5-11/16		6-15/16		6-3/16	
Thickness of Raised Face	1/16		1/16		1/16		1/4	

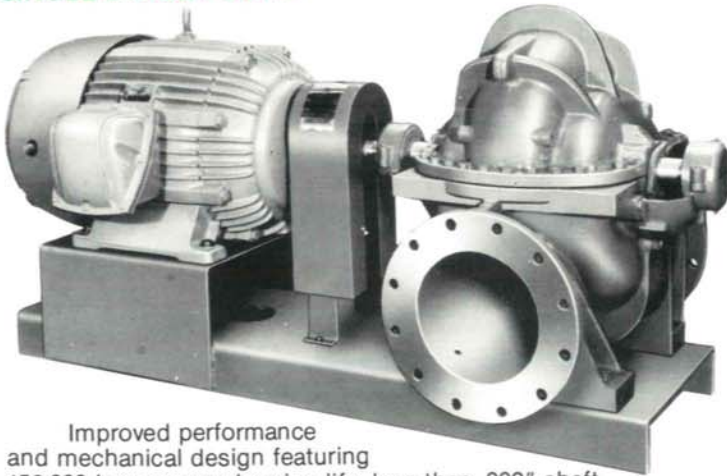
*A Discharge Size — 400 # Series Flange

CHEM-RATED® PUMPS
with Exclusive *BALANCED THRUST*



The result of over 100 years of hydraulic and mechanical engineering experience, Buffalo Pumps Chem-Rated Pumps are designed to reduce axial and radial loads for long, maintenance free operation in the chemical process and allied industries.
BULLETIN 903

**DOUBLE SUCTION
SINGLE STAGE PUMPS**



Improved performance and mechanical design featuring 150,000 hrs. average bearing life, less than .002" shaft deflection and maximum interchangeability.
BULLETIN 900

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