TXT Gearbox Frequently Asked Questions

This document is intended to answer frequently asked questions across the Dodge® Torque-Arm (TXT) Gearbox Family. This document will consist of summarized information from the catalog, manuals and other white papers, as well as provide the document number to the source so it can be searched for more in depth information. Dodge® Torque-Arm will be referred to as TXT throughout this document. The below table of contents will help guide to a specific section within this white paper.

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How is the nameplate nomenclature of TXT interpreted?

From the above picture,

TXT525CT

TXT = Family of speed reducer, 5 = Size, 25 = Ratio, C = Revision, T = Tapered bore reducer type

GV194354492

GV = Greenville Mfg., 19 = last 2 digits of year (2019), 43 = mfg. calendar week of year, 54492 = sequential order of reducer created

What do the letters mean after the size on a TXT gearbox?

Through the years, TXT gearbox sizes have gone through changes and updates. These revision letters signify the changes that have taken place starting with no revision (no letter, example TXT5), then going alphabetically starting with “A“. Take caution when ordering spare parts or accessories for TXT gearboxes and note the revision letter when discussing with distributor or sales individual.

What are the differences between TXT and TAII?

A specific TXT case size compared to the same TAII case size will have lesser ratings for the TXT versus the TAII. When converting from TXT to TAII, usually the customer can go down by one case size if the shaft size allows. For example, a TXT105 would have similar ratings to a TA0107L05. TXT has a main oil seal at all locations, whereas TAII has both a main oil seal and excluder seal at all sealing locations. TXT product line has a separate gearbox variant (SCXT) for screw conveyor drive applications whereas TAII product line can be used as either shaft mount or screw conveyor drives. TXT is less modular than TAII. For example, more accessories are universal within the TAII product line than TXT.

Is there a location ratings can be found for a TXT gearbox?

Ratings are only given out per a specific size gearbox, ratio and output speed when requested.

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What are service factors? What is the life of a TXT gearbox?

Service factor is the ratio of reducer mechanical rating at a certain output speed to actual load or motor horsepower. (Mechanical rating/Motor horsepower). Since thermal horsepower ratings are a function of continuous (or average) demand horsepower, they are not service factored. For a 1.0 service factor, TXT gearbox gearing is designed to be 25,000 hours minimum and bearings are designed to be 5,000 hours minimum life. As service factor increases, gearing and bearing life spans grow exponentially.

How is efficiency calculated for a TXT gearbox?

A gearbox's efficiency reflects how much output horsepower can be delivered for a given input horsepower. AGMA recognizes approximately 2% horsepower loss per stage of gearing in a helical gear reducer. For a double reduction reducer, expect approximately 4% horsepower loss across the reducer. This loss is due to gearing/bearing friction, oil churning losses, and seal drag.

What sheave limitations do I have on TXT gearboxes?

Minimum sheave diameters for Dodge Torque-Arm reducers

TXT, SCXT reducer	Single reduction		Double reduction			
	Shaft diameter	5:1	Shaft diameter	9:1	15:1	25:1
1	1-1/8	4.0	3/4	4.0	3.0	3.0
2	1-7/16	3.0	1-1/8	5.0	3.0	3.0
3	1-5/8	7.0	1-1/4	5.0	4.0	4.0
4	1-15/16	7.5	1-7/16	6.5	4.6	4.6
5	2-3/16	9.5	1-15/16	7.0	5.4	5.4
6	2-3/16	6.5	2-3/16	7.0	6.2	6.2
7	2-7/16	7.5	2-7/16	7.0	6.2	6.2
8	2-7/16	9.2	2-7/16	–	6.2	6.2
9	2-7/16	9.5	2-7/16	–	8.0	8.0
10	–	–	2-11/16	–	8.5	8.5
12	–	–	2-11/16	–	9.5	9.5
13	–	–	2-15/16	–	–	12.0
14	–	–	2-15/16	–	–	15.0
15	–	–	3-7/16	–	–	20.0

This information was taken from Table 8 on page G3-62 in 2021 TA Family Catalog.

Are TXT gearboxes ATEX approved?

As of the writing date for this document, TXT series of gearboxes are not ATEX approved.

What are the ratings for input speeds other than 1750 rpm?

Mechanical ratings are given from a known output rpm for the application and compared to the motor horsepower to get a service factor.

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Can a clutch/brake be used with a TXT gearbox?

Yes, a clutch/brake can be used with TXT gearboxes.

Do TXT gearboxes have C-face inputs?

No, a TXT gearbox does not have a C-face input. Motorized Torque Arm (MTA) does have a C-face input.

Are 2D CAD or 3D STEP drawings available for TXT gearboxes?

Yes, through PT Place or contacting Dodge Application Engineering.

Are certified drawings available for TXT gearboxes?

Yes, certified drawings are available for TXT gearboxes. Please contact Dodge Application Engineering with specific questions about the project to started with this process.

Can a cutsheet be provided for TXT gearboxes and speicific configurations?

Cutsheets are typically single page, per part number, documents that give all dimensional and rating information about a certain gearbox and ratio. Dodge does not provide this type of information, but dimensional data and other useful information can be found in the 2021 TA family catalog.

What are the plug sizes on a TXT gearbox?

TXT Size	Oil Plug Size
1	3/8-18
2	3/8-18
3	3/8-18
4	3/8-18
5	1/2-14
6	1/2-14
7	3/4-14
8	3/4-14
9	3/4-14
10	3/4-14
12	3/4-14
TDT13	3/4-14
TDT14	3/4-14
TDT15	3/4-14

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Can specific manufacturer info for components (seals, bearings, etc.) be provided from a TXT gearbox?

Specific component manufacturer information can not be provided, but general component questions can be answered based on the nature of the question.

What is the tolerance for standard shafting and bores on a TXT gearbox & are bushings bored to accomodate standard shafting?

Bushings furnished for Torque-Arm reducers are a clearance fit. Standard commercial shaft tolerances shown below are used to determine a minimum clearance fit of 0.0005“.

Diameter Tolerance – Steel Shafting, Cold-finished, Low Carbon bars

Shaft Size	Type	Plus	Minus
<= 1 ½ inches	-	.000	.002
> 1 ½ to <= 2 ½ inches	Cold	.000	.003
> 2 ½ to <= 4 inches	Drawn	.000	.004
> 4 to <= 6 inches	Turned & Polished	.000	.005
> 6 to <= 8 inches	Turned & Polished	.000	.006
> 8 to <= 9 inches	Turned & Polished	.000	.007
>9	Turned & Polished	.000	.008

What are the differences between a straight bore hub and tapered bore hub on a TXT gearbox?

A staight bore hub is straight completely through the length. Collars are used with set screws for attachment to the shaft. A tapered bore hub is tapered on each end. Backup plates with snap rings are used on a tapered hub. With the bushings removed, the ends (cross section) of the straight bore hub are thicker than the ends of the taper hub.

What is the minimum shaft length required for a straight bore TXT gearbox?

The following charts show the minimum shaft length required for straight bore reducers. This applies to maximum bore only (no bushing). If a bushing is required, please contact Dodge Application Engineering. All dimensions shown below are in inches.

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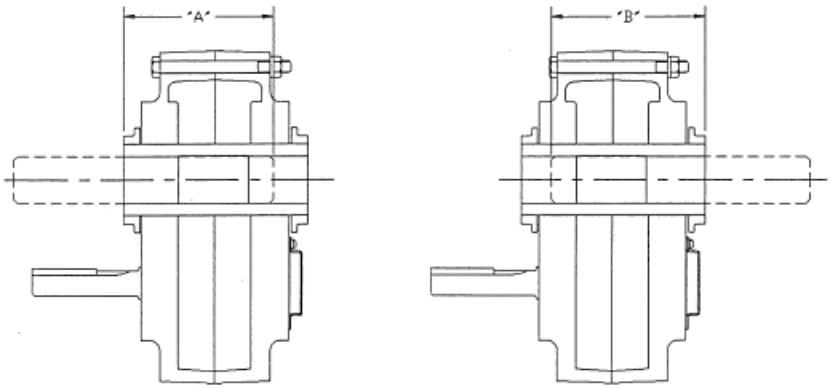
Double Reduction		
Size	Dimension “A”	Dimension “B”
1	4 5/16	5 1/8
2	4 9/16	5 1/16
3	5 3/16	6 3/16
4	5 7/8	7 3/16
5	6 5/16	7 3/16
6	6 9/16	7 7/8
7	8 ½	8 7/8
8	9 ½	9 ½
9	9 ¼	9 5/8
10	9 ½	10 3/8

Single Reduction		
Size	Dimension “A”	Dimension “B”
1	5 1/8	4 5/16
2	5 1/16	4 9/16
3	6 3/16	5 3/16
4	7 3/16	5 7/8
5	7 3/16	6 5/16
6	6 9/16	7 7/8
7	8 ½	8 7/8
8	9 ½	9 ½
9	9 5/8	9 ¼



What is the minimum shaft length required for a tapered bushed TXT gearbox?

The following charts show the minimum shaft length required for taper bushed reducer. To minimize shaft length required for bushing removal (reference catalog “D” dimension) extra removal bolts may be pre-installed. All dimensions shown below are in inches.

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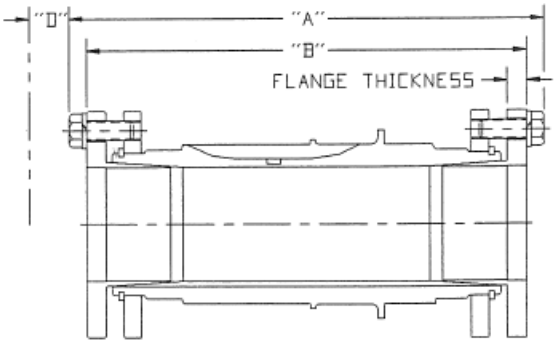
Size	"B"	Flange Thickness	"B" Less Flange Thickness
TXT1	6 15/32	5/16	6 5/32
TXT2	6 23/32	5/16	6 13/32
TXT3	8 7/16	3/8	8 1/16
TXT4	9 5/16	½	8 13/16
TXT5	9 11/16	7/16	8 13/16
TXT6	10 11/16	7/16	10 ¼
TXT7	11 7/8	½	11 3/8
TXT8	13 1/8	½	12 5/8
TXT9	12 15/16	5/8	12 5/16
TXT10	14 3/16	5/8	13 9/16
TXT12	17 5/16	¾	16 9/16
TDT13	19 27/32	¾	19 3/32
TDT14	22 5/16	¾	21 9/16
TDT15	27 5/16	1	26 5/16



Can a straight bore gearbox be converted to a tapered bore gearbox for TXT gearboxes?

Yes, a straight bore reducer can be converted to a taper bushed reducer. Convert a straight bore reducer to a taper bushed reducer by changing the hub to a taper hub. The addition of bushing back up plates (2) and backup plate snap rings (2) is also required. When converting to a taper bushed bore, it is also recommended that you replace the reducer seals. Refer to the accessories section of the relevant reducer in the 2021 TA Family Catalog for part numbers on replacement seal kits.

Can a shaft mount TXT gearbox be converted to a screw conveyor (SCXT) gearbox and vice versa?

A TXT gearbox can not be converted to an SCXT gearbox due to needing drilled and tapped holes for the screw conveyor adapter. Generally, this is not practical to do after a gearbox is finished and assembled. However, an SCXT gearbox could be converted to a shaft mount TXT gearbox. Requirements would vary based on size like listed below:

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SCXT 1A and 2A: The customer would have to provide a means to keep the reducer on the shaft due to hub differences and a torque arm assembly would have to be purchased from Dodge. No backstop could be used.

SCXT 3C through 8A: Straight bore collars, set screws and a key would need to be added. A torque arm assembly would have to be purchased from Dodge. No backstop could be used.

Can a CD screw conveyor series gearbox be converted to an SCXT gearbox?

The CD series Screw Conveyor Drive has to be replaced with a new SCXT Screw Conveyor Drive. All components including reducer, adapter, drive shaft and trough ends, motor mount, V-Drive and guard must be replaced. Additionally, the short series drive shaft must be used.

Can a shaft mount TXT gearbox be converted to a Hydroil (HXT) gearbox and vice versa?

For a TXT 1 and TXT 2 converted to HXT1 and HXT2, the housing would have to be drilled and tapped for mounting the motor adapter. Input pinion would have to be changed to a hydroil pinion and a motor adapter would have to be added.

For a TXT 3 through TXT 7 converted to HXT3 through HXT7, the input pinion and input gearing carrier would have to be changed to the input for hydroil and a motor adapter would have to be added.

For a HXT 1 and HXT 2 converted to TXT1 and TXT2, remove the motor adapter and input pinion. Install a standard T-A input pinion and input seal. Discard motor adapter and mounting hardware.

For a HXT 1 through HXT7 converted to TXT1 through TXT7, remove the motor adapter and input pinion. Install a standard T-A input pinion with new input seal carrier and mounting hardware. Shim the input bearings for proper axial clearance. Discard motor adapter and mounting hardware.

What are the specifications and materials used on a TXT gearbox housing? Can they be repaired?

TXT reducer housings for sizes TXT1-TDT1325 are made of class 30 grey ductile iron. Housings for sizes TDT1425 and TDT1530 are made of 60-45-10 ductile iron. Because housings are made of iron and gear alignment is critical to product life, attempting to weld housings for repair is not recommended.

Are there long term storage guidelines for a TXT gearbox?

Yes, the gearbox needs to be protected internally with a vapor phase corrosion inhibiting oil. The breather needs to be removed and a pipe plug installed in it's place to be sealed. These are basic steps and more in-depth steps can be found on page G3-171 in 2021 TA Family catalog.

Can gearing and bearing information be provided to aid vibration analysis for a TXT gearbox?

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Yes, gearing tooth count and standard bearing manufacturing identification numbers can be given on a case-by-case basis.

Is there a metric offering for TXT gearboxes or components?

Metric TXT product components have been discontinued. We do have metric offerings for TAII and MTA products.

What are the differences in flange mount vs. Non-flange mount TXT gearboxes?

Flange mount gearboxes are typically used in vertical, mixing applications. Flange mount gearboxes do not require a torque arm rod assembly for use. Flange mount TXT gearboxes will need to be ordered as a special part number per size for them to be drilled and tapped in the housing and come with mounting pads from factory. This pertains to TXT1-10 sizes as TXT12 through TDT15 are supplied from stock pre-drilled and tapped for flange mounting. Please see page G3-164 in 2021 TA Family catalog for more information.

What accessories are available for TXT gearboxes?

Accessories for TXT geaboxes include tapered bushing or straight bore bushing kits, motor mounts, belt guards, auxiliary seal kits and backstops. Additional information of accessories overview can be found on page G3-5 in the 2021 TA Family catalog.

What motor mount options do I have with TXT & SCXT gearboxes?

The below descriptions and notes explain motor mount options for TXT & SCXT gearboxes.

Standard Motor Mounts

Standard motor mounts are available for all size gearboxes (TXT1 – TDT15 & SCXT1 – SCXT8) and are bolted directly to the top of the gearbox when mounted in position B. Part numbers and additional information can be found on pages G3-63 through G3-64 in the 2021 TA Family catalog.

Long Motor Mounts

Long motor mounts have longer support brackets that allows additional clearance between the conveyor pulley and bottom plate of motor mount. These motor mounts are available for gearbox sizes (T)(SC)XT3 – (T)(SC)XT7 and are bolted directly to the top of the gearbox when mounted in position B. Part numbers and additional information can be found on page G3-65 in the 2021 TA Family catalog.

Bottom Motor Mounts

Bottom motor mounts are used where space constraints don't allow motor to be mounted above the gearbox. This motor mount is bolted directly to the bottom of the gearbox when mounted in position B. There are mounting support locations for the torque arm rod assembly along the vertical plate for this

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motor mount. These motor mounts are available for gearbox sizes TXT1 – TXT10 & SCXT1 – SCXT8. Part numbers and additional information can be found on page G3-66 in the 2021 TA Family catalog.

Position C Motor Mounts (Standard and Long)

Position C motor mounts are advertised and used mainly on SCXT, screw conveyor drive applications and are bolted directly to the top of the gearbox when mounted in position C. However, these can also be used on TXT gearboxes in the same orientation. There is a standard version and long version for additional clearance. These motor mounts are available for gearbox sizes (T)(SC)XT1 – (T)(SC)XT8. Part numbers and additional information can be found throughout the SCXT accessories sections on pages G3-82 through G3-111 in the 2021 TA Family catalog.

Are current motor mounts compatible with older series TXT gearboxes?

In most cases, a current, specific size motor mount will bolt to any TXT gearbox of the same size regardless of revision. However, there are some special cases and it is best to contact Dodge Application Engineering to verification.

Can TXT motor mounts be used on SCXT gearboxes and vice versa?

Yes, TXT motor mounts can be used on SCXT gearboxes and vice versa.

What belt guard options do I have with TXT & SCXT gearboxes?

The below descriptions and notes explain belt guard options for TXT & SCXT gearboxes.

Belt Guards for Standard Motor Mounts

Belt guards for standard motor mounts are designed to work with with standard motor mounts. These belt guards are available for gearbox sizes TXT1 – TXT12 & SCXT1 – SCXT8. There are different part numbers between double and single reduction gearboxes. Part numbers and additional information can be found on page G3-67 in the 2021 TA Family catalog.

Belt Guards for Long Motor Mounts

Belt guards for long motor mounts are designed to work with with long motor mounts. These belt guards are available for gearbox sizes (T)(SC)XT3 – (T)(SC)XT7. There are different part numbers between double and single reduction gearboxes. Part numbers and additional information can be found on page G3-68 in the 2021 TA Family catalog.

Belt Guards for Position C Motor Mounts (Standard and Long)

Belt guards for position C motor mounts are advertised and used mainly on SCXT, screw conveyor drive applications. However, these can also be used on TXT gearboxes in the same orientation. There is a standard version and long version to be used with the standard and long position C motor mounts,

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respectively. Belt guards for position C standard motor mount are available for gearbox sizes (T)(SC)XT1 – (T)(SC)XT7 whereas the belt guards for position C long motor mount are available for gearbox sizes (T)(SC)XT1 – (T)(SC)XT8. There are different part numbers between double and single reduction gearboxes. Part numbers and additional information can be found on pages G3-116 through G3-117 in the 2021 TA Family catalog.

What seal options do I have for TXT gearboxes?

TXT gearboxes come with a primary, double lip seal across all sealing locations. An auxiliary seal kit can be purchased separately that adds extra sealing protection from contaminants and has a greasable cavity.

Can fans and auxiliary seals be used simultaneously on a TXT gearbox?

All TXT sizes 3 and 4 cooling fans will work with auxiliary seals. On TXT sizes 5 and above, fans and auxiliary seals cannot be used together because of the straps used to attach the fan shroud. TXT sizes 1 and 2 do not offer cooling fans.

Does TXT offer an anti-rotation device and backstop?

Yes, both torque are rod assemblies and backstops are offered for TXT gearboxes. Torque arm rod assemblies come with each TXT shaft mount gearbox that is purchased (with exception to specific flange mount gearbox part numbers). Backstop part numbers can be seen in the accessories section for each specific size gearbox.

Are the tie-rods fully threaded for TXT gearboxes?

Yes, torque arm tie rod assemblies are fully threaded for TXT gearboxes.

How do you install a backstop on a TXT gearbox?

Detailed installation steps on backstops for any size TXT gearbox can be found in MN1606 manual and can be downloaded from PT Place.

Can backstops on a TXT gearbox be repaired?

Backstops can not be repaired and will need to be replaced with a new backstop assembly. Gearbox oil will need to be drained and checked for metal particles to verify no damage to internal gearing or bearings.

Are immersion heaters available for all TXT gearboxes?

Yes, immersion heaters are available for TXT1 – TXT10 gearboxes. Part numbers and additional information can be found on pages G3-146 and G3-149 in the 2021 TA Family catalog.

Where do I install an immersion heater for a TXT gearbox?

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Immersion heaters can be installed in the standard tapped drain hole on the gearbox. More information can be found on page G3-146 in the 2021 TA Family catalog.

Where is the drain plug on a TXT gearbox?

The magnetic drain plug will normally be at the bottom of the gearbox when referencing position B (most common position for mounting). Be sure to have this plug always at the bottom of the gearbox for all horizontal mounting positions. Please see page G3-162 in 2021 TA Family catalog for more information.

Are breathers available for TXT gearboxes?

Yes, please see page G3-16 in 2021 TA Family catalog for more information.

Can a single tapered bushing be used when mounting a TXT gearbox?

To transmit the full rated capacity of our TXT reducers, both bushings, as well as the full length key are required.

Can a standard key be used with a Dodge® tapered bushing kit for a TXT gearbox?

No, most of our hollow bore reducers use a special rectangular key to accommodate the special depth of the keyway in the hollow output shaft. The customer should machine their shaft keyway per standard keyway dimensions.

What material is used for standard SCXT drive shafts?

1144 CD 190/250 BHN is standard material used on SCXT drive shafts.

What other materials are available for SCXT drive shafts?

Stainless steel (#316 stainless) drive shafts are available in both standard and 3-hole CEMA lengths. Part numbers and additional information can be found on pages G3-113 through G3-115 in the 2021 TA Family catalog.

Can a hydraulic motor, other than ones offered in the catalog, be used with HXT gearboxes?

Yes, however customer should be aware of input connection to the pinion and mounting dimensions to the motor adapter. Also, the motor torque much be evaluated as to not over torque the gearbox. Specific hydraulic motor information can be found on page G3-143 in the 2021 TA Family catalog.

Can a hydraulic motor be used with a TXT gearbox?

Hydraulic motors can only be used with the hydraulic TXT (HXT) offering of speed reducers.

What hydraulic couplings are required for an HXT gearbox?

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The B-30, B-40, and B-50 Hydroil motors all require a 4-bolt flanged hose coupling. These are available for flexible hose or rigid pipe connection. The 4-hole center to center dimensions are per SAE-J518B. Hoses, couplings, and valving, as well as pump units, should be purchased from a Fluid Power Distributor.

What is the function of the drain line on an HXT gearbox?

In most cases, a drain line to Hydroil vane motors must be provided in order for the motor to function properly. The motor must be allowed to drain to a collection reservoir. Without a case drain, internal pressure will increase, motor output torque will be reduced, and hydroil motor seal will normally be blown.

Are there install, disassembly and repair instructions for TXT gearboxes?

Yes, this information can be found in our product instruction manual. MN1610 for TXT1 – TXT10 including HXT and MN1630 for TXT12 – TDT15 and can be downloaded from PT Place.

Can a TXT gearbox be rebuilt? What options are there?

Yes, customers can purchase levels of rebuild kits to rebuild sections of the gearbox themselves, or can send the gearbox into our Service department to have Dodge do a remanufacturing of the gearbox. TXT rebuild kits come in two levels. Level 1 kit includes input and output seals, set of bearings, shim kit, sealant and instruction manual. Level 2 kit includes all items in level 1 along with input pinion and first stage gear. Part numbers for TXT-TDT rebuild kits can be found on page G3-158 in the 2021 TA Family catalog. Remanufacturing of a gearbox with our Service department comes in three levels. Level 1 includes replacement of all bearings and seals. Level 2 includes replacement of input gear set, all seals and bearings. Level 3 includes a complete factory reset replacing all gearing, bearings and seals.

What are the mounting positions for a TXT gearbox? Is it allowed to deviate from any of these positions?

Typically, all TXT gearboxes can be installed in horizontal or vertical mounting positions. Mounting nomenclature that Dodge uses for the TXT gearboxes can be found on page G3-162 in the 2021 TA Family catalog. Deviation from any of these exact mounting positions are allowed within the limits explained on page G3-162 in the 2021 TA Family catalog. Any positions outside these limits will need to be evaluated by Dodge Application Engineer. Also note, for any positions other than position B mounting for TXT or position C mounting for SCXT will require magnetic drain plug and breather to be relocated appropriately.

What brands and types of oils are recommended for use in a TXT gearbox?

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Recommended, approved oils for TXT gearboxes can be found on page G3-148 in the 2021 TA Family catalog. This is not a comprehensive list as other oils may work as long as they meet requirements for use in a TXT gearbox. Please contact Dodge Application Engineering with any additional questions.

How much oil should I put in a TXT gearbox?

Based on mounting position and output rpm, there is a fill-to oil level plug that can be used to gauge proper oil level. Once this plug location is identified, the fill-to plug would be removed and oil would be filled until it began seeping out of this plug hole location. More information how to identify the fill-to level plug as well as approximate oil capacities in quarts per TXT gearbox size can be found on page G3-162 in the 2021 TA Family catalog.

How is the oil level checked on a TXT gearbox?

Oil sight glass and sight tubes can be purchased for checking oil level. Please see photos below of these components and chart listing part numbers per TXT gearbox size.

Oil sight glass

Oil sight tube

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TXT Size	Oil Sight Glass	Oil Sight Tube
1	430120	900110
2	430120	900110
3	430120	900110
4	430120	900110
5	430121	904110
6	430121	904110
7	430159	904110
8	430159	904110
9	430159	904110
10	430159	904110
12	430159	904110
TDT13	430159	904110
TDT14	430159	904110
TDT15	430159	904110

What is the oil change frequency for a TXT gearbox?

Every application is different and certain special conditions should be further evaluated for oil change frequency. Typically oil is flushed and checked after initial break in period (After initial operation of about two weeks). After break in period, conventional oil should be changed every 6 months or 2500 operating hours. Synthetic oil should be changed up to 18 months or 8000 operating hours. Additional information can be found on page G3-160 in the 2021 TA Family catalog.

Are there special lubrication requirements when using a backstop on a TXT gearbox?

Yes, any oils with EP additives are not allowed to be used with TXT gearboxes running with backstops. TXT gearboxes running without backstops are allowed to run with oils that include EP additives. An example of recommended, approved oils with or without backstops can be found on page G3-148 in the 2021 TA Family catalog.

Do we offer oil to purchase with a TXT gearbox?

Yes, Dodge offers factory recommended mineral oil, ISO220 in volumes sufficient for all recommended mounting positions. Part numbers and additional information can be found throughout each individual TXT size in the 2021 TA Family catalog.

Are TXT gearboxes shipped with oil from factory?

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Standard TXT gearboxes do not have oil from factory. However, Bio-Disc and ABHS gearboxes, which are special versions of TXT gearboxes, are shipped with oil from factory.

How can I heat the oil in a TXT gearbox if ambient temperature is very cold?

Yes, immersion heaters can be purchased for this. More information and part numbers can be found on pages G3-146 & G3-149 in the 2021 TA Family catalog.

What is the maximun gearbox speed for a TXT gearbox?

The maximum input and driven speeds for TXT and SCXT gearboxes can be seen on page G3-169 in the 2021 TA Family catalog.

How loud should a TXT gearbox run?

TXT gearboxes are checked for abnormal noise level under no-load condition. A Sound Level Meter located 36" from the gearbox shall have a noise level of 82dBA maximum per Dodge quality specification 5011- Speed Reducer Final Inspection. For further troubleshooting with excessive noise or vibration, please see the troubleshooting guide on page G3-172 in the 2021 TA Family catalog.

How hot should a TXT gearbox run?

The thermal rating for TXT gearboxes is established based on 120°F rise over 80°F ambient or a maximum 200°F gearbox oil sump temperature. Gearbox housing temperature should not exceed 195°F. If any of these conditions are exceeded, please see the troubleshooting guide on page G3-172 in the 2021 TA Family catalog or contact Dodge Application Engineering.

What can I do if a TXT gearbox if it's running too hot?

First, check proper gearbox sizing for application. Second, check location of gearbox in relation to any high heat sources or high ambient temperatures. Third, check for proper installation and tension(s) for V-belt. Fourth, check for proper oil level. If the oil level is too high based on mounting position and/or output rpm, this could cause excess heat due to churning and friction. Finally, Dodge offers accessory options for additional cooling. These accessories options include cooling fan or heat exchanger. Additional information and part numbers for these cooling options can be found on page G3-71 in the 2021 TA Family catalog.

What direction does the output shaft rotate if input shaft is rotated a specific direction on a TXT gearbox?

For single reduction gearboxes (5:1 ratio), the direction of the output shaft rotation will be opposite from the direction of the input shaft when viewed from the same side of the gearbox. For double

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reduction gearboxes (9:1, 15:1, 25:1 ratios, etc.), the direction of the output shaft rotation will be same as the direction of the input shaft when viewed from the same side of the gearbox. See chart below.

	Output Rotation	
Input Rotation	Odd number of gear sets	Even number of gear sets
CW	CCW	CW
CCW	CW	CCW

Can TXT gearboxes be back-driven?

TXT gearboxes can be back-driven as a speed increaser under certain circumstances. Please contact Dodge Application Engineering with specific questions.

What gear ratios are available in TXT gearboxes?

5:1, 9:1, 15:1, 24:1, 25:1, 26:1 and 30:1. Note that not all ratios are available in every size.

How can you determine the gear ratios for a TXT gearbox

If the gearbox is assembled and the shafts will turn, mark the output shaft and turn input shaft counting the full turns. Turn input shaft until output shaft makes one full revolution. The number of turns on the input shaft is the total gear ratio of the reducer. An example is 24 and a half turns is equal to 24.5 : 1 ratio.

If the gearbox is disassembled, count the number of teeth on the input pinion (i.e. 14 teeth). Next count the number of teeth on the mating first gear (i.e. 56 teeth). The gear ratio is mating first gear (56T) divided by input pinion (14T): 56T/14T=4 or 4:1 gear ratio. If more than one pair of gears exists, do the same for each pair of gears and multiply the results. Please see example of this below.

First set ratio	x	Second set ratio	=	Total ratio
(56T / 14T)	x	(86T / 11T)	=	31.27 : 1
4 : 1	x	7.81 : 1	=	31.27 : 1

Can a ratio be changed in a TXT gearbox? What parts are required?

Yes, TXT gearbox ratios can be changed. This is accomplished by changing the input pinion and first reduction gear. The low speed gear set for 9, 15, and 25:1 gear ratios are identical for a given size gearbox.

What are the expected backlash values for TXT gearboxes?

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The table below shows the expected range of input shaft rotation (in degrees) when the output shaft is held fixed for TXT sizes 1-10.

TXT Size										
Ratio	1	2	3	4	5	6	7	8	9	10
5:1	2.02/3.33	1.29/2.18	.36/.83	.32/.74	.33/.68	.38/.72	.35/.63	.28/.49	.24/.42	N/A
9:1	3.96/6.52	2.83/4.76	.64/1.53	.61/1.46	.57/1.22	.61/1.22	.63/1.17	N/A	N/A	N/A
15:1	6.27/10.32	4.20/7.06	1.02/2.46	.92/2.21	.94/2.03	.99/1.97	.97/1.81	.82/1.49	.73/1.32	.75/1.27
25:1	10.29/16.94	6.84/11.50	1.65/3.99	1.45/3.49	1.53/3.30	1.59/3.18	1.54/2.87	1.32/2.38	1.21/2.19	1.18/2.00

Is there a way to purchase a low backlash version of a TXT gearbox?

No, a special version of TXT with low backlash is not available. The backlash in TXT gearboxes is typical of industrial reducers.

What is the purpose for shimming the bearings on a TXT gearbox?

Shimming bearings within the housing bores is important to achieve the appropriate endplay so the gearbox will have ideal operation. Bearing endplay values for TXT & TDT gearboxes are below.

Reducer Size	Bearing Endplay Values		
	Input	Countershaft	Output
TXT1A	N / A	N / A	N / A
TXT2A	N / A	N / A	N / A
TXT3C	.002-.004 Loose	.0005-.003 Loose	.0005-.003 Loose
TXT4C	.002-.004 Loose	.0005-.003 Loose	.0005-.003 Loose
TXT5C	.002-.004 Loose	.0005-.003 Loose	.0005-.003 Loose
TXT6A	.002-.004 Loose	.0005-.003 Loose	.0005-.003 Loose
TXT7A	.002-.004 Loose	.0005-.003 Loose	.0005-.003 Loose
TXT8A	.002-.004 Loose	.0005-.003 Loose	.0005-.003 Loose
TXT9A	.002-.004 Loose	.0005-.003 Loose	.0005-.003 Loose
TXT10A	.002-.004 Loose	.0005-.003 Loose	.0005-.003 Loose
TXT12	.002-.004 Loose	.001-.003 Loose	.001-.003 Loose
TDT13	.002-.004 Loose	.001-.003 Loose	.001-.003 Loose
TDT14	.002-.004 Loose	.001-.003 Loose	.001-.003 Loose
TDT15	.002-.004 Loose	.001-.003 Loose	.001-.003 Loose

What is the bearing fit to housing bore on a TXT gearbox?

The bearing housing bores are designed to be 0.001“-0.003“ larger than the bearing cup outer diameter. This tolerance is what the bearing supplier recommends.

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How much axial movement, or wobble, should be expected with a TXT gearbox?

The axial movement of the hub of a shaft mounted gearbox is a function of the axial clearance of the output bearings. On sizes TXT1 and TXT2, ball bearings are used and standard units are not shimmed to restrict movement. As much as .030“ - .040“ might be expected on non-shimmed ball bearing gearboxes. (Note: We do shim gearboxes for reversing applications.) Sizes TXT3 and larger use tapered roller bearings that are shimmed appropriately per size. This movement combined with shaft runout could be exaggerated at the torque arm tie-rod connection. The maximum movement should not exceed +/- ⅛” at the tie-rod connection. Additional information on this topic can be found in the troubleshooting guide on page G3-172 in the 2021 TA Family catalog.

How much runout can be allowed with a customer’s shaft on a TXT gearbox?

The shaft runout allowable for a shaft mount reducer can be quite large if a top motor mount is used. There will be excessive movement in the gearbox but no detrimental effect to gearbox or shaft should occur. Allowable runout could be as much as 0.100“ T.I.R. or more. This much runout would also be present in the case of a bent shaft. If the motor is mounted separate from the gearbox and the gearbox is orbiting on a bent shaft, there could be detrimental stress transmitted to the gearbox input shaft or driven equipment through the V-Belt Drive.

How much runout can be allowed with a customer’s shaft on an SCXT gearbox?

The shaft runout which can be tolerated by a screw conveyor drive is a function of the stiffness of the trough end of the diameter of the drive shaft. General guidelines might be .030“ - .040“ T.I.R. Excessive runout might indicate a bent screw shaft which will cause a screw conveyor drive shaft to eventually break from bending fatigue.

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