

50 Hertz Pump & Motor Data

A 3-phase 50 Hertz Motorpump™ can be obtained in several ways. The most common options are listed below:

1. Most 60 Hz pumps available from Scot Pump can be operated on a 3-phase 50 Hz 190/380V power. However, when operated on 50 Hz power, the speed is reduced by approximately 20%, and a significant reduction in performance is realized. The charts below indicate these reductions in performance.
2. Pumps will produce the performance indicated in the performance curves when operated on 50 Hz power. The motors for these selections can be obtained through *derated 60 Hz motors* and *wound 50 Hz motors* (see below).

Contact factory for 1 Phase applications.

Derated 60 Hz Motors

The most common practice and readily available method of obtaining a 50 Hz motor is by using the next larger 60 Hz motor and derating it to the desired horsepower on 50 Hz. We will require the country the motor is being exported to, frequency in hertz and specific voltage to ensure that a nameplate with applicable efficiency and country markings (if required) is supplied. In utilizing this practice, service factors may be derated to 1.0. Please contact the factory for approval of the rating for your specific application.

Wound 50 Hz Motors

Specially wound 50 Hz motors are available. These motors are not normally a stock item and require an extended lead time.

The impeller and horsepower combination sized (taking the reduction in speed into consideration) may not be suitable for operation on 60 Hz power. The increase in speed, performance and load may overload the system and the electric motors. **Pumps sized for 50 Hz operation SHOULD NOT be tested on 60 Hz.**

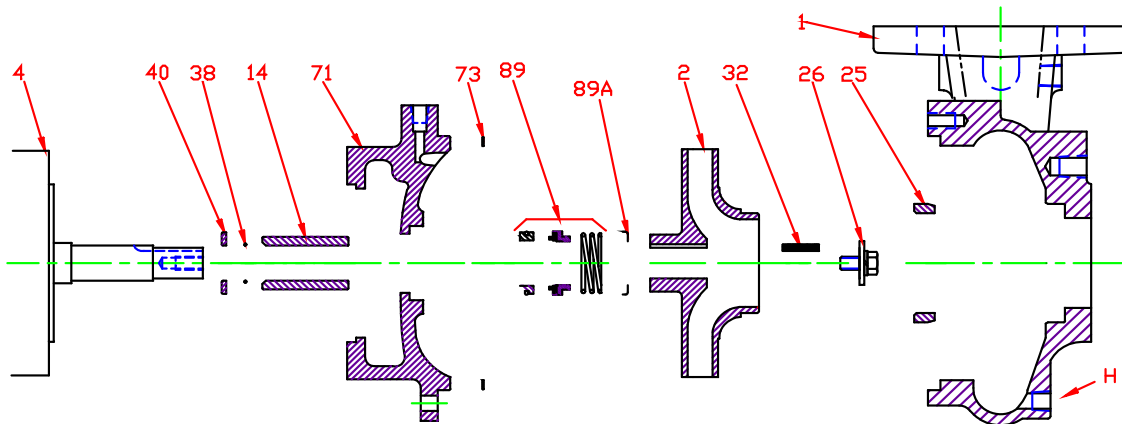
60 Hz Pump on 50 Hz Power		
No Impeller Change		
50 Hz	60 Hz	Factor
GPM =	GPM x	0.829
Head =	Head x	0.687
BHP =	HP x	0.569

To Size 60 Hz Pump Using 50 Hz Data,		
Obtain 60 Hz Data As Follows:		
60 Hz	50 Hz	Factor
GPM =	GPM x	1.2
Head =	Head x	1.45
BHP =	HP =	$\frac{\text{GPM} \times \text{Head} \times \text{SG of}}{3960 \times \text{Eff}}$

Change of Speed (RPM)		
	How Varies:	Examples
GPM	Directly	Double RPM = (2)(RPM) = (2)(GPM) Triple RPM = (3)(RPM) = (3)(GPM)
Head	Square	Double RPM = (2)(RPM) = (2) ² = (2)(2) = (4)(Head) Triple RPM = (3)(RPM) = (3) ² = (3)(3) = (9)(Head)
BHP	Cube	Double RPM = (2)(RPM) = (2) ³ = (2)(2)(2) = (8)(BHP) Triple RPM = (3)(RPM) = (3) ³ = (3)(3)(3) = (27)(BHP)

Change of Impeller Diameter (Dia.)		
	How Varies:	Examples
GPM	Directly	Double Dia. = (2)(Dia.) = (2)(GPM) Triple Dia. = (3)(Dia.) = (3)(RPM)
Head	Square	Double Dia. = (2)(Dia.) = (2) ² = (2)(2) = (4)(Head) Triple Dia. = (3)(Dia.) = (3) ² = (3)(3) = (9)(Head)
BHP	Cube	Double Dia. = (2)(Dia.) = (2) ³ = (2)(2)(2) = (8)(BHP) Triple Dia. = (3)(Dia.) = (3) ³ = (3)(3)(3) = (27)(BHP)

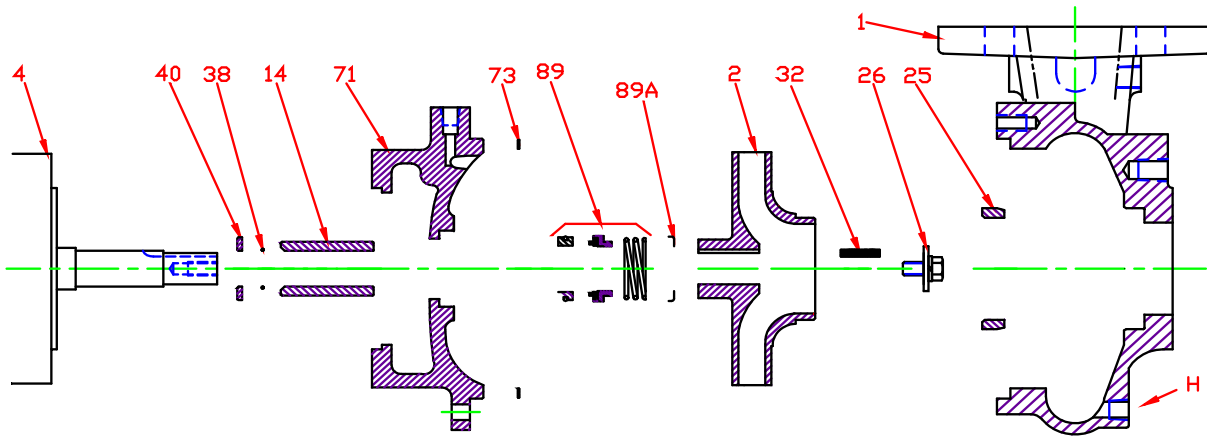
Pump 56F • Iron • JM Frame • 2900 RPM



KEY NO.	PART NAME	PUMP NO. 56F	
		5 - 10 HP	15 - 20 HP
1+	CASE, IRON, 3 x 3 FLG	130.000.185X	130.000.185X
2	IMPELLER, ENCLOSED, SPECIFY DIAMETER:	7/8" KEYED	1 1/4" KEYED
	IRON	131.000.809	131.000.824
4	MOTOR, JM140/180	See 60HZ Chart	--
	MOTOR, JM210	See 60HZ Chart	--
	MOTOR, JM250	--	See 60HZ Chart
14*	SHAFT SLEEVE, BRONZE	110.000.178	110.000.248
	SHAFT SLEEVE, STAINLESS	110.000.192	110.000.261
25	WEAR RING, BRONZE	103.000.138	103.000.138
	WEAR RING, STEEL	103.000.152	103.000.152
26*	IMPELLER RETAINER, STAINLESS	118.000.163A	118.000.234
32*	KEY, STAINLESS	102.000.102	102.000.208
38*	O-RING, SHAFT, BUNA	116.000.117	116.000.218
	O-RING, SHAFT, VITON	116.000.105	116.000.218A
40*	FLINGER, STAINLESS	104.000.165	104.000.200
71	ADAPTER, IRON - JM140/180	132.000.202X	--
	ADAPTER, IRON - JM210	132.000.213X	--
	ADAPTER, IRON - JM250	--	132.000.245X
73*	GASKET, CASE, FIBER	116.000.157	116.000.157
89*	SEALS:	1 1/2"	1 3/4"
	BN-CARB/CM	101.000.168	101.000.196
	VN-CARB/CM	101.000.191	101.000.216
	VN-CARB/SIL	101.000.175	101.000.221
	VN-SIL/SIL	101.000.204	101.000.231
	EPDM-CARB/SIL	101.000.175B	101.000.196B
	EPDM-SIL/SIL	101.000.204A	137.001.555
89A*	SEAL RETAINER, STAINLESS	104.000.174	<i>Included w/seal</i>
--	° REPAIR KITS:		
	BN-CARB/CM SEAL	118.000.344	118.000.345
	VN-CARB/CM SEAL (S)	118.000.344A	118.000.345A
	VN-CARB/CM SEAL	118.000.344K	118.000.345E
	VN-CARB/SIL SEAL	118.000.344B	118.000.345B
	VN-SILSIL SEAL (S)	118.000.344F	118.000.345C
	EPDM-CARB/SIL SEAL	118.000.344C	118.000.345F
EPDM-SIL/SIL SEAL	118.000.344D	118.000.345G	

* DENOTES COMPONENTS INCLUDED IN REPAIR KIT.
 + INCLUDES BRONZE WEAR RING. FOR STEEL WEAR RING, REPLACE SUFFIX "X" WITH
 ° ALL REPAIR KITS INCLUDE THE BRONZE SHAFT SLEEVE EXCEPT THE (S) INDICATED,
 WHICH IS STAINLESS WITH VITON SHAFT O-RING.

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CONSTRUCTION OPTIONS			
KEY	PART NAME	STANDARD FITTED	ALL IRON
1	Case	Iron	Iron
2	Impeller	Iron	Iron
14	Shaft Sleeve	Bronze	Stainless
25	Wear Ring	Bronze	Steel
26	Impeller Retaining Assy	Stainless	Stainless
32	Key	Stainless	Stainless
38	Shaft O-Ring	BUNA	BUNA
40	Flinger	Stainless	Stainless
71	Adapter	Iron	Iron
73	Gasket, Case	Fiber	Fiber
89	Mechanical Seal, Type 21 BN-CM	Standard	Standard
89A*	Seal Spring Retainer	Stainless	Stainless
H	Plug, Drain	Brass	Plated Steel

* Included with seal on 20-25 HP

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