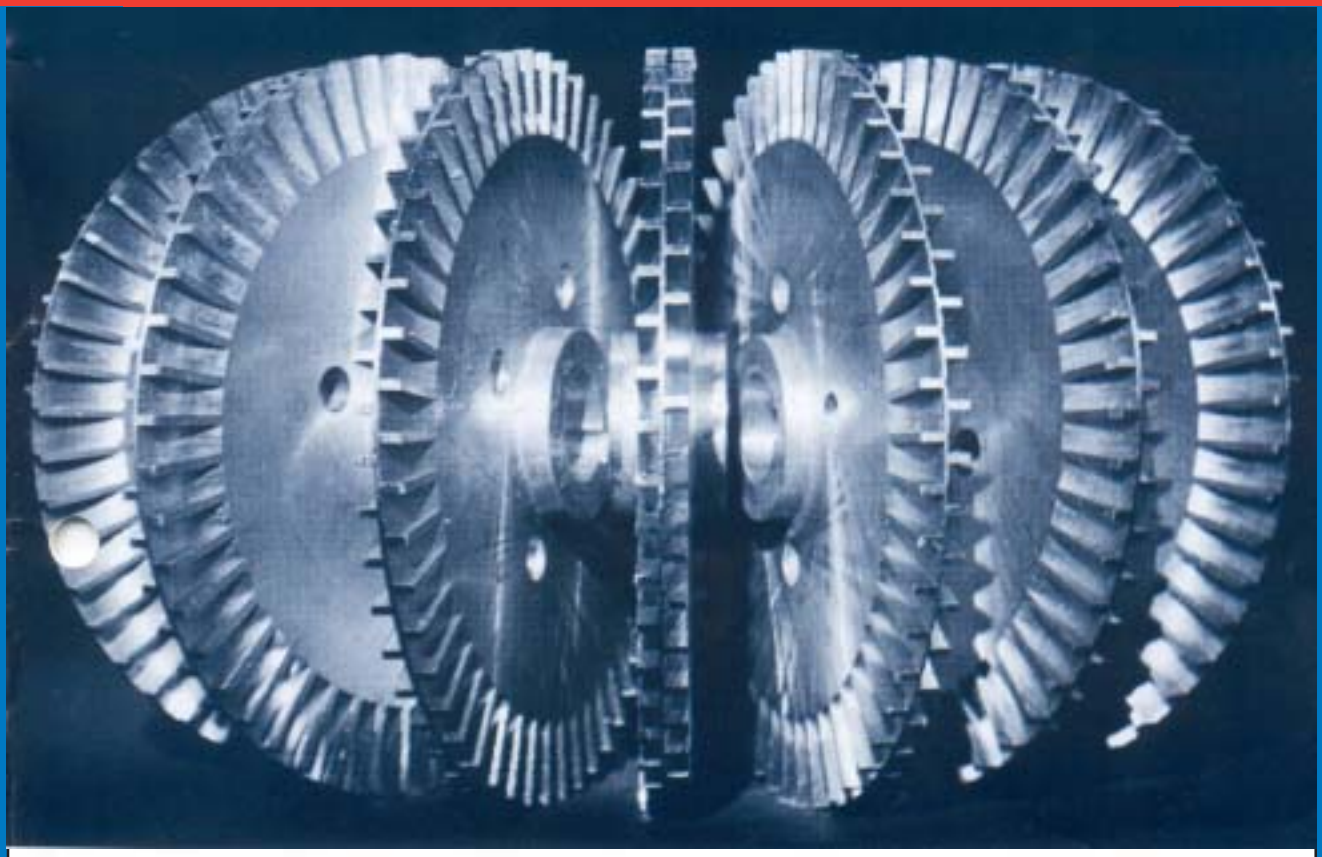
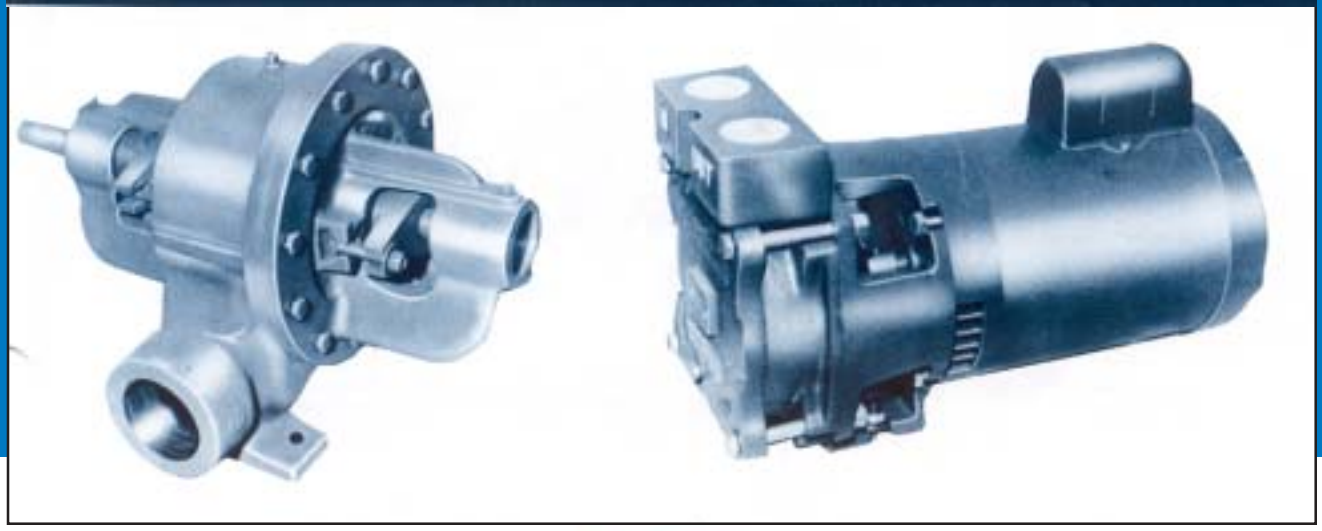
MEPCO

REGENERATIVE TURBINES





MEPCO

MARSHALL ENGINEERED PRODUCTS CO.

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MEPCO's WESTCO Regenerative Turbine Pumps - Features

WESTCO, the original turbine pump, has led the industry for 55 years with the ultimate in design features, efficiency and durability. WESTCO regenerative turbines are ideally suited for applications where vaporous fluids are being handled at low flows and moderate to high pressures.

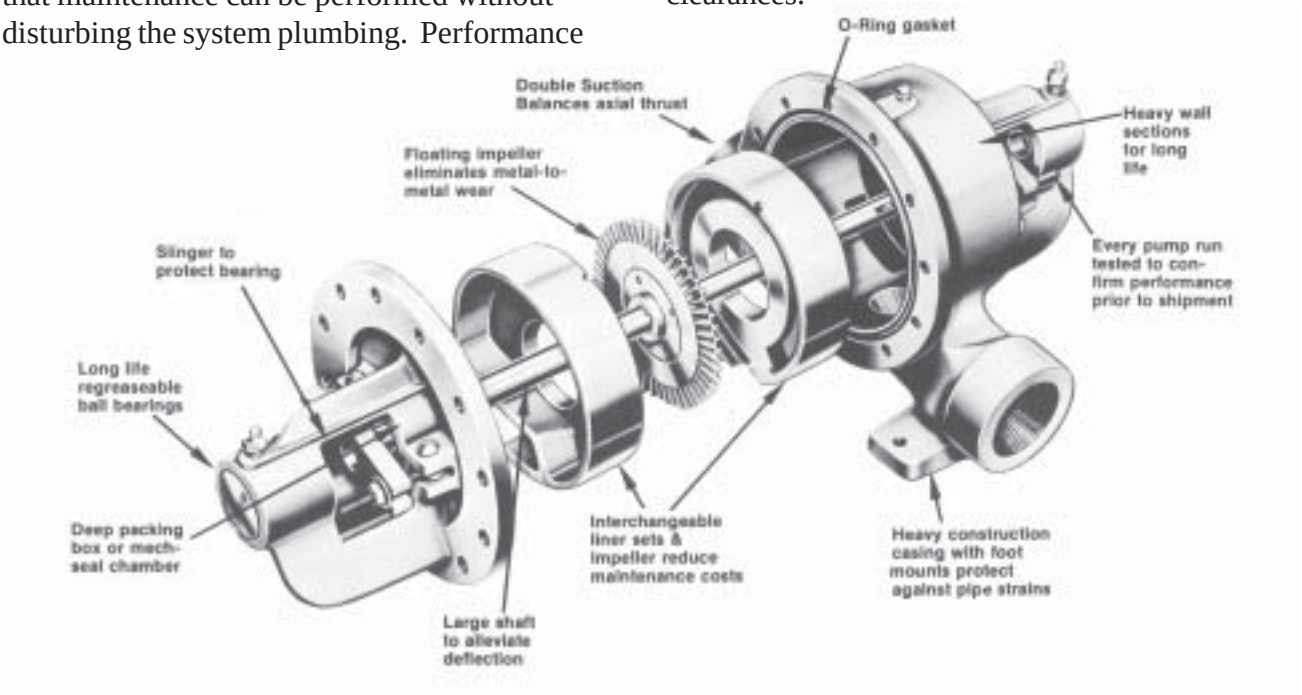
WESTCO was first to offer the floating impeller which automatically centered between liner rings. This elimninated the guesswork of centering with adjusting nuts. Optimum performance is always delivered without worry of metal-to-metal contact through a wide range of temperature.

WESTCO pumps operate on steep H-Q curves which allow the units to deliver near constant flow regardless of changes in pressure requirements. This is important to the system designer since he can rely on capacity with unpredictable pressure variations.

WESTCO's vertially split housing is designed so that maintenance can be performed without disturbing the system plumbing. Performance can be restored to "like new" by merely replacing the impeller and liner rings. Should your system H-Q requirements change, this can normally be accomodated with a different set of liners and impeller; no change to the housing or plumbing... a savings directly measured in dollars for parts and down time.

WESTCO pumps thrive on vaporous fluid. Many liquids vaporize at room temperature. These, as well as hot water, steam/air and refrigerants are handled without vapor lock or NPSH problems. The pump's self-venting characteristics simply carry the bubbles/vapors along with the fluid to the discharge port without a hint of vapor lock.

WESTCO pumps excel on applications where higher suction lights are required. Whether the liquid is at normal temperature or hot, the turbine pump will outlift the centrifugal type due to its air handling capability and close running internal clearances.



Principle of Operation

The WESTCO regenerative turbine pumps acquired their name from the numerous “buckets” which are machined into the impeller’s periphery. The companion parts, the liner rings, enclose the impeller and redirect the liquid particles to the buckets to perpetuate the regenerative pressure development.

Figure 1 depicts liquid entering the pump inlet where the flow is divided to both sides of the impeller. Liquid is immediately picked up by the “buckets” and pumped about the liner ring channel as shown in Figure 2. This pumping action is repeated on a given droplet many times as it is pumped toward the discharge port. Centrifugal forces and shearing action combine to add energy each time the droplet passes through a bucket. Pressure is developed progressively higher as liquid approaches the discharge. The flow is smooth, continuous and non-pulsating as the fluid from each side of the impeller rejoins at the discharge port at extremely high heads.

Figure 3 compares the performance of WESTCO pumps versus centrifugal for the low capacity, high head applications. Horsepower increases as the pressure increases, not capacity as in a centrifugal pump. And, of course, the steeper H-Q curve offers less change in capacity with pressure demand variations.

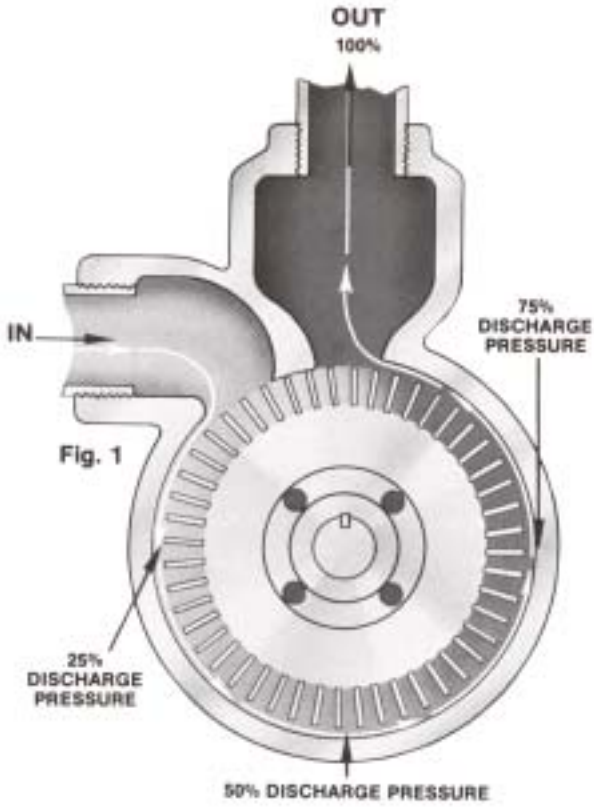
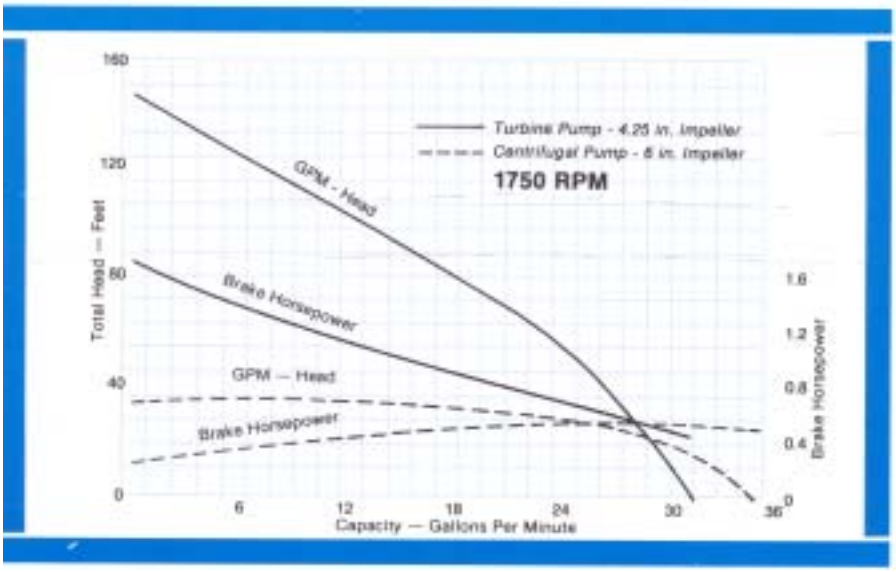


Fig. 1

Fig. 2



Applications

The WESTCO regenerative turbine can be used for a wide range of services and applications due to its excellent suction characteristics, ability to handle entrained vapors/gases, high temperature capability without internal binding, high pressure reserve and slower rotation assuring long life.

Typical applications found in boilerhouses, chemical plants, canneries, dairies, greenhouses, cement plants, distilleries, breweries, boats/ships and factories.

Boiler feed	Booster service	Car washers
Condensate return	Refrigeration	Petroleum pumping
Jockey service	Hot/volatile liquids	Caustic fluids
Sump service (clear water)	Marine (potable water)	Viscous fluids
Brine circulation	Water treatment	Chemicals
Coolant pumping	Refineries	

CONSTRUCTION MATERIALS

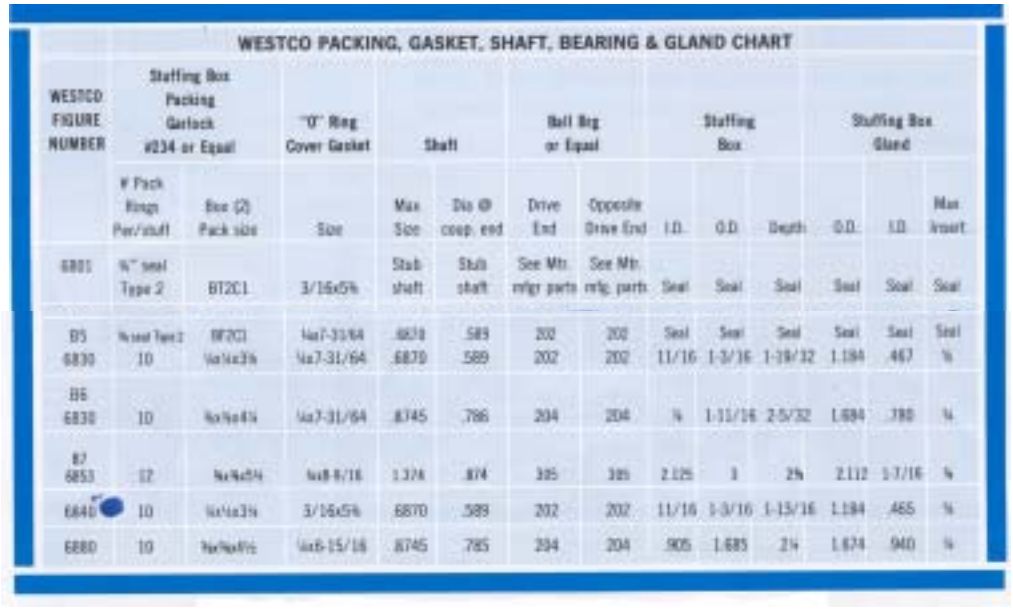
Bronze fitted (BF) pumps are considered standard construction and are stocked at the factory at all times. Parts inventory for All Iron (AI) and All Bronze (AB) are maintained to build these options. Stainless steel is offered in several pump families; these must be quoted from the factory.

PART	BRONZE FITTED	ALL IRON	ALL BRONZE
Body	Cast Iron	CI	Bronze
Cover	Cast Iron	CI	Bronze
Liners	Bronze	CI	Bronze
Impeller	Bronze	CI	Bronze
Shaft	Stainless Steel-416	St. Stl	St. Stl.
Glands	Cast Iron	CI	Bronze
Packing	Graphited Asbestos	GA	GA
Gasket	Neoprene	N	N

WESTCO pumps are capable of handling viscosities to 600 S.S.U. and temperatures to 210°F maximum. When pumping viscous fluids, the following guidelines should be considered:

LIMITATIONS

S.S.U.	DECREASED CAPACITY	INCREASE H.P.
UP to 200	0	0
201 to 300	15%	25%
301 to 400	25%	40%
401 to 600	35%	50%



WESTCO PACKING, GASKET, SHAFT, BEARING & GLAND CHART

WESTCO FIGURE NUMBER	Stuffing Box Packing Garlock #234 or Equal		"O" Ring Cover Gasket	Shaft		Ball Brg or Equal		Stuffing Box			Stuffing Box Gland		
	# Pack Rings Per/stuff	Box (2) Pack size	Size	Max Size	Dia @ coup. end	Drive End	Opposite Drive End	I.D.	O.D.	Depth	O.D.	I.D.	Max Insert
6801	¼" seal Type 2	BT2C1	3/16x5/8	Stub shaft	Stub shaft	See Mfr. mfgr parts	See Mfr. mfg. parts	Seal	Seal	Seal	Seal	Seal	Seal
B5 6830	¼ seal Type 2 10	BT2C1 ¼x¼x3/8	¼x7-31/64	.6870	.589	202	202	Seal 11/16	Seal 1-3/16	Seal 1-19/32	Seal 1.184	Seal .467	Seal ¼
B6 6830	10	¼x⅝x⅝	¼x7-31/64	.8745	.786	204	204	¼	1-11/16	2-5/32	1.684	.780	¼
B7 6853	12	¼x⅝x5/8	¼x8-8/16	1.378	.874	305	305	2.125	3	2⅜	2.112	1-7/16	¼
6840	10	¼x¼x3/8	3/16x5/8	.6870	.589	202	202	11/16	1-3/16	1-13/16	1.184	.465	¼
6880	10	¼x⅝x⅝	¼x8-15/16	.8745	.785	204	204	.905	1.685	2¼	1.674	.940	¼

Pump Selection Charts

For NPSHR and detailed performance refer to appropriate curve.

6801

NEMA C flange motor at either 1750 or 3450 RPM with mechanical seals. High performance in a very small package. (Max. 3 HP)

1750 RPM 1¼" Suction, 1¼" Discharge — TOTAL HEAD IN FEET OF WATER

Model 6801, 6820 & 6821		20	30	40	50	60	80	100	125	150	175	CURVE NO.
SR4R-4, 6801-4	GPM	2.0	1.6	1.3	1.0	.70						1
6821-4, 6821A-4	Motor	¼	¼	¼	¼	¼						
SR4R-6, 6801-6	GPM	3.6	3.1	2.7	2.2	1.8	1.0					2
6821-6, 6821A-6	Motor	¼	¼	¼	¼	¼	¼					
SR4R-8, 6801-8	GPM	7.0	6.4	5.9	5.4	4.8	3.8	2.8	1.6			3
6821-8, 6821A-8	Motor	¼	¼	¼	¼	¼	¼	1/3	1/3			
SR4R-8B, 6801-8B	GPM	9.0	8.3	7.7	7.0	6.4	5.2	4.1	2.7	1.5		4
6821-8B, 6821A-8B	Motor	¼	¼	¼	1/3	1/3	½	½	¼	¼		
SR4R-9, 6801-9	GPM	11.0	10.5	10.0	9.3	8.7	7.6	6.5	5.2	4.0	3.0	5
6821-9, 6821A-9	Motor	¼	¼	¼	1/3	1/3	½	½	¼	¼	¼	
SR4R-10, 6801-10	GPM	14.0	13.4	12.6	11.8	11.2	9.9	8.6	7.0	5.4	4.0	6
6821-10, 6821A-10	Motor	¼	1/3	1/3	½	½	½	¾	¼	1	1	
SR4R-11, 6801-11	GPM	17.8	16.8	15.8	15.0	14.4	13.2	12.0	10.4	9.0		7
6821-11, 6821A-11	Motor	½	½	½	½	¾	¾	¾	1	1		
SR4R-12, 6801-12	GPM	23.0	22.0	21.0	19.8	18.0	15.0	10.8	5.5			8
6821-12, 6821A-12	Motor	1/3	½	½	½	¾	¾	1	1			
SR4R-13, 6801-13	GPM	28.0	26.0	25.0	23.0	22.0	19.0	15.5				9
6821-13, 6821A-13	Motor	½	½	¾	¾	¾	1	1				

3450 RPM 1¼" Suction, 1¼" Discharge — TOTAL HEAD IN FEET OF WATER

Model 6801		100	150	200	250	300	350	400	450	500	550	CURVE NO.
6801-4	GPM	3.8	3.2	2.5	1.8	1.3	0.8					10
	Motor	1/3	½	½	¾	¾	¾					
6801-6	GPM	6.1	4.8	3.5	2.4	1.2						11
	Motor	½	¾	¾	1	1						
6801-8	GPM	12.4	11	9.8	8.6	7.4	6.4	5.4	4.2	3.2	2.3	12
	Motor	1	1½	1½	2	2	2	3	3	3	3	
6801-8B	GPM	15.6	14	12.8	11.4	10	8.6	7.4	6			13
	Motor	1	1½	1½	2	2	3	3	3			

Pump Selection Charts

For NPSHR and detailed performance refer to appropriate curve.

6840

2" Suction, 1½" Discharge Model 6840		TOTAL HEAD IN FEET OF WATER 1750 RPM 20	30	40	50	60	80	100	CURVE NO.
CR405	GPM	9.6	9.0	8.4	7.8	7.3	6.1	5.0	19
	Motor	½	½	½	½	¾	¾	¾	
CR410	GPM	14.0	13.4	12.5	11.8	11.0	9.6	8.4	20
	Motor	½	½	¾	¾	¾	¾	¾	
CR415	GPM	27.3	25.8	24.0	22.5	20.9	17.2	13.0	21
	Motor	½	¾	¾	¾	1	1	1	
CR420	GPM	37.4	35.0	32.0	28.8				22
	Motor	¾	¾	¾	1				
CR429	GPM	47.5	45.0	42.5	40.2	37.5	30.7		23
	Motor	¾	1	1	1	1½	1½		

Model 6840		2" Suction, 1½" Discharge TOTAL HEAD IN FEET OF WATER 3450 RPM 125	150	175	200	225	250	275	300	350	400	450	500	CURVE NO.
CR405	GPM	17.0	16.8	16.2	16.0	15.2	15.0	14.5	14.0	13.0	11.0	9.0	7.8	24
	Motor	1½	1½	2	2	2	3	3	3	3	5	5	5	
CR410	GPM	26.0	25.0	24.0	23.0	22.0	21.0	19.0	18.0	17.0	16.0	15.0	13.0	25
	Motor	2	3	3	3	3	3	3	5	5	5	5	5	
CR415	GPM	47.5	46.0	44.0	42.5	40.0	38.0	36.0	33.0	28.0	22.0			26
	Motor	3	5	5	5	5	5	5	7½	7½	7½			
CR420	GPM	64.0	62.0	58.0	50.0	40.0	26.0							27
	Motor	5	5	5	5	7½	7½							
CR429	GPM	80.0	80.0	79.0	77.0	75.0	70.0	65.0	60.0					28
	Motor	5	7½	7½	7½	7½	10	10	10					

6830 B-5

Standard with either packing or standard type 2 mechanical seals.

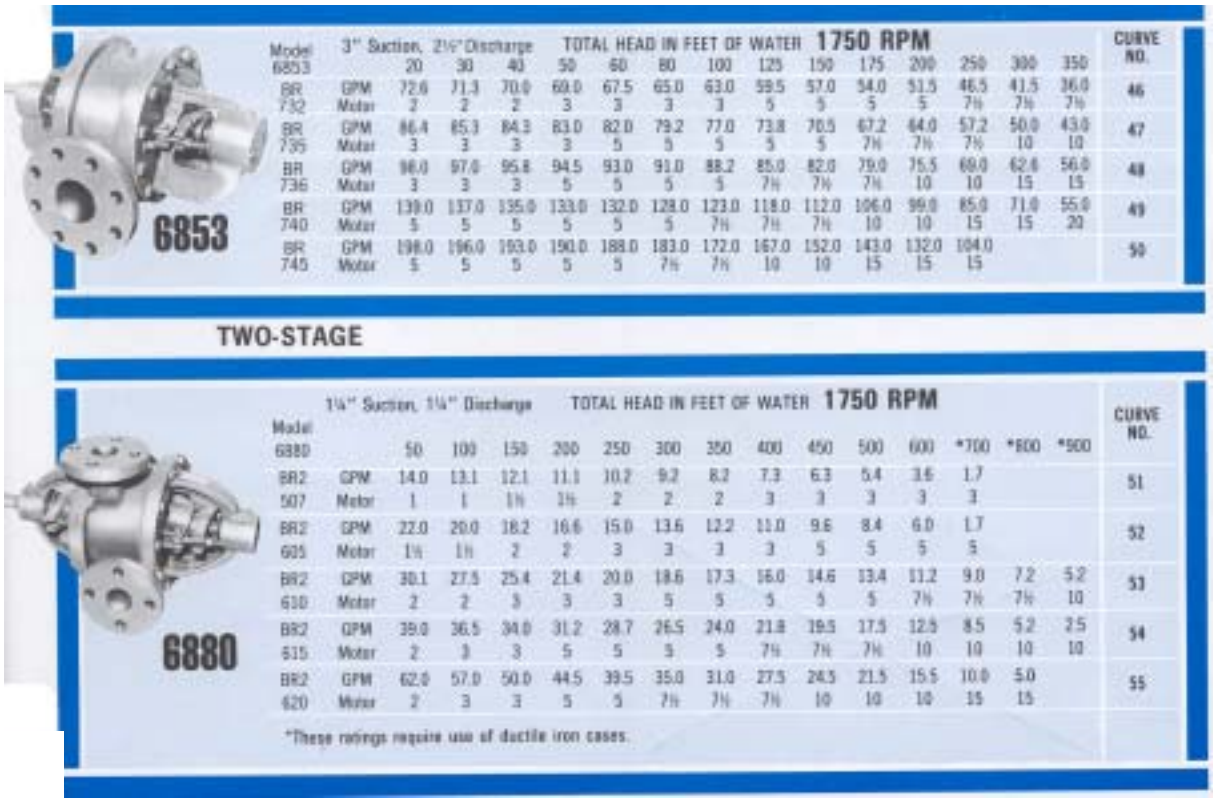
Model 6830	B-5	1¼" Suction, 1¼" Discharge TOTAL HEAD IN FEET OF WATER 1750 RPM 20	30	40	50	60	80	100	125	150	175	200	250	300	350	CURVE NO.
BR 505	GPM	9.2	8.8	8.5	8.1	7.8	7.2	6.6	5.9	5.2	4.6	4.0	3.0	2.0		29
	Motor	¼	¼	¼	1/3	1/3	½	½	½	¾	¾	¾	1	1		
BR 506	GPM	12.3	11.8	11.4	11.0	10.5	9.8	9.2	8.3	7.5	6.6	5.8	4.2	2.7	1.4	30
	Motor	1/3	½	½	½	½	½	¾	¾	¾	1	1	1½	1½	1½	
BR 507	GPM	13.5	13.0	12.7	12.3	12.2	11.3	11.0	10.0	9.2	8.4	7.6	5.8	4.2	3.1	31
	Motor	1/3	½	½	½	½	½	¾	¾	¾	1	1	1½	1½	2	
BR 515	GPM	18.0	17.4	16.8	16.2	15.7	14.5	13.3	11.8	10.0	8.6	6.8				32
	Motor	1/3	½	½	½	½	¾	¾	1	1	1½	1½				
BR 605	GPM	20.5	20.0	19.6	19.2	18.7	17.8	16.8	15.8	14.6	13.4	12.3	10.0			33
	Motor	¼	¾	¾	¾	1	1	1	1½	1½	1½	2	2			
BR 610	GPM	25.0	24.0	23.5	23.0	22.5	21.5	20.5	19.0	18.0	17.0	15.5	14.0	11.5		34
	Motor	½	½	¾	¾	¾	1	1½	1½	1½	2	2	3	3		
BR 615	GPM	38.5	37.2	36.5	35.5	34.5	32.7	31.0	29.0	27.0	25.2	23.5	20.0	17.0		35
	Motor	¾	1	1	1	1½	1½	1½	2	2	3	3	3	5		

6830 B-6

Model 6830	B-6	2½" Suction, 2½" Discharge TOTAL HEAD IN FEET OF WATER 1750 RPM 20	30	40	50	60	80	100	125	150	175	200	250	CURVE NO.
BR 520	GPM	56.0	54.0	52.0	50.0	47.5	42.0	36.0	28.7					36
	Motor	¾	1	1	1	1½	1½	2	3					
BR 525	GPM	71.0	68.0	65.0	61.5	58.0	50.5	42.5	30.0					37
	Motor	1	1	1½	1½	2	2	3	3					
BR 530	GPM	97.0	92.5	87.5	83.0	76.0	61.5							38
	Motor	1	1½	1½	2	2	3							
BR 540	GPM	160.0	156.0	151.0	144.0	136.0	116.0	93.0						39
	Motor	3	3	3	5	5	5	7½						
BR 620	GPM	53.7	52.3	50.7	49.1	48.0	45.2	42.7	39.5	37.0	34.0	31.2	26.0	40
	Motor	1½	1½	1½	1½	2	2	3	3	3	5	5	5	
BR 625	GPM	71.0	71.0	71.0	68.5	66.0	61.5	57.5	52.0	47.5	43.0	38.5	31.0	41
	Motor	1½	1½	1½	2	2	3	3	5	5	5	5	7½	
BR 630	GPM	87.4	83.5	82.0	80.3	78.5	74.0	70.0	63.0	55.5	47.0	37.5		42
	Motor	1½	1½	2	2	3	3	3	5	5	5	7½		
BR 639	GPM	109.0	106.0	104.0	102.0	100.0	95.0	91.0	86.0	80.0	75.0	69.0	53.0	43
	Motor	2	2	3	3	3	3	5	5	5	7½	7½	10	
BR 640	GPM	119.5	119.5	119.5	116.0	112.5	105.0	97.0	87.0	76.0	65.0	51.0		44
	Motor	2	2	3	3	3	5	5	5	7½	7½	7½		
BR 646	GPM	179.0	172.0	167.0	161.0	155.0	145.0	136.0	123.0	110.0	93.0	74.0		45
	Motor	3	3	5	5	5	5	7½	7½	10	10	10		

Pump Selection Charts

For NPSHR and detailed performance refer to appropriate curve.



6853

Model 6853		3" Suction, 2½" Discharge — TOTAL HEAD IN FEET OF WATER 1750 RPM															CURVE NO.
		20	30	40	50	60	80	100	125	150	175	200	250	300	350		
BR 732	GPM	72.6	71.3	70.0	69.0	67.5	65.0	63.0	59.5	57.0	54.0	51.5	46.5	41.5	36.0		46
	Motor	2	2	2	3	3	3	3	5	5	5	5	7½	7½	7½		
BR 735	GPM	86.4	85.3	84.3	83.0	82.0	79.2	77.0	73.8	70.5	67.2	64.0	57.2	50.0	43.0		47
	Motor	3	3	3	3	5	5	5	5	5	7½	7½	7½	10	10		
BR 736	GPM	96.0	97.0	95.8	94.5	93.0	91.0	88.2	85.0	82.0	79.0	75.5	69.0	62.6	56.0		48
	Motor	3	3	3	5	5	5	5	7½	7½	7½	10	10	15	15		
BR 740	GPM	139.0	137.0	135.0	133.0	132.0	128.0	123.0	118.0	112.0	106.0	99.0	85.0	71.0	55.0		49
	Motor	5	5	5	5	5	5	7½	7½	7½	10	10	15	15	20		
BR 745	GPM	198.0	196.0	193.0	190.0	188.0	183.0	172.0	167.0	152.0	143.0	132.0	104.0				50
	Motor	5	5	5	5	5	7½	7½	10	10	15	15	15				

TWO-STAGE

6880

Model 6880		1¼" Suction, 1¼" Discharge — TOTAL HEAD IN FEET OF WATER 1750 RPM														CURVE NO.
		50	100	150	200	250	300	350	400	450	500	600	*700	*800	*900	
BR2 507	GPM	14.0	13.1	12.1	11.1	10.2	9.2	8.2	7.3	6.3	5.4	3.6	1.7			51
	Motor	1	1	1½	1½	2	2	2	3	3	3	3	3			
BR2 605	GPM	22.0	20.0	18.2	16.6	15.0	13.6	12.2	11.0	9.6	8.4	6.0	1.7			52
	Motor	1½	1½	2	2	3	3	3	3	5	5	5	5			
BR2 610	GPM	30.1	27.5	25.4	21.4	20.0	18.6	17.3	16.0	14.6	13.4	11.2	9.0	7.2	5.2	53
	Motor	2	2	3	3	3	5	5	5	5	5	7½	7½	7½	10	
BR2 615	GPM	39.0	36.5	34.0	31.2	28.7	26.5	24.0	21.8	19.5	17.5	12.9	8.5	5.2	2.5	54
	Motor	2	3	3	5	5	5	5	7½	7½	7½	10	10	10	10	
BR2 620	GPM	62.0	57.0	50.0	44.5	39.5	35.0	31.0	27.5	24.5	21.5	15.5	10.0	5.0		55
	Motor	2	3	3	5	5	7½	7½	7½	10	10	10	15	15		

*These ratings require use of ductile iron cases.

ENGINEERING SPECIFICATIONS

The contractor shall furnish (and install as shown on the plans) a WESTCO regenerative turbine pump model _____ size _____ (Bronze Fitted) (All Iron) (All Bronze). Each pump shall have a capacity of _____ G.P. M. when operating at a total head of _____ feet at the specified temperature, viscosity, specific gravity, and NPSH. The speed of the pump shall not exceed (1750) (3450) R.P.M. The pump is to be furnished with (packing) (mechanical seals.)

The pump shall be of vertical split case design and the liner rings shall be replaceable without disturbing system plumbing. The suction and discharge connections shall be cast integral with the casing. The casing and bearing housings shall be cast of 25,000 pound tensile strength cast iron.

The impeller(s) shall be located on the stainless steel shaft between grease lubricated ball bearings.* The impeller shall be hydraulically self-centering and no external adjustment shall be necessary.

Each pump shall be tested at the head and capacity specified prior to shipment.

The pump shall be (Close) (mounted on a steel baseplate and flexibily) coupled to a _____ HP _____ phase _____ cycle voltage _____ R.P.M., horizontal (dripproof) (totally enclosed) (explosion proof) motor. The motor shall be sized to prevent overloading at the highest head condition listed in the specifications.

** Excluding overhung impeller design*

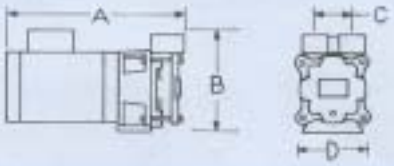
Dimensions

1. Not for construction unless certified.
2. Weights are approximate and dimensions + 1/8”.
3. Frame sizes are for open drip-proof motors.
4. Flanges are standard flat face.

LEGEND:
A - Pump-Motor Length
B - Height Including Base
C - Discharge and Suction Spacing
D - Base Width

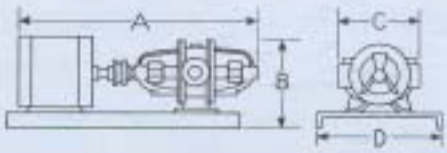
6801
-4 Thru -13
1¼ Disch. - 1¼ Suct.

HP	FR	A	B	C	D	WT
1/3	56	13⅜	9	3	7	55
½	56	14	9	3	7	60
¾	56	14⅝	9	3	7	65
1	56	15½	9	3	7	70



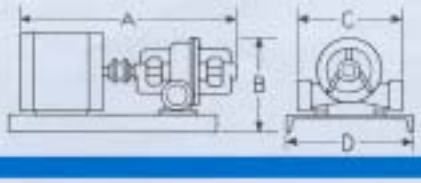
6840
CR-405, 410, 415, 420, 429
1½ Disch. - 2 Suct.

HP	FR	A	B	C	D	WT
1	143T	28⅜	10⅛	9¾	12	150
2	145T	27½	10⅛	9¾	12	161
3	182T	28⅜	10¼	9¾	12	190
5	184T	29⅜	10¼	9¾	12	213
7½	213T	30⅜	12¼	9¾	12	249
15	254T	35⅜	13¼	9¾	12	392



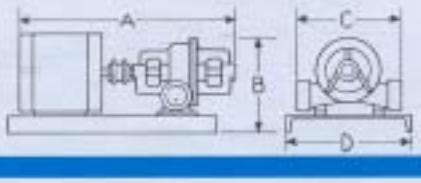
6830 B-5
BR505, 507, 515, 605, 610, 615
1¼ Disch. - 1¼ Suct.

HP	FR	A	B	C	D	WT
1	143T	25½	13¾	11	12	142
2	145T	26½	13¾	11	12	155
3	182T	27¾	12¾	11	12	185
5	184T	28¾	12¾	11	12	205
7½	213T	29¾	14⅜	11	12	245



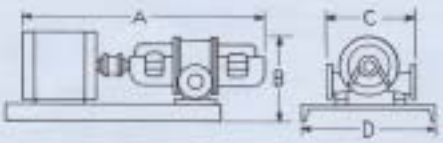
6830 B-6
BR520, 525, 530, 540, 620, 625, 630, 639, 640, 646
2½ Disch. - 2½ Suct.

HP	FR	A	B	C	D	WT
2	145T	31¼	15⅜	14½"	12	205
3	182T	32⅜	14⅛	14½"	12	235
5	184T	33⅜	14⅛	14½"	12	260
7½	213T	34⅜	14⅜	14½"	12	295
10	215T	36⅜	15	14½"	15	325
15	254T	39⅜	15¼	14½"	15	400



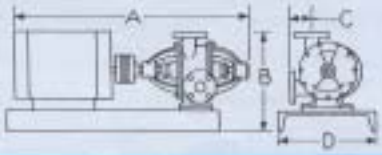
6853
BR732, 735, 736 740, 745
2½" Disch. - 3 Suct.

HP	FR	A	B	C	D	WT
7½	213T	37⅜	16¼	14⅜	15	385
10	215T	38⅜	16¼	14⅜	15	415
15	254T	42	16¾	14⅜	15	530
20	256T	43¼	16¾	14⅜	15	560
25	284T	44¼	16¾	14⅜	15	595



6880
BR2-507, 605, 610, 615, 620
1¼ Disch. - 1¼ Suct.

HP	FR	A	B	C	D	WT
2	145T	31⅛	16	3½"	12	185
3	182T	33¼	15⅜	3½"	12	200
5	184T	34¼	15⅜	3½"	12	215
7½	213T	35¼	16⅛	3½"	12	245
10	215T	36½	16¼	3½"	12	250
15	254T	40½	16⅛	3½"	12	380



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