THE PROBLEM

For many years, the power transmission industry has struggled with the problems of mounting components to shafts. The "industry standard", the keyed mounting, has a number of widely acknowledged limitations. The process of cutting keyways into the shaft is time-consuming, tedious and permanent. There's little chance to adjust timing or synchronise a drive, and cutting the keyway or slot reduces the strength of the shaft.

In addition, the stress of stopping, starting and transmitting power under high torque can induce fretting corrosion and cracking that can ultimately result in unit failure. Even the smallest discrepancies in the fit between the hub and the shaft will increase fretting corrosion and wear and cause premature failure of the mounting. Poor fit will also allow "backlash" during rapid stops.

It's not surprising, then, that many manufacturers have eliminated keyway problems and switched to TRANTORQUE GT.

SOLVING THE PROBLEM

TRANTORQUE GT is the solution to the problems of keyed mountings – a keyless bushing ideal for critical timing and high-torque applications. TRANTORQUE GT is a single-nut locking bushing with interlocking components that ensure positive release.

Easy to install, TRANTORQUE GT requires no special machining or cutting of keyways. It can be easily adjusted or removed, and allows the kind of infinite positioning that's critical for precise timing and synchronisation.

Because it functions as a mechanical shrink fit, there is no movement between the holding device and the shaft, thus eliminating the problems of fretting corrosion, backlash and key wallowing.

HOW IT WORKS

TRANTORQUE GT is a three-piece bushing consisting of an inner collet-like element, an outer sleeve and a nut that controls them. The inner and outer elements have matching, opposite tapers. As a result, when the nut is turned, the unit expands within the component *and* contracts onto the shaft, offering high torque ratings and excellent concentricity – within 0,025mm FIM.

With fewer component parts, Trantorque GT offers significant installation advantages, reducing downtime and operating costs. The single GT nut can be torqued-up in seconds...

ADVANTAGES TRANTORQUE GT

Eliminate Keys, Keyways, Setscrews

Eliminate costly matching with inexpensive Trantorque GT mounts. They grip like a shrink-fit on shaft and bore, and resist shocks and torque reversals better than keyways. Single-nut design self-centres accurately, locks or unlocks with the twist of a wrench.

Infinite, Precise Radial Adjustment

The positive lock and release action permits exact initial positioning with easy readjustment at a later date. This is not possible with fixed keyed connections.

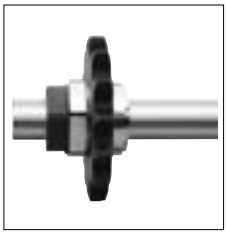
Use Smaller Shafts

Eliminate the weak spot in shafts and hubs caused by machining keyways. This, plus the rigidising effect, permits smaller and less expensive shafts and bearings with equal strength and stiffness.

Retrofit and Repair

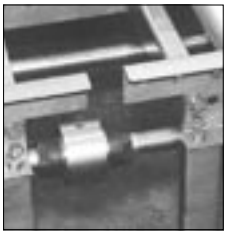
Can be used directly over empty keyways to repair a worn or damaged connection. Both metric and Imperial units are available making it easy to quickly return machinery to service.

Mount Hubless Devices

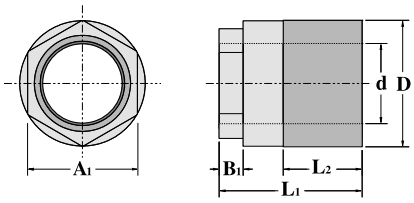


Trantorque GT mounts are unique in their ability to mount thin hubless devices. They need not be completely within the bore. This permits mounting plate sprockets, hubless gears, disc brakes, etc. – often at substantial savings to the user or OEM.

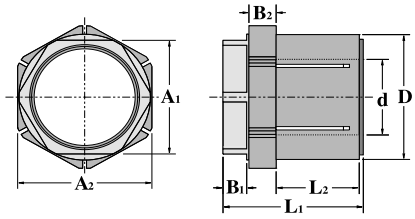
Speed Prototype Development



Easy installation, adjustment and removal permit great freedom and flexibility in new-product development. Trantorque mounts can be removed and reinstalled many times...a major advantage on prototype or final product.



Trantorque Mini Series



Trantorque GT

METRIC STOCK RANGE

		DIMENSIONS								PERFORMANCE			NUT TORQUE	
	PRODUCT CODES	d	D	L_1	L_2	A_1	A_2	B_1	B_2	Max Transmissible Torque Nm	Thrust kgf	Hub Pressure N/cm²	Nm	Approximate Mass kg
MINIATURE SERIES TRANTORQUE	184A0105	5	16.0	19.0	9.5	13	–	3.0	–	12	323	3585	14	0.014
	184A0106	6	16.0	19.0	9.5	13	–	3.0	–	16	349	3585	14	0.014
	184B0108	8	19.0	22.0	11.0	16	–	3.0	–	23	405	2550	17	0.028
	184B0109	9	19.0	22.0	11.0	16	–	3.0	–	26	414	2550	17	0.028
	184C0110	10	22.5	25.5	12.5	19	–	5.0	–	30	423	1860	20	0.042
	184C0111	11	22.5	25.5	12.5	19	–	5.0	–	34	430	1860	20	0.042
	184C0112	12	22.5	25.5	12.5	19	–	5.0	–	39	439	1860	20	0.042
	184D0114	14	25.5	28.5	16.0	22	–	5.0	–	44	449	1240	23	0.056
	184D0115	15	25.5	28.5	16.0	22	–	5.0	–	45	451	1240	23	0.056
	184D0116	16	25.5	28.5	16.0	22	–	5.0	–	50	459	1240	23	0.056
STANDARD SERIES TRANTORQUE GT	184E0115	15	38.0	38.0	19.0	32	38.0	8.0	8.0	180	1366	7600	136	0.230
	184E0116	16	38.0	38.0	19.0	32	38.0	8.0	8.0	198	1500	7600	136	0.230
	184E0118	18	38.0	38.0	19.0	32	38.0	8.0	8.0	265	1835	7600	136	0.230
	184E0119	19	38.0	38.0	19.0	32	38.0	8.0	8.0	282	2000	7600	136	0.230
	184F0120	20	45.0	47.5	21.5	38	44.5	11.0	9.5	290	2140	6500	170	0.310
	184F0122	22	45.0	47.5	21.5	38	44.5	11.0	9.5	315	2446	6500	170	0.310
	184F0124	24	45.0	47.5	21.5	38	44.5	11.0	9.5	380	2752	6500	170	0.310
	184F0125	25	45.0	47.5	21.5	38	44.5	11.0	9.5	390	2956	6500	170	0.310
	184G0128	28	51.0	57.0	25.5	46	51.0	13.0	14.5	495	3262	5400	225	0.450
	184G0130	30	51.0	57.0	25.5	46	51.0	13.0	14.5	580	3568	5400	225	0.450
	184G0132	32	51.0	57.0	25.5	46	51.0	13.0	14.5	680	3874	5400	225	0.450
	184H0134	34	60.5	70.0	38.0	50	60.3	14.0	13.0	710	4077	4500	260	0.770
	184H0135	35	60.5	70.0	38.0	50	60.3	14.0	13.0	725	4281	4500	260	0.770
	184H0136	36	60.5	70.0	38.0	50	60.3	14.0	13.0	750	4485	4500	260	0.770
	184H0138	38	60.5	70.0	38.0	50	60.3	14.0	13.0	790	4791	4500	260	0.770
	184J0140	40	67.0	79.5	43.0	60	67.0	14.5	17.5	900	5097	3800	315	1.050
	184J0142	42	67.0	79.5	43.0	60	67.0	14.5	17.5	1000	5043	3800	315	1.050
	184K0145	45	73.0	90.5	51.0	65	73.0	16.0	19.0	1170	5912	2900	550	1.360
	184K0148	48	73.0	90.5	51.0	65	73.0	16.0	19.0	1356	6422	2900	550	1.360
	184K0150	50	73.0	90.5	51.0	65	73.0	16.0	19.0	1515	6728	2900	550	1.360
LARGE SERIES TRANTORQUE GT	184L0155	55	80.0	95.0	54.0	70	79.4	16.0	20.5	1650	6932	2400	600	2.130
	184M0160	60	86.0	98.5	57.0	75	85.7	17.5	19.0	1745	7034	2000	635	2.270
	184N0165	65	92.0	103.0	60.5	82	92.0	17.5	20.5	1830	7136	1700	680	2.680
	184N0170	70	92.0	103.0	60.5	82	92.0	17.5	20.5	1920	7238	1700	680	2.680
	184P0175	75	100.0	108.0	63.5	90	98.5	19.0	20.5	2000	7339	1600	750	2.720

INCH STOCK RANGE

		DIMENSIONS								PERFORMANCE			NUT TORQUE	
	PRODUCT CODES	d	D	L_1	L_2	A_1	A_2	B_1	B_2	Max Transmissible Torque Nm	Thrust kgf	Hub Resource N/cm²	Nm	Approximate Mass kg
MINIATURE SERIES TRANTORQUE	184A0604	1/4"	5/8"	3/4"	3/8"	1/2"	–	1/8"	–	17.0	358	3585	14.1	0.014
	184B0606	3/8"	3/4"	7/8"	7/16"	5/8"	–	1/8"	–	28.0	418	2550	17.0	0.028
	184C0608	1/2"	7/8"	1"	1/2"	3/4"	–	3/16"	–	39.5	445	1857	19.8	0.042
	184D0610	5/8"	1"	1 1/8"	5/8"	7/8"	–	3/16"	–	50.0	453	1240	22.6	0.056
STANDARD SERIES TRANTORQUE GT	184E0610	5/8"	1 1/2"	1 1/2"	3/4"	1 1/4"	1 1/2"	5/16"	5/16"	198.0	1497	7586	136.0	0.230
	184E0612	3/4"	1 1/2"	1 1/2"	3/4"	1 1/4"	1 1/2"	5/16"	5/16"	282.0	1996	7586	136.0	0.230
	184F0614	7/8"	1 3/4"	1 7/8"	7/8"	1 1/2"	1 3/4"	7/16"	3/8"	316.0	2495	6480	170.0	0.310
	184F0616	1"	1 3/4"	1 7/8"	7/8"	1 1/2"	1 3/4"	7/16"	3/8"	395.0	2994	6480	170.0	0.310
	184G0620	1 1/4"	2"	2 1/4"	1"	1 3/4"	2"	1/2"	9/16"	678.0	3856	5380	225.0	0.450
	184H0624	1 1/2"	2 3/8"	2 3/4"	1 1/2"	2"	2 3/8"	9/16"	1/2"	790.0	4770	4480	260.0	0.770
	184J0628	1 3/4"	2 5/8"	3 1/8"	1 11/16"	2 1/4"	2 5/8"	9/16"	11/16"	1130.0	5785	3790	315.0	1.050
	184K0632	2"	2 7/8"	3 9/16"	2"	2 1/2"	2 7/8"	5/8"	3/4"	1582.0	6805	2900	550.0	1.360
LARGE SERIES TRANTORQUE GT	184L0636	2 1/4"	3 1/8"	3 3/4"	2 1/8"	2 3/4"	3 1/8"	5/8"	13/16"	1695.0	6930	2415	600.0	2.130
	184M0638	2 3/8"	3 3/8"	3 7/8"	2 1/4"	3"	3 3/8"	11/16"	3/4"	1750.0	6985	1930	635.0	2.270
	184M0640	2 1/2"	3 3/8"	3 7/8"	2 1/4"	3"	3 3/8"	11/16"	3/4"	1810.0	7060	1930	635.0	2.270
	184N0644	2 3/4"	3 5/8"	4 1/16"	2 3/8"	3 1/4"	3 5/8"	11/16"	13/16"	1920.0	7170	1655	680.0	2.530
	184P0648	3"	3 7/8"	4 1/4"	2 1/2"	3 1/2"	3 7/8"	3/4"	13/16"	2030.0	7330	1585	750.0	2.720

Tolerances on shaft and bore, miniature Series ± .038 mm, (.0015"). Standard and Larger Series ± .076 mm, (0.03").
Other sizes, types and materials are available to order. Consult your local Authorised Distributor.

SELECTION

To select the TRANTORQUE GT suitable for your application simply choose the bush with the appropriate ('d') to suit the shaft diameter and determine that the outside diameter ('D') and transmissible torque rating will be adequate.

Note: The nominal transmitted torque in Nm should be multiplied by a service factor before comparing with the tabulated maximum transmissible torque.

Service factors range from 1.0 for electric motor driven, smooth machines, to 2.25 for heavy shock machinery driven by i/c engines.

If in doubt consult your local Authorised Distributor.

Use the following formula to convert power (kW) to torque (Nm)

$$\text{Torque (Nm)} = \frac{\text{kW} \times 9550}{\text{rev/min}}$$

INSTALLATION

- Clean off the shaft and bore with a clean rag dampened with a commercial solvent so that the bore and the shaft are clean and completely free of oil.
- Fit the TRANTORQUE GT unit onto the shaft: the shaft must extend through the full length of the TRANTORQUE GT (dimension L_1).
- Fit the hub over the TRANTORQUE GT unit so that the expanding section of the unit (dimension L_2) is approximately in the centre of the hub. If the hub is longer than the L_2 dimension, make sure that the flats of the nut(s) (dimensions B) are outside of the hub to permit spanners to be applied to the nut(s).
- Tighten the outboard nut lightly by hand. Position the unit and the hub in the desired location. Now tighten the outboard nut to the torque indicated in the charts. The hub is now locked to the shaft. With Trantorque GT the inboard nut is used to restrain the unit and the shaft during tightening.

EFFECT OF TEMPERATURE

TRANTORQUE GT units are not affected by temperature within wide limits (–34°C to 204°C) when the shaft and hub are made of steel. TRANTORQUE GT units are all steel. If the shaft and/or hub are made of different materials e.g. aluminum, straightforward engineering compensation should be made for the difference in expansion coefficients.

In normal environments, where the seasonal ambient variation is less than 35°C, no compensation will generally be required, even with dissimilar metals.

MOUNTING OF HUBLESS MACHINE ELEMENTS

Hubless machine elements such as plate gears, plate disc brakes, plate cams and plate sprockets, can be successfully locked to the shaft by means of the TRANTORQUE GT, but some account should be taken of the increased hub pressure on these applications.