

Imperial Electric

Elevator Product Line



Nidec
All for dreams



Imperial Electric
A Nidec Kinetek Company

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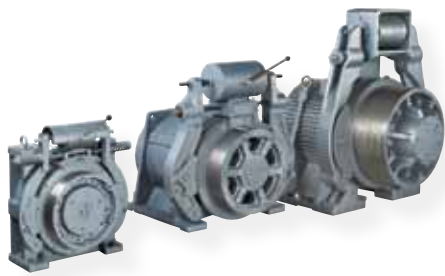
The Imperial Electric Company is a
manufacturer of Permanent Magnet
Motors, Gearmotors, AC and
DC Elevator Motors, Generator Sets,
AC Induction Motors, Vacuum Motors
and Transaxle Drive Systems.

330.734.3600

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Efficiency in Motion

With over one hundred years of
experience in electrodynamic devices,
Imperial Electric can supply you with a
complete line of high-performance motors
and drive systems to keep your products
in motion, and performing to specifications.



Compact design, high efficiency and extreme reliability have confirmed the Imperial Electric Gearless AC Machines to be a favorite in the industry. Models available: Frame 400 Series, 500 Series, LS Series and 800 Series.

Gearless AC Machines

Frame 400, 500, 800 Series

Compact design, high efficiency and extreme reliability have confirmed the Imperial Electric Gearless AC Machines to be a favorite in the industry. Models available: Frame 400 Series, 500 Series, LS Series and 800 Series.

Unlike traditional induction motors that lose efficiency at lower speeds, Imperial Electric gearless AC machines provide unusually capable low speed, high torque operation — and consume up to 40% less power than traditional asynchronous motors. Imperial Electric gearless AC machines are also noticeably quieter than the competition and are nearly maintenance-free.

Imperial Electric machines are known for durability and reliability. Imperial Electric gearless AC machines use rugged cast iron frames protecting a totally enclosed, self-cooling motor. Machine brake and sheave assemblies are removable and replaceable — features that will provide cost savings over long years of service.

Imperial Electric provides gearless AC machines in three frame sizes — serving car capacity ranges from 1,250 to 8,000 lbs. at speeds from 100 to 1,400 fpm (feet per minute). The 470 series has the capacity to lift 1,375 to 3,500 lbs. at speeds up to 500 fpm with 2:1 roping. The 520 series has the capacity to lift 2,000 to 4,500 lbs. up to 700 fpm with 1:1 roping or 2,200 to 6,500 lbs. up to 700 fpm with 2:1 roping. The 800 series has the capacity to lift 2,000 to 4,500 lbs. up to 1,400 fpm with 1:1 roping or 3,000 to 8,000 lbs. up to 700 fpm with 2:1 roping.

With the introduction of gearless AC machines to complement industry-leading, gearless DC machines, Imperial Electric boasts the most comprehensive gearless machine line in the elevator industry.

BENEFITS

- High efficiency
- Reduced power consumption
- Quieter operation
- Less cogging
- Smoother start up
- Compact design
- Reduced low speed vibration
- Improved electrical precision at very low speed
- Nearly maintenance-free

FEATURES

- AC synchronous permanent magnet design
- Machine, traction sheave, brake and encoder provided
- Totally enclosed, self-cooling motor — no fan needed
- Electronically activated double-action brake solenoid
- Brushless — no brushes to maintain
- Heavy duty components and construction
- Sub base with secondary sheave options
- CUS certified
- Re-greasable bearings
- Press fit hardened drive sheave

Imperial Electric

**Gearless
Elevator Machines**

Gearless AC Machines

Frame 400 Series: 472, 475, 478

ADDITIONAL FEATURES

MODEL 472

- 902 lbs.
- 682 ft.-lbs. brake torque per shoe
- 6,600 lbs. maximum sheave shaft load
- 5–10mm undercut U grooves for single wrap

MODEL 475

- 1,012 lbs.
- 734 ft.-lbs. brake torque per shoe
- 11,000 lbs. maximum sheave shaft load
- 6–10mm undercut U grooves single wrap

MODEL 478

- 1,367 lbs.
- 1,400 ft.-lbs. brake torque per shoe
- 11,000 lbs. maximum sheave shaft load
- 8–10mm undercut U grooves single wrap



Frame 470 has the capacity to lift 1,375 to 3,500 lbs. at 100 to 500 fpm with 2:1 roping.

Frame 400 Series 2:1 duty table

FPM	125		200		300		400		500	
Freq. (Hz)	10.1		16.2		24.3		32.3		40.4	
RPM	61		97		146		194		243	
Capacity (lbs.)	HP	Amps	HP	Amps	HP	Amps	HP	Amps	HP	Amps
2000	4.5	10.0	7.1	10.0	10.7	17.0	14.3	22.0	17.8	22.0
2200	4.9	11.0	7.8	11.0	11.8	18.7	15.7	24.2	19.6	24.2
2500	5.6	11.1	8.9	11.1	13.4	17.8	17.8	27.5	22.3	27.5
2750	6.1	12.2	9.8	12.2	14.7	19.6	19.6	30.2	24.5	30.2
3000	6.7	13.4	10.7	13.4	16.0	21.4	21.4	33.0	26.7	33.0
3500	7.8	17.3	12.5	17.3	18.7	28.0	25.0	41.2	31.2	41.2
Model 472	Model 475				Model 478					
All specifications at 50% counterweight. Consult Imperial Electric for other ratings.										

Frame 400 Series dimensional diagrams: Page 20



Frame 520 has the capacity to lift 2,000 to 3,500 lbs. at speeds to 700 fpm with 1:1 roping or 2,200 to 6,500 lbs. at speeds to 700 fpm with 2:1 roping.

Frame 500 Series: 522, 525

ADDITIONAL FEATURES

MODEL 522

- 2,596 lbs.
- 1,105 ft.-lbs. brake torque per shoe
- 17,600 lbs. maximum sheave shaft load
- 20 inch sheave
- 7-1/2 inch V grooves single wrap

MODEL 525

- 3,380 lbs.
- 2,215 ft.-lbs. brake torque per shoe
- 22,000 lbs. maximum sheave shaft load
- 20 inch or 25 inch sheave
- 7-1/2 inch or 6-5/8 inch V grooves single wrap

Frame 500 Series 1:1 duty table

FPM	300		350		400		500		600		700	
Freq. (Hz)	7.6		8.9		10.2		10.2		15.3		17.8	
RPM	46		53		69		76		92		107	
Capacity (lbs.)	HP	Amps	HP	Amps	HP	Amps	HP	Amps	HP	Amps	HP	Amps
2000	10.1	20.0	11.8	20.0	13.5	20.0	16.8	31.0	20.2	31.0	23.6	31.0
2500	12.6	25.0	14.7	25.0	16.8	25.0	21.0	39.0	25.3	39.0	29.5	39.0
3000	15.2	30.0	17.7	30.0	20.2	30.0	25.3	47.0	30.3	47.0	35.4	47.0
3500	17.7	35.0	20.6	35.0	23.6	35.0	29.5	55.0	35.4	55.0	41.2	55.0
Model 525	All specifications at 50% counterweight and 25 inch sheave. Consult Imperial Electric for other ratings											

Frame 500 Series 2:1 duty table

FPM	300		350		400		500		600		700	
Freq. (Hz)	19.1		22.3		25.5		31.8		38.2		44.6	
RPM	115		134		153		191		229		267	
Capacity (lbs.)	HP	Amps	HP	Amps	HP	Amps	HP	Amps	HP	Amps	HP	Amps
2000	10.7	19.0	12.5	19.0	14.3	19.0	17.8	23.7	21.4	32.3	25.0	32.3
2500	13.4	23.7	15.6	23.7	17.8	23.7	22.3	29.7	26.7	40.3	31.2	40.3
3000	16.0	28.5	18.7	28.5	21.4	28.5	26.7	35.6	32.1	48.4	37.4	48.4
3500	18.7	33.2	21.8	33.2	25.0	33.2	31.2	41.5	37.4	56.4	43.7	56.4
4500	24.1	40.1	28.1	40.1	32.1	40.1	40.1	51.5	48.1	70.5	56.1	70.5
5000	26.7	46.8	31.2	46.8	35.7	46.8	44.6	57.1	53.5	80.2	62.4	80.2
5500	29.4	51.5	34.3	51.5	39.2	51.5	49.0	62.8	58.8	88.3	68.6	88.3
6500	34.8	60.8	40.6	60.8	46.3	60.8	57.9	74.2	69.5	104.3	81.1	104.3
Model 522	Model 525		All specifications at 50% counterweight and 20 inch sheave. Consult Imperial Electric for other ratings.									

Frame 500 Series dimensional diagrams: Page 21

Imperial Electric

Gearless
Elevator Machines

Gearless AC Machines

Frame LS Series: 478-LS, 522-LS, 525-LS, 527-LS

ADDITIONAL FEATURES

MODEL 478-LS

- 1,750 lbs.
- 1,111 ft.-lbs. brake torque per shoe
- 12,000 lbs. maximum sheave shaft load
- 20 inch sheave
- 5-1/2 inch V grooves single wrap

MODEL 522-LS

- 2,875 lbs.
- 1,868 ft lbs. brake torque per shoe
- 17,600 lbs. maximum sheave shaft load
- 20 inch sheave
- 7-1/2 inch V grooves single wrap

MODEL 525-LS/527-LS

- 3,830 lbs. (525-LS)/3,995 lbs. (527-LS)
- 3,000 ft.-lbs. brake torque per shoe
- 22,000 lbs. maximum sheave shaft load
- 25 inch sheave
- 7-1/2 inch or 6-5/8 inch V grooves single wrap
- 527-LS requires rope brake



Frame LS Series has the capacity to lift 1,000 to 4,500 lbs. at traditional geared speeds from 100 to 450 fpm with 1:1 roping.

Frame LS Series 1:1 duty table

FPM	100		200		300		400		450	
Capacity	HP	Amps	HP	Amps	HP	Amps	HP	Amps	HP	Amps
1000	1.7	12.2	3.4	12.2	5.9	12.2	6.7	12.2	17.8	22.0
1500	2.5	18.3	5.1	18.3	8.8	18.3	10.1	18.3	17.0	17.0
1800	3.0	20.0	6.1	20.0	10.6	20.0	12.1	20.0	22.3	20.0
2200	3.7	22.0	7.4	22.0	13.0	22.0	14.8	22.0	24.5	22.0
2500	4.2	25.0	8.4	25.0	14.7	25.0	16.8	25.0	18.9	25.0
3000	5.1	30.0	10.1	30.0	17.7	30.0	20.2	30.0	22.7	30.0
3500	5.9	35.0	11.8	35.0	20.6	35.0	23.6	35.0	26.5	35.0
4000	6.7	43.0	13.5	43.0	20.2	43.0	26.9	43.0	30.3	43.0
4500	7.6	48.0	15.2	48.0	22.7	48.0	30.3	48.0	34.1	48.0
Model 478-LS		Model 522-LS		Model 525-LS		Model 527-LS				
All specifications at 50% counterweight Consult Imperial Electric for other ratings										

LS package includes

- Motor
- Dual Coil Brake
- Drive Sheave
- Endat Encoder
- Single Tier Base
- Blocking
- Dynamic Isolation
- Hardware for bolting the machine to the blocking, sheave guard, rope retainer

Frame LS Series dimensional diagrams: Pages 22 - 23



Frame 800 Series: 805, 808, 808-OB

ADDITIONAL FEATURES

MODEL 805

- 4,880 lbs.
- 2,400 ft.-lbs. brake torque per shoe
- 40,000 lbs maximum sheave shaft load
- 12–5/8 inch on 26 inch sheave or 14–9/16 inch on 22.5 inch U grooves double wrap. V grooves available consult Imperial Electric.

MODEL 808

- 6,305 lbs.
- 3,470 ft.-lbs. brake torque per shoe
- 40,000 lbs. maximum sheave shaft load

- 12–5/8 inch on 26 inch sheave or 14 - 9/16 inch on 22.5 inch U grooves double wrap. V groove available consult Imperial Electric.

MODEL 808-OB

- 5900 lbs.
- 3,470 ft.-lbs. brake torque per shoe
- 60,000 lbs. maximum sheave shaft load
- 14–5/8 inch on 26 inch sheave, U grooves double wrap. V groove available consult Imperial Electric
- Rope brake may be required.

Frame 800 has the capacity to lift 2,000 to 4,500 lbs. at speeds to 1,400 fpm with 1:1 roping or 3,000 to 8,000 lbs. at speeds to 700 fpm with 2:1 roping.

Frame 800 Series 2:1 duty table

FPM	400		500		600		700	
Freq. (Hz)	43.1		53.9		64.6		75.4	
RPM	117.5		146.9		176.3		205.7	
Capacity (lbs.)	HP	Amps	HP	Amps	HP	Amps	HP	Amps
3000	21.4	58.0	26.7	58.0	32.1	58.0	37.4	73.0
3500	25.0	68.0	31.2	68.0	37.4	68.0	43.7	85.0
4000	28.5	77.0	35.7	77.0	42.8	77.0	49.9	97.0
4500	32.1	87.0	40.1	87.0	48.1	87.0	56.1	109.0
5000	35.7	97.0	44.6	97.0	53.5	97.0	62.4	121.0
5500	39.2	107.0	49.0	107.0	58.8	107.0	68.6	133.0
6000	42.8	116.0	53.5	116.0	64.2	116.0	74.9	145.0
6500	46.3	117.0	57.9	117.0	69.5	144.0	81.1	144.0
7000	49.9	126.0	62.4	126.0	74.9	155.0	87.3	155.0
7500	53.5	136.0	66.8	136.0	80.2	166.0	93.6	166.0
8000	57.0	145.0	71.3	145.0	85.6	177.0	99.8	177.0
Model 805	Model 808		50% counterweight. Consult Imperial Electric for other ratings.					

Frame 800 Series dimensional diagrams: Page 24-25

Frame 800 Series 1:1 duty table

FPM	500			600			700			800			900			1000			1200			1400		
Capacity	HP	RPM	Amps	HP	RPM	Amps	HP	RPM	Amps	HP	RPM	Amps	HP	RPM	Amps	HP	RPM	Amps	HP	RPM	Amps	HP	RPM	Amps
2000	16.8	73.5	41.0	20.2	88.1	41.0	23.6	102.8	41.0	26.9	117.5	73.0	30.3	132.2	73.0	33.7	146.9	73.0	40.4	176.3	73.0	47.1	205.7	91.0
2500	21.0	73.5	51.0	25.3	88.1	51.0	29.5	102.8	51.0	33.7	117.5	91.0	37.9	132.2	91.0	42.1	146.9	91.0	50.5	176.3	91.0	58.9	205.7	114.0
3000	25.3	73.5	61.0	30.3	88.1	61.0	35.4	102.8	61.0	40.4	117.5	110.0	45.5	132.2	110.0	50.5	146.9	110.0	60.6	176.3	110.0	70.7	205.7	137.0
3500	29.5	73.5	71.0	35.4	88.1	71.0	41.2	102.8	71.0	47.1	117.5	119.0	53.0	132.2	119.0	58.9	146.9	119.0	70.7	176.3	146.0	82.5	205.7	146.0
4000	33.7	73.5	82.0	40.4	88.1	82.0	47.1	102.8	82.0	53.9	117.5	137.0	60.6	132.2	137.0	67.3	146.9	137.0	80.8	176.3	167.0	94.3	205.7	167.0
4500	37.9	84.9	79.0	45.5	101.9	79.0	53.0	118.8	133.0	60.6	135.8	133.0	68.2	152.8	133.0	75.8	169.8	133.0	90.9	203.7	163.0			
Model 805				Model 808						Model 808-OB - Imperial Electric Engineering to confirm OB requirements.														

Imperial Electric

Gearless
Elevator Machines

Gearless AC Machines |
Gearless DC Machines

Gearless DC Machines

Frame 590 Series: 591, 593, 596, 598



FEATURES

- Self ventilated – blower not required
- Speeds 500 – 1,000 fpm
- Class F insulation
- 50° C rise standard
- Capacity to 8,500 lbs. – 2:1 rope, 4,500 lbs. – 1:1 rope
- Single or double wrap
- CUS certified
- Re-greasable bearings
- Split-frame construction available
- Factory breakdown available

APPLICATIONS

- Gearless traction elevators
- Single or double wrap
- Split-frame construction available
- Factory breakdown available

BENEFITS

- Quiet operation
- Rugged construction
- Extreme reliability
- Easily disassembled for modernization

Quiet operation, heavy duty construction, and extreme reliability have confirmed the Imperial Electric Gearless DC Machines to be a favorite in the industry. Models available: 591, 593, 596, and 598.

Frame 590 Series basic ratings

Frame Size	Rated Torque (ft.-lbs.)	WK ² Armature & 26" Sheave (lbs.-ft. ²)	Armature Volts per RPM (V/RPM)	Armature Amps (A)	Armature Resistance Hot (Ω)	Armature Circuit Inductance (Ω ⁻³)	Field Voltage (V)	Field Amps (A)	Field Resistance (Ω)	L/R Field Time Constant (S)	Total Weight (lbs.)
598	3,250	1,438	2.915	180	0.146	15.53	198	13.20	15.02	1.29	9,759
596	2,875	1,315	2.236	180	0.138	11.79	195	11.00	17.73	1.16	8,358
593	2,300	1,232	1.790	180	0.132	9.56	183	10.50	17.40	1.08	7,467
591	1,725	1,149	1.346	180	0.117	7.17	195	8.35	23.41	0.94	6,579

Typical rating requirements for Gearless DC Machines

Roping	2:1	1:1
Counter Weight (%)	40	40
Acceleration Rate (ft./s ²)	4	4
Live Loads (lbs.)	2,000 to 8,500	2,000 to 4,500
Speeds (FPM)	400 to 700	500 to 1,000
Total Suspended Weight (lbs.)	15,400 to 32,000	15,400 to 19,000

Sheave data

Diameter (inch)	WK ² (lbs.-ft. ²)
26	762
30	1,012
33	1,332

Frame 590 Series dimensional diagram: Consult Imperial Electric

Efficiency in Motion



Rugged and dependable, Imperial Electric AC hoist motors enjoy a well deserved reputation for quality and durability.

FEATURES

- Cast iron construction
- 600–1,800 rpm
- 5 through 60 HP high slip
- 5 through 100 HP low slip
- Drip-proof construction standard, TENV and TEFC available
- Dual ball bearing construction
- Re-greasable bearings
- Class F insulation standard (Class H available)
- Class A temperature rise for elevator duty
- Mounted encoder optional
- CUS certified

AC Hoist Motors (including VVVF)

Frames 256T through 405T

Industry recognized performance and durability for all popular AC machine designs.

The Imperial Electric AC Hoist Motor is renowned for enduring dependability. Cast iron construction, hot rolled steel shaft, and re-greasable ball bearings contribute to a motor design that you can trust through long years of service.

A range of high and low slip single speed motor designs for VVVF drive applications are offered in rpm ranges from 600, 720, 900, 1,200 and 1,800. The motor is configured for foot mounting working with all popular machine designs.

BENEFITS

- Stock availability
- Quiet operation
- Available through 100 HP
- Highly reliable
- Long service life
- Rugged construction

APPLICATIONS

- Geared traction elevators
- VVVF with encoders, low slip 60 minute duty cycle
- Across the line high slip 30 minute duty cycle
- 2-speed, 60 minute duty cycle

VVVF AC Hoist Motors 1,200 RPM duty table full load amps

HP	5	7.5	10	12.5	15	20	25	30	40	50	60	75
Frame	256T	256T	256T	284T	284T	286T	324T	326T	365T	365T	405T	405T
200 V	15.4	24.5	30.8	34.1	43.8	58.3	70.0	80.4	113.0	132.2	152.0	189.0
208 V	14.8	23.5	29.6	32.7	41.9	55.2	67.0	78.4	108.0	129.3	147.0	182.0
220 V	14.2	21.5	26.6	30.9	39.3	52.4	65.8	72.5	104.0	122.0	139.0	172.0
230 V	13.5	21.6	26.4	29.5	39.0	49.8	61.0	70.4	98.2	116.2	132.2	164.0
240 V	13.6	20.4	26.5	28.9	36.0	47.6	58.6	68.6	95.4	114.2	127.0	156.8
440 V	7.1	10.8	13.3	15.6	19.7	26.2	32.9	36.7	52.0	61.0	69.3	86.0
460 V	6.75	10.8	13.2	14.8	19.5	24.9	30.5	35.2	49.1	58.1	66.1	82.0
480 V	6.8	10.2	13.3	14.2	18.0	23.8	29.3	34.3	47.7	57.1	63.5	78.4
575 V	11.2	8.5	10.5	11.9	15.2	20.1	24.8	28.4	38.6	46.5	53.0	65.5
Efficiency	87.1%	86.9%	88.0%	88.9%	89.0%	89.7%	89.5%	90.8%	90.0%	90.4%	91.4%	91.1%
P/F	79.8%	75.8%	72.4%	88.8%	83.1%	82.6%	85.9%	87.9%	85.1%	88.6%	92.7%	94.2%
BTU/HR	566	864	1,042	1,192	1,416	1,754	2,240	2,322	3,395	4,056	4,312	5,596
Consult Imperial Electric for additional ratings.												

Frame 256T through 405T dimensional diagram: Page 29

Imperial Electric

**Geared
Elevator Machines**

**AC Hoist Motors |
Flange Motors**

Flange Motors (including AC VVVF and DC)

Frames 256TYZ through 405TYZ

Direct replacement motors for most popular machines.

Heavy duty, replacement motors for your existing machines.

Imperial Electric's line of AC and DC Flange Hoist Motors directly replace existing motors on virtually all popular machines. Imperial Electric motors are the definition of heavy duty construction, designed to provide reliable service year after year.

Direct mounts for:

- Titan 1
- KONE MR26, MR35
- Armor #2, #2 & 3, #3
- Otis 17CT, 22CT, 29CT
- Westinghouse 28, 38
- Northern TW151 through TW340
- Serge
- Renold
- Schindler

Optional Flex Coupling mounts (see page 18):

- Gurney
- Dover GD105
- Westinghouse – all models

Consult Imperial Electric for additional ratings

BENEFITS

- Long life expectancy
- Heavy duty construction
- Drop in replacement availability
- Quiet operation
- Available through 100 HP
- Mounts for Flexible Couplings
(see page 18)

FEATURES

- Drip-proof enclosure
- 600–1,800 rpm
- Single and two bearing designs
- Encoder and encoder mounting options
- Hot rolled steel shafts
- CUS certified

APPLICATIONS

- Geared traction elevators
- AC VVVF with encoders, low slip
- AC across-the-line, high slip
- AC 2-speed, high slip
- DC shunt or compound wound



NEMA C



Otis



Armor/Northern

Capability Table and NEMA C Face Motors dimensional diagram: Page 26



Rugged and dependable, Imperial Electric AC hoist motors enjoy a well deserved reputation for quality and durability.

DC Hoist Motors

Frames 284AT through 409AT

FEATURES

- Drip-proof enclosure
- 60 minute duty
- 10 through 100 HP
- 600–1,750 rpm
- Drip-proof construction standard, TENV available
- Dual ball bearing construction
- Re-greasable bearings
- Class A temperature rise for elevator duty
- CUS certified

BENEFITS

- Quiet operation
- Available through 100 HP
- Highly reliable
- Proven performance
- Broad compatibility 240V DC, at 1,150 rpm

APPLICATIONS

- Geared traction elevators
- Shunt wound standard
- Compound wound available
- Special wound available



Imperial Electric motor generator sets are proven performers.

Motor Generator Sets

Frames 284A/280T through S409A/360T

FEATURES

- Drip-proof enclosure
- 7.5 kW–75 kW ratings
- 240 volt DC loop standard
- Special DC loop voltages available
- 1,750 rpm
- AC input voltages – 200, 230/460, 575 3-phase
- 4 bearing DC to DC and TEFC units also available

BENEFITS

- Drop in replacement availability
- Quiet operation
- Available through 75 kW
- Extreme reliability

APPLICATIONS

- Geared traction elevators
- Gearless DC machines
- Compound wound standard
- Shunt wound available
- Special wound available

Imperial Electric

**Geared
Elevator Machines**

DC Hoist Motors |
Motor Generator Sets |
Door Operator Motors

Door Operator Motors

Frames 2.0 through 6.1 inch diameter gear drive with motor/gearbox and PM motors

Light duty, self-contained worm gear drive with motor and gearbox.

Imperial door operator motors are designed to replace existing motors on a wide range of door operators from various manufacturers. These motors offer heavy duty construction and superior quality, employing hardened steel and bronze gearing, lifetime lubrication bearings, and Viton output seals.

Replacement motors for:

- Courion
- Dover
- ECI
- GAL
- Haughton
- KONE
- Otis

BENEFITS

- Heavy duty construction
- Precision design
- Broad application range

FEATURES

- Low profile
- Hardened steel and bronze gearing
- Ball and tapered roller bearing construction
- Field replaceable motor
- Grease or oil lubrication for life
- 1/6 HP
- 1,140 rpm
- DC and AC available

APPLICATIONS

- Passenger elevator doors
- Freight elevator doors



6.1 inch diameter PM



4.0 inch diameter PM



3.25 inch diameter PM



MC 137 Gearmotor

Door Operator Motors dimensional diagrams: Page 27

Durable, high-efficiency
submersible motors.



440 Series



80 Series



AC Submersible

AC Submersible Hydraulic Motors

Frame 217Z

Compact, open-frame construction delivers a light weight, high performance, submersible solution.

More than dependable, the Imperial Electric AC Submersible Hydraulic Motors are ruggedly built, highly efficient units. Open-construction, asynchronous motors are perfectly suited for wet operations. Hydraulic fluid cools the motors as they work. Motor leads are extra length, non-wicking for flexible unit positioning.

The Imperial Electric submersible motors are compatible with pump units from all major manufacturers. The motors offer the advantages of small size and light weight coupled with high starting torque and low starting current.

BENEFITS

- High performance
- Stock availability
- Drop-in replacement
- Available through 50 HP

FEATURES

- Rolled steel construction
- Submersible enclosure
- Stock motors dual rated for 80 or 120 starts per hour
- 10 through 50 HP
- 3,600 rpm
- Voltages: 200, 230/460, 575 AC 3-phase, 60 Hz
- Single ball bearing
- High starting torque
- Low starting current
- Adapter kits available for alternate pumps
- CUS certified

APPLICATIONS

- Submersible hydraulic elevators

Imperial Electric

Hydraulic Elevators

AC Submersible
Hydraulic Motors

Frames 217Z, L217Z

AC Submersible Hydraulic Motors duty table, 80 starts per hour

HP	Imperial Electric Part Number	Motor Loss BTU/HR	FL EFF (%)	FL PF (%)	FL RPM	Volts	Amps (A)				
							Delta				WYE
							Full Load	No Load	Locked Rotor	KVA Code	Locked Rotor
15	217EAS015C001	14,120	73	87	3400	200	51.0	27.0	242	F	82
	217EAS015C015	14120	73	87	3400	230	44.6	23.0	204	F	68
						460	22.3	11.5	102	F	34
	217EAS015C020	14,120	73	87	3400	575	17.6	9.2	84	F	30
20	217EAS020C001	16,074	76	89	3395	200	65.4	31.2	311	F	104
	217EAS020C015	16,074	76	89	3395	230	56.2	25.5	270	F	90
						460	28.1	12.8	135	F	45
	217EAS020C020	16,074	76	89	3395	575	22.4	10.2	108	F	36
25	217EAS025C001	17,946	78	91	3400	200	78.2	34.5	391	F	130
	217EAS025C015	17,946	78	91	3400	230	67.8	30.0	340	F	113
						460	33.9	15.0	170	F	57
	217EAS025C020	17,946	78	91	3400	575	26.9	11.3	136	F	45
30	217EAS030C001	20,296	79	91	3390	200	90.0	36.0	471	F	157
	217EAS030C015	20,296	79	91	3390	230	78.2	31.0	410	F	136
						460	39.1	15.5	205	F	68
	217EAS030C020	20,296	79	91	3390	575	31.2	12.0	174	G	58
40	217EAS040C001	23,879	81	91	3410	200	120.0	46.0	671	G	224
	217EAS040C015	23,879	81	91	3410	230	104.0	40.0	584	G	195
						460	52.0	20.0	292	G	97
	217EAS040C020	23,879	81	91	3410	575	42.0	16.0	234	G	78
50	217EAS050C001	29,861	81	91	3380	200	142.0	42.7	920	G	307
	217EAS050C010	29,861	81	91	3380	230	123.0	37.5	800	G	268
						460	61.5	18.8	400	G	133
	217EAS050C020	29,861	81	91	3380	575	49.4	15.0	320	G	106

200 volt motors are designed for operation at 208 volts

AC Submersible Hydraulic Motors dimensional diagram: Page 28

Efficiency in Motion

AC Dry Hydraulic Motors

Frames 215T through 365T



AC dry hydraulic motors are available across a wide range of horsepower ratings, including 80 or 120 starts per hour.

Quiet, efficient AC dry hydraulic motors.

Designed for use with belted hydraulic pump systems, Imperial Electric AC Dry Hydraulic Motors are exceptionally quiet, highly efficient and built for rugged duty. Totally Enclosed Fan Cooled (TEFC) designs are available for most ratings.

Rated for 80 or 120 starts per hour, the AC Dry Hydraulic Motor is a drop-in replacement for existing motors, making any elevator modernization project more efficient.

The AC Dry Hydraulic Motor is just one of many highly engineered products developed for the elevator industry by Imperial Electric. Imperial Electric has more than 100 years experience in electrodynamic devices. Learn how Imperial Electric can benefit your next project. Call your representative today for more information.

BENEFITS

- Stock availability
- Drop-in replacement
- Available through 100 HP

FEATURES

- Cast iron construction
- Stock motors dual rated for 80 or 120 starts per hour
- 15 through 100 HP
- 1,800 rpm
- Voltages: 200, 230/460, 575 AC 3-phase, 60 Hz
- Dual ball bearing
- Drip-proof or TEFC enclosure
- Class F insulation standard
- 40° C ambient
- WYE Start, Delta Run

APPLICATIONS

- Dry hydraulic elevators

Imperial Electric

Hydraulic Elevators

AC Dry Hydraulic Motors

Frames 215T, 254T, 256T, 284T, 286T, 324T, 326T, 364T, 365T

AC Dry Hydraulic Motors duty table, 80 starts per hour

HP	Full Load RPM	Frame	Voltage	Amps (A)					Elevator Duty BTU Per Hour
				Delta				WYE	
				Full Load	No Load	Locked Rotor	KVA Code	Locked Rotor	
15	1740	215T	200	46	23	270	G	89	1859
	1735	215T	230/460	39.2/19.6	19/9.5	230/115	G	76/38	1859
	1735	215T	575	15.7	7.6	92	G	31	1859
20	1750	254T	200	62	31	340	G	112	2263
	1750	254T	230/460	54/27	27/13.5	296/148	G	98/49	2263
	1750	254T	575	22	11	120	G	40	2263
25	1755	256T	200	73	31	420	G	139	2360
	1755	256T	230/460	62/31	26.4/13.2	366/183	G	120/60	2360
	1755	256T	575	25	10.6	146	G	48	2360
30	1760	284T	200	87	36	500	G	165	2774
	1760	284T	230/460	74/37	31/15.5	430/215	G	142/71	2774
	1760	284T	575	30	12.4	172	G	57	2774
40	1760	286T	200	112	42	670	G	221	3282
	1760	286T	230/460	98/49	37/18.5	580/290	G	192/96	3282
	1760	286T	575	39	14.5	230	G	76	3282
50	1760	324T	200	138	70	850	G	281	3869
	1760	324T	230/460	118.8/59.4	62/31	740/370	G	244/122	3869
	1760	324T	575	49	25	310	G	102	3869
60	1760	326T	200	162	70	1000	G	330	4477
	1760	326T	230/460	143.2/71.6	64/32	920/460	G	304/152	4477
	1760	326T	575	58	26	370	G	122	4477
75	1770	364T	200	210	87	1320	G	436	5253
	1770	364T	230/460	180/90	72/36	1120/560	G	370/185	5253
	1770	364T	575	72	29	450	G	149	5253
100	1780	365T	230/460	228/114	76/38	1590/795	G	524/262	6015
	1780	365T	575	91	30	636	G	210	6015

AC Dry Hydraulic Motors dimensional diagram: Page 29

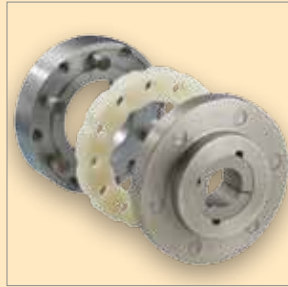
Efficiency in Motion

Flexible Couplings and Adapters

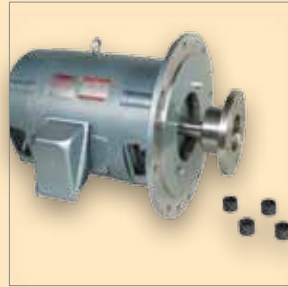
Imperial Electric offers flexible couplings and adapters with its heavy-duty line of AC & DC Elevator Duty Motors for geared traction machines. The couplings and adapters are also available for both flange or foot-mount machines manufactured by companies such as Armor, Dover, Gurney, Montgomery, Otis, Schindler-Haughton, Serge and Westinghouse. Other couplings are available upon request.

The three-part coupling consists of a drum-mount flange, polyurethane disc and a motor adapter plate for flange motors. When assembled and properly installed, the poly disc reduces vibration and noise carry-through to the car due to any misalignment. End thrusting of motor shafts and overloading of bearings are also reduced.

Flexible couplings are also available in kit form for field modifications. The couplings with Taper-Lock™ fittings have flange bolt patterns that are identical to the rigid couplings they replace which allows for motor replacement within a few hours.



Flexible Coupling



Dover Flange



Otis Belly Mount Replacement Motor



Gurney Flange



Foot Mounted



Armor/Northern Flange

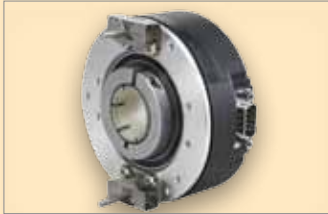
Imperial Electric

**Machine and
Motor Accessories**

Flexible Couplings and
Adapters | Elevator
Machine Accessories

Elevator Machine Accessories

Encoders



Incremental hollow shaft encoder for hoist motors



Absolute taper shaft encoder for frame 400 and 500 series gearless AC machines

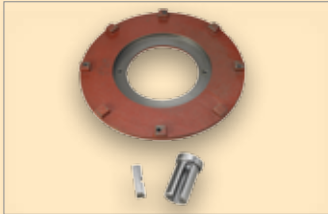


Absolute hollow shaft encoder for Frame 800 series gearless AC machines

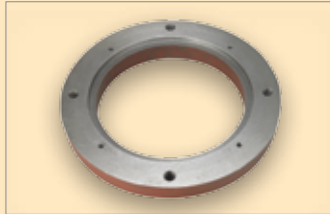


Encoder Cables

Submersibles



80 Series Flange Kit



440 Series Flange Kit

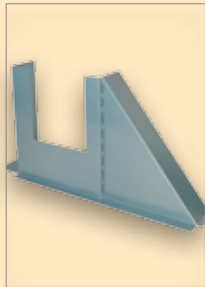
Gearless



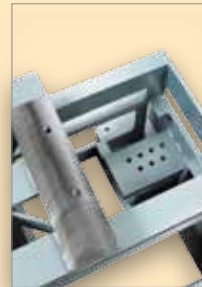
Sub-Base/
Sub-Structure/
Up-Stand



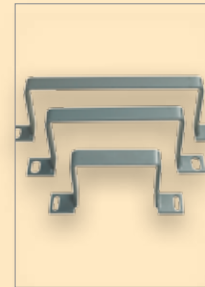
Deflector/
Secondary Sheave



Sheave Guard



Dead-End
Hitch Plate



Rope Guard/
Rope Retainer



Isolation Pads

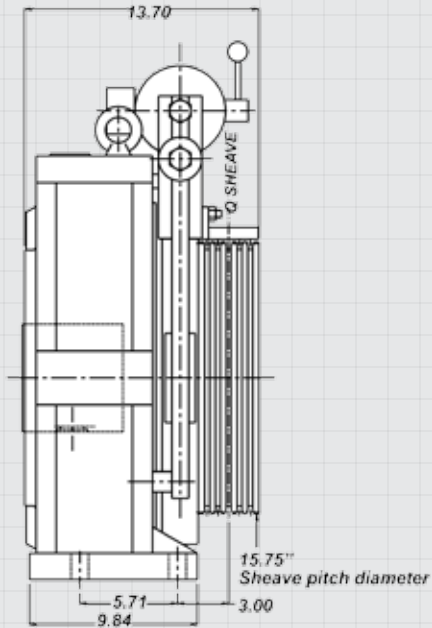


Threaded
Mounting Plate

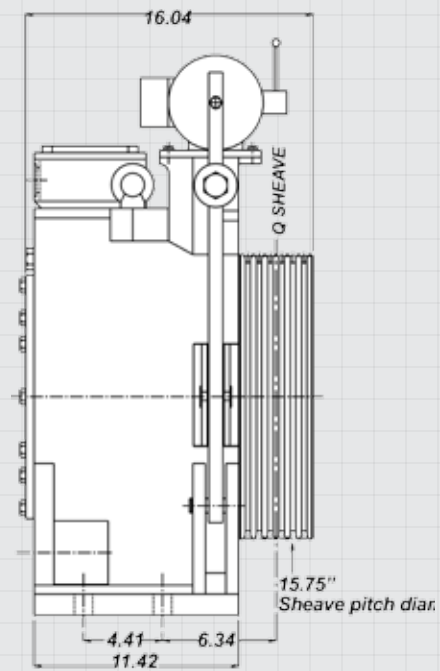
Gearless AC Machines

Frame 400 series dimensional diagrams

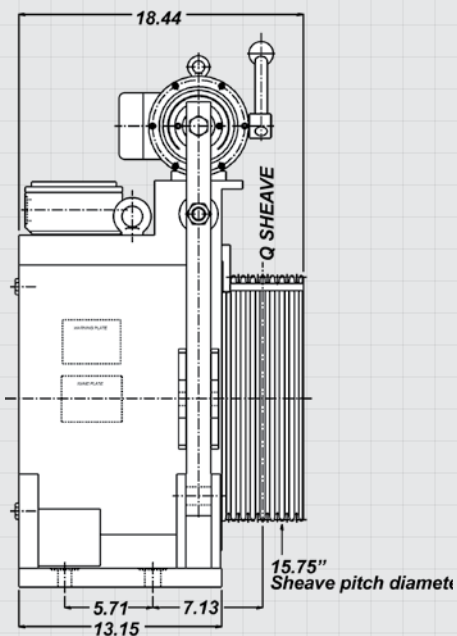
20



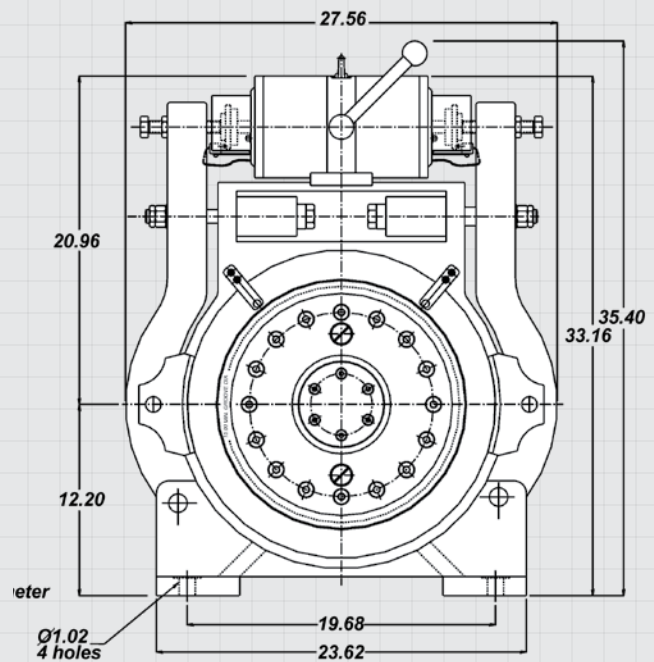
Model 472



Model 475



Model 478



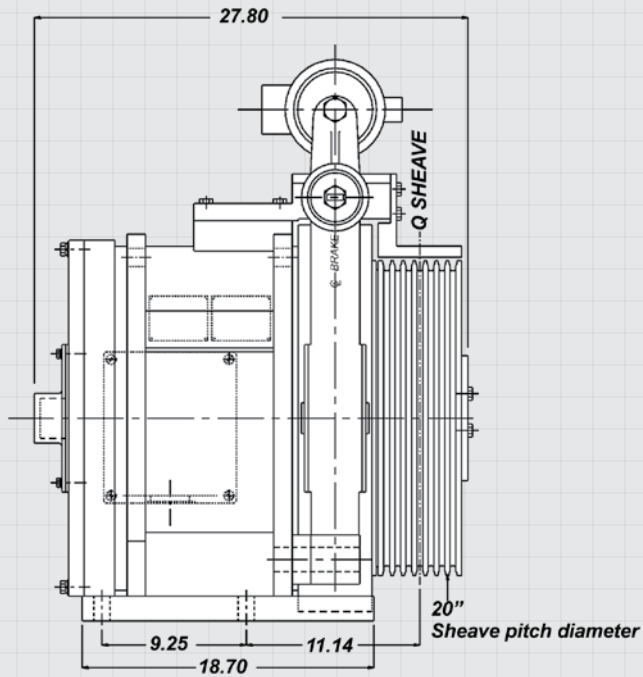
Model 478

Note: Contact Imperial Electric for actual dimensions.

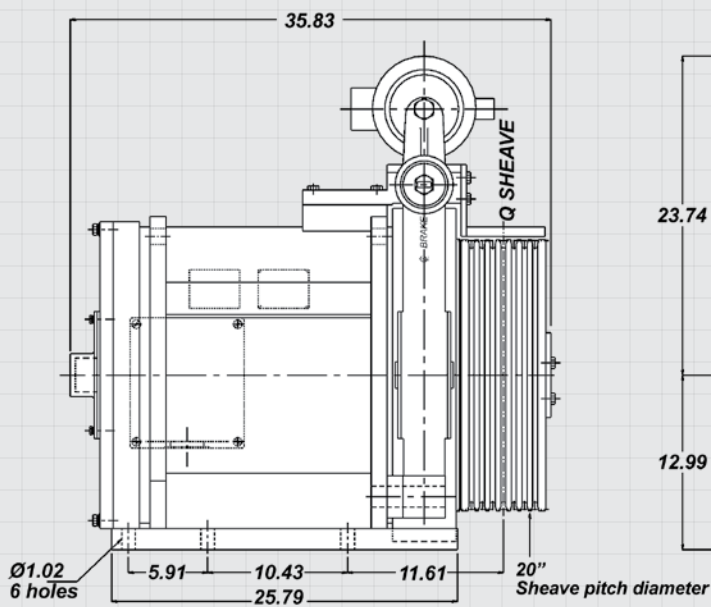
Gearless AC Machines

Frame 500 series dimensional diagrams

21

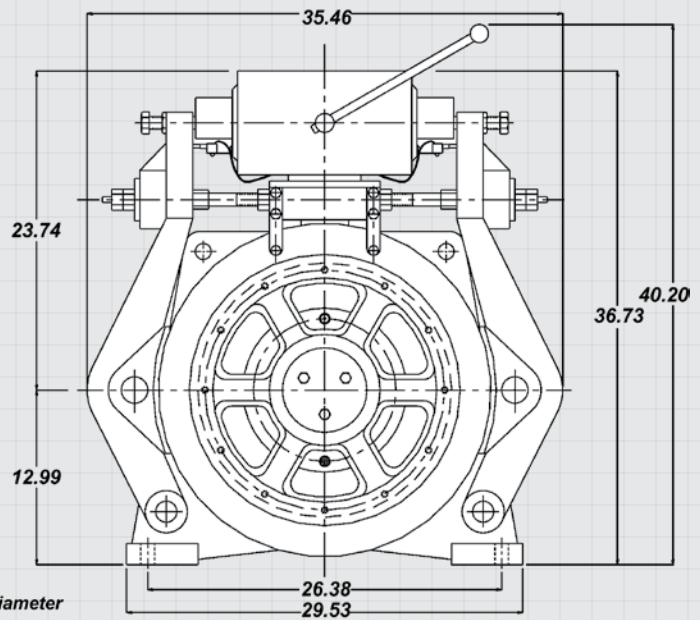


Model 522



Model 525

Model 525 available in 20 inch and 25 inch sheaves.



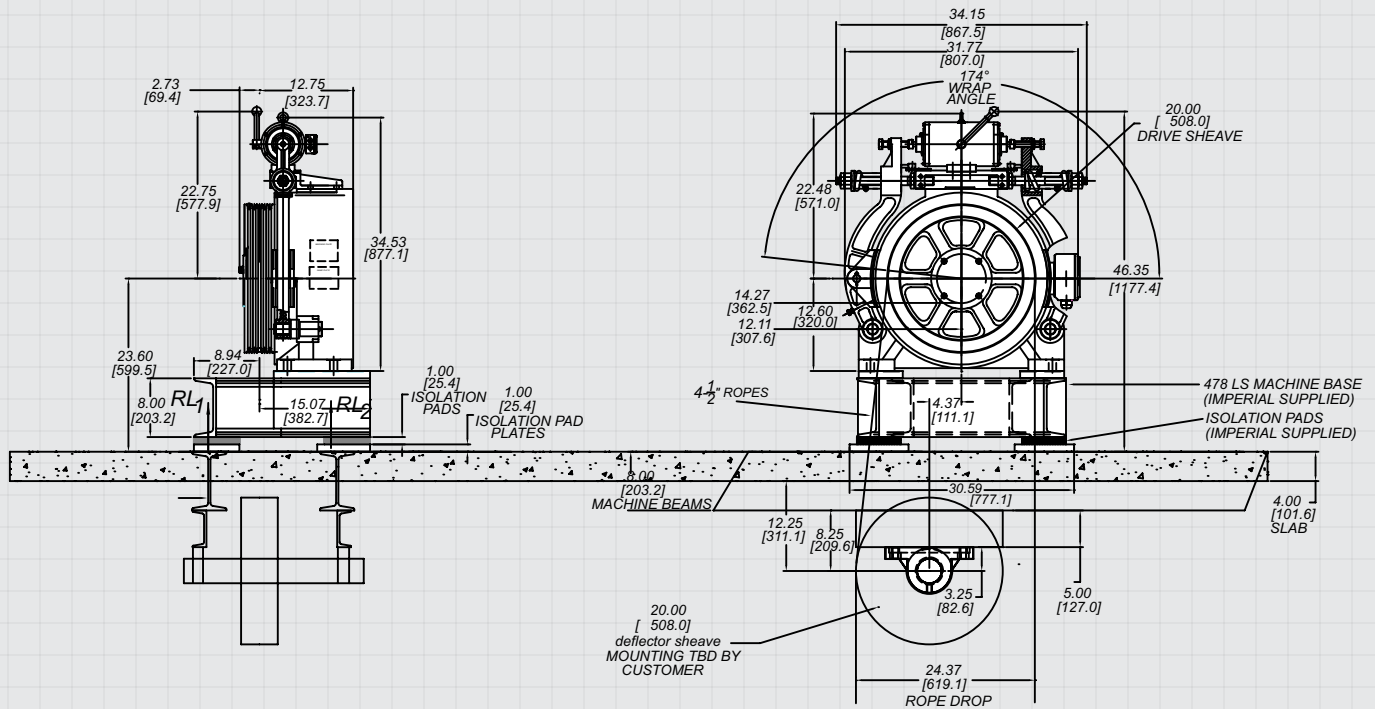
Model 525

Note: Contact Imperial Electric for actual dimensions.

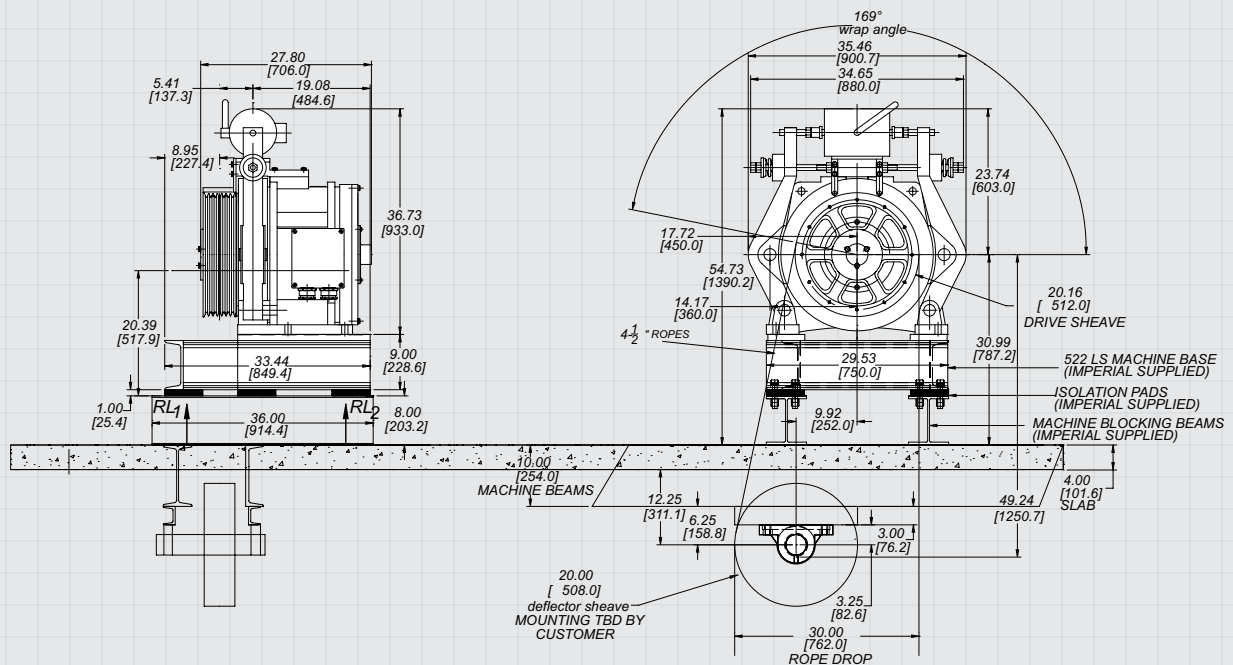
Gearless AC Machines

Frame LS series dimensional diagrams

22



Model 478-LS

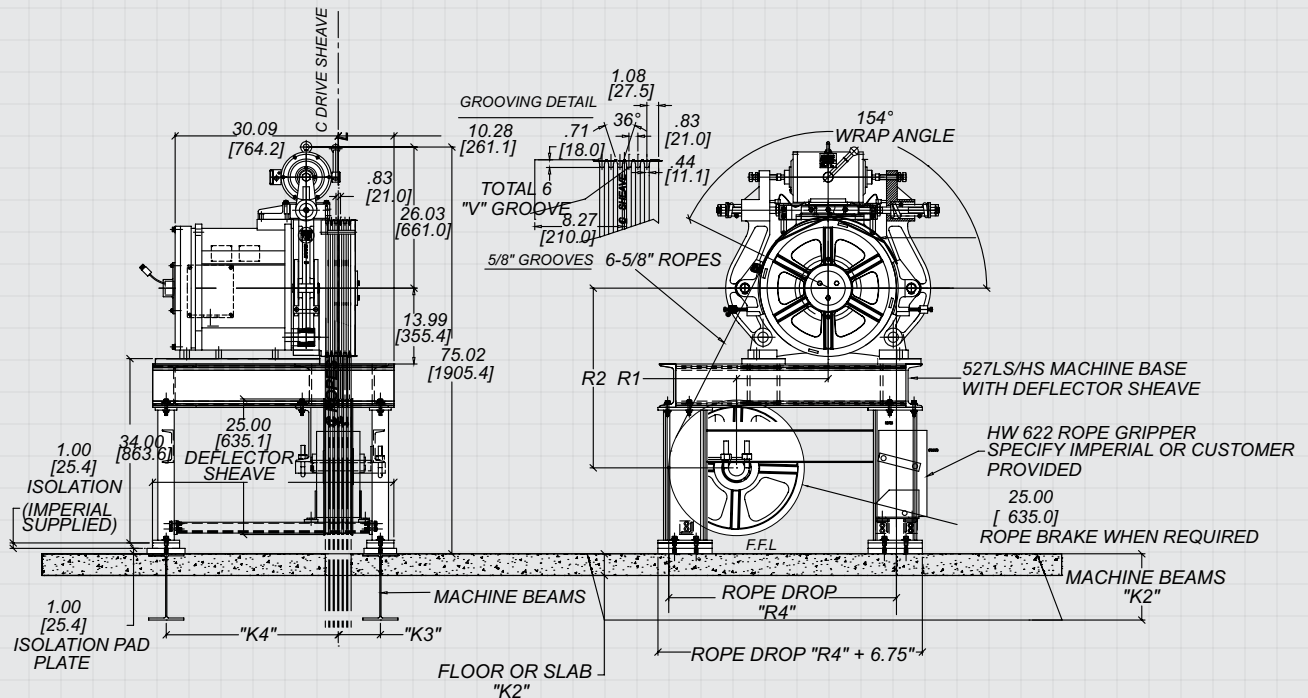


Model 522-LS

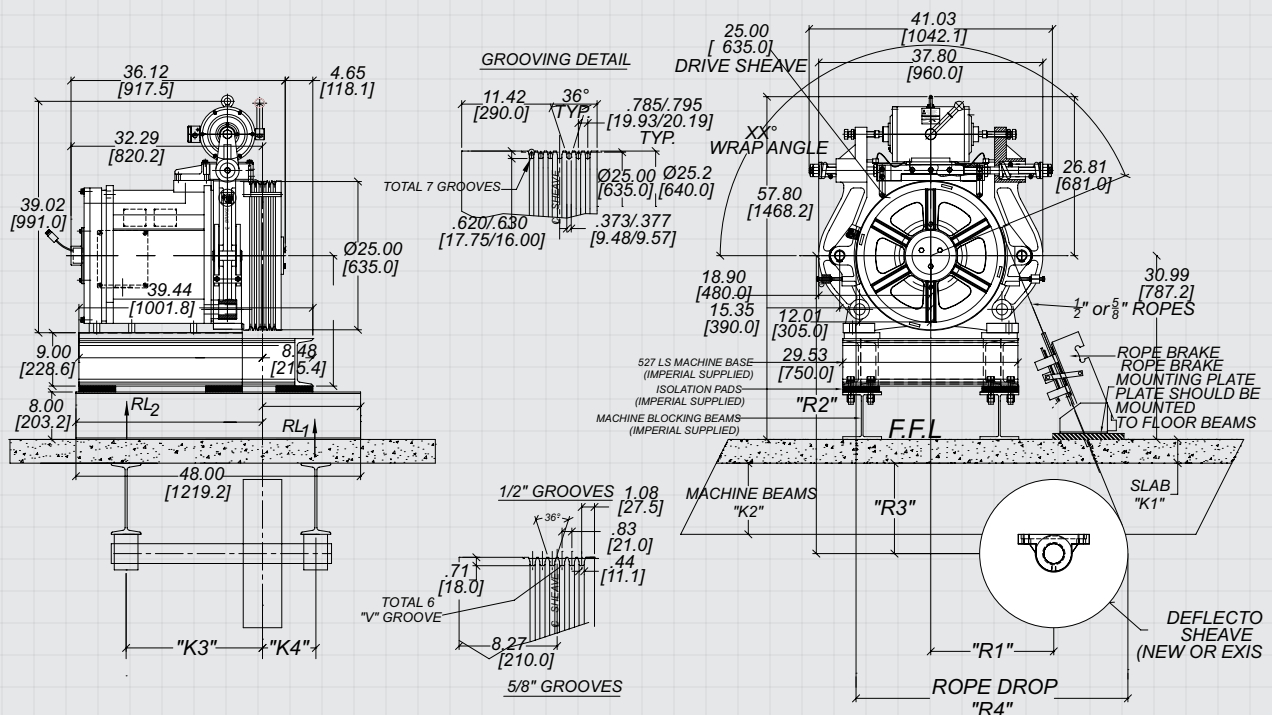
Gearless AC Machines

Frame LS series dimensional diagrams

23



Model 525-LS or 527-LS with table top base and with deflector sheave

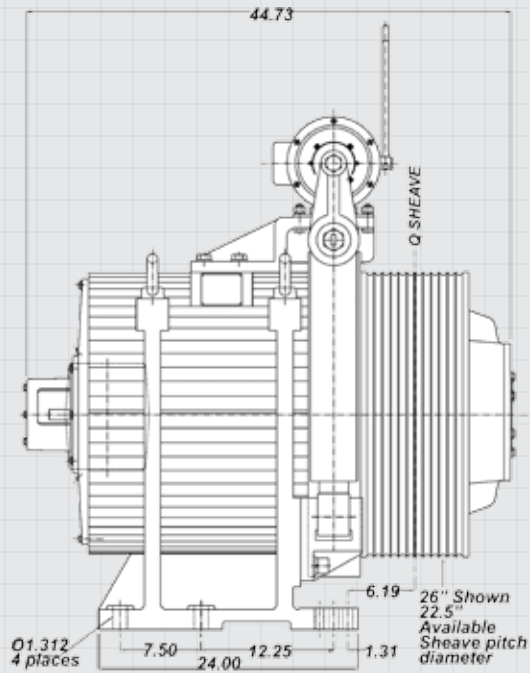


Model 525-LS or 527-LS

Gearless AC Machines

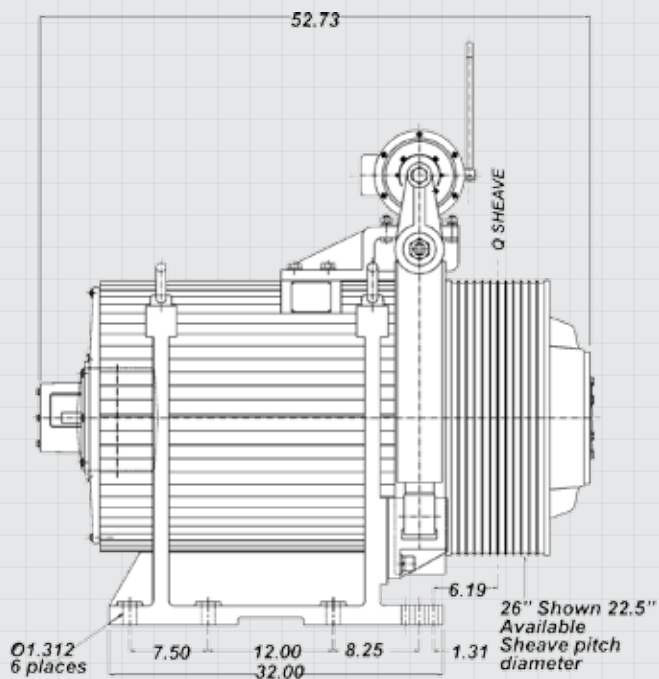
Frame 800 series dimensional diagrams

24



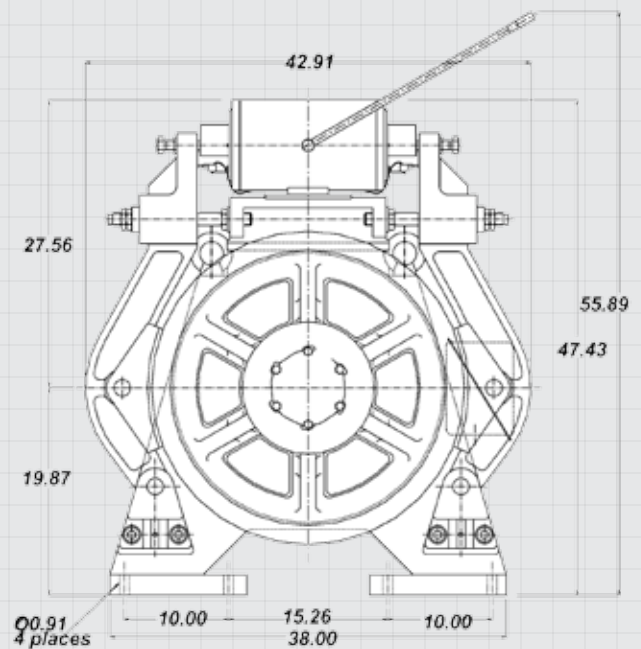
Model 805

Model 805 available in 22.5 inch and 26 inch sheaves.



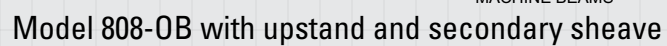
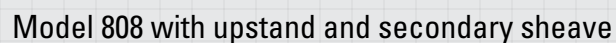
Model 808

Model 805 available in 22.5 inch and 26 inch sheaves.



Model 808

Note: Contact Imperial Electric for actual dimensions.

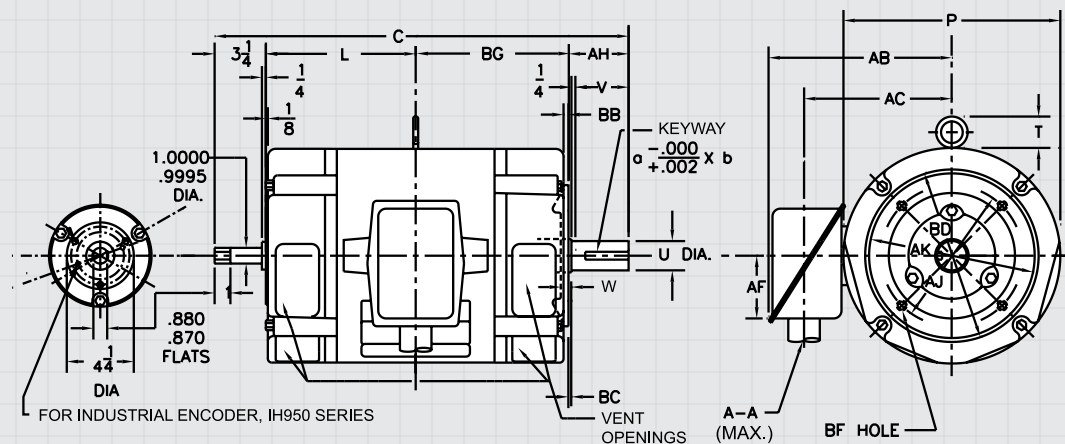


Flange Motors (including AC VVVF and DC)

Frame 256TYZ through 405TYZ dimensional diagram

(256TC through 405TC shown)

26



Flange Motor dimensions

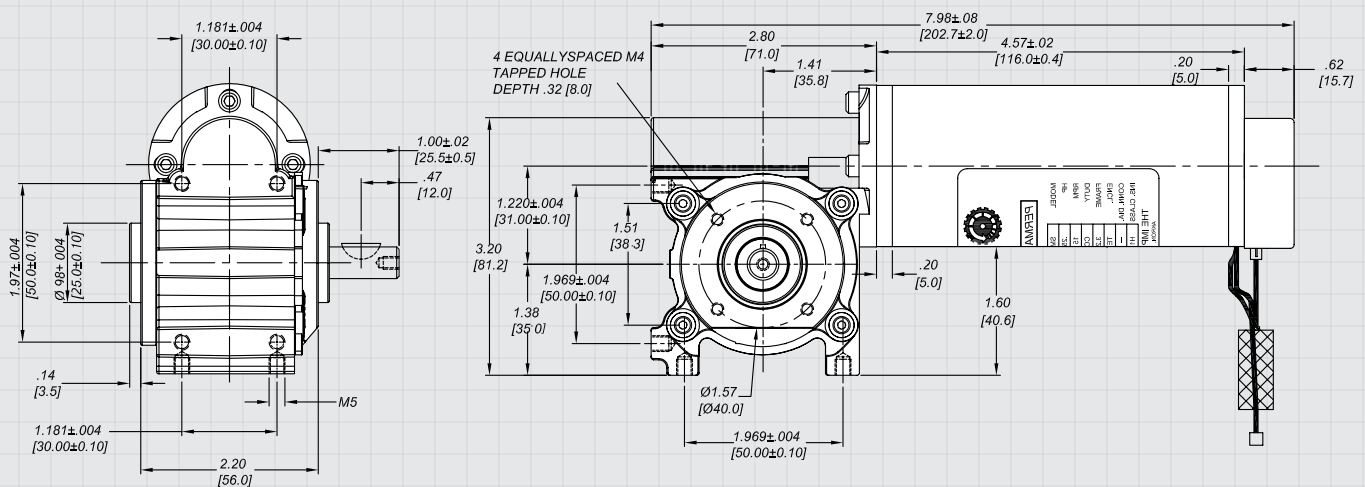
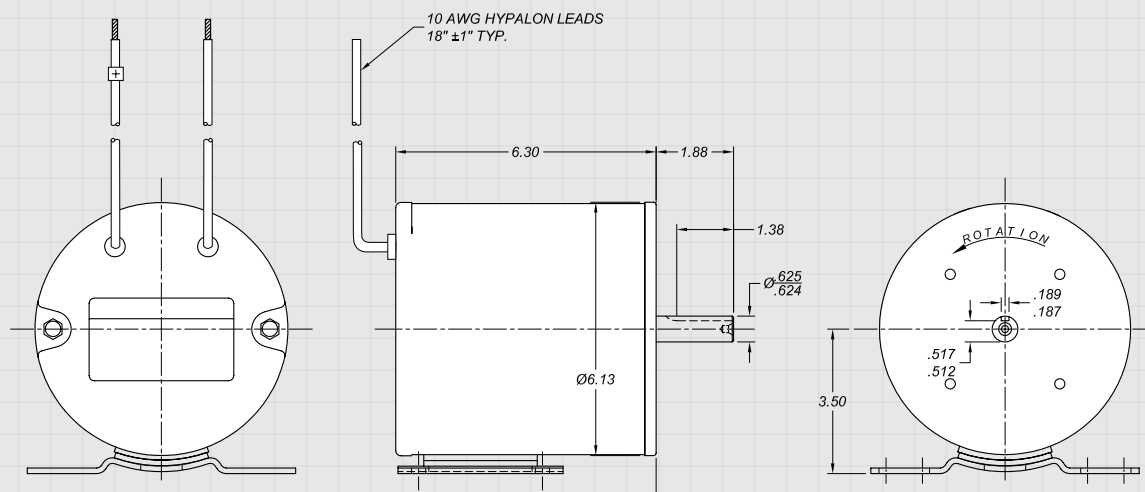
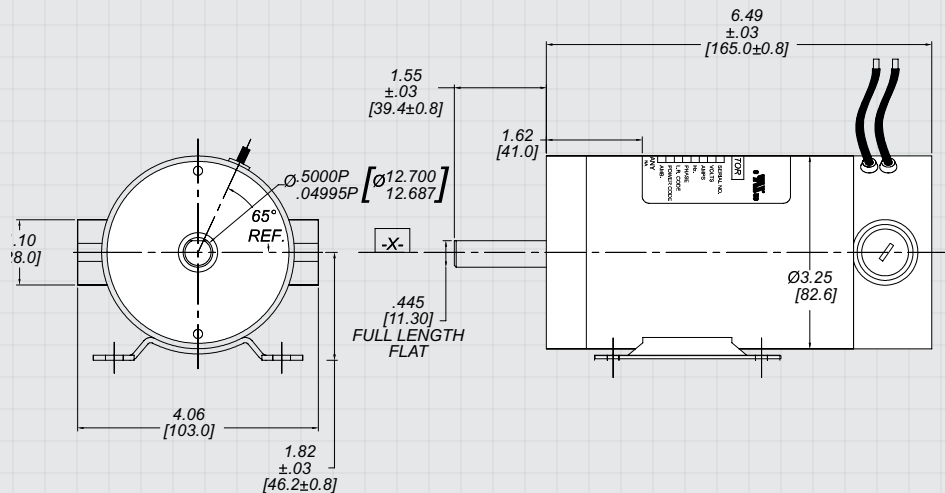
Frame	C	L	P	T	U	V	W	a	b	AA	AB	AC	AF	AH	AJ	AK	BB	BC	BD	BF	BF Tap Size	BF Depth	BG	Appr. Wt.
256TC	25.625	9.25	12.125	2.375	1.625	3.75	0.125	0.375	0.187	1.5	11	8.75	4	3.75	7.25	8.5	.25	-0.25	10	4	1/2-13	0.75	9.5	225
284TC	26.875	9.5	13.75	2.375	1.875	4.375	0.125	0.5	0.25	1.5	11.75	9.5	4	4.375	9	10.5	.25	-0.25	11.25	4	1/2-13	0.75	9.75	300
286TC	28.375	10.25	13.75	2.375	1.875	4.375	0.125	0.5	0.25	1.5	11.75	9.5	4	4.375	9	10.5	.25	-0.25	11.25	4	1/2-13	0.75	10.5	325
324TC	29.5	10.5	15.625	2.375	2.125	5	0.125	0.5	0.25	2	12.75	10.5	4	5	11	12.5	.25	-0.25	14	4	5/8-11	0.9375	10.75	400
326TC	31	11.25	15.625	2.375	2.125	5	0.125	0.5	0.25	2	12.75	10.5	4	5	11	12.5	.25	-0.25	14	4	5/8-11	0.9375	11.5	450
365TC	33	11.875	18.625	2.75	2.375	5.625	0.125	0.625	0.312	3	15.875	12.812	4.5	5.625	11	12.5	.25	-0.25	14	8	5/8-11	1	12.25	610
405TC	37.5	13.5	19.625	2.75	2.875	7	0.125	0.75	0.375	3	15.875	12.875	4.5	7	11	12.5	.25	-0.25	15.5	8	5/8-11	1	13.75	865

Compatibility Table 1,200 RPM, low slip, 200V-575V, 3-phase, 60 Hz

Machine	Flange	Horsepower											
		5	10	12.5	15	20	25	30	40	50	60	75	100
Armor	#2&3	•	•	•	•	•	•	•	•	•	•	•	•
	#2 (Serge)*	•	•	•	•	•	•	•	•	•	•	•	•
Dover	GD1	•	•	•	•	•	•	•	•	•	•	•	•
Haughton	NEMA C	•	•	•	•	•	•	•	•	•	•	•	•
	NEMA D	•	•	•	•	•	•	•	•	•	•	•	•
KONE	MR26-35	•	•	•	•	•	•	•	•	•	•	•	•
Montgomery	207E	•	•	•	•	•	•	•	•	•	•	•	•
NEMA	C	•	•	•	•	•	•	•	•	•	•	•	•
	D	•	•	•	•	•	•	•	•	•	•	•	•
Northern	TW151*	•	•	•	•	•	•	•	•	•	•	•	•
	TW160*	•	•	•	•	•	•	•	•	•	•	•	•
	TW280*	•	•	•	•	•	•	•	•	•	•	•	•
	TW340*	•	•	•	•	•	•	•	•	•	•	•	•
Otis	17CT	•	•	•	•	•	•	•	•	•	•	•	•
	22CT	•	•	•	•	•	•	•	•	•	•	•	•
	29CT	•	•	•	•	•	•	•	•	•	•	•	•
Renold	NEMA C	•	•	•	•	•	•	•	•	•	•	•	•
Schindler	NEMA D	•	•	•	•	•	•	•	•	•	•	•	•
Titan	1	•	•	•	•	•	•	•	•	•	•	•	•
Westinghouse	28	•	•	•	•	•	•	•	•	•	•	•	•
	38	•	•	•	•	•	•	•	•	•	•	•	•

Motors are 2 ball bearing designs unless otherwise noted (*single ball bearing design). Consult Imperial Electric for other ratings.
All flange mounted requirements need customer review of dimension sheets.

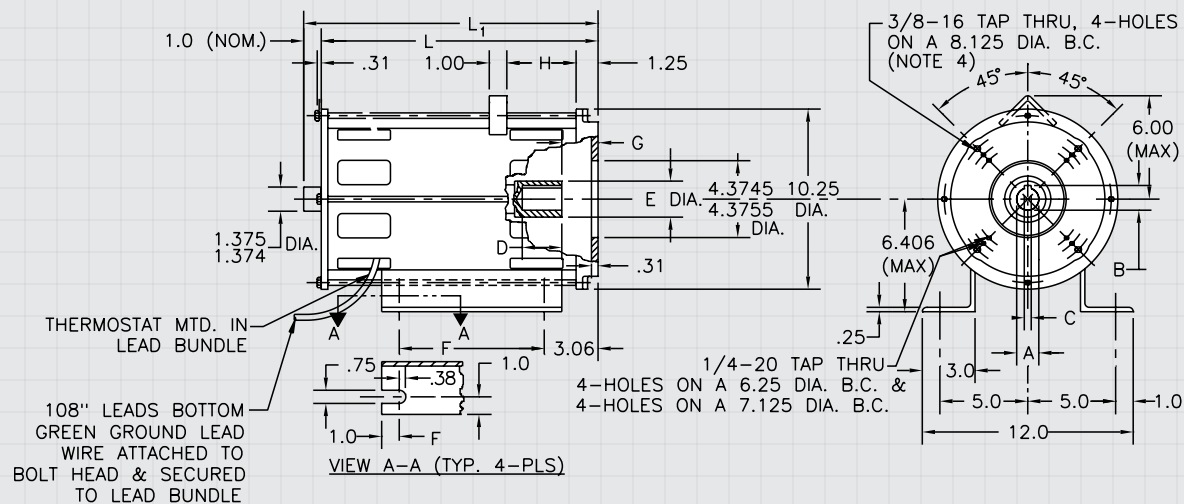
Frame 2.0 through 6.1 inch diameter dimensional diagrams



AC Submersible Hydraulic Motors

Frame 217Z dimensional diagram

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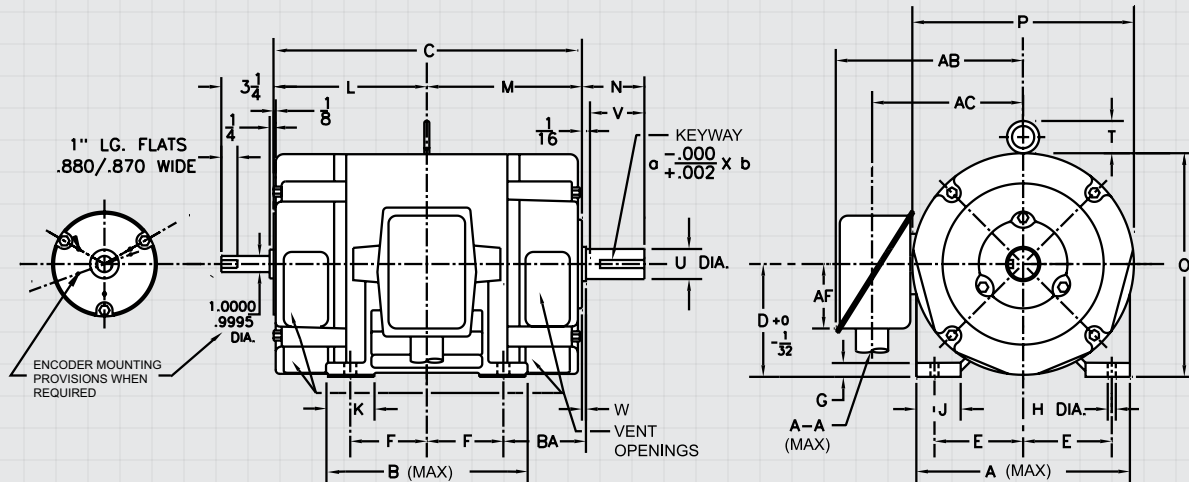
AC Submersible Hydraulic Motor dimensions

Frame	A	B	C	D	E	F	G	H	L	L _i	Ref. HP	(lbs.)
217Z	1.260 1.261	1.396 1.406	.394 .395	2.25	2.050 2.045	8.25	2.06	3.94	13.72	14.63	15,20,25,30	100
L217Z	1.260 1.261	1.396 1.406	.394 .395	2.25	2.050 2.045	8.25	2.06	3.94	15.72	—	40,50	130

AC Hoist or AC Dry Hydraulic Motors

Frames 215T through 405T dimensional diagram

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AC Hoist and AC Dry Hydraulic Motor dimensions

Frame	A	B	BA	C	D	E	F	G	H	J	K	L	M	N	O	P	T	U	V	W	a	b	AA	AB	AC	AF	App. Wt.
215T	10.5	9	3.5	17.312	5.25	4.25	3.5	.625	.406	1.75	2	6.937	6.875	3.5	10.312	10.125	—	1.375	3.125	.125	.312	.156	1	8.562	6.937	2.75	125
254T	12.5	10.75	4.25	20.75	6.25	5	4.125	.75	.531	2.25	2.5	8.375	8.25	4.125	12.312	12.125	2.375	1.625	3.75	.125	.375	.187	1.5	11	8.75	4	200
256T	12.5	12.5	4.25	22.5	6.25	5	5	.75	.531	2.25	2.5	9.25	9.125	4.125	12.312	12.125	2.375	1.625	3.75	.125	.375	.187	1.5	11	8.75	4	225
284T	14	12.5	4.75	23.625	7	5.25	4.75	.875	.531	2.75	3	9.5	9.375	4.75	13.812	13.75	2.375	1.875	4.375	0	.5	.25	1.5	11.75	9.5	4	300
286T	14	14	4.75	25.125	7	5.25	5.5	.875	.531	2.75	3	10.25	10.125	4.75	13.812	13.75	2.375	1.875	4.375	0	.5	.25	1.5	11.75	9.5	4	325
324T	16	14	5.25	26.25	8	6.25	5.25	1	.656	3.25	3.5	10.5	10.375	5.375	15.812	15.625	2.375	2.125	5	.125	.5	.25	2	12.75	10.5	4	400
326T	16	15.5	5.25	27.75	8	6.25	6	1	.656	3.25	3.5	11.25	11.125	5.375	15.812	15.625	2.375	2.125	5	.125	.5	.25	2	12.75	10.5	4	450
364T	18	15.25	5.875	28.75	9	7	5.625	1	.656	2.5	3	11.375	11.375	6	17.812	18.625	2.75	2.375	5.625	.25	.625	.312	3	15.875	12.812	4.5	550
365T	18	16.25	5.876	29.75	9	7	6.125	1	.656	2.5	3	11.875	11.875	6	17.812	18.625	2.75	2.375	5.625	.25	.625	.312	3	15.875	12.812	4.5	610
405T	20	17.75	6.625	34.25	10	8	6.875	1	.812	3	3.5	13.5	13.375	7.375	19.812	19.25	2.75	2.875	7	.125	.75	.375	3	15.875	12.875	4.5	885

Kinetek

Kinetek is a global manufacturing enterprise that provides custom engineered control, motor and drive system solutions for world class customers in the elevator/ escalator, commercial floor care, material handling/aerial lift, commercial food equipment, golf car/utility vehicle, renewable energy and medical markets.



Imperial Electric

Imperial Electric is a custom manufacturer of special application AC and DC motor systems. Imperial manufactures a complete line of products for the elevator/escalator market including AC and DC gearless machines, AC and DC hoist motors and submersible motors. Imperial Electric is also an established leader in commercial floor care and hose reel markets.



Motion Control Engineering

Motion Control Engineering (MCE) is a leader in non-proprietary elevator controls, complete elevator packages, technical services and repair solutions for modernization and new construction. MCE has an installed base of more than 160,000 elevator controls worldwide.



Advanced Motors & Drives

Advanced Motors & Drives designs and manufactures special purpose AC, DC and brushless DC motors for traction, pump and steering applications for battery operated vehicles. AMD is a leader in material handling, golf car, utility vehicle, scissor lift and wind markets.



Euclid Universal

Euclid Universal designs and builds gear drives for special applications to meet custom specification and performance requirements. Euclid develops custom engineered gearmotors, transmissions, and gearing for the floor care, medical/ mobility and loose gearing markets.



Scott DC Power Products

Scott DC Power Products designs and manufactures high output DC motors for the floor care market, hydraulic pump drive motors for industrial lift applications, and traction drive motors.



Kinetek Controls

Kinetek Controls specializes in application specific, custom motor control design and production. Kinetek Controls' markets include material handling, floor care, recreational vehicles, lift trucks, golf and other electric vehicles.



United States

Mexico

Imperial Electric

Motion Control Engineering
Rancho Cordova, California

VIS (Valmark Interface Solutions)
Livermore, California

Scott DC Power Products
Alamogordo, New Mexico

KDM
Monterrey, Mexico
Merkle-Korff SLP
San Luis Potosi, Mexico

Merkle-Korff Industries
Elk Grove Village, Illinois
Des Plaines, Illinois

Kinetek
Global Manufacturing

Kinetek product lines include AC, DC and brushless DC electric motors, pumps, gearing, gearboxes, fans, transaxles, human machine interface products (membrane switches, touch screens, turnkey HMI assemblies), electronic controls/ systems and end products.

MAJOR MARKETS

- Elevator
- Food Equipment
- Material Handling
- Electric Vehicle Transport
- Floor Care
- Pump
- Transport Refrigeration
- Medical Device



Elettromeccanica S.r.l.

FIR Group designs and manufactures custom made AC and brushless DC motors and pump motor packages for highly specialized industrial and commercial markets. TEA International, a member of the FIR group, serves the global building construction market with cable hoist and platform lift products.



Valmark Interface Solutions

Valmark Interface Solutions is an ISO 9001:2000 certified leader in the design and manufacture of custom human machine interface (HMI) products, incorporating sophisticated membrane switch assemblies, touch screens, graphic panel overlays, and a variety of custom industrial and commercial labeling and shielding products.



Merkle-Korff Industries

Merkle-Korff, founded in 1911, is a pioneer in the development of small motors and gear motors. Merkle-Korff's product line includes advanced brushless DC motors and gearmotors, PMDC planetary and PMDC right angle gearmotors, high efficiency PSC motors, and PMDC and AC parallel shaft gearmotors.



KJH

KJH (Kinetek Jinghe) is a leading shaft and gearing manufacturer. KJH's world class customers include Bosch, Panasonic and Kinetek. KJH markets include floor care & material handling, golf car/utility vehicle, power tools, appliance and automotive.



NKET (Nidec Kinetek Elevator Technology (Wuxi) Corporation) designs and manufactures elevator controls and complete elevator packages for China and International markets. NKET is a member of Nidec Kinetek's elevator group..

KDS

KDS (Kinetek De Sheng) maintains a strong position in China in several industries. KDS is an ISO-certified manufacturer of AC and DC motors, brushless DC motors, general purpose motors, gearboxes and end products.

Europe

China

Imperial Electric
Akron, Ohio

Euclid Universal
Solon, Ohio

Kinetek Controls
Perry, Ohio

Advanced Motors & Drives
Syracuse, New York

FIR Group
Casalmaggiore, Italy

KDS
Shunde, China

KJH
Guangzhou City, China

KMM
Changzhou, China

NKET
Wuxi, China

Efficiency in Motion



Imperial Electric
A Nidec Kinetek Company

nidec-ise.com

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Fax: (330) 734-3601
Email: sales@nidec-ise.com

East Coast Office

Phone: (908) 575-7950
Fax: (908) 575-7958

WARRANTY POLICY

New equipment is warranted to be free from defects in material and workmanship for one year from date of shipment from Imperial Electric Co.

Imperial Electric Co. will repair or replace defective equipment at its option and expense provided that prior to repair or replacement, defects are reported to and approved for disposition by the Akron office at the address listed above:

Attn: Elevator Warranty Claims

Notice of failure or defect must include job name, location, date of start-up, unit serial number, model number as listed on unit nameplate, kW/HP rating, and description of problem.

Imperial shall have the right to require the buyer to deliver the equipment to a designated service center and the buyer shall pay all inbound and outbound transportation and for services of any kind, diagnostic or otherwise, except the direct and actual cost of repair or replacement.

Equipment sold but not manufactured by the Imperial Electric Co. will be warranted as to defects in material and workmanship consistent with the warranty policy of the original manufacturer of the equipment.

The Imperial Electric Co.'s liability under this warranty or any other warranty whether expressed or implied in law or fact shall be limited to the repair or replacement of defective material and workmanship and in no event shall it be liable for consequential or indirect damages.

Failure to comply with the above policy places responsibility and cost of repair or replacement with others.

NOTE: The technical information in this product catalog has been reviewed and approved by Imperial Electric technical and engineering staff. Performance data and dimensions are for reference only and are subject to change. It is the responsibility of the purchaser to ensure that the specific data for the product they are purchasing is properly confirmed for their specific application. This analysis should be performed only by individuals with appropriate technical expertise related to elevator machines and motors. Contact Imperial Electric directly for certified data. Imperial Electric is not responsible for providing financial remedy for products that were incorrectly specified by the purchaser.