

# PRODUCT NOTE

## MODEL : AMRCHS



HIGH THRUST HOLLOWSHAFT PUMP MOTORS  
 LOW VOLTAGE SQUIRREL CAGE  
 FRAME SIZE (SSV) 444TP ~ 449TP

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APPD.	B.LIN	2018.9.14	<b>TECO Electric &amp; Machinery Co., Ltd.</b>	DWG NO.	3A057M249E
CHKD.	H.Y.WANG	2018.9.14		REV. 00	1/1
DWN.	H.F.KUO	2018.9.14			

ISSUED SEP. 14 2018	<b>SPECIFICATION TABLE</b> <b>HIGH THRUST HOLLOWSHAFT PUMP MOTORS</b> <b>LOW VOLTAGE SQUIRREL CAGE</b>	MODEL <b>AMRCHS</b>
REVISED		

ITEM		STANDARD SPECIFICATION
RATING	KIND OF MOTOR	SQUIRREL-CAGE INDUCTION MOTOR (SCIM), VHS, ODP/WPI
	DESIGN STANDARD	NEMA MG-1, EPAct EFFICIENCY, Fire Pump (Special Use Category)
	VOLTAGE	460V, CAPABLE OF RUNNING ON 380V 50Hz
	FREQUENCY	60Hz, DUAL RATED NAMEPLATE AND FULL HP AT 50Hz @ 1.0 S.F.
	OUTPUT RANGE	100 ~ 400HP
	R.P.M. (SYN.)	1800 ~ 1200R.P.M. (4 ~ 6 POLE)
	TIME DUTY	CONTINUOUS S.F. 1.15 OR S.F. 1.0 ( S1, MCR )
	FRAME SIZE (SSV)	444TP ~ 449TP
	PROTECTION ENCLOSURE	OPEN, DRIP PROOF (IP23), NEMA WEATHER-PROTECTED TYPE I(WPI)
	COOLING METHOD	SELF VENTILATED, INTERIOR COOLING (IC 01)
	MOUNTING	FLANGE MOUNTING ( IM3011 )
HIGH THRUST LOAD	AS DWG NO. 3A057M251E	
APPLICATION	POWER CONDITION	VOLTAGE : ±10%, FREQUENCY ±5%, AND 10% MAX. OF COMBINED VOLTAGE AND FREQUENCY
	DESIGNED PRIMARILY	DEEP WELL TURBINE PUMP
	ENVIRONMENT CONDITIONS	PLACE : SHADOW, NON-HAZARDOUS AMBIENT TEMPERATURE : -15 ~ 40°C RELATIVE HUMIDITY : LESS THAN 80% RH (NON-CONDENSATION) ALTITUDE : LESS THAN 3,300 FT
	DRIVE METHOD	DIRECT COUPLING
	DIRECTION OF ROTATION	COUNTER-CLOCK-WISE FACING THE COUPLING END
	METHOD OF STARTING	FULL VOLTAGE DIRECT-ON-LINE OR WYE-DELTA START OR VFD
CONSTRUCTION	DIMENSIONS	AS DWG NO. 4B049R662E
	FRAME	HIGH GRADE CAST IRON
	FLANGE BRACKET	HIGH GRADE CAST IRON, DIMENSIONS AS NEMA MG1-18.238.1
	UPPER BRACKET	HIGH GRADE CAST IRON, INCLUDING OIL TANK
	INTERNAL FAN	INTEGRALLY CAST ALUMINUM BLADES
	SHAFT	HOLLOW TYPE,CARBON STEEL,INNER BORE DIAMETER (XG) AS FLLOWS: F#444~445TP: 2.047" (52mm), F#445TP20, F#447~449TP: 2.559" (65mm)
	COUPLINGS	AS DWG NO. 4B049M679E, AS NEMA MG1-18.238.2
	THRUST BEARING (UPPER)	OVERSIZED ANGULAR CONTACT THRUST BEARING
	GUIDE BEARING (LOWER)	BRACKET MOUNTING,VACUUM DE-GASSED HIGH QUALITY DEEP-GROOVE BALL BEARING WITH REGREASE PROVISION

APPD.	B.LIN	SEP. 14 2018	<b>TECO Electric &amp; Machinery Co., Ltd.</b>	DWG NO.	<b>3A057M250E</b>
CHKD.	H.Y.WANG	SEP. 14 2018		REV.00	
DWN.	H.F.KUO	SEP. 14 2018		1/2	

ITEM		STANDARD SPECIFICATION
C O N S T R U C T I O N	STEADY BUSHING(OPTIONAL)	AS DWG NO. 4B049M680E, MADE FROM BRONZE WITH SET SCREWS.
	LUBRICANT	THRUST BEARING : TURBINE OIL WHICH VISCOSITY IS 300 S.S.U. AT 100°F GUIDE BEARING : MINERAL OIL, POLYUREA-THICKENED GREASE (MOBIL POLYREX EM GREASE)
	SHAFT OPENNING SHIELD	SPRING LOADED LIP SEAL (VITON) AT BRACKET END
	TERMINAL HOUSING	CAST IRON, LARGER SIZE , THREADED FOR EXTERNAL CONDUIT ENTRANCE
	LEAD TERMINAL	6 LEADS, WITH SOLDERLESS LUG TERMINALS
	IRON CORE	HIGH GRADE, C5 COATING OR ABOVE, COLD-ROLLED ELECTRO-MAGNETIC STEEL PLATE
	STATOR WINDING	PRE-FORMED RANDOM WOUND, MADE OF HIGH PULSE ENDURANCE INDEX WIRE, CIV TESTED TO 2000V/0.1US ; PER NEMA MG-1 PART31
	STATOR INSULATION	CLASS F INSULATION SYSTEM
	VARNISH TREATMENT	2-DIP PHENOLIC ALKYD RESIN VARNISH AND 1-SPRAY ENAMEL TOP COAT, 2 DIPS AND BAKES
	ROTOR WINDING	SQUIRREL-CAGE, ALUMINUM CONDUCTOR WITH END-RING AND WAFER BLADES INTEGRALLY CAST
	PAINTING	EPOXY RUST PROOF BASE, PLUS POLYURETHANE SURFACE FINISH PAINTING IN BLUE-GRAY COLOR (MUNSELL 7.5B 3.5/0.5)
	NAMEPLATE	STAINLESS STEEL PLATE
	BOLT THREAD	ISO METRIC SYSTEM
	GROUNDING TERMINAL	BE SET INSIDE OF TERMINAL HOUSING AND ON THE FRMAE
P E R F O R M A N C E	TEST PROCEDURE	IEEE-112 METHOD-B AND FULL VOLTAGE MEASURING STARTING PERFORMANCE FOR MOTORS 300HP AND UNDER. IEEE-112 METHOD E-F AND REDUCED VOLTAGE MEASURING STARTING PERFORMANCE FOR THE OTHERS
	TYPICAL PERFORMANCE	AS DWG NO. 3A057M251E
	TEMPERATURE RISE	NOT TO EXCEED 105°C FOR S.F. 1.15 OR 80°C FOR S.F. 1.0 BY RESISTANCE METHOD
	OVER SPEED	200HP AND SMALLER: 125% SYN. R.P.M. FOR TWO MIN. (4P), 150% SYN. R.P.M. FOR TWO MIN. (6P) 201HP AND LARGER: 125% SYN. R.P.M. FOR TWO MIN.(4P & SLOWER)
	OVER TORQUE	160% RATED TORQUE FOR 15 SEC

ISSUED SEP. 14 2018	<b>PERFORMANCE DATA</b> <b>HIGH THRUST HOLLOWSHAFT PUMP MOTORS</b> <b>LOW VOLTAGE SQUIRREL CAGE</b>	MODEL <b>AMRCHS</b>
REVISED		

DP, NEMA , DESIGN B , CODE G, CLASS F, 40°C AMBIENT,  
CONTINUOUS DUTY, 1.15 S.F. 460V 60HZ

TYPICAL PERFORMANCE

(460V)

HP	FULL LOAD RPM	FRAME SIZE (SSV)	EFFICIENCY (%)				POWER FACTOR			CURRENT		TORQUE				ROTOR WR <sup>2</sup> lb-ft <sup>2</sup>	NEMA CODE LETTER	DOWN THRUST LBS	APPROX. WEIGHT LBS
			FULL LOAD		3/4 LOAD	1/2 LOAD	FULL LOAD	3/4 LOAD	1/2 LOAD	FULL LOAD	LOCKED ROTOR	FULL LOAD	LOCKED ROTOR	PULL UP	BREAK- DOWN				
			NOM.	MIN.	NOM.	NOM.	%	%	%	A	A	lb-ft	%FLT	%FLT	%FLT				
100	1187	444TP	94.1	93.0	93.4	92.9	81.4	77.1	66.5	122	725	440	125	115	230	45	G	12000	1730
125	1185	445TP	94.1	93.0	93.4	92.9	81.4	77.2	66.7	153	908	550	125	115	230	53	G	11900	1770
150	1781	444TP	95.0	94.1	94.3	93.5	86.2	83.9	76.5	172	1085	440	100	120	220	35	G	10700	1830
	1184	445TP	94.5	93.6	93.8	93.5	84.2	82.4	74.8	177	1085	660	125	115	230	67	G	11800	1890
200	1779	445TP	95.0	94.1	94.3	93.5	86.2	84.0	76.7	229	1450	590	135	120	220	45	G	10700	1900
	1187	447TP	94.5	93.6	93.8	93.5	81.3	76.3	65.8	244	1450	880	135	115	240	101	G	14900	2610
250	1780	445TP20	95.4	94.5	94.8	94.0	86.2	84.0	76.9	285	1825	730	135	120	220	54	G	13400	2330
	1188	449TP	95.4	94.5	94.8	93.5	83.8	79.9	70.9	293	1825	1100	135	115	240	146	G	14700	2800
300	1781	447TP	95.4	94.5	94.8	94.0	86.8	84.5	77.5	339	2372	880	135	120	240	66	G	13400	2590
350	1782	447TP	95.4	94.5	94.8	94.0	86.9	84.2	76.8	395	2768	1030	135	120	240	78	G	13300	2730
400	1783	449TP	95.4	94.5	94.8	94.0	88.2	84.9	80.4	445	3163	1180	135	120	240	89	G	13200	3000

NOTE : 1. THE ABOVE ARE TYPICAL VALUES BASED ON TEST ACCORDING TO ANSI/IEEE STANDARD 112 METHOD F.

2. BREAKDOWN & LOCKED ROTOR TORQUES ARE SHOWN AS AVERAGE EXPECTED VALUES.

3. DECLARED EFFICIENCY HAVEN'T TAKEN INTO ACCOUNT OF THRUST LOAD LOSSES

4. THRUST LOAD LOSSES ESTIMATED AS FOLLOWS : ( ACCORDING TO NEMA STANDARD MG1-12.08 )

FRAME SIZE	LOSS HP /100 RPM RPM/1000 LB THRUST
444TP - 445TP	0.0134
445TP20 - 447TP - 449TP	0.0145

5. REDUCING THE THRUST LOAD WILL INCREASE BEARING LIFE AS FOLLOWS :

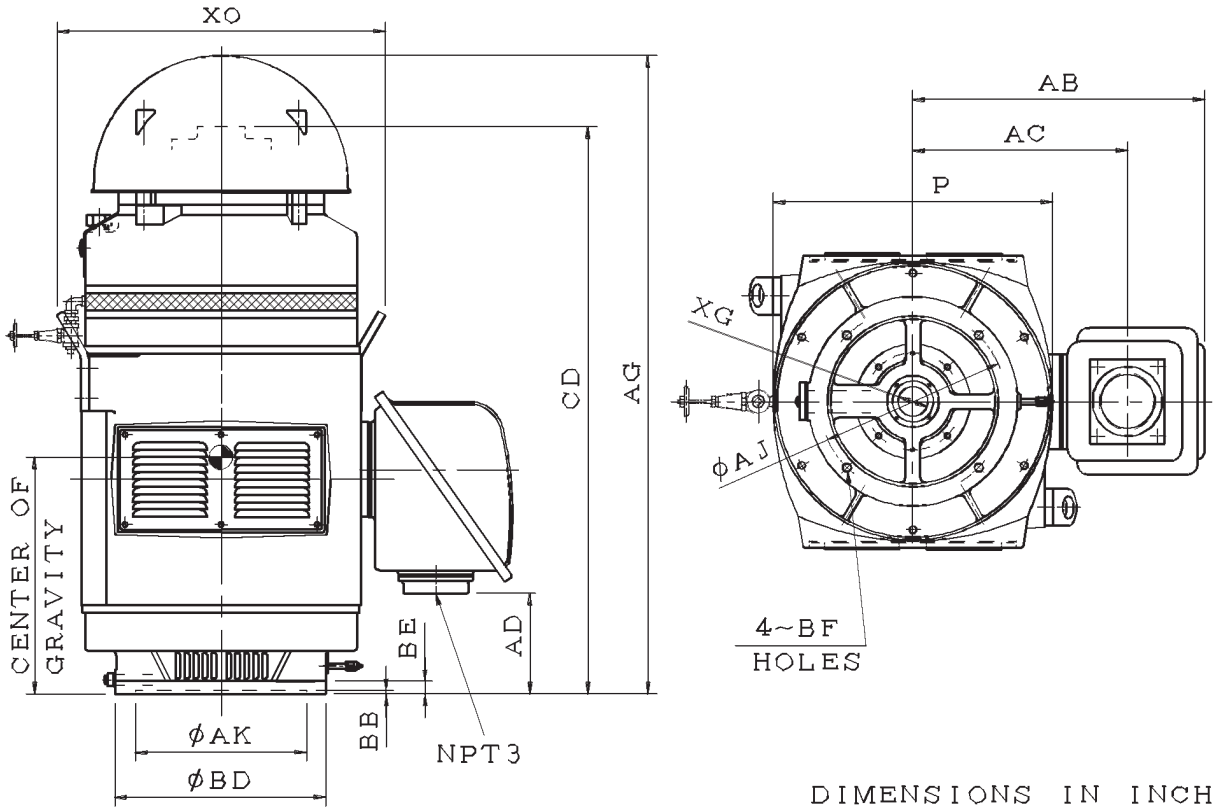
THUST(%)	100	85	77	67	61	57
MIN. LIFE(Hrs)	8800	15000	20000	30000	40000	50000

6. DATA SUBJECT TO CHANGE WITHOUT NOTICE

APPD.	B.LIN	SEP. 14 2018	<b>TECO Electric &amp; Machinery Co., Ltd.</b>	DWG NO.
CHKD.	H.Y.WANG	SEP. 14 2018		<b>3A057M251E</b>
DWN.	H.F.KUO	SEP. 14 2018		REV.00 1/1

ISSUED AUG. 02 2018	OUTLINE DIMENSIONS SHEET	MODEL AMRCHS
REVISED	HIGH THRUST HOLLOWSHAFT PUMP MOTORS FRAME SIZE (SSV) 444TP ~ 449TP	

DRIP PROOF SQUIRREL CAGE, NEMA WEATHER PROTECTED I



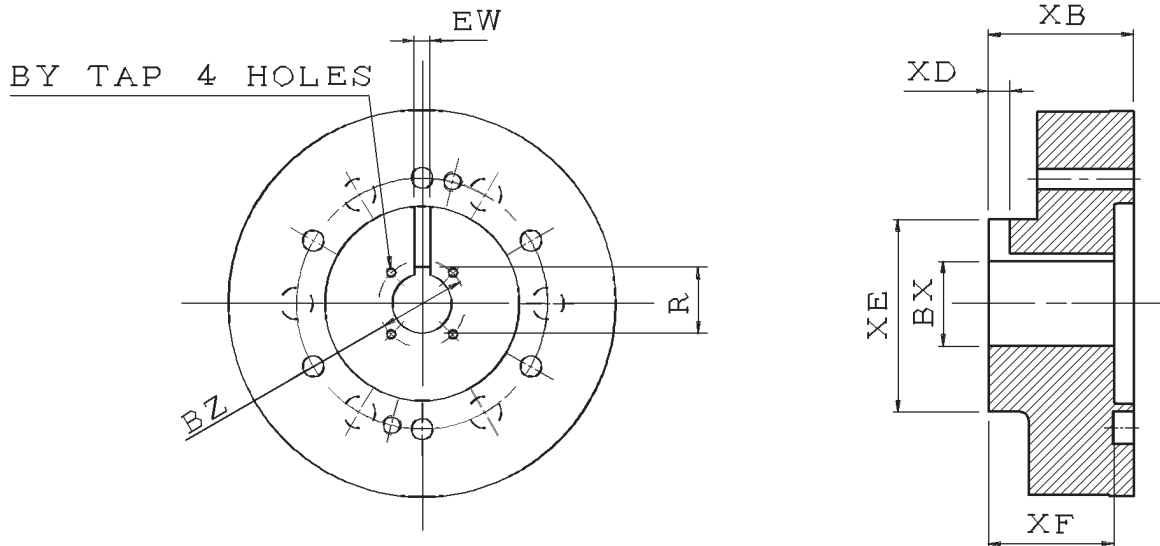
OUTPUT (HP)		FRAME SIZE (SSV)	MOUNTING						CD
4P	6P		AK	AJ	BD	BF	BB	BE	
150	100	444TP	13.50	14.75	16.50	0.69	0.25	1.00	44.78
200	125, 150	445TP	13.50	14.75	16.50	0.69	0.25	1.00	44.78
250	—	445TP20	13.50	14.75	20.00	0.69	0.25	1.00	44.78
300, 350	200, 250	447TP	13.50	14.75	20.00	0.69	0.25	1.00	49.78
400	—	449TP	13.50	14.75	20.00	0.69	0.25	1.00	53.91

FRAME SIZE (SSV)	XG	AG	XO	P	TERMINAL HOUSING			BEARINGS		CENTER OF GRAVITY
					AB	AC	AD	UPPER END	LOWER END	
444TP	2.047	50.40	26.00	22.05	23.05	16.95	7.95	7324B	6316C3	17.91
445TP	2.047	50.40	26.00	22.05	23.05	16.95	7.95	7324B	6316C3	17.91
445TP20	2.559	50.80	27.55	24.00	24.00	17.90	6.65	7326B	6318C3	17.40
447TP	2.559	55.80	27.55	24.00	24.00	17.90	8.95	7326B	6318C3	20.24
449TP	2.559	59.93	27.55	24.00	24.00	17.90	11.05	7326B	6318C3	22.60

- NOTE: 1. DIMENSION AK TOLERANCE: +0.005 INCH, -0.000 INCH  
2. FOR COUPLING AS DWG NO. 4B049M679E  
3. WITH BALL TYPE NON-REVERSE RATCHET MECHANISM  
4. ROTATING DIRECTION: COUNTER CLOCK-WISE (VIEW FROM COUPLING END)

APPD.	B. LIN	AUG. 02 2018	<b>TECO Electric &amp; Machinery Co., Ltd.</b>	DWG NO.
CHKD.	Y. LEE	AUG. 02 2018		4B049R662E
DWN.	B. LEE	AUG. 02 2018		REV.00

ISSUED JAN. 16 2010	OUTLINE DIMENSIONS SHEET	MODEL AMRCHS
REVISED AUG. 02 2018	DRIVE COUPLING FOR HOLLOWSHAFT PUMP MOTOR FRAME SIZE (SSV) 444TP ~ 449TP	



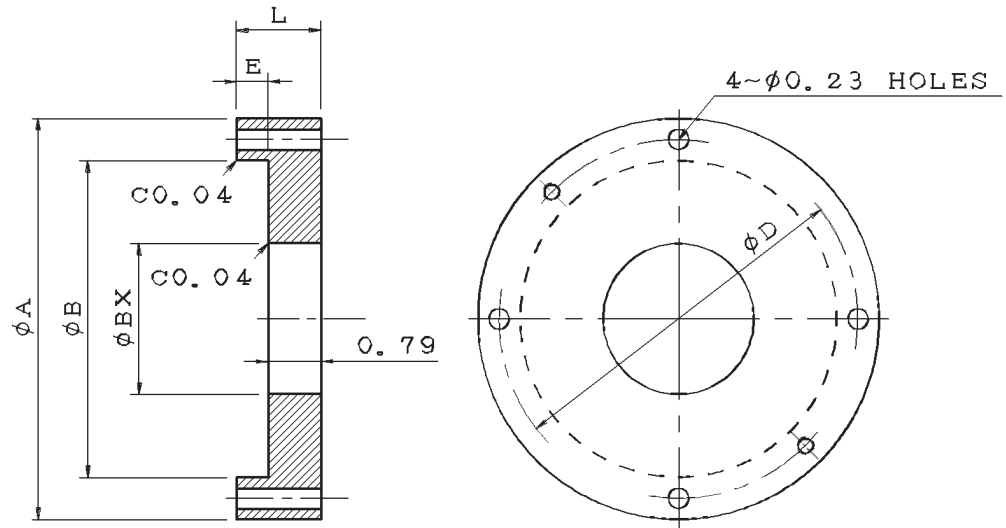
DIMENSIONS IN INCHES

FRAME SIZE	BX	BY	BZ	EW	R	XB	XD	XE	XF
444TP 445TP	1.501	1/4-20	2.125	0.375	1.669	3.169	0.531	3.740	2.875
445TP20	1.501	1/4-20	2.125	0.375	1.669	3.559	0.531	4.724	3.071
447TP	1.688	1/4-20	2.500	0.375	1.859				
449TP	1.938	1/4-20	2.500	0.500	2.160	3.559	0.689	4.724	3.071

NOTE: 1. TOLERANCE ON BX DIMENSION AS FOLLOWS UP TO 1.500 INCHES: +0.001INCH, -0.000INCH  
LARGER THAN 1.500 INCHES: +0.0015INCH, -0.000INCH  
2. DIMENSION EW TOLERANCE: +0.002INCH, -0.000INCH  
3. DIMENSION R TOLERANCE: +0.010INCH, -0.000INCH

APPD.	M. HSU	OCT. 08 2018	<b>TECO Electric &amp; Machinery Co., Ltd.</b>	DWG NO.	4B049M679E
CHKD.	G. SHIH	OCT. 08 2018		REV.03	
DWN.	J. HSIAO	OCT. 08 2018			

ISSUED AUG. 02 2018	OUTLINE DIMENSIONS SHEET	MODEL AMRCHS
REVISED	STEADY BUSH FOR HOLLOW SHAFT PUMP MOTOR FRAME SIZE (SSV) 444TP ~ 449TP	



DIMENSIONS IN INCHES

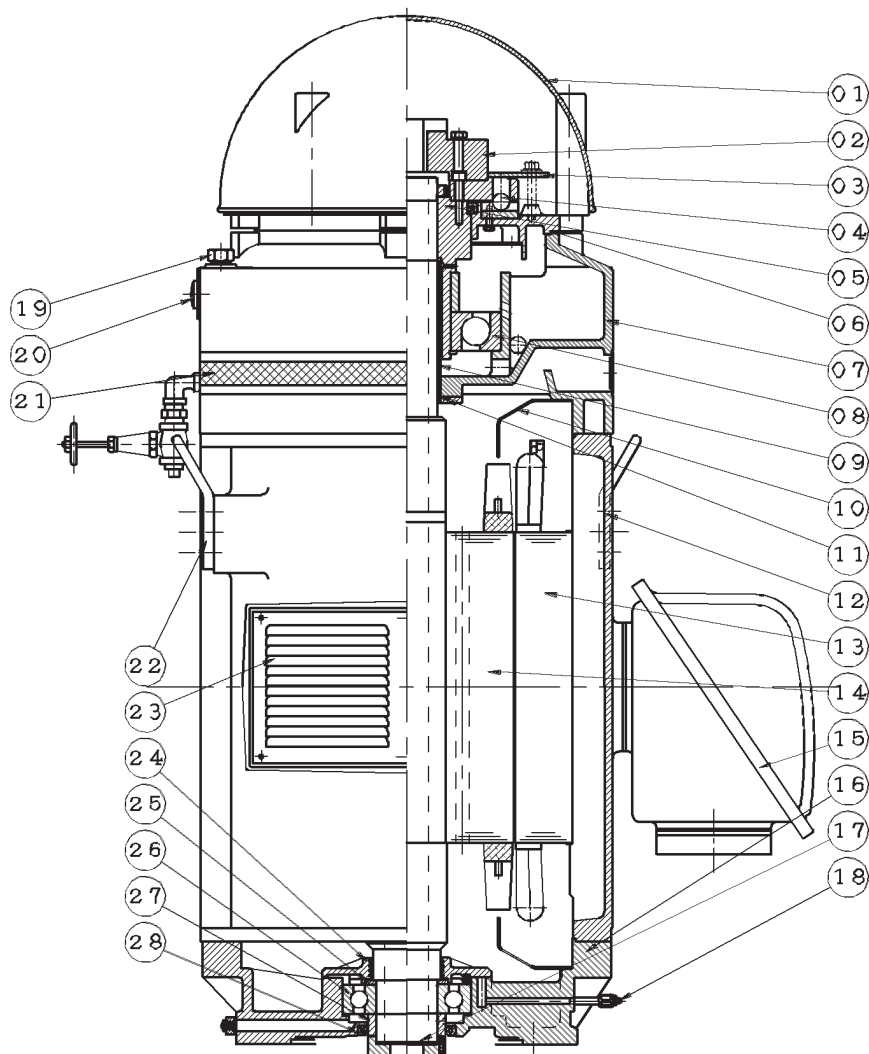
FRAME SIZE	BX	A	B	D	E	L
444TP 445TP	1.501	4.09	3.15	3.62	0.31	1.10
445TP20	1.501	4.49	3.54	4.02	0.47	1.26
447TP	1.688	4.49	3.54	4.02	0.47	1.26
449TP	1.938	4.49	3.54	4.02	0.47	1.26

NOTE: 1. TOLERANCE ON BX DIMENSION AS FOLLOWS UP TO 1.500 INCHES:  $+0.001$  INCH,  $-0.000$  INCH  
LARGER THAN 1.500 INCHES:  $+0.0015$  INCH,  $-0.000$  INCH

APPD.	B. LIN	AUG. 02 2018	<b>TECO Electric &amp; Machinery Co., Ltd.</b>	DWG NO.
CHKD.	Y. LEE	AUG. 02 2018		4B049M664E
DWN.	B. LEE	AUG. 02 2018		REV.00

ISSUED AUG. 02 2018	SCHEMATIC DRAWING	MODEL AMRCHS
REVISED	HIGH THRUST HOLLOWSHAFT PUMP MOTORS FRAME SIZE (SSV) 444TP~449TP	

DRIP PROOF SQUIRREL CAGE, NEMA WEATHER PROTECTED I



ITEM	NAME	ITEM	NAME
01	VERTICAL SPLASH COVER	15	TERMINAL BOX ASSY
02	COUPLING	16	FLANGE BRACKET
03	COVER	17	SHAFT
04	RATCHET BALL	18	GREASE NIPPLE
05	BEARING SEAT	19	PLUG
06	RATCHET	20	OIL GAUGE
07	BRACKET	21	WINDOW COVER
08	BEARING	22	HOOK
09	OIL SEPARATOR	23	WINDOW
10	AIR GUIDE	24	BEARING COVER—INNER
11	O RING	25	STOP RING—BEARING
12	FRAME	26	BEARING
13	STATOR	27	GREASE FLINGER
14	ROTOR	28	SPRING LOADED LIP SEAL(VITON)

APPD.	B. LIN	AUG. 02 2018	<b>TECO Electric &amp; Machinery Co., Ltd.</b>	DWG NO.	4B049R666E
CHKD.	Y. LEE	AUG. 02 2018		REV.00	
DWN.	B. LEE	AUG. 02 2018			