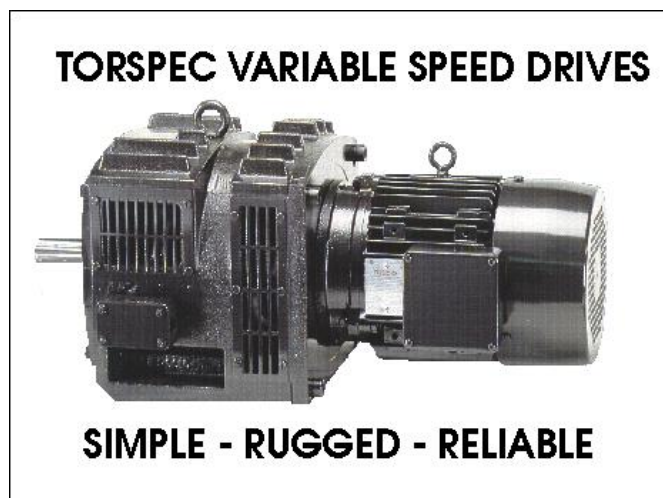


TORSPEC™ VARIABLE SPEED DRIVE

INSTALLATION AND MAINTENANCE INSTRUCTIONS TORSPEC MODEL 180TCD-NEMA



WARNING

Disconnect all incoming power before working on this equipment.

Follow power lockout procedures.

Use extreme caution around electrical equipment.

Do not touch the circuit board while power is applied.

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Manufacturers & Suppliers of World Class Quality Variable Speed Drives & Controls

TORSPEC MODEL 180TCD-NEMA DISMANTLING INSTRUCTIONS

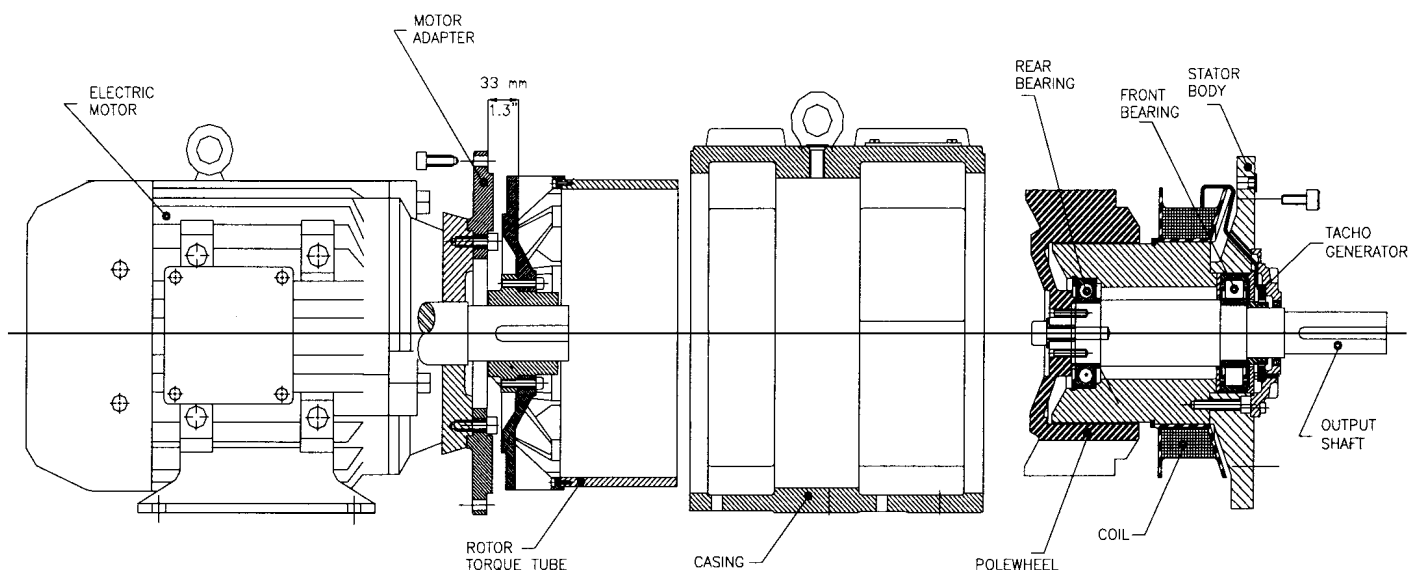
CAUTION - BE SURE TO DISCONNECT POWER AND FOLLOW LOCK--OUT PROCEDURES AS SPECIFIED BY LAW **BEFORE** OPENING ANY TERMINAL BOXES OR TOUCHING ANY WIRING.

- D1: Open terminal box and disconnect drive wires. **EXTREME CAUTION** should be exercised with the small wires going to the tach generator, as they can be easily broken.
Hint: (Look for broken wires, or poor connections.)
- D2: Remove four bolts holding output assembly to main casing. Remove output assembly while feeding wires through the hole, once the wires are free, the output assembly can be completely removed.
Hint: (Look for physical damage, remove any build up of foreign material on polewheel which could cause binding. Binding will cause the drive to run at full speed when the motor is started even if the clutch is turned off.)
- D3: The polewheel is removed by removing the bolt in the center that is attaching it to the output shaft and inserting a larger 14mm bolt to push it off.
- D4: The coil is held in place by a circlip at the back and silicone sealant at the front. After removing the circlip it is necessary to use a thin blade to break the sealant between the coil form and the front of the output assembly. **Care must be used, the former is breakable.**
Hint: (Look for physical damage, signs of overheating, coil should be 20 to 40 ohms depending on size. Low resistance will cause the control fuses to blow, too high will result in poor performance.)
- D5: To separate the coil and tach wires cut the waxed string and **carefully** slide the rubber tube off. If the tach is being replaced, a string or small wire tied to the old tach wires before removing can be used to assist in pulling in the new wires.
Hint: (Look for broken wires, tach should be 220 ohms, a bad tach will cause the drive to run at full speed when the controller is energized.)
- D6: Remove the tach cover plate and tach stator. The tach armature is held in place by two grub screws and can be pulled off once loosened
Hint: (Look for broken magnetic strip, this will give the same symptoms as a bad tach.)
- D7: Remove the bearing retaining plate and remove the shaft out of the assembly from the polewheel side by pressing on the tach side of the shaft.
- D8: The ball bearing and front roller bearing inner race can now be pulled off.
- D9: Remove the motor adapter flange from the main casing. Remove the 6 cap head screws holding the torque tube assembly to the hub on the motor shaft. Two grub screws hold the hub on the shaft, be sure to remove these grub screws completely as one is counter sunk into the shaft.
Hint: (Look for pitting and/or lifting of the copper lining on the torque tube, this is what transmits the power and damage here will cause the drive to be short of power)

TORSPEC MODEL 180TCD-NEMA ASSEMBLY INSTRUCTIONS

USE A THREAD LOCKING COMPOUND ON ALL BOLTS

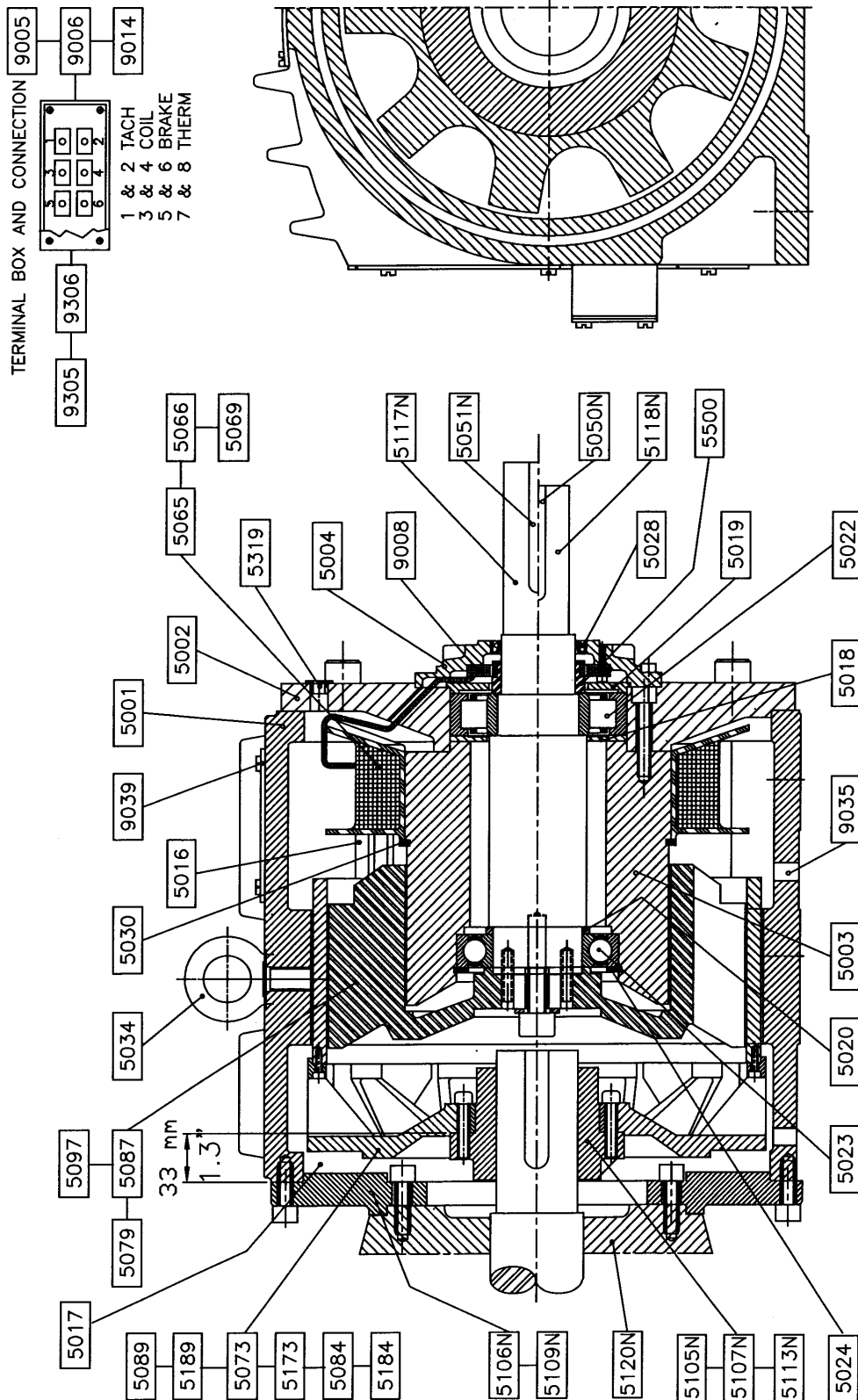
- A1: If the motor is being replaced it will be necessary to dimple the shaft in the same location as the original motor. ***This location is critical for proper alignment.*** Use an anti-seize compound on the shaft. Mount the torque tube hub with one of the grub screws in the dimple
- A2: Mount the motor adapter flange onto the motor flange with the flat on the bottom. Mount the torque tube on the hub. Bolt the motor assembly onto the main casing.
- A3: Mount the pre-greased outer roller bearing into the output assembly. Press the inner race onto the shaft. Press the pre-greased ball bearing onto the back of the shaft; be sure to press on the inner race only. Insert the shaft assembly into the output assembly from the polewheel side by pressing on the inner and outer rear bearing.
- A4: Mount the armature onto the shaft and tighten both grub screws. Feed the tach wires through the hole in the output assembly and slide the tach stator plate over the shaft and bolt to the output assembly. **Be sure not to pinch the tach wires.**
- A5: Apply silicone rubber to the front of the main coil and push the coil onto the output assembly. Install the coil circlip. Push the tach wires, then the coil wires into the rubber sleeving. Tie off with a piece of waxed string.
- A6: Bolt the polewheel onto the shaft ensuring the spring pins are in place and the polewheel completely seats.
- A7: Insert the output assembly into the casing while feeding the wires through the hole. Bolt into place on main casing.



TORSPEC 180TCD-N PARTS LIST

PART NO.	DESCRIPTION
5050N	KEYSTOCK 254/256TC 3/8" SQUARE X 2-7/8" CODE S3
5151N	KEYSTOCK 284/286TC 1/2" SQUARE X 3-1/4" CODE S2
5105N	ROTOR HUB 213/215TC 1-3/8" FIXED BY M8X16 CONE POINT GRUB SCREW, 1-M8X16 CUP POINT GRUB SCREW CODE D2
5106N	MOTOR ADAPTER 213/215/254/256TC FIXED BY 6-M10X40 SOCKET HD. CAP CODE D2
5107N	ROTOR HUB 254/256TC 1-5/8" FIXED BY 1 M8X16 CONE POINT GRUB SCREW, 1-M8X16 CUP POINT GRUB SCREW CODE D2
5109N	MOTOR ADAPTER 284/286TC FIXED BY 6-M10X50 SOCKET HD. CAP CODE D2
5113N	ROTOR HUB 284/286TC 1-7/8" FIXED BY 1-M8X16 CONE POINT GRUB SCREW, 1-M8X16 CUP POINT GRUB SCREW CODE D2
5115N	OUTPUT FLANGE 254/256TC FIXED BY 6-M12X45 SOCKET HD. CAP
5116N	OUTPUT FLANGE 284/286TC FIXED BY 6-M12X45 SOCKET HD. CAP
5117N	OUTPUT SHAFT 284/286TC 1-7/8" CODE S2
5118N	OUTPUT SHAFT 254/256TC 1 5/8" CODE S3
5120N	NEMA MOTOR SEE MOTOR NAMEPLATE FOR DETAILS FIXED BY 254/256TC = 1/2" X 1 1/4" HEX HD. CAP II 284/285TC = 1/2" X 1 1/2" HEX HD. CAP
5324N	INPUT ASSY. NEMA CODE K2
5001	CASING
5002	STATOR FLANGE FIXED BY 5-M10X50 SOCKET HD. CAP, 4-M16X40 HEX. HD. BOLTS
5003	STATOR BODY FIXED BY 5-M10X150 SOCKET HD. CAP
5004	TACH GENERATOR HOUSING FIXED BY 6-M6X20 SOCKET HD. CAP
5016	GRILLES SMALL INLET FIXED BY 4-M5X8 PAN HD. SLOTTED
5017	GRILLES LARGE OUTLET FIXED BY 6-M5X8 PAN HD. SLOTTED
5018	INNER SEAL PLATE FRONT BEARING
5019	OUTER SEAL PLATE FRONT BEARING
5020	REAR BEARING SPACER
5022	BEARING FRONT NU311
5023	BEARING REAR 6212Z FIXED BY PART NO. 5024
5024	REAR BEARING CIRCLIP
5028	OIL SEAL 50X65X8
5030	COIL RETAINING RING
5034	EYEBOLT M16
5065	HP COIL FOR 4/15HP, 4/20, 2/25HP FIXED BY PART NO. 5030 CODES H10, H20, N1, N2
5066	HP COIL FOR 4/30HP FIXED BY PART NO. 5030 CODES H10, H20, N1, N2
5069	HP COIL FOR 4/25HP, 2/40HP, 2/50 FIXED BY PART NO. 5030 CODES H10, H20, N1, N2
5073	TORQUE TUBE/ROTOR ASSY. 4 POLE FIXED BY 6-M8X40 SOCKET HD. CAP
5079	POLEWHEEL STD. FIXED BY 1-M12X50 SOCKET HD. CAP, 1-M12 FLAT WASHER, 4-M8X36 SLOTTED SPRING PINS
5087	POLEWHEEL REDUCER FIXED BY 1-M12X50 SOCKET HD. CAP, 1-M12 FLAT WASHER, 4-M8X36 SLOTTED SPRING PINS CODE R
5097K	POLEWH. RED. WITH AXIAL BLADES FIXED AS P/N 5079
5073	TORQUE TUBE/ROTOR ASSY. 4 POLE FIXED BY 6-M8X40 SOCKET HD. CAP
5173	TORQUE TUBE / ROTOR ASSY 4-POLE FIXED BY 6-M8X40 SOCKET HD CAP (NICKEL PLATED)
5089	TORQUE TUBE/ROTOR ASSY. 2 POLE FIXED BY 6-M8X40 SOCKET HD. CAP
5189	TORQUE TUBE/ROTOR ASSY. 2 POLE FIXED BY 6-M8X40 SOCKET HD. CAP (NICKEL PLATED)
5084	TORQUE TUBE/ ROTOR ASSY. FAN TUBE FIXED BY 6-M8 SOCKET DH. CAP
5184	TORQUE TUBE/ ROTOR ASSY. FAN TUBE FIXED BY 6-M8 SOCKET DH. CAP (NICKEL PLATED)
5302	TOTALLY ENCLOSED COVERS LEFT HAND FIXED BY 5-M5X16 SOCKET HD CAP CODES T1, T2
5303	TOTALLY ENCLOSED COVERS RIGHT HAND RIXED BY 5-M5X16 SOCKET HD. CAP CODES T1, T2
5319	PLASTIC PLUGS 6- # 8 CODES T1, H10, N1
5500	TACH ARMATURE FIXED BY 2-M5X8 CONE POINT GRUB SCREWS
5501	HOSEPROOF COVERS SMALL INLET FIXED BY 4-M5X60 STUD. CAP CODES N1, N2
5502	BAFFLES FOR PART NO. 5501 CODES N1, N2
5503	HOSEPROOF COVERS LARGE OUTLET FIXED BY 4-M5X60 STUD. CAP CODES N1, N2
5504	BAFFLES FOR PART NO. 5503 CODES N1, N2
9005	TERMINAL BOX FIXED BY 4-M5X60 STUD, 4-M5 RUBBER WASHERS, 4-M5 FLAT WASHERS, 4-M5 LOCKNUT
9006	TERMINAL BOX LID X2
9008	TACH GENERATOR ASSY. FIXED BY 4-M4X16 SOCKET HD. CAP, 4-M4 FLAT WASHER
9014	TERMINAL BOX GASKET X3 FOR CODES H10, H20, N1, N2, T1, T2
9035	PLASTIC PLUG 1- #12 CODES T1, T2
9038	OIL SEAL 30X47X7 CODES F1, F2
9039	NAMEPLATE FIXED BY 4-6X1/4 TAPPING SCREWS
9305	TERMINAL BLOCK 4 WAY FIXED BY 1-M5X12 SOCKET HD. CAP
9306	TERMINAL BLOCK 6 WAY FIXED BY 1-M5X12 SOCKET HD CAP CODES B? Y?

TORSPEC MODEL 180TCD-N PARTS DIAGRAM



NOTES:
NOT SHOWN:
5115N OUTPUT FLANGE
5116N OUTPUT FLANGE
5324N INPUT ASSEMBLY
5302.03 TOTALLY ENCLOSED COVERS
5501, 02, 03, 04 DEBRIS COVERS

TORSPEC™ INTERNATIONAL INC.	180TCD CLUTCH UNIT - N.E.M.A. BASIC UNIT - FOOT MOUNTED	
	File: Instr_180/ 180assyN	March/02

DRIVE FEET MOUNTING PROCEDURE

- F1: Push slotted Shims under the Coupling lowest mounting feet and moderately tighten the Bolts
- F2: Align the unit. Insert Feeler Gauges under the remaining feet during the alignment process to level the unit.
- F3: Replace feeler gauges with equal thickness of slotted Shims. Use a few thick shims rather than a large number of thin shims.
- F4: Alternately tighten Bolts.
- F5: Recheck alignment and change shims as required.
- F6: Push slotted Shims under AC Motor mounting feet and moderately tighten the bolts.

Note:

-The decision to mount (bolt) the Motor feet should be based on the application dynamics. (I.e. vibration/support). It is not always necessary to mount the motor feet and is specifically motor size related.

-When Drives are purchased on base, base must also be leveled and secured.

Warning:

Failure to properly mount and level drive unit may result in distortion to the drive housing, torque tube, mechanical failure, misalignment, and premature bearing wear.

V-BELT DRIVE

- Sheaves should be installed on the shaft before mounting the unit.
- Do not pound sheaves on shaft as you may damage drive bearings.
- Align sheaves carefully to avoid axial thrust on drive bearings.
- The sheave on drive shaft should be positioned as close as possible toward the drive bearing.
- Sheaves and belts should be in accordance to NEMA Spec. MG-1.
- When adjusting belt tension, make sure the drive (clutch) is secured by all mounting bolts before tightening belts.
- Adjust belt tension to belt manufacturer recommendations. Excessive tension will decrease bearing life.