GOULDS PUMPS



High Pressure Centrifugal Booster Pump

MODEL

45HB, 70HB

APPLICATIONS

Wide variety of industrial, commercial and agricultural uses, especially:

- High rise buildings
- Multiple dwelling buildings
- Reverse osmosis systems
- High pressure cleaning
- Spraying systems
- Booster service

SPECIFICATIONS

Pump

- Capacities: to 100 GPM
- Heads: to 760 feet.
- Pipe connections:
  Suction 2" NPT
  Discharge 2" NPT.
- Temperature: 160ºF (71ºC) maximum.
- Inlet pressure: 100 PSI maximum.
- Rotation: right hand, i.e., clockwise when viewed from motor end.

Motor

- Open drip-proof or TEFC enclosure
  60 Hz, 3500 RPM.
  Threaded shaft extension.
- Single phase:
  3 HP 115/208–230 V
  5 HP 208–230 V
  7½ HP 208–230 V.
- Three phase:
  3–10 HP 208–230/460 V.

FEATURES

■ **Multi-Stage Design:** This configuration provides a steady, quiet and vibration-free operation for years of trouble-free service.

■ **Impellers and Diffusers:** Glass filled thermoplastic. Precision molded for high efficiencies.

■ **Bowls:** Constructed with 300 series stainless steel. Rabbet lock for positive alignment – no gaskets required.

■ **Mechanical Seal:** Carbon/ceramic faces. BUNA elastomers 300 series stainless steel metal parts.

■ **Motor:** Close-coupled design. Ball bearings carry all radial/axial thrust loads. Designed for continuous operation. All ratings are within working limits of the motor.

WARNING: This is a booster pump. It has no lift capability. DO NOT RUN DRY. DO NOT DEADHEAD.

Goulds Pumps is ISO 9001 Registered.

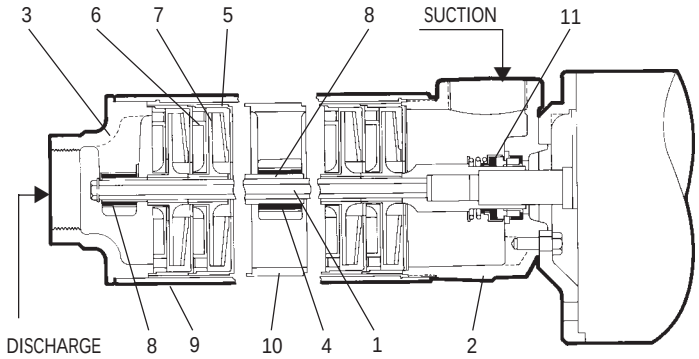
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B45-70HB

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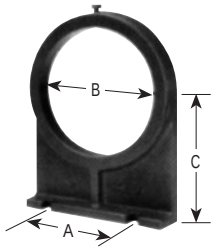
High Pressure Centrifugal Booster Pump

MODEL

45HB, 70HB

COMPONENTS

Item No.	Description	Material
1	Hex shaft and coupling	300 series stainless steel
2	Suction housing	Brass (ASTM B584)
3	Discharge head	Brass (ASTM B584)
4	Shaft sleeve	300 series stainless steel
5	Bowl	300 series stainless steel
6	Diffuser	Glass-filled thermoplastic
7	Impeller	Glass-filled thermoplastic
8	Marine bearing	BUNA
9	Casing	300 series stainless steel
10	Intermediate bearing spider	Brass (ASTM B584)
11	Mechanical seal	Carbon/ceramic faces, BUNA elastomers, 300 series stainless steel metal parts.



Optional Support Leg

OPTIONAL SUPPORT LEG – dimensions (in inches)

Model	Frame	A	B	C
AM200	182/184	4⅛	5⅜	4½
AM201	213/215	4⅛	5⅜	5¼

NOTE: Support leg is not required for 145 frame motors.

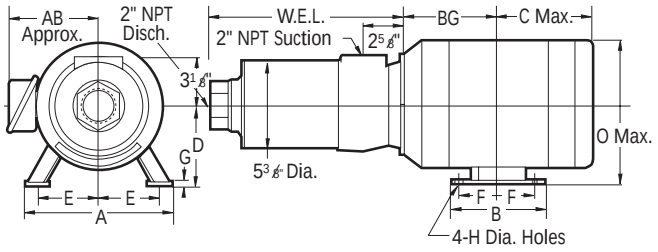
MODELS

Order No.	HP	No. of Stages	Phase	Enclosure	Frame	W.E.L.	Wt. (lbs.)
45HB13012	3	3	1	ODP	182	11½	88
45HB23012	3	2	1	TEFC	184	10⅜	101
45HB13035	3	3	3	ODP	145	11½	59
45HB23035	3	2	3	TEFC	182	10⅜	83
45HB15013	5	5	1	ODP	184	13⅞	100
45HB25013	5	4	1	TEFC	213	12¾	147
45HB15035	5	5	3	ODP	182	13⅞	80
45HB25035	5	4	3	TEFC	184	12¾	99
45HB17513	7½	7	1	ODP	213	16¼	169
45HB17535	7½	7	3	ODP	184	16¼	103
45HB27535	7½	6	3	TEFC	213	15⅛	150
45HB11135	10	10	3	ODP	213	21½	155
45HB21135	10	8	3	TEFC	215	17½	190
70HB13012	3	2	1	ODP	182	10⅜	86
70HB23012	3	2	1	TEFC	184	10⅜	99
70HB13035	3	2	3	ODP	145	10⅜	57
70HB23035	3	2	3	TEFC	182	10⅜	81
70HB15013	5	4	1	ODP	184	12¾	98
70HB25013	5	3	1	TEFC	213	11½	145
70HB15035	5	4	3	ODP	182	12¾	78
70HB25035	5	3	3	TEFC	184	11½	97
70HB17513	7½	6	1	ODP	213	15⅛	170
70HB17535	7½	6	3	ODP	184	15⅛	101
70HB27535	7½	5	3	TEFC	213	13⅞	148
70HB11135	10	9	3	ODP	213	20¼	153
70HB21135	10	7	3	TEFC	215	17½	188

DIMENSIONS – determined by motor (in inches)

Frame	A	AB	B	BG	C	D	E	F	G	H	O
145	6½	5¼	5 15/16	4⅞	6	3½	2¾	2	5/32	11/32	6⅝
182/184	8½	6	6½	5¾	9 9/16	4½	3¾	2¼	5/32	13/32	8½
213/215	9½	7⅜	8	7¼	9 7/16	5¼	4¼	2¾	7/32	13/32	10 3/16

(All dimensions are in inches. Do not use for construction purposes.)



Goulds Pumps

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GOULDS PUMPS

Installation, Operation and Maintenance Instructions

Model 45HB-70HB

Multi-Stage Centrifugal Booster Pump



General Information

Models 45HB and 70HB are multi-stage, high-pressure, general-purpose centrifugal booster pumps, using enclosed impellers. Applicable for clear, non-hazardous liquids in general industrial services up to 180°F (82°C). Particularly suited for high-pressure booster services.

All models are close-coupled to electric motors containing prelubricated bearings designed for continuous service. Threaded shaft extension is protected by a stainless steel sleeve/coupling combination.

All models are equipped with single, unbalanced mechanical shaft seals.

Units are shipped completely assembled and ready for installation.

Important

1. Inspect unit for shipping damage.
2. Read all instructions carefully.
3. ALWAYS disconnect all electrical power when handling pump, motor, or controls.
4. Do not run unit dry or against a closed discharge. This will result in damage to mechanical seal and pump.
5. Never pump hazardous liquids or solvents.
6. Maximum liquid temperature: 180°F (82°C).
7. Maximum inlet pressure: 100 PSI.

Installation

Location: Locate pump as near the liquid source as practical. Allow adequate room for servicing and ventilation. Protect the unit from cold weather freezing and water damage due to rain or flooding. Pump may be mounted horizontal; or vertical with motor on top provided a drip-shield is used for motor protection.

Foundation: Foundation surface must be flat so there is no distortion and/or strain developed when tightening the foundation bolts. *CAUTION*: Bolting and/or piping must not put strain on liquid end. The pumps are quiet and smooth running, but rubber mounting is recommended on foundations susceptible to sound effect.

Alignment: No filed alignment is necessary as pumps are close-coupled.

Piping: Suction pipe must be at least equal in size to suction connection of pump and provide positive suction head (intake pressure) to the pump. Avoid using the pump for applications requiring suction lift. Never use a gate valve in the suction line to throttle the pump. *CAUTION*: Piping must not put strain on the liquid end.

Wiring: Electrical power supply must be a separate branch circuit equipped with proper starters, fuses or circuit breakers, wire size, etc., conforming to National Electrical Code plus local codes. Power supply voltage, phase and controls must match motor nameplate requirements. Low voltage and phase-loss (3 phase) protection is recommended.

Motors: Single-phase 3 HP motors are dual voltage 115/230 volts, 60 Hz, A.C. Single-phase 5 HP motors are 230 volts, 60 Hz, A.C. All other motors are three-phase, dual voltage 230/460 volts, 60 Hz, A.C. The higher voltages are recommended where available.

Rotation: Three-phase rotation must be checked at installation my momentarily energizing the completely filled pump and observing the rotation. Rotation is clockwise looking into the motor shaft, end-bell side (remove protective cap to observe shaft). Rotation must correspond to rotation arrow. Rotation of three-phase units can be reversed by interchanging any two (2) electrical power leads. *CAUTION*: Do Not run in reverse rotation or damage will result.

Goulds Pumps

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Operation

Fill suction line and pump with liquid to be pumped to insure mechanical seal will not run dry. With pump and suction line completely filled, and motor properly wired, the unit may be started. Be sure pump is not started against a closed valve in the discharge line.

Maintenance

1. Lubrication
   Pumps should require no maintenance other than the motor bearings: In hot or severe service, lubricate every 3 months. Follow motor manufacturer's instructions to determine lubrication schedule. Lubricate with power off and motor warm. Remove upper and lower plugs at both bearing. Free lower relief hole of hard grease. Install clean grease-fitting on upper hole and add grease with a low-pressure grease gun. Run motor 30 minutes. Stop motor and remove drained grease. Replace all plugs.
   CAUTION: Do Not over-grease.

Disassembly

1. Turn off all electrical power.
2. Drain system.
3. Disconnect piping.
4. Remove bolts holding motor to foundation.
5. Remove shaft snap ring (1) within discharge head (2).
6. Use a torch on both ends of casing to break-down thread sealant at casing threads.
7. Use wrenches on suction housing (21) and discharge head (2) to unscrew (counter-clockwise) discharge head and casing. Casing is threaded inside each end and sealed with thread sealant. The casing may come off with the discharge head or stay on the suction housing. If the casing remains on the suction housing it may be removed with a strap wrench. *CAUTION*: Do Not use a pipe wrench on the casing or damage will result. The unbroken thread sealant may be removed by applying heat with a torch.
8. Remove shaft sleeve (4) from shaft.
9. Stages, each consisting of a bowl, impeller, and diffuser, can now be removed.
10. Remove motor end-plug to expose slot in end of motor shaft.
11. Heat shaft sleeve/coupling with a torch by directing a flame through hole in suction housing (21). This will break down Loctite® thread locking compound to

allow removal of the sleeve/coupling. Note: Thread is right-hand. Turn counter-clockwise to loosen.

12. Remove shaft assembly, including rotating portion of mechanical seal, by holding motor shaft with a screw-driver in motor shaft slot while turning pump shaft assembly counter-clockwise with a ½" wrench. Note: Due to the applied heat, the mechanical seal must be discarded and replaced with a new mechanical seal.
13. Remove bolts holding adapter to motor.
14. Remove suction housing/adapter combination from motor.
15. Place suction housing/adapter on a flat surface and push out stationary portion of mechanical seal.

Reassembly

1. Clean all parts, especially pump and motor register fits, seal seat counter bore in suction housing, and shaft (in particular where shaft sleeve/coupling fits against shaft shoulder).
2. Clean shaft sleeve/coupling threads and motor shaft threads. Clean old Loctite from threads with a wire brush. Apply Locquic Primer T®, (Loctite® Product No. 74756 available in Automotive Parts and Hardware stores) and allow to dry.
3. Lubricate counterbore of suction housing (21) and rubber bushing of new stationary seal seat with light oil or soapy water and press into counterbore squarely and evenly. *CAUTION*: Do Not mar or contaminate the lapped face of the new mechanical seal seat.
4. With motor in vertical position, remount suction housing/adapter on motor. Make certain the motor shaft does not dislocate the new mechanical seal stationary seat.
5. Apply a thin coat of light oil or soapy water to outer surface of sleeve/coupling and inside diameter of rubber portion of the new rotating seal member.
6. Slide spring retainer, spring and rotating member of the new mechanical seal over the sleeve/coupling, making certain the seal face stays in the holding collar, and spring retainer is squarely seated against shoulder of sleeve/coupling. *CAUTION*: Take care to prevent damage or dirt on lapped faces of the new mechanical seal.
7. Coat motor shaft threads with Loctite® 271.
8. Thread the shaft sleeve/coupling, with rotating portion of mechanical seal in place, onto the threaded motor shaft until the sleeve/coupling bottoms on the motor shaft shoulder. Use screwdriver in motor shaft slot to hold while tightening the shaft assembly with a ½" wrench.
9. Use a straight edge across face of suction housing to check location of outboard end of shaft sleeve/coupling. Due to variations in motor shaft lengths and pump parts, it will be from 0.080" short (below the straight edge) to flush.
10. If sleeve/coupling is below the straight edge, add 0.010" shims until top face of shims are one (1) shim higher than straight edge (interferes with straight edge).
11. Reassemble stages on shaft, checking impeller hub height after each stage. Hub must be flush with straight edge or higher. Add 0.010" shims as necessary.

11a. On 10 HP models install bearing spider at half way point in the stack, use shaft sleeve (13) and shim accordingly.

12. Install shaft sleeve (4) on shaft.
13. Apply thread sealant (Loctite® HVV Pipe Sealant) to suction housing (21) threads plus discharge head (2) threads and reassemble casing to pump. (Tighten to 50 foot pounds torque.) *CAUTION*: Do Not apply sealant to casing threads.
14. Turn pump by hand with a ½" socket over the end of the pump shaft inside the discharge head (2). Turn counter-clockwise. Unit should turn with resistance of only the mechanical shaft seal.

14a. Replace snap ring (1) on shaft.

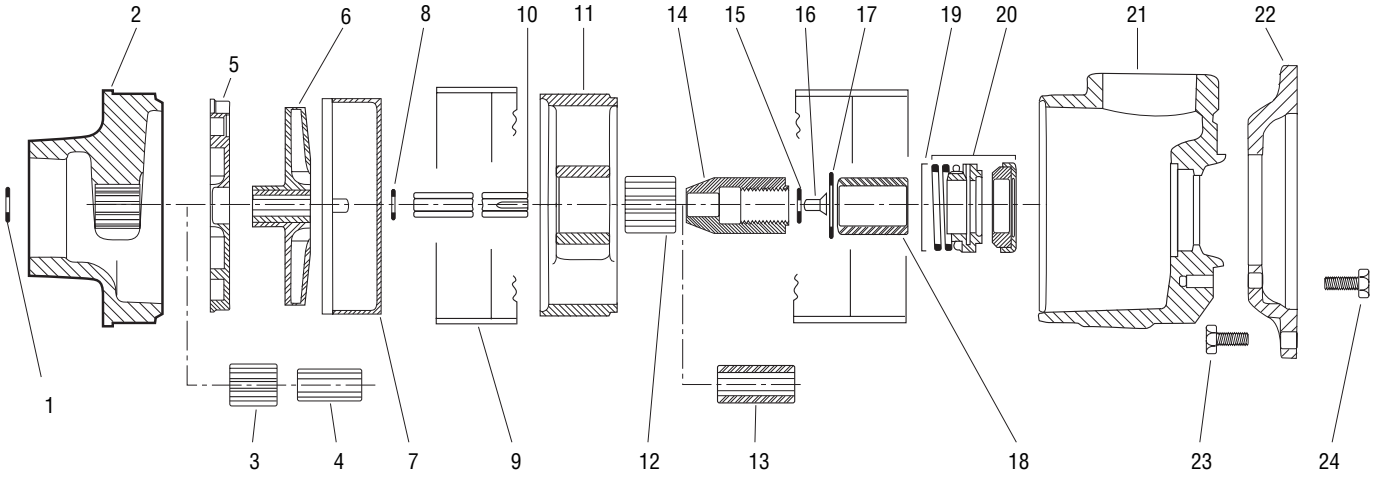
15. Replace motor end plug.
16. Do not start unit until suction line and pump are completely filled with water. Refer to OPERATION Section.

Repair Parts

Item No.	Part Name	Pattern No.
1	Retaining ring	
2	Discharge head assembly – 2" NPT	57209
3	Marine bearing – Discharge head	
4	Sleeve – Discharge head	
5	Diffuser	
6	Impeller	
7	Bowl	
8	Shim	
9	Casing	
10*	Shaft/coupling assembly	
11	Intermediate stage assembly	57203
12	Marine bearing – Intermediate stage	
13	Sleeve – Intermediate stage	
14	Coupling	

Part No.	Part Name	Pattern No.
15	Washer (coupling screw)	
16	Mechanical screw	
17	Retaining ring	
18	Shaft sleeve	
19	Spring retainer	
20	Mechanical seal assembly	
21	Suction housing – 2" NPT	59098
22	Motor adapter (210 frame) Motor adapter (140-180 frame)	59153 59099
23	Hex cap screw – adapter to motor	
24	Hex cap screw – adapter to suction housing	

* Note: Shaft assembly includes screw (16) and washer (15).



GOULDS PUMPS

GOULDS PUMPS LIMITED WARRANTY

This warranty applies to all water systems pumps manufactured by Goulds Pumps.

Any part or parts found to be defective within the warranty period shall be replaced at no charge to the dealer during the warranty period. The warranty period shall exist for a period of twelve (12) months from date of installation or eighteen (18) months from date of manufacture, whichever period is shorter.

A dealer who believes that a warranty claim exists must contact the authorized Goulds Pumps distributor from whom the pump was purchased and furnish complete details regarding the claim. The distributor is authorized to adjust any warranty claims utilizing the Goulds Pumps Customer Service Department.

The warranty excludes:

(a) Labor, transportation and related costs incurred by the dealer;
(b) Reinstallation costs of repaired equipment;
(c) Reinstallation costs of replacement equipment;
(d) Consequential damages of any kind; and,
(e) Reimbursement for loss caused by interruption of service.

For purposes of this warranty, the following terms have these definitions:

(1) "Distributor" means any individual, partnership, corporation, association, or other legal relationship that stands between Goulds Pumps and the dealer in purchases, consignments or contracts for sale of the subject pumps.
(2) "Dealer" means any individual, partnership, corporation, association, or other legal relationship which engages in the business of selling or leasing pumps to customers.
(3) "Customer" means any entity who buys or leases the subject pumps from a dealer. The "customer" may mean an individual, partnership, corporation, limited liability company, association or other legal entity which may engage in any type of business.

THIS WARRANTY EXTENDS TO THE DEALER ONLY.

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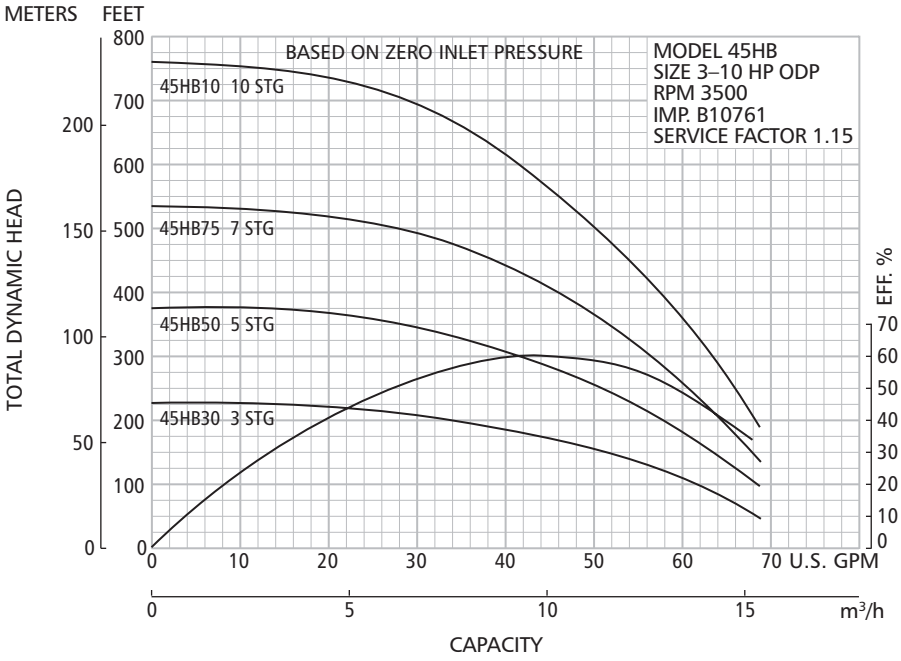
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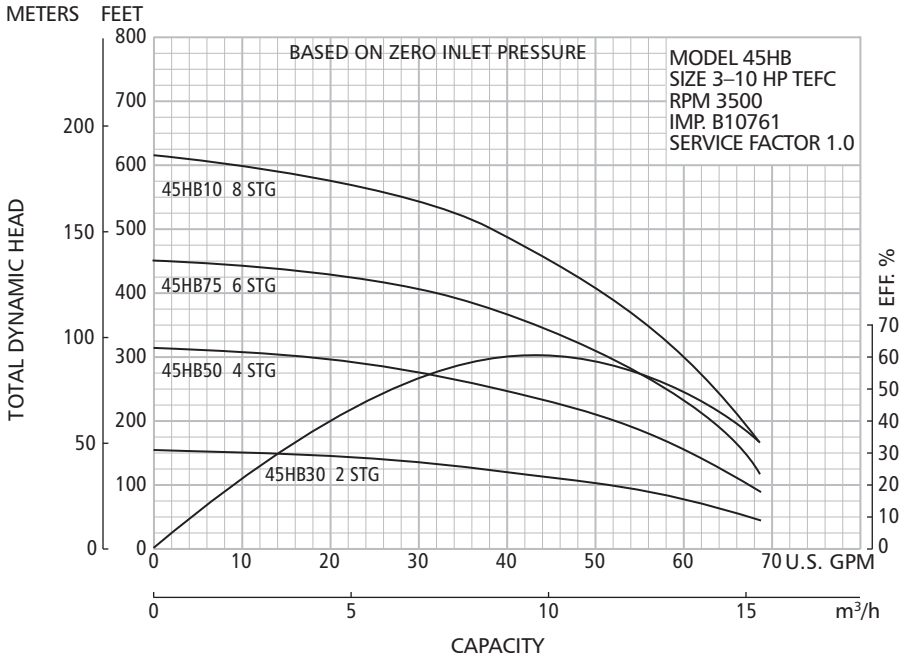
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Close-Coupled Multi-Stage Pumps

MODEL

45-70HB





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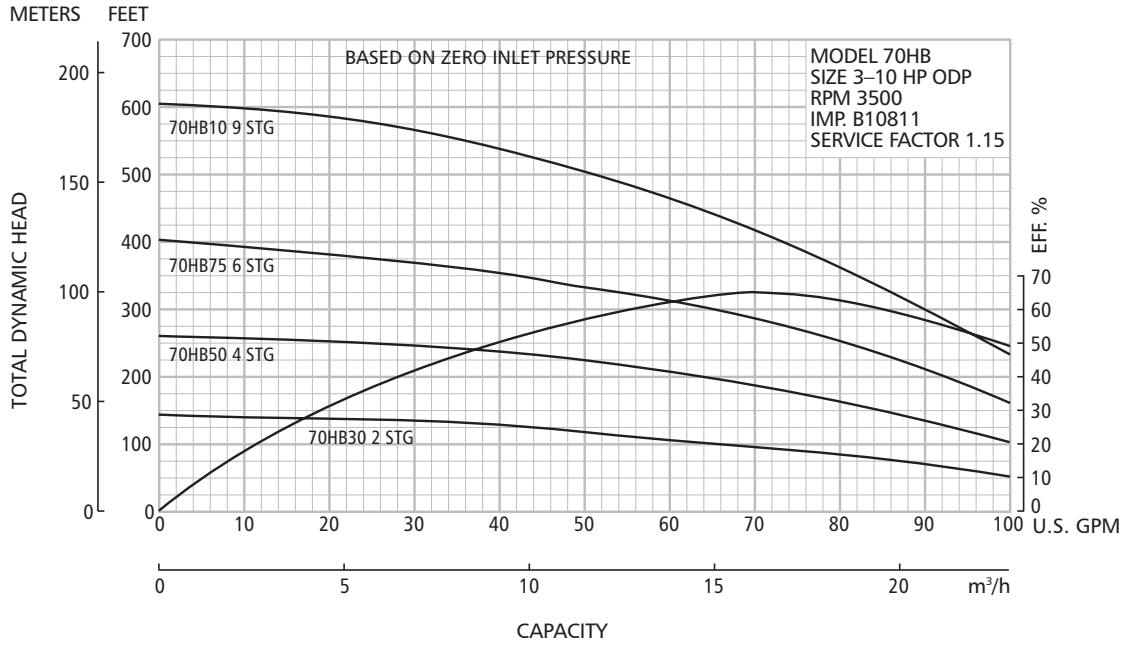
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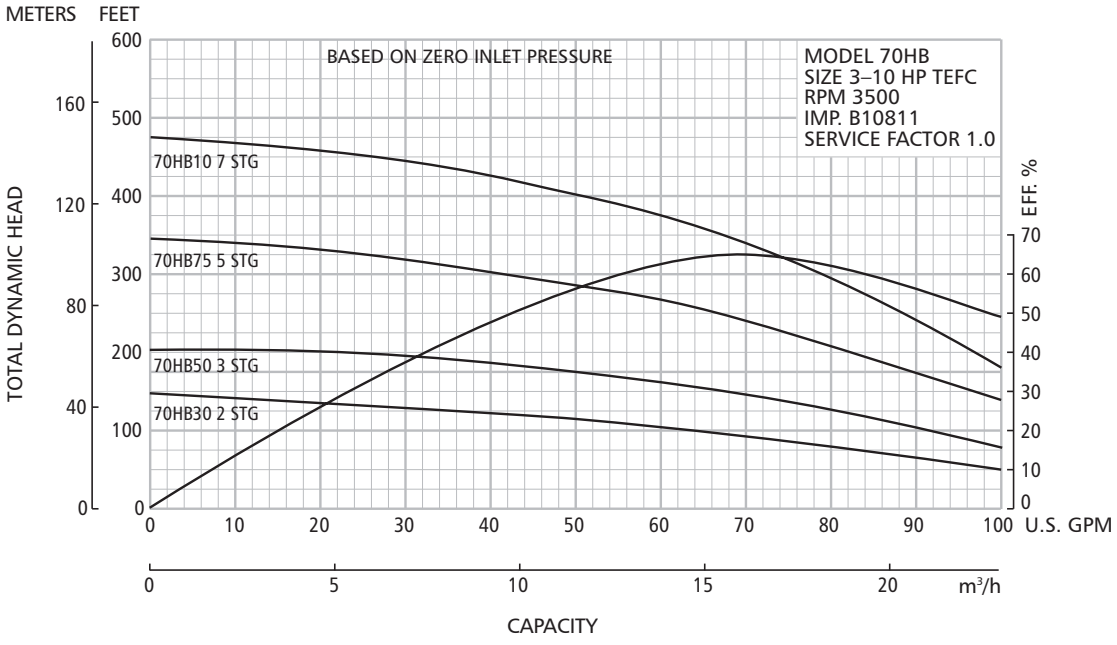
GOULDS PUMPS

Close-Coupled Multi-Stage Pumps

MODEL

45-70HB





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Residential Water Systems

Goulds Pumps

45HB – 70HB

Centrifugal Booster Pumps
Repair Parts

GOULDS PUMPS

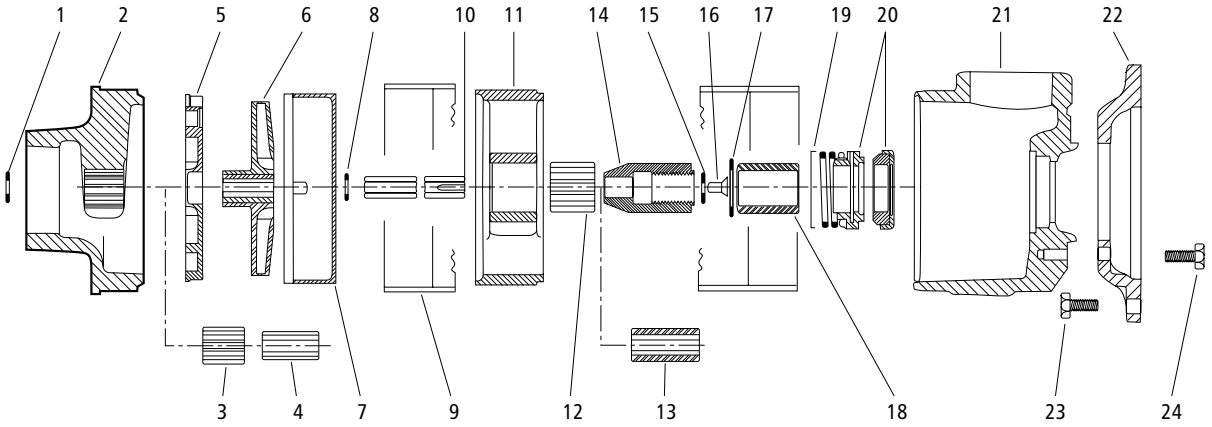
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GOULDS PUMPS
Residential Water Systems



Item No.	Part Name	Part No.	Pattern No.
1	Snap Ring	7K310	
2	Disch. Head Assembly – 2" NPT	7K709	57209
3	Marine Bearing – Discharge Head	7K474	
4	Sleeve – Discharge Head	7K708	
5	Diffuser – 45HB only Diffuser – 70HB only	7K631 7K717	
6	Impeller – 45HB only Impeller – 70HB only	7K630 7K716	
7	Bowl	7K629	
8	Shim	7K435	
9	Casing – 2 Stage Casing – 3 Stage Casing – 4 Stage Casing – 5 Stage Casing – 6 Stage Casing – 7 Stage Casing – 8 Stage Casing – 9 Stage Casing – 10 Stage	7K826 7K624 7K827 7K625 7K828 7K626 7K639 7K829 7K627	
10	Shaft Assembly – 2 Stage Shaft Assembly – 3 Stage Shaft Assembly – 4 Stage Shaft Assembly – 5 Stage Shaft Assembly – 6 Stage Shaft Assembly – 7 Stage Shaft Assembly – 8 Stage Shaft Assembly – 9 Stage Shaft Assembly – 10 Stage	7K973 7K974 7K975 7K976 7K977 7K978 7K979 7K980 7K981	
11	Intermediate Stage Assembly	7K623	57203
12	Marine Bearing – Intermediate Stage	7K411	
13	Sleeve – Intermediate Stage	7K302	
14	Coupling	4K364	
15	Washer	13K238	
16	Screw	13K237	

Item No.	Part Name	Part No.	Pattern No.
17	Retaining Ring	4K361	
18	Shaft Sleeve	4K66	
19	Spring Retainer	4K317	
20	Mechanical Seal Assembly	10K13	
21	Suction Housing 2" NPT	1K194	59098
22	Motor Adapter (210 Frame) Motor Adapter (140-180 Frame)	1K195 1K196	59153 59099
23	Hex Cap Screw – Adapter to Motor –140 and 180 Frame –210 Frame	 13K69 13K102	
24	Hex Cap Screw– Adapter to Suction Hsg.	13K69	

Notes: Shaft assembly includes 13K237 screw and 13K238 washer. When replacing older style shaft/coupling assemblies additional parts may be required (4K364, 4K361, 4K66).

7K623 intermediate stage assembly includes marine bearing 7K411. The assembly is only required on 45HB11135 and 70HB11135.

MOTORS

Model	HP	Stages	Motor Encl.	Motor Codes	
				1Ø	3Ø
45HB130	3	3	ODP	C09721TH	C09741TH
45HB230	3	2	TEFC	C09722TH	C09742TH
45HB150	5	5	ODP	C10721TH	C10741TH
45HB250	5	4	TEFC	C10722TH	C10742TH
45HB175	7½	7	ODP	C11721TH	C11741TH
45HB275	7½	6	TEFC	—	C11742TH
45HB111	10	10	ODP	—	C12741TH
45HB211	10	8	TEFC	—	C12742TH
70HB130	3	2	ODP	C09721TH	C09741TH
70HB230	3	2	TEFC	C09722TH	C09742TH
70HB150	5	4	ODP	C10721TH	C10741TH
70HB250	5	3	TEFC	C10722TH	C10742TH
70HB175	7½	6	ODP	C11721TH	C11741TH
70HB275	7½	5	TEFC	—	C11742TH
70HB111	10	9	ODP	—	C12741TH
70HB211	10	7	TEFC	—	C12742TH

ITT

Residential Water Systems

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R45-70HB August, 2006

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