

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.**

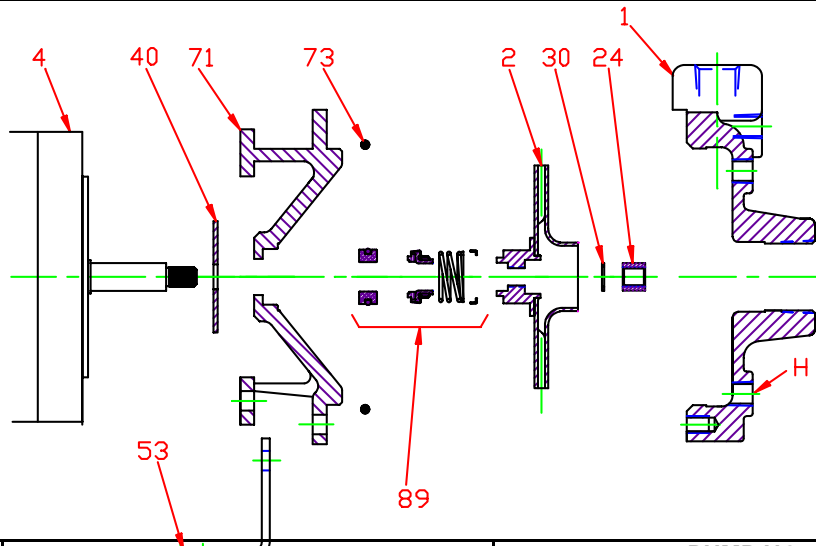
60 Hz Pump on 50 Hz Power		
No Impeller Change		
50 Hz	60 Hz	Factor
GPM =	GPM x	0.829
Head =	Head x	0.687
BHP =	HP x	0.569

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) 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)

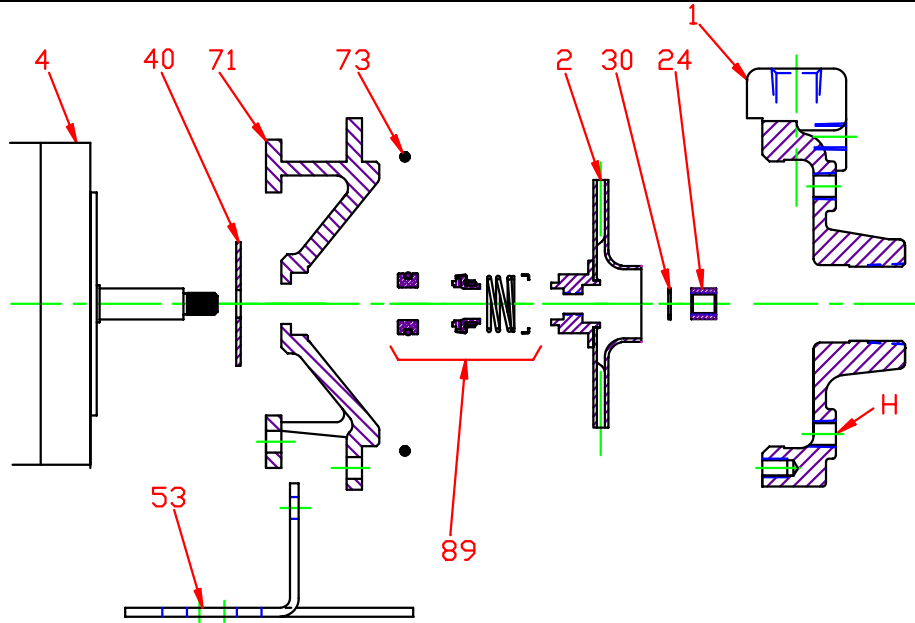
Pump 11 • Iron • J56 Frame • 2900 RPM



KEY NO.	PART NAME	PUMP NO. 11	
1	CASE, IRON, 1.25 x 1 NPT	137.002.664X	
2	IMPELLER, 7/16" THREADED, STAINLESS, ENCLOSED:		
	3.50 DIA	131.000.763R	
	3.75 DIA	131.000.763P	
	4.00 DIA	131.000.763J	
	4.25 DIA	131.000.763F	
	4.50 DIA	131.000.763E	
	4.75 DIA	131.000.763	
	4.88 DIA	131.000.763D	
	5.00 DIA	131.000.763C	
	5.25 DIA	131.000.763B	
	5.38 DIA	131.000.763G	
	5.50 DIA	131.000.763H	
5.63 DIA	131.000.763A		
4	MOTOR:		
	J56, ROUND BODY J56, 3.5" RIGID BASE	See 60HZ Chart See 60HZ Chart	
24*+	NUT, STAINLESS	105.000.465	
30*+	D WASHER, STAINLESS	104.000.168	
40*	FLINGER, NEOPRENE	104.000.171	
53	BASE, STEEL	119.000.231A	
71	ADAPTER, IRON	132.000.337X	
73*	GASKET, CASE, BUNA	116.000.146	
89*	5/8" SEALS:		
	NO RETAINER: (not shown)		
	TYPE 6, BN-CARB/CM	101.000.110	
	WITH RETAINER:		
	TYPE 21, VN-CARB/CM	101.000.103	
	TYPE 21, VN-CARB/SIL	101.000.120	
	TYPE 21, VN-SIL/SIL	101.000.239	
	TYPE 21, EPDM-CARB/SIL	101.000.173	
TYPE 21, EPDM-CARB/CM	101.000.327		
TYPE 21, EPDM-SIL/SIL	101.000.236		
--	REPAIR KITS:	3 PHASE:	† 1 PHASE:
	BN-CARB/CM SEAL	118.000.340	118.000.340.1
	VN-CARB/CM SEAL	118.000.340A	118.000.340A.1
	VN-CARB/SIL SEAL	118.000.340B	118.000.340B.1
	VN-SIL/SIL SEAL	118.000.340J	118.000.340J.1
	EPDM-CARB/SIL SEAL	118.000.340C	118.000.340C.1
	EPDM-CARB/CM SEAL	118.000.340R	118.000.340R.1
	EPDM-SIL/SIL SEAL	118.000.340D	118.000.340D.1

* DENOTES COMPONENTS INCLUDED IN REPAIR KIT.
 + NOT REQUIRED ON 1/3 TO 1-1/2 HP 1 PHASE MOTORS.
 † USE 3 PHASE KIT ON 2-3 HP 1 PHASE MOTORS.

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CONSTRUCTION OPTIONS			
KEY	PART NAME	STANDARD FITTED	ALL IRON
1	Case	Iron	Iron
2	Impeller	Stainless	Stainless
24	Impeller Locknut	Stainless	Stainless
30	D-Washer	Stainless	Stainless
40	Flinger	Neoprene	Neoprene
53	Base	Steel	Steel
71	Adapter	Iron	Iron
73	Gasket, Case	Buna	Buna
89	Mechanical Seal, Type 6 BN-CM	Standard	Standard
H	Plug, Drain	Brass	Plated Steel

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