TCI / TCP SERIES / CAST IRON THREE PHASE

0.75kW to 315kW – Frame 80 to 355

Techtop's TCI/TCP cast iron series motors combine superior electrical characteristics, high quality design and the robust strength of cast iron, making this series ideal for all industrial applications.

Operating parameters
Standard TCI/TCP series motors are designed with the following parameters:

- 380V to 415V, 50Hz & 440V to 480V, 60Hz supply
- Continuous (S1) duty
- Ambient temperatures up to 40°C
- Installation up to 1000 MASL

Connection

- 230V Delta / 400V Star (3kW & below)
- 400V Delta / 690V Star (4kW & above)

Standards
Dimensions and rated outputs for the TCI/TCP series conform to Australian Standard AS/NZS 1359 and International Standards IEC 60034 and IEC 60072.

Standard & High Efficiency
The TCI range complies with MEPS2 requirements of AS/NZS 1359.5:2004 Table A2 **(Standard Efficiency)**. The TCP range complies with MEPS2 requirements of AS/NZS 1359.5:2004 Table A3 **(High Efficiency)**. Motors are tested in accordance with Test Method A of AS/NZS 1359.102.3 as per IEC 60034-2-1.

Insulation class
TCI/TCP motors are insulated with Class F materials and limited to Class B temperature rise. The windings are spike resistant making them suitable for use with VVVF drives.

Thermistors
As standard all TCI/TCP series motors from 160 frame and above are fitted with one set of PTC thermistors. The thermistor termination is located in the main terminal box and has a trip temperature of 150°C as standard. Additional 130°C thermistors can be fitted as an option for alarm connection. Thermistors are available as an option for smaller frame sizes.

IP Protection
The standard degree of enclosure protection is IP 55 (increased IP protection is available). Shafts are fitted with an oil seal as standard.

Multi-mount design
TCI/TCP series motors from frame size 80 to 280 are fitted with detachable feet. The multi-mount design allows for the motor feet to be removed and repositioned to either side to produce a side mounted terminal box.

Terminal box
The terminal box is manufactured from cast iron and is mounted on top of the motor as standard. Terminal box is separate to the motor body and can be rotated in 90° increments.

Surface Finish
As standard TCI/TCP motors are painted with high quality alkyd enamel with the final colour being RAL 9005 Jet Black. Other colours are available upon request.

Bearings
Bearings fitted are high quality NSK bearings with C3 diametrical clearances. As standard, frame sizes 80 to 132 have sealed for life deep groove ball bearings. Frame sizes 160 to 355 have re-greaseable bearings with facilities to replenish the grease during operation. Grease nipples are fitted to the top of the end shields with a grease relief fitted at the bottom.

Frame size	Bearing	
Cast Iron	D.E.	N.D.E
80	6204 ZZ C3	
90	6205 ZZ C3	
100	6206 ZZ C3	
112	6306 ZZ C3	
132	6308 ZZ C3	
160	6309 C3	
180	6311 C3	
200	6312 C3	
225	6313 C3	
250	6314 C3	
280	6316 C3	
315 (2P)	6317 C3	
315 (4/6/8)	NU319 C3	6319 C3
355 (2P)	6319 C3	
355 (4/6/8)	NU322 C3	6322 C3

Part Number Logic
Detailed below is the part number logic which should be specified when placing orders. The part number is composed in accordance with the following example:

T	C	4	B	0 2 2	5	TCI	
1	2	3	4	5 - 7	8	9 - 12	13

Position 1
T = Techtop

Position 2
A = Aluminium
C = Cast Iron

Position 3
2 = 2 Pole
4 = 4 Pole
6 = 6 Pole
8 = 8 Pole

Position 4
A = less than 0.99kW
B = 1.0kW to 9.9kW
C = 10.0kW to 99.9kW
D = 100kW to 999kW

Position 5 to 7
Output kW

Position 8
Mounting position
1 = V1
3 = B3
4 = B3/5
5 = B5
6 = B3/B14A
7 = B14A
8 = B3/B14B
9 = B14B

Position 9 to 12
TCI = Cast iron Std Eff.
TCP = Cast iron Hi-Eff.
TCIM = Cast iron Mine Spec.

Position 13
H = Class H insulation

Vibration
Vibration levels are within Level N (normal) limits of vibration severity as per IEC 60034 – 14:2007 which are listed below:

Vibration Grade	Frame size	56 - 132	160 - 280	315 - 355
	Mounting Type	(mm/s)	(mm/s)	(mm/s)
A	Suspension	1.5	2.2	2.8
	Rigid Mount	1.3	1.8	2.3

Conduit Entries

Frame Size	Entry Size	Number of Entries
80	M20 x 1.5	2
90	M20 x 1.5	2
100	M20 x 1.5	2
112	M25 x 1.5	2
132	M25 x 1.5	2
160*	M32 x 1.5	2
180*	M32 x 1.5	2
200*	M50 x 1.5	2
225*	M50 x 1.5	2
250*	M50 x 1.5	2
280*	M50 x 1.5	2
315*	M63 x 1.5	2
355*	M63 x 1.5	2

*Frames fitted with 1 X M20 cable gland for thermistor termination.

Noise Level
Noise levels comply with the limits shown in IEC 60034.9 and AS1359.109 standards.

Output kW	Sound pressure dB(A) @ 1 metre no load			
	2 Pole	4 Pole	6 Pole	8 Pole
0.75	64	60	58	55
1.1	64	60	59	55
1.5	68	60	59	55
2.2	68	62	59	55
3	71	62	63	58
4	71	66	63	58
5.5	69	63	58	58
7.5	69	63	61	58
11	75	67	61	58
15	75	67	61	61
18.5	75	67	63	66
22	75	67	63	66
30	75	70	66	66
37	75	70	66	66
45	75	70	66	66
55	77	70	66	69
75	78	73	73	69
90	78	73	73	69
110	80	77	73	69
132	80	77	73	79
160	80	77	82	79
200	80	77	82	79
250	86	84	82	-
315	86	84	-	-

GREASE

TCI bearings are lubricated with polyurea (Mobil Polyrex EM) based bearing grease suitable for operation in ambient temperatures from -20°C to +55°C. Bearings are prepacked with grease but it is recommended to lubricate the bearings one hour after commissioning.

RECOMMENDED BEARING MAINTENANCE

Frame	Bearing	Grease Qty (g)	Interval Hours			
			2P	4P	6P	8P
160	6309 C3	15	6,600	11,000	14,000	16,200
180	6311 C3	18	6,100	10,600	14,000	15,250
200	6312 C3	20	5,200	10,200	14,100	15,000
225	6313 C3	25	4,900	9,600	13,600	15,000
250	6314 C3	38	2,600	9,200	13,200	14,600
280	6316 C3	42	2,100	9,000	12,800	14,000
315 (2P)	6317 C3	44	2,000	–	–	–
315 (4/6/8)	NU/6319 C3	48	–	6,400	9,300	12,000
355 (2P)	6319 C3	48	1,900	–	–	–
355 (4/6/8)	NU/6322 C3	68	–	4,400	8,300	11,000

RADIAL & AXIAL LOADS

The table below details the permissible force that can be applied to the motor shaft and are applicable for horizontal mounting only. The values shown are calculated on a basic bearing life of L_{10} of 40,000 hours.

Frame size	Permissible Radial Load (N)				Permissible Axial Load (N)			
	2 Pole	4 Pole	6 Pole	8 Pole	2 Pole	4 Pole	6 Pole	8 Pole
80	470	595	690	750	395	540	655	635
90	485	625	720	785	420	570	685	690
100	710	890	1,035	1,150	570	780	940	1,075
112	950	1,240	1,420	1,580	790	1,085	1,310	1,520
132	1,420	1,820	2,100	2,325	1,160	1,590	1,915	2,210
160	1,800	2,350	2,720	3,040	1,480	2,035	2,450	2,810
180	2,490	3,200	3,780	4,215	1,990	2,710	3,270	3,760
200	2,915	3,750	4,350	4,835	2,225	3,065	3,710	4,235
225	3,270	4,000	4,700	5,210	2,460	3,390	4,130	4,750
250	3,590	4,650	5,400	5,980	2,725	3,780	4,575	5,225
280	3,700	8,100	9,375	10,300	3,280	4,560	5,590	6,375
315 (2P)	4,500	-	-	-	3,825	-	-	-
315 (4/6/8)	-	15,800	17,950	19,750	-	4,855	5,895	6,780
355 (2P)	4,560	-	-	-	3,980	-	-	-
355 (4/6/8)	-	22,145	25,360	27,890	-	6,135	7,395	8,555