



# VERTICAL HOLLOW SHAFT MOTORS

## STANDARD EFFICIENCY

### THREE PHASE

Vertical Hollow Shaft Motors are designed primarily for deep well turbine pump application. The coupling is equipped with a non-reverse ratchet, which prevents motor rotation from backspin at shutdown.

These motors are built to NEMA standards and have special bearing arrangements to carry heavy thrust loads.



### STANDARD FEATURES

### APPLICATIONS

- Three-phase, IV pole, 60Hz
- Voltage:
  - 230/460V (up to 100HP)
  - 460V (60HP and up)
- Enclosure: Open weather-protected machine Type 1 to NEMA MG 1-1993 (WP-I)
- Cast iron construction
- Frames: 215TP up to 444TP
- Hi-Thrust Design
- Precision Balancing
- 104°F (40°C) ambient temperature
- Class 'F' insulation
- Class 'B' Temperature Rise @ 1.15
- Oversized angular contact bearing and ball bearing
- Large oil reservoir
- Hi-Torque
- VPI treatment
- Non-reverse coupling (ball type) included
- 230/460 suitable for PWS on 230V
- 460V suitable for PWS
- Thermal protected
- Space heater
- Liquid Pumping

### "TP" TYPE – STANDARD EFFICIENCY THREE PHASE

HP	RPM	NEMA Frame	Catalog Number	List Price	Mult. Sym.	Approx. Shipp. Weight Lbs	FL Amps 460V	FL Eff. %	"C" Dimension (in.)	Voltage	High Thrust (Lb.)	Notes
10	1800	215TP	01018OS3EHS215TP	2,486	P2	408	12.8	85.7	21.250	230/460V	2500	
15	1800	254TP	01518OS3EHS254TP	2,735	P2	474	18.6	87.3	26.750	230/460V	3200	
20	1800	256TP	02018OS3EHS256TP	3,148	P2	474	25.0	88.8	26.750	230/460V	3200	
25	1800	284TP	02518OS3EHS284TP	4,002	P2	650	30.1	89.2	28.130	230/460V	3200	
30	1800	286TP	03018OS3EHS286TP	4,318	P2	662	35.5	90.2	28.130	230/460V	3200	
40	1800	324TP	04018OS3EHS324TP	5,282	P2	838	49.6	91.2	33.000	230/460V	5500	
50	1800	326TP	05018OS3EHS326TP	5,953	P2	882	58.2	91.3	33.000	230/460V	5500	
60	1800	364TP	06018OS3EHS364TP	6,588	P2	1136	71.3	92.3	36.000	230/460V	5600	
	1800	364TP	06018OS3GHS364TP	6,588	P2	1136	71.3	92.3	36.000	460V	5600	
75	1800	365TP	07518OS3EHS365TP	8,205	P2	1180	87.7	92.3	36.000	230/460V	5600	
	1800	365TP	07518OS3GHS365TP	8,205	P2	1180	87.7	92.3	36.000	460V	5600	
100	1800	404TP	10018OS3EHS404TP	9,827	P2	1521	115	92.3	42.500	230/460V	6700	
	1800	404TP	10018OS3GHS404TP	9,827	P2	1521	115	92.3	42.500	460V	6700	
125	1800	405TP	12518OS3GHS405TP	10,247	P2	1588	146	93.2	42.500	460V	6700	
150	1800	444TP	15018OS3GHS444TP	12,263	P2	2139	170	93.3	47.700	460V	8000	
200	1800	445TP	20018OS3GHS445TP	18,956	P2	2249	226	93.8	47.700	460V	8000	
250	1800	445TP	25018OS3GHS445TP	22,089	P2	2359	278	93.8	47.700	460V	8000	

- ELECTRICAL FEATURES ON PAGE B-41.
- MECHANICAL FEATURES ON PAGE B-88.

FRACTIONAL HP

GENERAL PURPOSE

NEMA PREMIUM EFFICIENCY

CRUSHER® DUTY

IEC TRU-METRIC™

PUMP MOTORS

DEFINITE PURPOSE

ADD-ON™ MODIFICATIONS

MOTOR TECHNICAL DATA

DRIVES & SOFT STARTERS

CONTROLS

# P-BASE MOTORS



**Standard Efficiency**

## THREE PHASE

*HP and HPH types are available. These motors are suitable for dusty or moist environments and provide high starting torque, with efficient performance.*



**High Efficiency**

FRACTIONAL HP

GENERAL PURPOSE

NEMA PREMIUM EFFICIENCY

CRUSHER® DUTY

IEC TRU-METRIC™

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## APPLICATIONS

*Normal thrust in-line pump applications*

- Waste water treatment plants
- Petro chemical industries
- Pulp and paper mills
- Agricultural irrigation

## OPTIONAL FEATURES

- Cable glands
- Special voltages
- Space heaters
- Thermistor, Thermostats or RTD's (PT100)
- Additional terminal box
- Stainless steel shaft
- Design C for High Efficiency and NEMA Premium Efficiency
- Insulation class "H"
- 575V
- VI & VIII pole, 60Hz

## STANDARD FEATURES

- Three-phase, II, IV pole, 60Hz
- Voltage: 208-230/460, 460
- HP type: from frames 143HP up to 445HP
- HPH type: frames 284/6HPH and 404/5HPH
- Squirrel cage rotor / Aluminum die cast
- Totally Enclosed Fan Cooled - TEFC (IP55)
- V-ring slingers on both endshields
- Cast iron frame
- Ball bearings
- Class 'F' insulation for all frames
- Service factor for High Efficiency: 1.25 up to 100HP  
1.15 from 125HP and up
- Service Factor for Standard Efficiency: 1.15
- Temperature rise: Class 'B' (80°C)
- Continuous Duty (S1)
- 104°F (40°C) ambient temperature
- Altitude: 3300 ft (1000 m)
- 1045 carbon steel shaft
- Usual mounting: V1 - footless
- Stainless steel nameplate
- Paint: Enamel alkyd resin base
- Color: RAL 7022 - Dark Gray (Standard Efficiency)  
RAL 5007 - Blue (High Efficiency)
- NPT threaded terminal box
- Automatic drain plugs
- Regreasable bearings system (frames 254HP and up)
- Drip cover (canopy)

*NOTE: Motors are tested according to IEEE 112 std. - method 'B' or C390 CSA . High Efficiency motors are suitable for Inverter Duty.*





# P-BASE MOTORS

## HP & HPH TYPE – TEFC STANDARD EFFICIENCY



- FRACTIONAL HP
- GENERAL PURPOSE
- NEMA PREMIUM EFFICIENCY
- CRUSHER® DUTY
- IEC TRU-METRIC™
- PUMP MOTORS
- DEFINITE PURPOSE
- ADD-ON™ MODIFICATIONS
- MOTOR TECHNICAL DATA
- DRIVES & SOFT STARTERS
- CONTROLS

HP	RPM	NEMA Frame	Catalog Number	List Price	Mult. Sym.	Approx. Shipp. Weight Lbs	FL Amps 460V	FL Eff. %	"C" Dimension (in.)	Voltage	Notes
1	1800	143HP	00118ES3E143HP	375	P1F	40	1.51	78.0	13.421	208-230/460V	
	3600	143HP	00156ES3E143HP	390	P1F	40	2.04	78.0	13.421	208-230/460V	
1.5	1800	145HP	00158ES3E145HP	396	P1F	40	2.19	79.0	14.397	208-230/460V	
	3600	145HP	00236ES3E145HP	405	P1F	44	2.73	78.5	14.397	208-230/460V	
2	1800	145HP	00218ES3E145HP	436	P1F	52	2.93	82.5	14.397	208-230/460V	
	3600	145HP	00336ES3E145HP	548	P1F	49	4.04	81.5	14.397	208-230/460V	♣
3	3600	182HP	00336ES3E182HP	602	P1F	88	4.04	81.5	15.504	208-230/460V	
	1800	182HP	00318ES3E182HP	606	P1F	73	4.13	81.5	15.504	208-230/460V	
	3600	182HP	00536ES3E182HP	604	P1F	93	6.15	84.5	15.504	208-230/460V	♣
5	3600	184HP	00536ES3E184HP	721	P1F	97	6.15	84.5	16.504	208-230/460V	
	1800	182HP	00518ES3E182HP	723	P1F	106	6.50	85.0	15.504	208-230/460V	♣
	1800	184HP	00518ES3E184HP	786	P1F	106	6.50	85.0	16.504	208-230/460V	
	3600	184HP	00736ES3E184HP	908	P1F	99	9.15	86.7	16.504	208-230/460V	♣
7.5	3600	213HP	00736ES3E213HP	972	P1F	145	8.95	86.5	18.630	208-230/460V	
	1800	213HP	00718ES3E213HP	998	P1F	152	9.70	87.0	18.630	208-230/460V	
	3600	213HP	01036ES3E213HP	1,032	P1F	154	12.2	87.6	18.630	208-230/460V	
10	3600	215HP	01036ES3E215HP	1,044	P1F	156	12.2	87.6	20.126	208-230/460V	
	1800	213HP	01018ES3E213HP	1,062	P1F	150	12.8	89.0	18.630	208-230/460V	
	1800	215HP	01018ES3E215HP	1,148	P1F	150	12.8	89.0	20.126	208-230/460V	
	3600	215HP	01536ES3E215HP	1,311	P1F	172	17.7	87.8	20.126	208-230/460V	♣
15	3600	254HP	01536ES3E254HP	1,509	P1F	260	18.2	87.5	23.723	208-230/460V	
	1800	254HP	01518ES3E254HP	1,669	P1F	233	18.8	88.5	23.723	208-230/460V	
	3600	254HP	02036ES3E254HP	1,643	P1F	255	24.1	89.0	23.723	208-230/460V	♣
20	3600	256HP	02036ES3E256HP	1,796	P1F	269	24.1	89.0	25.455	208-230/460V	
	1800	256HP	02018ES3E256HP	1,824	P1F	277	25.2	90.2	25.455	208-230/460V	
	3600	256HP	02536ES3E256HP	2,133	P1F	271	29.5	89.5	25.455	208-230/460V	♣
25	3600	284HP	02536ES3E284HP	2,474	P1F	346	29.7	89.0	26.350	208-230/460V	
	3600	284HPH	02536ES3E284HPH	2,474	P1F	346	29.7	89.0	25.100	208-230/460V	
	1800	284HP	02518ES3E284HP	2,556	P1F	371	30.2	90.5	26.350	208-230/460V	
	1800	284HPH	02518ES3E284HPH	2,556	P1F	371	30.2	90.5	28.100	208-230/460V	
	3600	284HP	03036ES3E284HP	2,695	P1F	395	35.1	89.5	26.350	208-230/460V	♣
30	3600	286HP	03036ES3E286HP	2,772	P1F	399	35.1	89.5	27.845	208-230/460V	
	3600	286HPH	03036ES3E286HPH	2,772	P1F	399	35.1	89.5	29.595	208-230/460V	
	1800	286HP	03018ES3E286HP	2,730	P1F	393	36.1	91.0	27.845	208-230/460V	
	1800	286HPH	03018ES3E286HPH	2,730	P1F	393	36.1	91.0	29.595	208-230/460V	
	3600*	286HP	04036ES3E286HP	3,329	P1F	404	48.6	90.2	27.845	208-230/460V	♣
40	3600	324HP	04036ES3E324HP	3,584	P1F	515	47.4	90.4	30.403	208-230/460V	
	1800	324HP	04018ES3E324HP	3,476	P1F	506	48.3	91.7	30.403	208-230/460V	
	3600	324HP	05036ES3E324HP	3,899	P1F	563	57.0	92.2	30.403	208-230/460V	♣
50	3600	326HP	05036ES3E326HP	4,178	P1F	574	57.0	92.2	31.897	208-230/460V	
	1800	326HP	05018ES3E326HP	4,035	P1F	557	58.5	92.4	31.897	208-230/460V	
60	3600	326HP	06036ES3E326HP	5,533	P1F	640	70.5	92.0	31.897	208-230/460V	♣
	3600	364HP	06036ES3E364HP	6,147	P1F	948	68.5	91.7	33.684	208-230/460V	
	1800	326HP	06018ES3E326HP	6,074	P1F	640	72.0	92.5	31.897	208-230/460V	♣
	1800	364HP	06018ES3E364HP	6,966	P1F	948	70.0	93.0	33.684	208-230/460V	
75	3600	364HP	07536ES3E364HP	8,343	P1F	1058	83.0	92.4	33.684	208-230/460V	♣
	3600	365HP	07536ES3E365HP	8,654	P1F	1058	83.0	92.4	33.684	208-230/460V	
	1800	365HP	07518ES3E365HP	7,362	P1F	1025	84.5	93.0	33.684	208-230/460V	
100	3600	404HP	10036ES3E404HP	8,819	P1F	1180	111	93.0	36.674	208-230/460V	♣
	3600	404HP	10036ES3G404HP	8,819	P1F	1180	111	93.0	36.674	460V	♣
	1800	405HP	10018ES3E405HP	8,762	P1F	1302	116	93.2	36.674	208-230/460V	
	1800	405HP	10018ES3G405HP	8,762	P1F	1302	116	93.2	36.674	460V	
	1800	405HPH	10018ES3E405HPH	8,762	P1F	1302	116	93.2	36.674	208-230/460V	
	1800	405HPH	10018ES3G405HPH	8,762	P1F	1302	116	93.2	36.674	460V	

• ELECTRICAL FEATURES ON PAGE B-42. • MECHANICAL FEATURES ON PAGE B-91-B-89.

♣ = Reduced Frame

# P-BASE MOTORS



## HP & HPH TYPE – TEFC – STANDARD EFFICIENCY

HP	RPM	NEMA Frame	Catalog Number	List Price	Mult. Sym.	Approx. Shipp. Weight Lbs	FL Amps 460V	FL Eff. %	"C" Dimension (in.)	Voltage	Notes
125	3600	444HP	12536ES3G444HP	14,261	P1F	1797	138	93.0	40.012	460V	
	1800	444HP	12518ES3G444HP	12,450	P1F	1742	141	93.2	40.012	460V	
150	3600	445HP	15036ES3G445HP	16,283	P1F	1797	165	93.3	40.012	460V	
	1800	445HP	15018ES3G445HP	14,162	P1F	1940	170	93.5	40.012	460V	

- ELECTRICAL FEATURES ON PAGE B-42.
- MECHANICAL FEATURES ON PAGE B-89.

## HP & HPH TYPE – TEFC – HIGH EFFICIENCY

HP	RPM	NEMA Frame	Catalog Number	List Price	Mult. Sym.	Approx. Shipp. Weight Lbs	FL Amps 460V	FL Eff. %	"C" Dimension (in.)	Voltage	Notes
1	1800	143HP	00118EP3E143HP	503	P1F	47	1.49	82.5	13.421	208-230/460V	
1.5	3600	143HP	00156EP3E143HP	546	P1F	45	1.99	82.5	13.421	208-230/460V	
	1800	145HP	00158EP3E145HP	529	P1F	54	2.05	84.0	14.397	208-230/460V	
2	3600	145HP	00236EP3E145HP	553	P1F	47	2.60	84.0	14.397	208-230/460V	
	1800	145HP	00218EP3E145HP	583	P1F	56	2.70	84.0	14.397	208-230/460V	
3	3600	145HP	00336EP3E145HP	822	P1F	54	3.71	85.5	14.397	208-230/460V	♣
	3600	182HP	00336EP3E182HP	881	P1F	106	3.59	85.5	15.504	208-230/460V	
	1800	182HP	00318EP3E182HP	879	P1F	97	3.90	87.5	15.504	208-230/460V	
5	3600	184HP	00536EP3E184HP	1,032	P1F	114	5.90	87.5	16.504	208-230/460V	
	1800	184HP	00518EP3E184HP	995	P1F	102	6.48	87.5	16.504	208-230/460V	
7.5	3600	184HP	00736EP3E184HP	1,268	P1F	128	8.76	88.5	16.504	208-230/460V	♣
	3600	213HP	00736EP3E213HP	1,371	P1F	150	8.66	88.5	18.630	208-230/460V	
	1800	213HP	00718EP3E213HP	1,306	P1F	150	9.53	89.5	18.630	208-230/460V	
10	3600	215HP	01036EP3E215HP	1,645	P1F	150	11.7	89.5	20.126	208-230/460V	
	1800	215HP	01018EP3E215HP	1,563	P1F	165	12.8	90.2	20.126	208-230/460V	
15	3600	215HP	01536EP3E215HP	2,133	P1F	174	17.3	90.2	20.126	208-230/460V	♣
	3600	254HP	01536EP3E254HP	2,345	P1F	280	17.0	90.2	23.723	208-230/460V	
	1800	254HP	01518EP3E254HP	2,346	P1F	266	17.9	91.0	23.723	208-230/460V	
20	3600	254HP	02036EP3E254HP	2,608	P1F	304	23.3	90.2	23.723	208-230/460V	♣
	3600	256HP	02036EP3E256HP	2,814	P1F	313	23.3	90.2	25.455	208-230/460V	
	1800	256HP	02018EP3E256HP	2,591	P1F	313	24.4	91.0	25.455	208-230/460V	
25	3600	256HP	02536EP3E256HP	3,177	P1F	313	28.4	91.0	25.455	208-230/460V	♣
	3600	284HP	02536EP3E284HP	3,454	P1F	353	29.0	91.0	26.350	208-230/460V	
	3600	284HPH	02536EP3E284HPH	3,454	P1F	353	29.0	91.0	28.100	208-230/460V	
	1800	284HP	02518EP3E284HP	3,451	P1F	437	29.6	92.4	26.350	208-230/460V	
	1800	284HPH	02518EP3E284HPH	3,451	P1F	437	29.6	92.4	28.100	208-230/460V	
30	3600	284HP	03036EP3E284HP	3,848	P1F	399	33.8	91.0	26.350	208-230/460V	♣
	3600	286HP	03036EP3E286HP	4,157	P1F	404	33.8	91.0	27.845	208-230/460V	
	3600	286HPH	03036EP3E286HPH	4,157	P1F	404	33.8	91.0	29.595	208-230/460V	
	1800	286HP	03018EP3E286HP	3,778	P1F	481	34.4	92.4	27.845	208-230/460V	
	1800	286HPH	03018EP3E286HPH	3,778	P1F	481	34.4	92.4	29.595	208-230/460V	
40	3600	286HP	04036EP3E286HP	4,914	P1F	448	46.6	91.7	27.845	208-230/460V	♣
	3600	324HP	04036EP3E324HP	5,197	P1F	561	46.1	91.7	30.403	208-230/460V	
	1800	324HP	04018EP3E324HP	4,997	P1F	587	47.6	93.0	30.403	208-230/460V	

- ELECTRICAL FEATURES ON PAGE B-43.
- MECHANICAL FEATURES ON PAGE B-89.
- ♣ = Reduced Frame

FRACTIONAL HP

GENERAL PURPOSE

NEMA PREMIUM EFFICIENCY

CRUSHER® DUTY

IEC TRU-METRIC™

PUMP MOTORS

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DRIVES & SOFT STARTERS

CONTROLS



## HP & HPH TYPE – TEFC HIGH EFFICIENCY

HP	RPM	NEMA Frame	Catalog Number	List Price	Mult. Sym.	Approx. Shipp. Weight Lbs	FL Amps 460V	FL Eff. %	"C" Dimension (in.)	Voltage	Notes
50	3600	324HP	05036EP3E324HP	6,153	P1F	565	56.5	92.4	30.403	208-230/460V	♣
	3600	326HP	05036EP3E326HP	6,363	P1F	594	56.5	92.4	31.897	208-230/460V	
	1800	326HP	05018EP3E326HP	5,723	P1F	640	57.8	93.6	31.897	208-230/460V	
60	3600	326HP	06036EP3E326HP	8,221	P1F	594	69.0	93.0	31.897	208-230/460V	♣
	3600	364HP	06036EP3E364HP	9,032	P1F	917	69.0	93.0	33.684	208-230/460V	
	1800	326HP	06018EP3E326HP	7,641	P1F	640	71.0	93.6	31.897	208-230/460V	♣
75	1800	364HP	06018EP3E364HP	8,119	P1F	963	67.0	93.6	33.684	208-230/460V	
	3600	365HP	07536EP3E365HP	10,454	P1F	1025	82.5	93.0	33.684	208-230/460V	
100	1800	365HP	07518EP3E365HP	8,907	P1F	1010	82.4	94.1	33.684	208-230/460V	
	3600	405HP	10036EP3E405HP	12,293	P1F	1361	113	93.6	36.674	208-230/460V	
	3600	405HP	10036EP3G405HP	12,293	P1F	1361	113	93.6	36.674	460V	
	3600	405HPH	10036EP3E405HPH	12,293	P1F	1361	113	93.6	36.674	208-230/460V	
	3600	405HPH	10036EP3G405HPH	12,293	P1F	1361	113	93.6	36.674	460V	
	1800	405HP	10018EP3E405HP	10,688	P1F	1273	115	94.5	36.674	208-230/460V	
	1800	405HP	10018EP3G405HP	10,688	P1F	1273	115	94.5	36.674	460V	
	1800	405HPH	10018EP3E405HPH	10,688	P1F	1273	115	94.5	36.674	208-230/460V	
125	1800	405HPH	10018EP3G405HPH	10,688	P1F	1273	115	94.5	36.674	460V	
	3600	444HP	12536EP3G444HP	17,113	P1F	1801	131	94.5	40.012	460V	
150	1800	444HP	12518EP3G444HP	14,940	P1F	1647	138	94.5	40.012	460V	
	3600	445HP	15036EP3G445HP	19,540	P1F	1865	160	94.5	40.012	460V	
	1800	445HP	15018EP3G445HP	16,995	P1F	1841	168	95.0	40.012	460V	

- ELECTRICAL FEATURES ON PAGE B-43.
- MECHANICAL FEATURES ON PAGE B-89.
- ♣ = Reduced Frame

FRACTIONAL HP

GENERAL PURPOSE

NEMA PREMIUM EFFICIENCY

CRUSHER® DUTY

IEC TRU-METRIC™

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