FARADYNE MOTORS

2077 Division St. Palmyra, NY 14522
315-502-0125

12/01/2015

FARADYNE MOTORS

A higher standard in submersible motors.

6" AND 8" MOTOR INSTALLATION MANUAL

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6" AND 8" MOTOR INSTALLATION MANUAL

Use this information in addition to the pump installation data provided by pump manufacturer.

Owner's Information

Serial #: _____

Motor #: _____

Installation Date: _____

HP: _____

Phase: _____

Volts: _____

Purchase Date: _____

C 232852 US

WATER QUALITY

TROUBLESHOOTING

TROUBLESHOOTING OF SUBMERSIBLE MOTORS

1. Motor does not start but does not blow fuses or relay.

- No Power Supply › Replace fuses, breakers or check for loose or corroded connections and motor lead terminals.
- Defective Connections › Correct connections.

2. Fuses or relay blow when motor starts.

- Incorrect Voltage › Apply correct voltage. Voltage must be ±10% of rated (Nameplate).
- Incorrect Fuses or Relay › Replace with proper fuses and relay.
- Defective Capacitors › Replace with proper capacitors.
- Wrong Connections › Correct wrong connections or short circuit.
- Locked Rotor Conditions › Correct pump or well conditions.
- Insulation Resistance Down › Check the line and correct.

3. Motor runs for a while and then blows fuses or relay.

- Low Voltage or High Voltage › Apply rated voltage.
- Defective Capacitors › Replace with proper capacitors.
- Different Control Box for the Motor › Replace with proper control box.
- Defective Starting Voltage Relay › Replace with proper relay.
- Pump is Sand Clogged › Pull pump and clean well.
- Overheated Protector › Shield the control box from heat source.

The following conditions are stated to provide the owner with a list of criteria for maximum motor life and to assure motor warranty.

LEAD LENGTHS – 90°C, THREE CONDUCTOR

6" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					90C Insulation - AWG Copper Wire Size - 3 Conductors													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
6" 3-Wire 1-Phase	230	5	3.7	22.8	26		132	210	332	517	825	1037	1309	1649	2082	2626	3315	4177	4931				
	230	7.5	5.6	35.2	40			136	216	336	536	674	851	1072	1353	1707	2155	2715	3205	3848	4498		
	230	10	7.5	45.7	52.4				165	257	409	514	650	818	1033	1303	1645	2073	2447	2937	3434	3926	4884
	230	15	11	62.4	72.5					185	296	372	469	591	747	942	1189	1498	1768	2123	2482	2837	3530
6" 3-Phase	230	5	3.7	14.4	16.1	134	213	339	537	835	1332	1674	2114	2663	3362	4241							
	230	7.5	5.5	21.5	24.1	89	142	226	359	558	890	1118	1412	1779	2246	2833	3577	4506					
	230	10	7.5	28	31.5			173	274	427	681	856	1081	1361	1718	2168	2737	3448	4070	4886			
	230	15	11	40.9	46.3				187	290	463	582	735	926	1169	1475	1862	2346	2769	3324	3886	4443	
	230	20	15	53.2	60.8					221	353	443	560	705	890	1123	1418	1786	2109	2532	2959	3383	4209
	230	25	19	66.7	76						282	355	448	564	712	898	1134	1429	1687	2025	2367	2707	3368
	230	30	22	79.3	90.2						238	299	377	475	600	757	956	1204	1421	1706	1995	2281	2837
	460	5	3.7	7	8	538	855	1364	2161	3362													
	460	7.5	5.5	10	11.3	381	606	966	1530	2380	3794	4770											
	460	10	7.5	13.1	14.8	291	462	737	1168	1817	2897	3642	4600										
	460	15	11	20.4	23	187	298	475	752	1169	1864	2344	2960	3728	4706								
	460	20	15	25.8	29.4		233	371	588	915	1458	1833	2315	2917	3682	4645							
	460	25	19	32.8	36.8			297	470	731	1165	1465	1850	2330	2942	3711	4685						
	460	30	22	39.3	44.6				388	603	961	1209	1526	1923	2427	3062	3866						
	460	40	30	51.3	58.6					459	732	920	1162	1463	1847	2331	2942	3707	4376				
	460	50	37	65.8	75.1						571	718	906	1142	1441	1818	2296	2892	3415	4099	4792		
	200-208	5	3.7	16.1	18	108	172	274	434	676	1077	1354	1710	2154	2719	3431	4331						
	200-208	7.5	5.5	23.3	26.8		115	184	292	454	723	909	1149	1447	1826	2304	2909	3665	4327				
	200-208	10	7.5	31.5	35			141	223	347	554	696	879	1108	1398	1764	2227	2806	3313	3977	4649		
	200-208	15	11	44.9	50.8				154	239	382	480	606	763	964	1216	1535	1933	2283	2740	3203	3662	4556
	200-208	20	15	59	67.1					181	289	363	459	578	729	920	1162	1464	1728	2074	2425	2772	3449
	200-208	25	19	76.8	86.5						224	282	356	448	566	714	901	1135	1340	1609	1881	2151	2676
	200-208	30	22	91.7	103.3							236	298	375	474	598	755	951	1122	1347	1575	1801	2241
	575	5	3.7	5.8	6.5	827	1316	2099	3324														
	575	7.5	5.5	8.2	9.3	578	920	1467	2323	3615													
	575	10	7.5	10.5	11.8	456	725	1156	1831	2849	4542												
	575	15	11	15	17.1	314	500	798	1264	1966	3134	3940											
	575	20	15	20.9	23.7	227	361	576	912	1419	2261	2843	3590	4523									
	575	25	19	26.2	29.7		288	459	728	1132	1805	2269	2865	3609	4556								
	575	30	22	31	35			390	617	961	1531	1925	2431	3063	3866								
	575	40	30	41.5	47.3				457	711	1133	1424	1799	2266	2861	3609	4556						

8" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					90C Insulation - AWG Copper Wire Size - 3 Conductors													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
8" 3-Phase	460 8x6	50	37	65	74					363	579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460 8x6	60	45	78	89						482	606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	50	37	65	74					363	579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460	60	45	78	89						482	606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	75	56	95	109							495	625	787	993	1253	1582	1993	2353	2824	3301	3774	4696
	460	100	75	128	146										741	935	1181	1488	1756	2108	2465	2818	3506
	460	125	93	165	188											726	917	1155	1364	1637	1914	2188	2723
	460	150	112	203	228												756	953	1125	1350	1578	1804	2245
	575	50	37	52	60					560	893	1123	1418	1787	2255	2845	3592	4525					
	575	60	45	61	70					480	766	963	1216	1531	1933	2439	3079	3879	4579				
	575	75	56	76	88						609	766	967	1218	1538	1940	2449	3085	3642	4373			
	575	100	75	100	115							586	740	932	1177	1484	1874	2361	2787	3346	3911	4472	
	575	125	93	129	148											1153	1456	1835	2166	2600	3039	3475	4323
	575	150	112	159	178											959	1211	1525	1801	2162	2527	2889	3595

SAFETY INSTRUCTIONS

TO AVOID SERIOUS OR FATAL PERSONAL INJURY OR MAJOR PROPERTY DAMAGE, READ AND FOLLOW ALL SAFETY INSTRUCTIONS IN MANUAL AND ON PUMP.

THIS MANUAL IS INTENDED TO ASSIST IN THE INSTALLATION AND OPERATION OF THIS UNIT AND MUST BE KEPT WITH THE PUMP.

This is a SAFETY ALERT SYMBOL. When you see this symbol on the pump or in the manual, look for one of the following signal words and be alert to the potential for personal injury or property damage.

DANGER Warns of hazards that WILL cause serious personal injury, death or major property damage.

WARNING Warns of hazards that CAN cause serious personal injury, death or major property damage.

CAUTION Warns of hazards that CAN cause personal injury or property damage.

NOTICE: INDICATES SPECIAL INSTRUCTIONS WHICH ARE VERY IMPORTANT AND MUST BE FOLLOWED.

THOROUGHLY REVIEW ALL INSTRUCTIONS AND WARNINGS PRIOR TO PERFORMING ANY WORK ON THIS PUMP.

MAINTAIN ALL SAFETY DECALS.

Important notice: Read safety instructions before proceeding with any wiring.

WARNING All electrical work must be performed by a qualified technician. Always follow the National Electrical Code (NEC), or the Canadian Electrical Code, as well as all local, state and provincial codes. Code questions should be directed to your local electrical inspector. Failure to follow electrical codes and OSHA safety standards may result in personal injury or equipment damage. Failure to follow manufacturer's installation instructions may result in electrical shock, fire hazard, personal injury or death, damaged equipment, provide unsatisfactory performance, and may void manufacturer's warranty.

WARNING Faradyne Motors are not designed for use in swimming pools, open bodies of water, hazardous liquids, or where flammable gases exist. Well must be vented per local codes.

WARNING Disconnect and lock out electrical power before installing or servicing any electrical equipment. Many motors are equipped with automatic thermal overload protection which may allow an overheated motor to restart unexpectedly.

CAUTION All three-phase (3Ø) controls for submersible motors must provide Class 10, quick-trip, overload protection.

WARNING Do not lift, carry or hang motor by the electrical cables. Damage to the electrical cables can cause shock, burns or death.

WARNING Use only stranded copper wire to pump/motor and ground. The ground wire must be at least as large as the power supply wires. Wires should be color-coded for ease of maintenance and troubleshooting.

DANGER Install wire and ground according to the National Electrical Code (NEC), or the Canadian Electrical Code, as well as all local, state and provincial codes.

WARNING Install an all leg disconnect switch where required by code.

WARNING The electrical supply voltage and phase must match all equipment requirements. Incorrect voltage or phase can cause fire, motor and control damage, and voids the warranty.

WARNING All splices must be waterproof. If using splice kits, follow manufacturer's instructions.

WARNING Select the correct type and NEMA grade junction box for the application and location. The junction box must insure dry, safe wiring connections.

WARNING Failure to permanently ground the pump, motor and controls before connecting to power can cause shock, burns or death.

WARNING Install the motor so that during operation water flows past all parts of it at a rate of at least 0.5 fps (0.15 mps). If the well will not provide this flow, install a sleeve on the motor to channel water past it. Do not try to operate the motor in mud or sand. To do so will damage the motor and void the warranty.

CAUTION All motors require a minimum 5' submergence for proper refill check valve operation.

CAUTION This motor has been evaluated for use with Water Only.

SAFETY INSTRUCTIONS

WIRE SIZING, SPLICING and POWER SUPPLY

Always follow the National Electric Code (NEC), Canadian Electrical Code, and any state, provincial, or local codes.

Use only copper wire. Size wire from this manual, or an NEC code book. If discrepancies exist, the NEC book takes precedence over a manufacturer's recommendations.

Splicing Wire to Motor Leads

When the drop cable must be spliced or connected to the motor lead, it is necessary that the splice be watertight. The splice can be done with heat shrink kits or waterproof tape.

A. Heat Shrink Splice Instructions

To use a typical heat shrink kit: Strip 1/2" from the motor wires and drop cable wires; it is best to stagger the splices. Place the heat shrink tubes on the wires. Place the crimps on the wires and crimp the ends. Slide the heat shrink tubes over the crimps and heat from the center outward. The sealant and adhesive will ooze out the ends when the tube shrinks. The tube, crimps, sealant, and adhesive create a very strong, watertight seal.

B. Taped Splice Instructions

A) Strip individual conductor of insulation only as far as necessary to provide room for a stake type connector. Tubular connectors of the staked type are preferred. If connector O.D. is not as large as cable insulation, build up with rubber electrical tape.

B) Tape individual joints with rubber electrical tape, using two layers: the first extending two inches beyond each end of the conductor insulation end, the second layer two inches beyond the ends of the first layer. Wrap tightly, eliminating air spaces as much as possible.

C) Tape over the rubber electrical tape with #33 Scotch electrical tape, or equivalent, using two layers as in step B and making each layer overlap the end of the preceding layer by at least two inches.

In the case of a cable with three conductors encased in a single outer sheath, tape individual conductors as described, staggering joints.

Total thickness of tape should be no less than the thickness of the conductor insulation.

WIRING THE CONTROLS and SWITCH

Mounting the Motor Control Box

Single-phase 3-wire control boxes meet UL requirements for Type 3R enclosures. They are suitable for vertical mounting in indoor and outdoor locations. They will operate at temperatures between 14°F (-10°C) and 122°F (50°C). Select a shaded, dry place to mount the box. Insure that there is enough clearance for the cover to be removed.

Verify Voltage and Turn Supply Power Off

Insure that your motor voltage and power supply voltage are the same.

Place the circuit breaker or disconnect switch in the OFF position to prevent accidentally starting the pump before you are ready.

Three-phase starter coils are very voltage-sensitive; always verify actual supply voltage with a voltmeter. High or low voltage, greater than ±10%, will damage motors and controls and is not covered under warranty.

Connecting Motor Leads to Motor Control Box, Pressure Switch or Starter

Caution: Do not power the motor until all electrical and plumbing connections are completed. Verify that the disconnect or breaker is OFF before connecting the pressure switch line leads to the power supply. Follow all local and national codes. Use a disconnect where required by code.

A. Three-Wire Single-Phase Motor

Connect the color-coded motor leads to the motor control box terminals - Y (yellow), R (red), and B (black); and the green or bare wire to the green ground screw.

Connect wires between the Load terminals on the pressure switch and control box terminals L1 and L2. Run a ground wire between the switch ground and the control box ground.

B. Two-Wire Single-Phase Motor

Connect the black motor leads to the Load terminals on the pressure switch and the green or bare ground wire to the green ground screw.

C. Three-phase motors

Connect the motor leads to T1, T2, and T3 on the three-phase starter. Connect the ground wire to the ground screw in the starter box. Follow starter manufacturer's instructions for connecting pressure switch.

Connect to Power Supply

Complete the wiring by making the connection from the single-phase pressure switch Line terminals to the circuit breaker panel or disconnect where used.

Three-phase - make the connections between L1, L2, L3, and ground on the starter to the disconnect switch and then to the circuit breaker panel.

Three phase installations must be checked for motor rotation and phase unbalance. To reverse motor rotation, switch (reverse) any two leads. See the instructions for checking three-phase unbalance in the application manual. Failure to check phase unbalance can cause premature motor failure and nuisance overload tripping. If using a generator, see Technical Data for generators in the application manual.

LEAD LENGTHS – 75°C, THREE CONDUCTOR

6" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					75C Insulation - AWG Copper Wire Size - 3 Conductors													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
6" 3-Wire 1-Phase	230	5	3.7	22.8	26			210	332	517	825	1037	1309	1649	2082	2626	3315	4177	4931				
	230	7.5	5.6	35.2	40				216	336	536	674	851	1072	1353	1707	2155	2715	3205	3848	4498		
	230	10	7.5	45.7	52.4					257	409	514	650	818	1033	1303	1645	2073	2447	2937	3434	3926	4884
	230	15	11	62.4	72.5						296	372	469	591	747	942	1189	1498	1768	2123	2482	2837	3530
6" 3-Phase	230	5	3.7	14.4	16.1	134	213	339	537	835	1332	1674	2114	2663	3362	4241							
	230	7.5	5.5	21.5	24.1		142	226	359	558	890	1118	1412	1779	2246	2833	3577	4506					
	230	10	7.5	28	31.5			173	274	427	681	856	1081	1361	1718	2168	2737	3448	4070	4886			
	230	15	11	40.9	46.3				187	290	463	582	735	926	1169	1475	1862	2346	2769	3324	3886	4443	
	230	20	15	53.2	60.8					221	353	443	560	705	890	1123	1418	1786	2109	2532	2959	3383	4209
	230	25	19	66.7	76						282	355	448	564	712	898	1134	1429	1687	2025	2367	2707	3368
	230	30	22	79.3	90.2							299	377	475	600	757	956	1204	1421	1706	1995	2281	2837
	460	5	3.7	7	8	538	855	1364	2161	3362													
	460	7.5	5.5	10	11.3	381	606	966	1530	2380	3794	4770											
	460	10	7.5	13.1	14.8	291	462	737	1168	1817	2897	3642	4600										
	460	15	11	20.4	23		298	475	752	1169	1864	2344	2960	3728	4706								
	460	20	15	25.8	29.4			371	588	915	1458	1833	2315	2917	3682	4645							
	460	25	19	32.8	36.8				470	731	1165	1465	1850	2330	2942	3711	4685						
	460	30	22	39.3	44.6				388	603	961	1209	1526	1923	2427	3062	3866						
	460	40	30	51.3	58.6					459	732	920	1162	1463	1847	2331	2942	3707	4376				
	460	50	37	65.8	75.1						571	718	906	1142	1441	1818	2296	2892	3415	4099	4792		
	200-208	5	3.7	16.1	18	108	172	274	434	676	1077	1354	1710	2154	2719	3431	4331						
	200-208	7.5	5.5	23.3	26.8			184	292	454	723	909	1149	1447	1826	2304	2909	3665	4327				
	200-208	10	7.5	31.5	35			141	223	347	554	696	879	1108	1398	1764	2227	2806	3313	3977	4649		
	200-208	15	11	44.9	50.8					239	382	480	606	763	964	1216	1535	1933	2283	2740	3203	3662	4556
	200-208	20	15	59	67.1						289	363	459	578	729	920	1162	1464	1728	2074	2425	2772	3449
	200-208	25	19	76.8	86.5							282	356	448	566	714	901	1135	1340	1609	1881	2151	2676
	200-208	30	22	91.7	103.3								298	375	474	598	755	951	1122	1347	1575	1801	2241
	575	5	3.7	5.8	6.5	827	1316	2099	3324														
	575	7.5	5.5	8.2	9.3	578	920	1467	2323	3615													
	575	10	7.5	10.5	11.8	456	725	1156	1831	2849	4542												
	575	15	11	15	17.1	314	500	798	1264	1966	3134	3940											
	575	20	15	20.9	23.7		361	576	912	1419	2261	2843	3590	4523									
	575	25	19	26.2	29.7			459	728	1132	1805	2269	2865	3609	4556								
	575	30	22	31	35			390	617	961	1531	1925	2431	3063	3866								
	575	40	30	41.5	47.3				457	711	1133	1424	1799	2266	2861	3609	4556						

8" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					75C Insulation - AWG Copper Wire Size - 3 Conductors													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
8" 3-Phase	460 8x6	50	37	65	74						579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460 8x6	60	45	78	89							606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	50	37	65	74						579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460	60	45	78	89							606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	75	56	95	109								625	787	993	1253	1582	1993	2353	2824	3301	3774	4696
	460	100	75	128	146										741	935	1181	1488	1756	2108	2465	2818	3506
	460	125	93	165	188												917	1155	1364	1637	1914	2188	2723
	460	150	112	203	228													953	1125	1350	1578	1804	2245
	575	50	37	52	60					560	893	1123	1418	1787	2255	2845	3592	4525					
	575	60	45	61	70						766	963	1216	1531	1933	2439	3079	3879	4579				
	575	75	56	76	88							766	967	1218	1538	1940	2449	3085	3642	4373			
	575	100	75	100	115								740	932	1177	1484	1874	2361	2787	3346	3911	4472	
	575	125	93	129	148											1153	1456	1835	2166	2600	3039	3475	4323
	575	150	112	159	178												1211	1525	1801	2162	2527	2889	3595

LEAD LENGTHS – 60°C, THREE CONDUCTOR

6" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					60C Insulation - AWG Copper Wire Size - 3 Conductors													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
6" 3-Wire 1-Phase	230	5	3.7	22.8	26			210	332	517	825	1037	1309	1649	2082	2626	3315	4177	4931				
	230	7.5	5.5	35.2	40				216	336	536	674	851	1072	1353	1707	2155	2715	3205	3848	4498		
	230	10	7.5	45.7	52.4					257	409	514	650	818	1033	1303	1645	2073	2447	2937	3434	3926	4884
	230	15	11	62.4	72.5							372	469	591	747	942	1189	1498	1768	2123	2482	2837	3530
6" 3-Phase	230	5	3.7	14.4	16.1		213	339	537	835	1332	1674	2114	2663	3362	4241							
	230	7.5	5.5	21.5	24.1			226	359	558	890	1118	1412	1779	2246	2833	3577	4506					
	230	10	7.5	28	31.5				274	427	681	856	1081	1361	1718	2168	2737	3448	4070	4886			
	230	15	11	40.9	46.3					290	463	582	735	926	1169	1475	1862	2346	2769	3324	3886	4443	
	230	20	15	53.2	60.8						353	443	560	705	890	1123	1418	1786	2109	2532	2959	3383	4209
	230	25	19	66.7	76							355	448	564	712	898	1134	1429	1687	2025	2367	2707	3368
	230	30	22	79.3	90.2								377	475	600	757	956	1204	1421	1706	1995	2281	2837
	460	5	3.7	7	8	538	855	1364	2161	3362													
	460	7.5	5.5	10	11.3	381	606	966	1530	2380	3794	4770											
	460	10	7.5	13.1	14.8	291	462	737	1168	1817	2897	3642	4600										
	460	15	11	20.4	23			475	752	1169	1864	2344	2960	3728	4706								
	460	20	15	25.8	29.4			371	588	915	1458	1833	2315	2917	3682	4645							
	460	25	19	32.8	36.8				470	731	1165	1465	1850	2330	2942	3711	4685						
	460	30	22	39.3	44.6					603	961	1209	1526	1923	2427	3062	3866						
	460	40	30	51.3	58.6						732	920	1162	1463	1847	2331	2942	3707	4376				
	460	50	37	65.8	75.1							718	906	1142	1441	1818	2296	2892	3415	4099	4792		
	200-208	5	3.7	16.1	18		172	274	434	676	1077	1354	1710	2154	2719	3431	4331						
	200-208	7.5	5.5	23.3	26.8			184	292	454	723	909	1149	1447	1826	2304	2909	3665	4327				
	200-208	10	7.5	31.5	35				223	347	554	696	879	1108	1398	1764	2227	2806	3313	3977	4649		
	200-208	15	11	44.9	50.8					239	382	480	606	763	964	1216	1535	1933	2283	2740	3203	3662	4556
	200-208	20	15	59	67.1						289	363	459	578	729	920	1162	1464	1728	2074	2425	2772	3449
	200-208	25	19	76.8	86.5								356	448	566	714	901	1135	1340	1609	1881	2151	2676
	200-208	30	22	91.7	103.3									375	474	598	755	951	1122	1347	1575	1801	2241
	575	5	3.7	5.8	6.5	827	1316	2099	3324														
	575	7.5	5.5	8.2	9.3	578	920	1467	2323	3615													
	575	10	7.5	10.5	11.8	456	725	1156	1831	2849	4542												
	575	15	11	15	17.1		500	798	1264	1966	3134	3940											
	575	20	15	20.9	23.7			576	912	1419	2261	2843	3590	4523									
	575	25	19	26.2	29.7			459	728	1132	1805	2269	2865	3609	4556								
	575	30	22	31	35				617	961	1531	1925	2431	3063	3866								
	575	40	30	41.5	47.3					711	1133	1424	1799	2266	2861	3609	4556						

8" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					60C Insulation - AWG Copper Wire Size - 3 Conductors													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
8" 3-Phase	460 8x6	50	37	65	74							728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460 8x6	60	45	78	89								765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	50	37	65	74							728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460	60	45	78	89								765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	75	56	95	109									787	993	1253	1582	1993	2353	2824	3301	3774	4696
	460	100	75	128	146											935	1181	1488	1756	2108	2465	2818	3506
	460	125	93	165	188													1155	1364	1637	1914	2188	2723
	460	150	112	203	228															1350	1578	1804	2245
	575	50	37	52	60						893	1123	1418	1787	2255	2845	3592	4525					
	575	60	45	61	70							963	1216	1531	1933	2439	3079	3879	4579				
	575	75	56	76	88								967	1218	1538	1940	2449	3085	3642	4373			
	575	100	75	100	115										1177	1484	1874	2361	2787	3346	3911	4472	
	575	125	93	129	148												1456	1835	2166	2600	3039	3475	4323
	575	150	112	159	178													1525	1801	2162	2527	2889	3595

PRE-INSTALLATION

PRE-INSTALLATION

1. Maximum Water Temperature:
   35° C (95° F)
2. PH content of the water between: 6.5–8
3. Maximum Chlorine Content: 20 PPM
   Maximum Sulfuric Acid Iron Content: 15 PPM
   Maximum Flourine Content: 0.8 PPM
   Maximum Electric Conductivity: 118 µMHO/INCH
4. Maximum Sand Content: 1,000 PPM
5. Proper approved three phase overload protection. Class 10, quick trip overloads are mandatory.
6. Proper fusing for motor circuit protection. See following pages.
7. Proper Line Voltage During Running Conditions:
   460V ±10%, i.e. 506 to 414 volts
   230V ±10%, i.e. 253 to 207 volts
   For a 60 cycle system measured at motor lead wire terminal. (Voltage drop of cable should be considered by user.) Current unbalance between legs should not exceed 5% of the average.
8. Proper sizing of motor (current, thrust, voltage, etc.) and a 10 ft. clearance from the bottom of the well are required.
9. In the case of horizontal installation, the motor is to be rigidly aligned with the pump and firmly mounted to prevent any load on the shaft and bearings and to avoid any damaging vibrations to the motor.
10. The motor must always be immersed in water so that a flow velocity of cooling water at a rate of 0.5 feet per second flows past any and all parts of the motor. The motor will not operate in mud or sand.
11. The power cables shall be sized large enough so that at rated current there will be less than a 5% voltage drop. Cables must be waterproof submersible type. See following pages.
12. For 3Ø motors a balanced and properly sized transformer bank shall be provided. Improper electrical supply (for example, phase converter, V-connection transformer, etc.) or connections will void the warranty.
13. Single phase protection is recommended for protection of the installation. Any failure due to single phasing of the incoming voltage causing the motor to fail will void the warranty.
14. Lightning arrestors are recommended in the interest of protecting the control panel, as well as the insulation system of the motor. Any motor failure due to lightning or other Acts of God will void the warranty.
15. Provide waterproof insulation splices between all lead wires and well cables.
16. In the event that a reduced voltage starter is used to start the motor, the following should be verified:
    A. Correct quick trip ambient compensated overloads are incorporated.
    B. Proper short circuit protection is utilized.
    C. The torque required by the motor and pump package is attainable by this type starter.
    D. The lead arrangement of the motor is acceptable with the proposed starter load connections.
    E. Verify that if any time delay relays are used in switching contactors in and out, that the time settings are not too long; this could damage the motor.
17. Single Phase Motors (5-15 HP)
    Proper connections and correct capacitors and relays are necessary for single phase motor starting and running.
    Connection Diagram: See application manual.
    See recommended capacitors and recommended control boxes in application manual.
18. Do not expose motor leads to air. Leads must be submerged for cooling.

SUBMERSIBLE MOTOR PERFORMANCE GUIDELINES FOR USE ON VARIABLE FREQUENCY DRIVES

The Faradyne motor has been used extensively with variable frequency drives. As with any modified application, there are considerations to evaluate when using an inverter, or Variable Frequency Drive (VFD), to operate a submersible motor. To ensure reliable operation, the following guidelines must be followed when using the 2 pole Faradyne submersible motor with a VFD.

1. Proper, class 10, quick trip, overload protection must be used at all times. As a minimum, Overloads must trip at five times full load current within 10 seconds on any phase.
2. A minimum of 1.5 times full load current should be available to initially start the motor if needed.
3. Minimum operating frequency is 30 hertz

PRE-INSTALLATION

4. Minimum Speed: 0.5 x Synchronous Speed (Example: 3600 RPM x .5 = 1800 RPM)
5. Maximum Speed: 1.00 x Full Load Speed
6. Ramp-up Time: Maximum 1 second to reach 30 Hz, maximum 4.0 seconds to reach current limit and rated speed
7. Ramp down time: from minimum frequency to power shutoff shall be four (4) seconds.
8. At the minimum speed (see #3), one-half foot per second water velocity, at rated temperature, must be maintained past the motor. Velocity in excess of 10 feet per second is not recommended.
9. The VFD must maintain a constant volts to Hertz ratio. The controls must be rated the same as motor nameplate.
10. The output of the VFD must have a filtering or line conditioning device installed to eliminate voltage waveform phenomenon that might adversely affect motor components and elements. Power at the motor leads must be clean, free of high voltage transients, harmonics, and within the voltage range of the motor (1000V peak at more than .2 microsecond rise time).
11. All other requirements and restrictions for the Faradyne submersible motor apply.

    These are general guidelines for the operation of the 2 pole Faradyne submersible motor on AC Inverters incorporating IGBT type switching devices and starting from zero rotation with a limited, immediate, hydraulic load.

MAINTENANCE

There are no bearings that need oil or grease. The motor, being inaccessible, should be monitored through its electrical connections.

1. Measure and record operating current and voltage.
2. Measure and record the motor insulation resistance. Any resistance of less than 5 megohm (5,000,000) for a new motor should be evaluated or checked further by a qualified service shop.
3. Lightning arrestors and/or surge capacitors will help prevent damage to the control box, cables and motor.
4. Single phase protection will help in preventing motor failure due to adverse incoming primary power.
5. Based on the values obtained in 1 and 2 above and the output flow rates and pressures of the pump, a complete picture of total performance can be obtained. This can be used to determine any pump and motor maintenance and overhauling which might be required.
6. If the motor is to be stored, protect the unit from freezing by storing in an area with a temperature higher than -30° C (-22° F).

OPERATION

1. After energizing the motor, check the flow and pressure of the pump to make sure that the motor is rotating in the correct direction. To correct a wrong rotation, switch any two of the three cable connections. (Three phase motor only.)
2. When starting the pump for the first time, inspect the water for sand. If sand appears, then continue to pump until the water clears up; otherwise, sand will accumulate in the pump stages and will bind or freeze the moving parts if water is allowed to flow back down the well.
3. During testing or checking rotation (such as “bumping” or “inching”) the number of “starts” should be limited to 3, followed by a full 15 minute cooling-off period before any additional “starts” are attempted. Depending on the depth of the well and/or method of checking, these rotational checks or “starts” may actually be full-fledged starts. If this is the case, then a full cooling-off period of 15 minutes is required between this type of start.
4. For automatic (pilot device) operation, the motor should be allowed to cool for 15 minutes between starts.
5. Input voltage, current and insulation resistance values should be recorded throughout the life of the installation and should be used as a form of preventive maintenance.

LEAD LENGTHS – 90°C, SINGLE CONDUCTOR

6" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					90C Insulation - AWG Copper Wire Size - Single Conductor													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
6” 3-Wire 1-Phase	230	5	3.7	22.8	26	83	132	210	332	517	825	1037	1309	1649	2082	2626	3315	4177	4931				
	230	7.5	5.6	35.2	40		86	136	216	336	536	674	851	1072	1353	1707	2155	2715	3205	3848	4498		
	230	10	7.5	45.7	52.4			104	165	257	409	514	650	818	1033	1303	1645	2073	2447	2937	3434	3926	4884
	230	15	11	62.4	72.5				119	185	296	372	469	591	747	942	1189	1498	1768	2123	2482	2837	3530
6” 3-Phase	230	5	3.7	14.4	16.1	134	213	339	537	835	1332	1674	2114	2663	3362	4241							
	230	7.5	5.5	21.5	24.1	89	142	226	359	558	890	1118	1412	1779	2246	2833	3577	4506					
	230	10	7.5	28	31.5	68	109	173	274	427	681	856	1081	1361	1718	2168	2737	3448	4070	4886			
	230	15	11	40.9	46.3			118	187	290	463	582	735	926	1169	1475	1862	2346	2769	3324	3886	4443	
	230	20	15	53.2	60.8				142	221	353	443	560	705	890	1123	1418	1786	2109	2532	2959	3383	4209
	230	25	19	66.7	76				114	177	282	355	448	564	712	898	1134	1429	1687	2025	2367	2707	3368
	230	30	22	79.3	90.2					149	238	299	377	475	600	757	956	1204	1421	1706	1995	2281	2837
	460	5	3.7	7	8	538	855	1364	2161	3362													
	460	7.5	5.5	10	11.3	381	606	966	1530	2380	3794	4770											
	460	10	7.5	13.1	14.8	291	462	737	1168	1817	2897	3642	4600										
	460	15	11	20.4	23	187	298	475	752	1169	1864	2344	2960	3728	4706								
	460	20	15	25.8	29.4	146	233	371	588	915	1458	1833	2315	2917	3682	4645							
	460	25	19	32.8	36.8		186	297	470	731	1165	1465	1850	2330	2942	3711	4685							
	460	30	22	39.3	44.6			245	388	603	961	1209	1526	1923	2427	3062	3866							
	460	40	30	51.3	58.6				295	459	732	920	1162	1463	1847	2331	2942	3707	4376				
	460	50	37	65.8	75.1				230	358	571	718	906	1142	1441	1818	2296	2892	3415	4099	4792		
	200-208	5	3.7	16.1	18	108	172	274	434	676	1077	1354	1710	2154	2719	3431	4331						
	200-208	7.5	5.5	23.3	26.8	73	115	184	292	454	723	909	1149	1447	1826	2304	2909	3665	4327				
	200-208	10	7.5	31.5	35	56	88	141	223	347	554	696	879	1108	1398	1764	2227	2806	3313	3977	4649		
	200-208	15	11	44.9	50.8			97	154	239	382	480	606	763	964	1216	1535	1933	2283	2740	3203	3662	4556
	200-208	20	15	59	67.1				116	181	289	363	459	578	729	920	1162	1464	1728	2074	2425	2772	3449
	200-208	25	19	76.8	86.5					141	224	282	356	448	566	714	901	1135	1340	1609	1881	2151	2676
	200-208	30	22	91.7	103.3					118	188	236	298	375	474	598	755	951	1122	1347	1575	1801	2241
	575	5	3.7	5.8	6.5	827	1316	2099	3324														
	575	7.5	5.5	8.2	9.3	578	920	1467	2323	3615													
	575	10	7.5	10.5	11.8	456	725	1156	1831	2849	4542												
	575	15	11	15	17.1	314	500	798	1264	1966	3134	3940											
	575	20	15	20.9	23.7	227	361	576	912	1419	2261	2843	3590	4523									
	575	25	19	26.2	29.7		288	459	728	1132	1805	2269	2865	3609	4556								
	575	30	22	31	35			390	617	961	1531	1925	2431	3063	3866								
	575	40	30	41.5	47.3				457	711	1133	1424	1799	2266	2861	3609	4556						

8" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					90C Insulation - AWG Copper Wire Size - Single Conductor													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
8” 3-Phase	460 8x6	50	37	65	74				234	363	579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460 8x6	60	45	78	89					302	482	606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	50	37	65	74				234	363	579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460	60	45	78	89					302	482	606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	75	56	95	109						393	495	625	787	993	1253	1582	1993	2353	2824	3301	3774	4696
	460	100	75	128	146							369	466	587	741	935	1181	1488	1756	2108	2465	2818	3506
	460	125	93	165	188								362	456	576	726	917	1155	1364	1637	1914	2188	2723
	460	150	112	203	228									376	475	599	756	953	1125	1350	1578	1804	2245
	575	50	37	52	60				360	560	893	1123	1418	1787	2255	2845	3592	4525					
	575	60	45	61	70				309	480	766	963	1216	1531	1933	2439	3079	3879	4579				
	575	75	56	76	88					382	609	766	967	1218	1538	1940	2449	3085	3642	4373			
	575	100	75	100	115						466	586	740	932	1177	1484	1874	2361	2787	3346	3911	4472	
	575	125	93	129	148							455	575	724	914	1153	1456	1835	2166	2600	3039	3475	4323
	575	150	112	159	178								478	602	760	959	1211	1525	1801	2162	2527	2889	3595

LEAD LENGTHS – 75°C, SINGLE CONDUCTOR

6" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					75C Insulation - AWG Copper Wire Size - Single Conductor													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
6" 3-Wire 1-Phase	230	5	3.7	22.8	26.0		132	210	332	517	825	1037	1309	1649	2082	2626	3315	4177	4931				
	230	7.5	6	35.2	40.0			136	216	336	536	674	851	1072	1353	1707	2155	2715	3205	3848	4498		
	230	10	7.5	45.7	52.4				165	257	409	514	650	818	1033	1303	1645	2073	2447	2937	3434	3926	4884
	230	15	11	62.4	72.5					185	296	372	469	591	747	942	1189	1498	1768	2123	2482	2837	3530
6" 3-Phase	230	5	3.7	14.4	16.1	134	213	339	537	835	1332	1674	2114	2663	3362	4241							
	230	7.5	5.5	21.5	24.1	89	142	226	359	558	890	1118	1412	1779	2246	2833	3577	4506					
	230	10	7.5	28	31.5		109	173	274	427	681	856	1081	1361	1718	2168	2737	3448	4070	4886			
	230	15	11	40.9	46.3			118	187	290	463	582	735	926	1169	1475	1862	2346	2769	3324	3886	4443	
	230	20	15	53.2	60.8				142	221	353	443	560	705	890	1123	1418	1786	2109	2532	2959	3383	4209
	230	25	19	66.7	76					177	282	355	448	564	712	898	1134	1429	1687	2025	2367	2707	3368
	230	30	22	79.3	90.2					149	238	299	377	475	600	757	956	1204	1421	1706	1995	2281	2837
	460	5	3.7	7	8	538	855	1364	2161	3362													
	460	7.5	5.5	10	11.3	381	606	966	1530	2380	3794	4770											
	460	10	7.5	13.1	14.8	291	462	737	1168	1817	2897	3642	4600										
	460	15	11	20.4	23	187	298	475	752	1169	1864	2344	2960	3728	4706								
	460	20	15	25.8	29.4	146	233	371	588	915	1458	1833	2315	2917	3682	4645							
	460	25	19	32.8	36.8			297	470	731	1165	1465	1850	2330	2942	3711	4685							
	460	30	22	39.3	44.6			245	388	603	961	1209	1526	1923	2427	3062	3866							
	460	40	30	51.3	58.6				295	459	732	920	1162	1463	1847	2331	2942	3707	4376				
	460	50	37	65.8	75.1					358	571	718	906	1142	1441	1818	2296	2892	3415	4099	4792		
	200-208	5	3.7	16.1	18	108	172	274	434	676	1077	1354	1710	2154	2719	3431	4331						
	200-208	7.5	5.5	23.3	26.8	73	115	184	292	454	723	909	1149	1447	1826	2304	2909	3665	4327				
	200-208	10	7.5	31.5	35		88	141	223	347	554	696	879	1108	1398	1764	2227	2806	3313	3977	4649		
	200-208	15	11	44.9	50.8				154	239	382	480	606	763	964	1216	1535	1933	2283	2740	3203	3662	4556
	200-208	20	15	59	67.1				116	181	289	363	459	578	729	920	1162	1464	1728	2074	2425	2772	3449
	200-208	25	19	76.8	86.5					141	224	282	356	448	566	714	901	1135	1340	1609	1881	2151	2676
	200-208	30	22	91.7	103.3						188	236	298	375	474	598	755	951	1122	1347	1575	1801	2241
	575	5	3.7	5.8	6.5	827	1316	2099	3324														
	575	7.5	5.5	8.2	9.3	578	920	1467	2323	3615													
	575	10	7.5	10.5	11.8	456	725	1156	1831	2849	4542												
	575	15	11	15	17.1	314	500	798	1264	1966	3134	3940											
	575	20	15	20.9	23.7	227	361	576	912	1419	2261	2843	3590	4523									
	575	25	19	26.2	29.7	181	288	459	728	1132	1805	2269	2865	3609	4556								
	575	30	22	31	35		244	390	617	961	1531	1925	2431	3063	3866								
	575	40	30	41.5	47.3			288	457	711	1133	1424	1799	2266	2861	3609	4556						

8" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					75C Insulation - AWG Copper Wire Size - Single Conductor													MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
8" 3-Phase	460 8x6	50	37	65	74					363	579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460 8x6	60	45	78	89						482	606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	50	37	65	74					363	579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460	60	45	78	89						482	606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	75	56	95	109							495	625	787	993	1253	1582	1993	2353	2824	3301	3774	4696
	460	100	75	128	146									587	741	935	1181	1488	1756	2108	2465	2818	3506
	460	125	93	165	188										576	726	917	1155	1364	1637	1914	2188	2723
	460	150	112	203	228											599	756	953	1125	1350	1578	1804	2245
	575	50	37	52	59				366	570	908	1142	1442	1817	2293	2893	3653	4602					
	575	60	45	62	71					474	755	949	1198	1510	1906	2404	3035	3824	4515				
	575	75	56	77	88						609	766	967	1218	1538	1940	2449	3085	3642	4373	5111		
	575	100	75	101	114							591	746	940	1187	1497	1890	2382	2812	3375	3946	4511	
	575	125	93	129	148									724	914	1153	1456	1835	2166	2600	3039	3475	4323
	575	150	112	159	178										760	959	1211	1525	1801	2162	2527	2889	3595

MOTOR RATINGS

6" Single Phase Standard Motor Ratings:

Type	Model	Rating HP	KW	Volts	SF	Full Load Amps (Y/B/R)	Watts	Eff	P.F.	Service Factor Amps (Y/B/R)	Watts	Eff	P.F.	KVA Code	Locked Rotor Amps	Winding Resistance Main (B-Y)	Winding Resistance Start (R-Y)	Standard Fuse	Dual Element Time Delay Fuse	Circuit Breaker
3-Wire CSCR	FM6300531A	5.0	3.7	230	1.15	22.8/16.5/9.0	4975	74.5	97.0	26.0/18.9/8.9	5625	75.5	97.0	E	104	.54 - .67	1.7 - 2.1	80	50	70
	FM6300731A	7.5	5.5	230	1.15	35.2/30.7/8.3	7300	77.0	92.0	40.0/35.1/7.9	8300	77.5	92.5	F	162	.36 - .44	.76 - .94	125	80	110
	FM6301031A	10.0	7.5	230	1.15	45.7/38.2/12.7	9700	76.5	94.0	52.4/45.1/12.5	11175	76.5	94.0	E	202	.25 - .31	.69 - .85	175	90	125
	FM6301531A	15.0	11.0	230	1.15	62.4/46.6/19.9	13725	81.5	98.0	72.5/54.7/19.6	15825	81.5	98.0	E	296	.22 - .28	.61 - .75	225	150	200

6" Three Phase Standard Motor Ratings:

Type	Model	Rating HP	KW	Volts	SF	Full Load Amps	Watts	Eff	P.F.	Service Factor Amps	Watts	Eff	P.F.	KVA Code	Locked Rotor Amps	Winding Resistance PH-PH	Standard Fuse	Dual Element Time Delay Fuse	Circuit Breaker
6" Three Phase	FM6300523A	5	3.7	200	1.15	16.1	4830	77.5	86.5	18.0	5490	78.5	88.0	H	96	.86 - 1.1	60	35	50
	FM6300723A	7.5	5.5	200	1.15	23.3	7000	80.0	87.5	26.8	8070	80.0	88.5	H	140	.66 - .81	90	50	70
	FM6301023A	10	7.5	200	1.15	31.5	9090	82.5	86.5	35.0	10400	82.5	88.0	H	187	.37 - .46	110	70	100
	FM6301523A	15	11	200	1.15	44.9	13440	83.5	87.0	50.8	15460	83.5	88.5	H	268	.26 - .32	175	100	125
	FM6302023A	20	15	200	1.15	59.0	17850	83.0	87.5	67.1	20630	83.0	89.0	H	354	.19 - .24	225	125	175
	FM6302523A	25	19	200	1.15	76.8	22110	84.0	85.5	86.5	25520	84.0	87.5	H	445	.13 - .17	300	150	200
	FM6303023A	30	22	200	1.15	91.7	26420	84.5	86.0	103.3	30450	84.5	87.5	H	530	.10 - .13	350	200	250
	FM6300533A	5	3.7	230	1.15	14.4	4830	77.5	86.5	16.1	5490	78.5	88.0	H	87	1.1 - 1.4	60	35	45
	FM6300733A	7.5	5.5	230	1.15	21.5	7000	80.0	87.5	24.1	8070	80.0	88.5	H	127	.73 - .90	80	45	70
	FM6301033A	10	7.5	230	1.15	28.0	9090	82.5	86.5	31.5	10400	82.5	88.0	H	164	.50 - .62	100	60	90
	FM6301533A	15	11	230	1.15	40.9	13440	83.5	87.0	46.3	15460	83.5	88.5	G	237	.33 - .41	150	90	125
	FM6302033A	20	15	230	1.15	53.2	17850	83.0	87.5	60.8	20630	83.0	89.0	G	312	.25 - .31	200	110	175
	FM6302533A	25	19	230	1.15	66.7	22110	84.0	85.5	76.0	25520	84.0	87.5	G	387	.18 - .22	225	150	200
	FM6303033A	30	22	230	1.15	79.3	26420	84.5	86.0	90.2	30450	84.5	87.5	G	458	.15 - .19	300	175	225
	FM6300553A	5	3.7	460	1.15	7.0	4830	77.5	86.5	8.0	5490	78.5	88.0	H	44	4.4 - 5.4	30	15	25
	FM6300753A	7.5	5.5	460	1.15	10.0	7000	80.0	87.5	11.3	8070	80.0	88.5	H	62	2.9 - 3.6	40	25	35
	FM6301053A	10	7.5	460	1.15	13.1	9090	82.5	86.5	14.8	10400	82.5	88.0	H	82	1.9 - 2.4	50	30	40
	FM6301553A	15	11	460	1.15	20.4	13440	83.5	87.0	23.0	15460	83.5	88.5	G	117	1.1 - 1.4	70	45	60
	FM6302053A	20	15	460	1.15	25.8	17850	83.0	87.5	29.4	20630	83.0	89.0	G	151	.9 - 1.1	90	50	80
	FM6302553A	25	19	460	1.15	32.8	22110	84.0	85.5	36.8	25520	84.0	87.5	G	187	.69 - .85	110	70	100
	FM6303053A	30	22	460	1.15	39.3	26420	84.5	86.0	44.6	30450	84.5	87.5	G	226	.58 - .72	150	80	110
	FM6304053A	40	30	460	1.15	51.3	35030	85.0	87.5	58.6	40500	85.0	89.0	G	302	.45 - .56	175	100	150
	FM6305053A	50	37	460	1.15	65.8	44350	84.0	87.0	75.1	51200	84.0	88.0	G	385	.35 - .43	225	150	175
	FM6300563A	5	3.7	575	1.15	5.8	4830	77.5	86.5	6.5	5490	78.5	88.0	H	35	5.8 - 7.2	25	15	20
	FM6300763A	7.5	5.5	575	1.15	8.2	7000	80.0	87.5	9.3	8070	80.0	88.5	H	51	3.6 - 4.4	30	20	25
	FM6301063A	10	7.5	575	1.15	10.5	9090	82.5	86.5	11.8	10400	82.5	88.0	G	61	2.8 - 3.5	40	25	30
	FM6301563A	15	11	575	1.15	15.0	13440	83.5	87.0	17.1	15460	83.5	88.5	G	88	1.9 - 2.4	60	30	45
	FM6302063A	20	15	575	1.15	20.9	17850	83.0	87.5	23.7	20630	83.0	89.0	G	122	1.4 - 1.7	80	45	60
	FM6302563A	25	19	575	1.15	26.2	22110	84.0	85.5	29.7	25520	84.0	87.5	G	153	1.0 - 1.3	90	60	80
	FM6303063A	30	22	575	1.15	31.0	26420	84.5	86.0	35.0	30450	84.5	87.5	G	179	.83 - 1.0	110	70	90
	FM6304063A	40	30	575	1.15	41.5	35030	85.0	87.5	47.3	40500	85.0	89.0	G	247	.64 - .79	150	90	125

MOTOR RATINGS

8" Three Phase Standard Motor Ratings:

		Rating				Full Load				Service Factor				KVA Code	Locked Rotor Amps	Winding Resistance PH-PH	Standard Fuse	Dual Element Time Delay Fuse	Circuit Breaker
Type	Model	HP	KW	Volts	SF	Amps	Watts	Eff	P.F.	Amps	Watts	Eff	P.F.						
6x8" 3-Phase	FM8305053A-X	50	37	460	1.15	65	43675	85.5	87.0	74	49950	86.0	88.0	K	540	.21 - .26	250	175	225
	FM8306053A-X	60	45	460	1.15	78	52225	85.5	88.0	89	59825	86.0	88.5	K	645	.19 - .24	350	200	250
8" 3-Phase	FM8305053A	50	37	460	1.15	65	43675	85.5	87.0	74	49950	86.0	88.0	K	540	.21 - .26	250	175	225
	FM8306053A	60	45	460	1.15	78	52225	85.5	88.0	89	59825	86.0	88.5	K	645	.19 - .24	350	200	250
	FM8307553A	75	56	460	1.15	95	64850	86.5	88.5	109	74650	86.5	89.0	K	803	.15 - .19	400	225	350
	FM8310053A	100	75	460	1.15	128	85075	87.5	87.5	146	98350	87.5	88.5	K	1080	.10 - .13	500	300	450
	FM8312553A	125	93	460	1.15	165	110125	84.5	87.0	188	126825	85.0	87.5	K	1410	.07 - .09	700	400	600
	FM8315053A	150	112	460	1.15	203	133025	84.5	85.5	228	151100	85.0	86.5	K	1643	.05 - .07	800	450	700
	FM8305063A	50	37	575	1.15	52	43675	85.5	87.0	60	49950	86.0	88.0	K	439	.27 - .34	225	125	175
	FM8306063A	60	45	575	1.15	61	52225	85.5	88.0	70	59825	86.0	88.5	K	518	.21 - .26	250	150	200
	FM8307563A	75	56	575	1.15	76	64850	86.5	88.5	88	74650	86.5	89.0	K	645	.16 - .20	350	200	250
	FM8310063A	100	75	575	1.15	100	85075	87.5	87.5	115	98350	87.5	88.5	K	855	.10 - .13	400	250	350
	FM8312563A	125	93	575	1.15	129	110125	84.5	87.0	148	126825	85.0	87.5	L	1133	.10 - .13	600	350	450
	FM8315063A	150	112	575	1.15	159	133025	84.5	85.5	178	151100	85.0	86.5	K	1320	.08 - .10	700	400	500

Motor Lengths and Weights:

		Length		Weight	
Type	Hp	In.	mm.	Lb.	Kg.
6" 1-Phase	5	25.6	650	104	47
	7.5	28.1	714	117	53
	10	30.3	770	132	60
	15	32.8	833	144	65
6" 3-Phase	5	23.0	584	87	40
	7.5	24.3	617	97	44
	10	25.6	650	104	47
	15	28.1	714	117	53
	20	30.3	770	132	60
	25	32.8	833	144	65
	30	35.6	904	165	75
	40	39.3	998	187	85
	50	54.1	1374	265	120
6x8" 3-Phase	50	38.9	987	344	156
	60	41.6	1057	373	169
8" 3-Phase	50	38.9	987	344	156
	60	41.6	1057	373	169
	75	46.6	1184	436	198
	100	58.6	1488	525	238
	125	66.9	1700	819	371
	150	75.1	1908	932	423

6" and 8" Thrust Bearing Ratings:

	Motor Size		Thrust Bearing Rating	
Frame	Hp	kW	Lb.	Kg.
6"	5	3.7	3600	1630
	7.5	5.5		
	10	7.5		
	15	11		
	20	15		
	25	19		
	30	22		
	40	30	6750	3070
	50	37		
8" and 8"x6"	50	37	10000	4545
	60	45		
	75	56		
	100	75		
	125	92		
	150	112		

LEAD LENGTHS – 60°C, SINGLE CONDUCTOR

6" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					60C Insulation - AWG Copper Wire Size - Single Conductor												MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
6" 3-Wire 1-Phase	230	5	3.7	22.8	26		132	210	332	517	825	1037	1309	1649	2082	2626	3315	4177	4931				
	230	7.5	5.5	35.2	40			136	216	336	536	674	851	1072	1353	1707	2155	2715	3205	3848	4498		
	230	10	7.5	45.7	52.4				165	257	409	514	650	818	1033	1303	1645	2073	2447	2937	3434	3926	4884
	230	15	11	62.4	72.5					185	296	372	469	591	747	942	1189	1498	1768	2123	2482	2837	3530
6" 3-Phase	230	5	3.7	14.4	16.1	134	213	339	537	835	1332	1674	2114	2663	3362	4241							
	230	7.5	5.5	21.5	24.1	89	142	226	359	558	890	1118	1412	1779	2246	2833	3577	4506					
	230	10	7.5	28	31.5			173	274	427	681	856	1081	1361	1718	2168	2737	3448	4070	4886			
	230	15	11	40.9	46.3				187	290	463	582	735	926	1169	1475	1862	2346	2769	3324	3886	4443	
	230	20	15	53.2	60.8					221	353	443	560	705	890	1123	1418	1786	2109	2532	2959	3383	4209
	230	25	19	66.7	76					177	282	355	448	564	712	898	1134	1429	1687	2025	2367	2707	3368
	230	30	22	79.3	90.2						238	299	377	475	600	757	956	1204	1421	1706	1995	2281	2837
	460	5	3.7	7	8	538	855	1364	2161	3362													
	460	7.5	5.5	10	11.3	381	606	966	1530	2380	3794	4770											
	460	10	7.5	13.1	14.8	291	462	737	1168	1817	2897	3642	4600										
	460	15	11	20.4	23	187	298	475	752	1169	1864	2344	2960	3728	4706								
	460	20	15	25.8	29.4		233	371	588	915	1458	1833	2315	2917	3682	4645							
	460	25	19	32.8	36.8			297	470	731	1165	1465	1850	2330	2942	3711	4685						
	460	30	22	39.3	44.6				388	603	961	1209	1526	1923	2427	3062	3866	4870					
	460	40	30	51.3	58.6				295	459	732	920	1162	1463	1847	2331	2942	3707	4376				
	460	50	37	65.8	75.1					358	571	718	906	1142	1441	1818	2296	2892	3415	4099	4792		
	200-208	5	3.7	16.1	18	108	172	274	434	676	1077	1354	1710	2154	2719	3431	4331						
	200-208	7.5	5.5	23.3	26.8		115	184	292	454	723	909	1149	1447	1826	2304	2909	3665	4327				
	200-208	10	7.5	31.5	35			141	223	347	554	696	879	1108	1398	1764	2227	2806	3313	3977	4649		
	200-208	15	11	44.9	50.8				154	239	382	480	606	763	964	1216	1535	1933	2283	2740	3203	3662	4556
	200-208	20	15	59	67.1					181	289	363	459	578	729	920	1162	1464	1728	2074	2425	2772	3449
	200-208	25	19	76.8	86.5						224	282	356	448	566	714	901	1135	1340	1609	1881	2151	2676
	200-208	30	22	91.7	103.3						188	236	298	375	474	598	755	951	1122	1347	1575	1801	2241
	575	5	3.7	5.8	6.5	827	1316	2099	3324														
	575	7.5	5.5	8.2	9.3	578	920	1467	2323	3615													
	575	10	7.5	10.5	11.8	456	725	1156	1831	2849	4542												
	575	15	11	15	17.1	314	500	798	1264	1966	3134	3940	4976										
	575	20	15	20.9	23.7	227	361	576	912	1419	2261	2843	3590	4523									
	575	25	19	26.2	29.7		288	459	728	1132	1805	2269	2865	3609	4556								
	575	30	22	31	35			390	617	961	1531	1925	2431	3063	3866	4877							
	575	40	30	41.5	47.3				457	711	1133	1424	1799	2266	2861	3609	4556						

8" Motor Lead Lengths - Based on Service Factor Amps, 35C Ambient & 5% Voltage Drop:

Type	Motor Rating					60C Insulation - AWG Copper Wire Size - Single Conductor												MCM				
	Volts	HP	kW	FLA	SFA	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
8" 3-Phase	460 8x6	50	37	65	74					363	579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460 8x6	60	45	78	89						482	606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	50	37	65	74					363	579	728	920	1159	1463	1846	2330	2935	3465	4160	4863		
	460	60	45	78	89						482	606	765	964	1216	1534	1937	2441	2881	3459	4043	4623	
	460	75	56	95	109							495	625	787	993	1253	1582	1993	2353	2824	3301	3774	4696
	460	100	75	128	146									587	741	935	1181	1488	1756	2108	2465	2818	3506
	460	125	93	165	188										576	726	917	1155	1364	1637	1914	2188	2723
	460	150	112	203	228											599	756	953	1125	1350	1578	1804	2245
	575	50	37	52	60				360	560	893	1123	1418	1787	2255	2845	3592	4525					
	575	60	45	61	70					480	766	963	1216	1531	1933	2439	3079	3879	4579				
	575	75	56	76	88						609	766	967	1218	1538	1940	2449	3085	3642	4373			
	575	100	75	100	115							586	740	932	1177	1484	1874	2361	2787	3346	3911	4472	
	575	125	93	129	148									724	914	1153	1456	1835	2166	2600	3039	3475	4323
	575	150	112	159	178										760	959	1211	1525	1801	2162	2527	2889	3595