



# 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*.

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. Many High Efficient motors can be operated on 50 HZ power without a reduction in horsepower. The motor manufacturers 60 HZ nameplate will remain intact. An "Alternate Motor Rating" nameplate indicating the reduced horsepower, RPM, volts, amps, and service factor will be affixed to the pump. In utilizing this practice, service factors may be derated to 1.0. The standard voltage is 190/380V and has a ±10% voltage variation. In addition, 200/400V and 208/416V may be available. Please contact the factory for approval of the rating for your specific application.

## Wound 50 Hz Motors

Specially wound 50 Hz 220/380V six-lead Delta Wye motors are available. Most ratings offer a ±15% voltage variation. 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.**

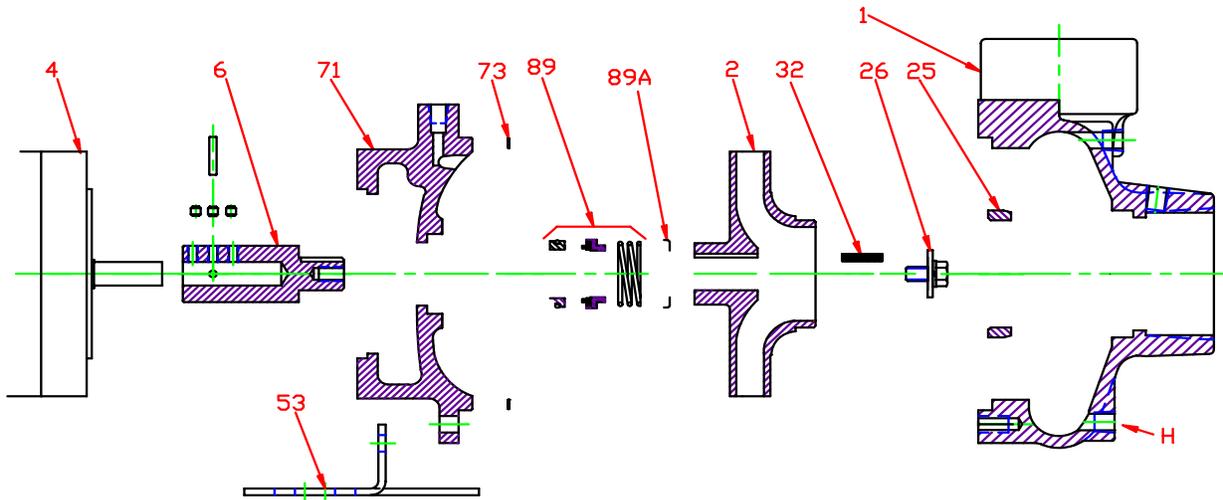
60 Hz Pump on 50 Hz Power		
No Impeller Change		
50 Hz	60 Hz	Factor
GPM =	GPM x	0.829
Head =	Head x	0.687
BHP =	HP x	0.569

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) <sup>2</sup> = (2)(2) = (4)(Head) Triple RPM = (3)(RPM) = (3) <sup>2</sup> = (3)(3) = (9)(Head)
BHP	Cube	Double RPM = (2)(RPM) = (2) <sup>3</sup> = (2)(2) (2) = (8)(BHP) Triple RPM = (3)(RPM) = (3) <sup>3</sup> = (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) <sup>2</sup> = (2)(2) = (4)(Head) Triple Dia. = (3)(Dia.) = (3) <sup>2</sup> = (3)(3) = (9)(Head)
BHP	Cube	Double Dia. = (2)(Dia.) = (2) <sup>3</sup> = (2)(2) (2) = (8)(BHP) Triple Dia. = (3)(Dia.) = (3) <sup>3</sup> = (3)(3)(3) = (27)(BHP)

# Pump 52B • Bronze • C56 Frame • 1450 RPM



KEY NO.	PART NAME	PUMP NO. 52B
1+	CASE, BRONZE, 2.5 x 2 NPT	130.000.218X
2	IMPELLER, 7/8" KEYED, ENCLOSED, SPECIFY DIAMETER: BRONZE	131.000.810
4	MOTOR, C56	See 60Hz Chart
6*†	STUB SHAFT, BRONZE STUB SHAFT, STAINLESS	135.000.165X 135.000.174X
25	WEAR RING, BRONZE	103.000.136
26*	IMPELLER RETAINER, STAINLESS	118.000.163A
32*	KEY, STAINLESS	102.000.102
53	BASE, STEEL	119.000.237D
--	ADAPTER, BRONZE	132.000.228X
73*	GASKET, CASE, FIBER	116.000.157
89*	1½" SEALS:	
	BN-CARB/CM	101.000.168
	VN-CARB/CM	101.000.191
	VN-CARB/SIL	101.000.175
	VN-SIL/SIL	101.000.204
	EPDM-CARB/SIL	101.000.175B
	EPDM-SIL/SIL	101.000.204A
89A*	SEAL RETAINER, STAINLESS	104.000.174
--	° REPAIR KITS:	
	BN-CARB/CM SEAL	118.000.382
	VN-CARB/CM SEAL (S)	118.000.382A
	VN-CARB/SIL SEAL	118.000.382B
	VN-SIL/SIL SEAL (S)	118.000.382D
	EPDM-CARB/SIL SEAL	118.000.382C
	EPDM-SIL/SIL SEAL	118.000.382E

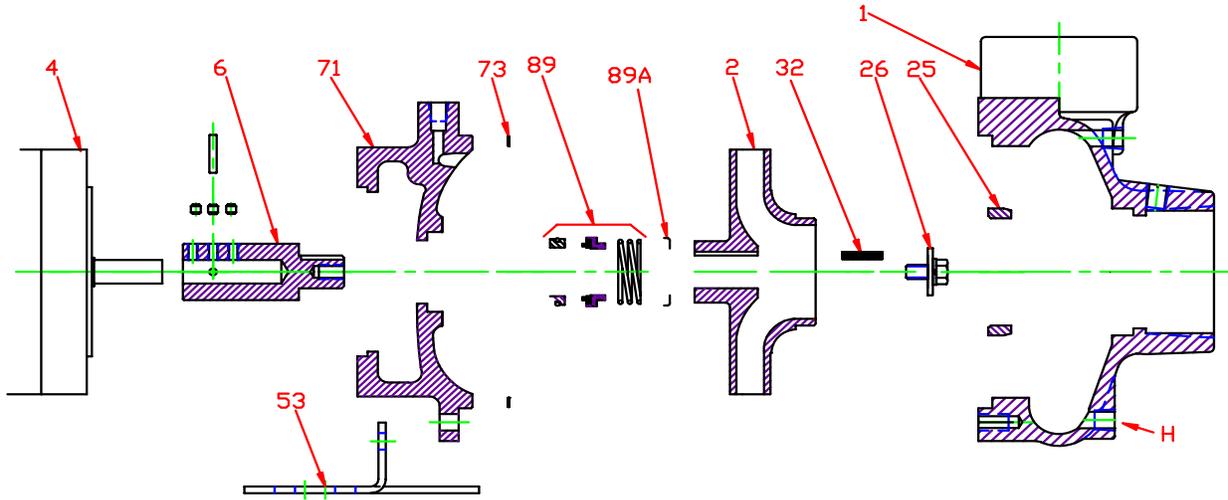
\* DENOTES COMPONENTS INCLUDED IN REPAIR KIT.  
 + INCLUDES BRONZE WEAR RING.  
 ° ALL REPAIR KITS INCLUDE THE BRONZE STUB SHAFT EXCEPT THE VN-CM SEAL, WHICH IS STAINLESS.  
 † INCLUDES SET SCREWS AND PIN

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CONSTRUCTION OPTIONS		
KEY	PART NAME	ALL BRONZE
1	Case	Bronze
2	Impeller	Bronze
6	Shaft Stub	Bronze
25	Wear Ring	Bronze
26	Impeller Retaining Assy	Stainless
32	Key	Stainless
53	Base	Steel
71	Adapter	Bronze
73	Gasket, Case	Fibre
89	Mechanical Seal, Type 21 BN-CM	Standard
89A	Seal Spring Retainer	Stainless
H	Plug, Drain	Brass

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