

# Torque-Arm TXT Double-Reduction Tapered-Bushed and Straight-Bore Speed Reducers

		TYTOE
IXI/HXI2E	IXI/HXI6E	IXI9E
TXT/HXT 3E	TXT/HXT 7E	<b>TXT 10E</b>
TXT/HXT 4E		<b>TXT 12E</b>

Includes Char-Lynn 6B Hydroil Reducers

HXT 3E-6B	UNTER OD	HXT 6E-6B
HXT 4E–6B	HAI JE-0B	HXT 7E-6B

These instructions must be read thoroughly before installation or operation. This instruction manual was accurate at the time of printing. Please see **dodgeindustrial.com** for updated instruction manuals.

WARNING: To ensure the drive is not unexpectedly started, turn off and lock-out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.

WARNING: All products over 25 kg (55 lbs) are noted on the shipping package. Proper lifting practices are required for these products.



WARNING: Because of the possible danger to person(s) or property from accidents which may result from the improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the engineering information specified in the catalog. Proper installation, maintenance and operation procedures must be observed. The instructions in the instruction manuals must be followed. Inspections should be made as necessary to assure safe operation under prevailing conditions. Proper guards and other suitable safety devices or procedures as may be desirable or as may be specified in safety codes should be provided, and are neither provided by Dodge® nor are the responsibility of Dodge. This unit and its associated equipment must be installed, adjusted and maintained by gualified personnel who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. When risk to persons or property may be involved, a holding device must be an integral part of the driven equipment beyond the speed reducer output shaft.

# INSTALLATION

- 1. Use lifting bracket where applicable to lift reducer.
- 2. Determine the running positions of the reducer (see Figure 1). Note that the reducer is supplied with six plugs; four around the sides for horizontal installations and one on each face for vertical installations. These plugs must be arranged relative to the running positions as follows:

#### Horizontal installations

Install the magnetic drain plug in the hole closest to the bottom of the reducer. Install the filter/ventilation plug in topmost hole. Of the two remaining plugs on the sides of the reducer, the lowest plug is the minimum oil level plug.

#### **Vertical installations**

Install the filter/ventilation plug in the hole provided in the upper face of the reducer housing. If space is restricted on the upper face, install the vent in the highest hole on the side of the reducer per Figure 1 using the optional vertical vent kit. Install a plug in the hole in the bottom face of the reducer. Do not use this hole for the magnetic drain plug. Install the magnetic drain plug in the lowest hole on the sides of the reducer. Of the remaining holes on the sides of the reducer, use the plug in the upper housing half for the minimum oil level plug.

NOTE: This reducer is compatible with Dodge sensors, that can be installed in the adapter plug. The plug and sensor can be moved to different locations as required by mounting position.



Figure 1 - Mounting Positions

Below 15 rpm output speed, oil level must be adjusted to reach the highest oil level plug. If reducer position is to vary from those shown in Figure 1, either more or less oil may be required. For assistance, contact Dodge Application Engineering at +18642845700.

The running position of the reducer in a horizontal application is not limited to the four positions shown in Figure 1. However, if running position is over 20 degrees in position B and D or over 5 degrees in position A and C (either way from sketches), the oil level plug cannot be used safely to check the oil level unless during the checking, the torque-arm is disconnected and the reducer is swung to within 20 degrees for position B and D or to within 5 degrees for position A and C of the positions shown in Figure 1.

Because of the many possible positions of the reducer, it may be necessary or desirable to make special adaptations using the lubrication filling holes furnished along with other standard pipe fittings, stand pipes and oil level gauges as required.

For Tapered-Bushed Reducer: Mount the reducer on the driven shaft per instruction sheet for the tapered-bushing kit.

- 3. Install sheave on input shaft as close to reducer as practical (see Figure 2).
- 4. If not using a Dodge Torque-Arm motor mount, install motor and V-belt drive so belt will approximately be at right angles to the centerline between driven and input shaft (see Figure 3). This will permit tightening the V-belt with the Torque-Arm.
- 5. Install Torque-Arm and adapter plates using the long reducer bolts. The adapter plates may be installed in any position around the input end of the reducer.
- 6. Install Torque-Arm fulcrum on a flat and rigid support so that the torque-arm will be approximately at right angles to the centerline through the driven shaft and the torque arm anchor screw (see Figure 4). Make sure that there is sufficient take-up in the turnbuckle for belt tension adjustment when using V-belt drive.

CAUTION: Unit is shipped without oil. Add proper amount of recommended lubricant before operating. Failure to observe this precaution could result in damage to or destruction of the equipment.

7. Fill gear reducer with the recommended volume of lubricant.



Figure 2 - Reducer and Sheave Installation







Figure 4 - Angle of Torque-Arm

# **TXT TAPERED-BUSHING INSTALLATION**

CAUTION: DO NOT USE LUBRICANTS OR ANTI-SEIZE WHEN INSTALLING TWIN-TAPERED BUSHINGS. The use of lubricants or anti-seize could result in over tightening of the bushing assembly. This may result in bushing assembly damage or future bushing removal issues.

#### **Tapered-Bore Bushings**

1. One bushing assembly is required to mount the reducer on the driven shaft. An assembly consists of two tapered bushings, bushing screws and washers, and necessary shaft keys or key.

The driven shaft must extend through the full length of the reducer. The minimum shaft length, as measured from the end of the shaft to the outer edge of the bushing flange (see Figure 5), is given in Table 1. This dimension does not include dimension "A". Dimension "A" should be added to the minimum shaft length to allow for the removal of the bushings at disassembly.

2. Place one bushing, flange end first, onto the driven shaft and position per dimension A, as shown in Table 1. This will allow the bolts to be threaded into the bushing and for future bushing and reducer removal. If the reducer must be positioned closer to the equipment than dimension A, place the screws, with washers installed, into the unthreaded holes of the bushing flange prior to placing the bushing on the shaft and position as required.

- 3. Insert the output key in the shaft and bushing. For ease of installation, rotate the driven shaft so that the shaft keyseat is at the top position.
- 4. Mount the reducer on the driven shaft and align the shaft key with the reducer hub keyway. Maintain the recommended minimum distance A from the shaft bearing.
- 5. Insert the screws, with washers installed, in the unthreaded holes in the bushing flange and align with the threaded holes in the bushing backup plate. If necessary, rotate the bushing backup plate to align with the bushing screws. Tighten the screws lightly. If the reducer must be positioned closer than dimension A, place the screws with washers installed, in the unthreaded holes in the bushing before positioning reducer making sure to maintain at least 1/8" between the screw heads and the bearing.
- 6. Place the second tapered bushing in position on the shaft and align the bushing keyway with the shaft key. Align the unthreaded holes in the bushing with the threaded holes in the bushing backup plate. If necessary, rotate the bushing backup plate to align with the bushing holes. Insert bushing screws, with washers installed in the unthreaded holes in the bushing. Tighten screws lightly.
- 7. Alternately and evenly tighten the screws in the bushing nearest the equipment to the recommended torque given in Table 1. Repeat procedure on outer bushing.



Figure 5 - Minimum Recommend Dimensions

Table	1–Minimum	Mounting	<b>Dimensions</b>	and Bolt Tor	aues
					4

Minimum required shaft length							
Reducer size	Tapered bushing (in)	Straight bushing (in)					
TXT/HXT 1E	6-1/2	5-5/8					
TXT/HXT 2E	6-3/4	5-13/16					
TXT/HXT 3E	8-9/16	7-11/16					
TXT/HXT 4E	9-5/16	8-1/4					
TXT/HXT 5E	9-3/4	8-11/16					
TXT/HXT 6E	10-3/4	9-5/8					
TXT/HXT7E	11-15/16	10-3/4					
TXT 8E	13-1/8	11-3/8					
TXT 9E	13-0	11-3/8					
TXT 10E	14-3/16	12-3/8					
TXT 12E	17-3/8	N/A					

Bushing screw information and minimum clearance for removal							
Reducer size	Fastener size	Torque (in-lbs)	Dimension A (in)				
TXT/HXT1E	5/16-18	200	1-1/4				
TXT/HXT 2E	5/16-18	200	1-1/4				
TXT/HXT 3E	3/8-16	200	1-1/2				
TXT/HXT 4E	3/8-16	360	1-3/4				
TXT/HXT 5E	3/8-16	360	1-13/16				
TXT/HXT 6E	1/2-13	360	1-13/16				
TXT/HXT7E	1/2-13	800	2-1/16				
TXT 8E	1/2-13	800	2-1/16				
TXT 9E	1/2-13	900	2-7/16				
TXT 10E	5/8-11	900	2-7/16				
TXT 12E	5/8-11	900	2-7/16				

### **Straight-Bore Bushings**

- 1. One bushing assembly is required to mount the reducer on the driven shaft. An assembly consists of one keyed straight bushing, one plain straight bushing, required set screws, and necessary shaft key or keys. The driven shaft must extent through the reducer to operate properly. The minimum shaft length, as measured from the end of the shaft to the outer edge of the retaining collar, is given in Table 1.
- 2. Install the plain bushing into the reducer output hub on the side toward the equipment or bearing. Remove two short set screws from the retaining collar and install two of the longer set screws supplied with the bushing kit. Line up the bushing holes with the set screws. Thread the set screws in until they locate into the bushing holes. Make sure the set screws are threaded in only enough to locate the bushing in the reducer hub and does not extend thru the bushing.
- 3. Install the keyed bushing into the opposite end of the reducer hub as the plain bushing. Remove one short set screw from the retaining collar and install the remaining set screw from the bushing kit into the collar. Line up the bushing hole with the set screw. Thread the set screw in until it locates into the bushing hole. Make sure the set screw is threaded in only enough to locate the bushing in the reducer hub and does not extend through the bushing.
- 4. Mount the reducer on the driven shaft as close to the equipment or bearing as practical.
- 5. Line up the keyway in the bushing with the keyway in the driven shaft. Insert the key supplied with the bushing kit into the keyway. Gently tap the key into position until the key is flush with the edge of the reducer. Securely tighten all set screws.

## **Standard Tapered Bushings Removal**

- 1. Remove bushing screws.
- 2. Place the screws in the threaded holes provided in the bushing flanges. Tighten the screws alternately and evenly until the bushings are free on the shaft. For ease of tightening screws make sure screw threads and threaded holes in the bushing flanges are clean. If the reducer was positioned closer than the recommended minimum distance "A" as shown in Table 1, loosen the inboard bushing screws until they are clear of the bushing flange by 1/8". Locate two (2) wedges at 180 degrees between the bushing flange and the bushing backup plate. Drive the wedges alternately and evenly until the bushing is free on the shaft.
- 3. Remove the outside bushing, the reducer, key(s), and inboard bushing.,

# LUBRICATION

IMPORTANT: Because Torque-Arm reducers are shipped without oil, it is extremely important to add the proper amount of lubricant prior to operating reducer. For most applications, a high-grade petroleum-base rust and oxidation (R&O) inhibited gear oil is suitable. See Table 2 and Table 3 for proper oil volume and viscosity requirements.

TXT-E double-reduction gearboxes have redesigned backstops that allow the usage of extreme pressure (EP) oils.

Follow instructions on reducer warning tags.

Lubrication is very important for satisfactory operation. The proper oil level must be maintained at all times. Frequent inspection, at least monthly, with the unit not running and allowing sufficient time for the oil to cool and the entrapped air to settle out of the oil should be made by removing the level plug and verifying the level is being maintained. If oil level is low, add the proper lubricant until the oil volume is increased to the correct level. After an initial operation of about two weeks, the oil should be changed. If desired, this oil may be filtered and reused. After the initial break in period, under average industrial operating conditions, the lubricant should be changed every 2,500 hours of operation. At every oil change, drain reducer and flush with kerosene, clean magnetic drain plug and refill to proper level with new lubricant.

Under extreme operating conditions, such as rapid rise and fall of temperature, dust, dirt, chemical particles, chemical fumes, or oil sump temperatures above 200 °F, the oil should be changed every 1 to 3 months, depending on severity of conditions.

#### CAUTION: Too much oil will cause overheating and too little will result in gear failure. Check oil level regularly. Failure to observe this precaution could result in equipment damage and/or bodily injury.

Heating is a natural characteristic of enclosed gearing. A maximum gear case temperature approaching 200 °F is not uncommon for some units operating in normal ambient temperatures of 80 °F. When operating at the rated capacity with proper lubrication, no damage will result from this temperature. This maximum temperature was taken into consideration during the design of the reducer.

Durla			Approximate volume of oil to fill reducer to oil level plug ${\mathbb O}$ ${\mathbb G}$										
Redu	cer	2 Pos	sition A	2 Po:	sition B	② Pos	ition C	② Pos	ition D	② Pos	ition E	② Pos	ition F
Size	Ratio	3 Qt	4 L	3 Qt	4 L	3 Qt	4 L	3 Qt	4 L	3 Qt	4 L	Qt	L
(H)TXT 1E	9,15,25	1/2	1/2	1/2	1/2	5/8	5/8	3/4	3/4	1	1	1-1/4	1-1/8
(H)TXT 2E	9,15,25	7/8	7/8	1	1	5/8	5/8	1	1	1-5/8	1-1/2	1-3/4	1-5/8
(H)TXT 3E	9,15,25	1-1/2	1-3/8	1-1/2	1-3/8	3/4	3/4	2-1/4	2-1/8	2-5/8	2-1/2	3	2-7/8
(H)TXT 4E	9,15,25	1-7/8	1-3/4	2-1/4	2-1/8	1-1/4	1-1/8	1-3/4	1-5/8	3-3/8	3-1/8	4-1/4	4
(H)TXT 5E	9,15,25	3-1/4	3-1/8	4	3-3/4	3-1/4	3-1/8	4	3-3/4	7	6-5/8	8-5/8	8-1/8
(H)TXT 6E	9,15,25	4-1/4	4	5	4-3/4	4-1/4	4	5	4-3/4	8-5/8	8-1/8	9-1/8	8-5/8
(H)TXT 7E	9,15,25	6-1/2	6-1/8	8	7-1/2	7-1/4	6-7/8	9-1/4	8-3/4	15-3/8	14-1/2	16-3/8	15-1/2
TXT 8E	15,25	8-1/2	8	11	10-3/8	10-1/2	9-7/8	8-1/2	8	19-1/8	18-1/8	19-1/8	18-1/8
TXT 9E	15,26	13	12-1/4	13	12-1/4	12-1/2	11-7/8	14-1/4	13-1/2	25-3/8	24	25-3/8	24
TXT 10E	15,24	23	21-3/4	14	13-1/4	15-3/4	14-7/8	18-3/4	17-3/4	41	38-3/4	41	38-3/4
TXT 12E	15,25	59	55-7/8	38	36	59	55-7/8	36-1/2	34-1/2	100	94-5/8	100	94-5/8

Table 2–Oil Volumes

① Oil quantity is approximate. Service with lubricant until oil runs out of oil level hole.

<sup>2</sup> Refer to Figure 1 for mounting positions

3 US measurement conversions: 1 quart = 32 fluid ounces = 0.94646 liters

Conversion from quarts rounded values

Below 15 rpm output speed, oil level must be adjusted to reach the highest oil level plug. If reducer position is to vary from those shown in Figure 1, either more or less oil may be required. For assistance, consult Dodge Application Engineering at +1 864 284 5700.
 Consult Dodge Application Engineering at +1 864 284 5700 for proper oil level for reducers equipped with backstops and which are mounted in

Onsult Dodge Application Engineering at +1 864 284 5700 for proper oil level for reducers equipped with backstops and which are mounted in either position C or position D
 One of the positi

#### Table 3-oil recommendations

	ISO grades for ambient temperatures of 50 °F to 125 °F (refer to notes below)										
Output		Torque-Arm reducer size									
rpm	(H)TXT 1E	(H)TXT 2E	(H)TXT3E	(H)TXT4E	(H)TXT5E	(H)TXT6E	(H)TXT7E	TXT 8E	TXT9E	TXT 10E	TXT 12E
301-400	320	320	220	220	220	220	220	220	220	220	220
201-300	320	320	220	220	220	220	220	220	220	220	220
151–200	320	320	220	220	220	220	220	220	220	220	220
126–150	320	320	320	220	220	220	220	220	220	220	220
101–125	320	320	320	320	220	220	220	220	220	220	220
81–100	320	320	320	320	320	220	220	220	220	220	220
41-80	320	320	320	320	320	220	220	220	220	220	220
11-40	320	320	320	320	320	320	320	320	320	320	220
1–10	320	320	320	320	320	320	320	320	320	320	320

	ISO grades for ambient temperatures of 15 °F to 60 °F (refer to notes below)										
Output		Torque-Arm reducer size									
rpm	(H)TXT 1E	(H)TXT2E	(H)TXT3E	(H)TXT4E	(H)TXT5E	(H)TXT6E	(H)TXT7E	TXT 8E	TXT9E	TXT 10E	TXT 12E
301-400	220	220	150	150	150	150	150	150	150	150	150
201-300	220	220	150	150	150	150	150	150	150	150	150
151–200	220	220	150	150	150	150	150	150	150	150	150
126–150	220	220	220	150	150	150	150	150	150	150	150
101–125	220	220	220	220	150	150	150	150	150	150	150
81–100	220	220	220	220	220	150	150	150	150	150	150
41-80	220	220	220	220	220	150	150	150	150	150	150
11-40	220	220	220	220	220	220	220	220	220	220	150
1–10	220	220	220	220	220	220	220	220	220	220	220

Notes:

1.

2. 3.

Assumes auxiliary cooling where recommended in the catalog Pour point of lubricant selected should be at least 10 °F lower than expected minimum ambient starting temperature. EP lubricants are not necessary for average operating conditions. Torque-Arm internal backstops are not suitable for use with EP lubricants.

Special lubricants may be required for food and drug industry applications where contact with the product being manufactured may 4.

For reducers operating in ambient temperatures between -22 °F (-30 °C) and 20 °F (-6.6 °C) use a synthetic hydrocarbon lubricant, 100 ISO grade or AGMA 3 grade (for example, Mobil SHC627). Above 125 °F (51 °C), consult Dodge Application Engineering +1 864 284 5700 for lubrication recommendations. Mobil SHC630 Series oil is recommended for high ambient temperatures 5.

6.

# **OIL VISCOCITY EQUIVALENCY CHART**



# GUIDELINES FOR TXT REDUCER LONG-TERM STORAGE

# **MOTOR MOUNTS**

During periods of long storage, or when waiting for delivery or installation of other equipment, special care should be taken to protect a gear reducer to have it ready to be in the best condition when placed into service.

By taking special precautions, problems such as seal leakage and reducer failure due to lack of lubrication, improper lubrication quantity, or contamination can be avoided. The following precautions will protect gear reducers during periods of extended storage.

### Preparation

- 1. Drain oil from the unit. Add a vapor phase corrosion inhibiting oil (VCI-105 oil by Daubert Chemical Co.) in accordance with Table 4.
- 2. Seal the unit airtight. Replace the vent plug with a standard pipe plug and wire the vent to the unit.
- 3. Cover all unpainted exterior parts with a waxy rust preventative compound that will keep oxygen away from the bare metal. (Non-Rust X-110 by Daubert Chemical Co. or equivalent)
- 4. The instruction manuals and lubrication tags are paper and must be kept dry. Either remove these documents and store them inside, or cover the unit with a durable waterproof cover which can keep moisture away.
- 5. Protect reducer from dust, moisture, and other contaminants by storing the unit in a dry area.
- 6. In damp environments, the reducer should be packed inside a moisture-proof container or an envelope of polyethylene containing a desiccant material. If the reducer is to be stored outdoors, cover the entire exterior with a rust preventative.

#### When Placing the Reducer into Service

- 1. Fill the unit to the proper oil level using a recommended lubricant. The VCI oil will not affect the new lubricant.
- 2. Clean the shaft extensions with petroleum solvents.
- 3. Assemble the vent plug into the proper hole.

Follow the installation instructions provided in this manual.

Reducer size	Quantity (oz/mm)
11000001 0120	Quantity (02/1111)
(H)TXT 1E	1/30
(H)TXT 2E	1/30
(H)TXT 3E	1/30
(H)TXT 4E	1/30
(H)TXT 5E	1/30
(H)TXT 6E	2/59
(H)TXT7E	2/59
TXT 8E	3/89
TXT9E	4/118
TXT 10E	6/177
TXT 12E	10/296

Table 4–Quantities of VCI #105 Oil

VCI #105 and #10 are interchangeable

VCI #105 is more readily available



Figure 6 - Motor Mounts

WARNING: Belt guard removed for illustration purposes. Do not operate if belt guard is not in place.

#### **Motor Mount Installation**

The Torque-Arm (TA) motor mount is designed to be installed on the output end of the reducer as shown in Figure 6. If bottom mounting is desired, use the optional TAB style.

### TA1M through TA7M Motor Mount

- 1. Remove the required housing bolts on the output end of the reducer. Place the motor mount brackets in position and install the longer housing bolts supplied with the motor mount assembly. Do not fully tighten the housing bolts at this time.
- 2. Install the bottom plate to the motor mount brackets and tighten with the hardware provided. Next, tighten the housing bolts to the torque values listed in Table 6.
- 3. Install the four adjusting studs to the bottom plate using the jam nuts provided and securely tighten. These nuts will not require any further adjustment. Add one additional jam nut to each stud and thread approximately to the middle of the stud. Install the top motor plate on top of the jam nuts. Assemble the remaining jam nuts on studs to secure top motor plate. Do not fully tighten these nuts yet.
- 4. Mount motor, drive and driven sheaves, and V-belts.

# NOTE: Mount driven sheave as close to the reducer housing as practical.

- 5. Adjust V-belts to the proper tension by adjusting the jam nuts and securely tighten.
- 6. Check all bolts to insure that they are securely tightened.

### TA8 through TA10 Motor Mount

- 1. Remove the required housing bolts on the output end of the reducer. Place the motor mount brackets in position and install the longer housing bolts supplied with the motor mount assembly. Do not fully tighten the housing bolts at this time.
- 2. Install the four adjusting studs to the top plate as shown using the jam nuts provided and securely tighten. Add one additional jam nut to each stud and thread approximately to the middle of the stud. Install this assembly to the motor mount brackets and install the remaining jam nuts onto the studs to secure the top plate to the brackets. Tighten the housing bolts to the torque values listed in Table 6.
- 3. Loosely install the front motor rail to the top plate. Measure the distance between the front and rear mounting holes on the motor and position the rear motor rail at this distance and loosely bolt to the top plate.
- 4. Center the motor on the motor rails and securely bolt the motor to the motor rails.
- 5. Install the motor sheave and reducer sheave on their shafts. Mount the reducer sheave as close to the housings as practical. Install the V-belts and adjust the motor rails to permit proper alignment of the V-belts to the sheaves. Securely tighten the motor rails to the mounting plate.
- 6. Adjust the V-belts to the proper tension and securely tighten the adjusting nuts.
- 7. Check all bolts to see that they are securely tightened.

WARNING: To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Remove all external loads from drive before removing or servicing drive or accessories. Failure to observe these precautions could result in bodily injury.

# **REPLACEMENT OF PARTS**

NOTE: Using tools normally found in a maintenance department, a Dodge Torque-Arm speed reducer can be disassembled and reassembled by careful attention to the following instructions.

Cleanliness is very important to prevent the introduction of dirt into the bearings and other parts of the reducer. A tank of clean solvent, an arbor press, and equipment for heating bearings and gears (for shrinking these parts on shafts) should be available.

The oil seals are designed with a contact lip. Considerable care should be used during disassembly and reassembly to avoid damage to the surface on which the seals rub.

The keyseat in the input shaft, as well as any sharp edges on the output hub should be covered with tape or paper before disassembly or reassembly. Be careful to remove any burrs or nicks on surfaces of the input shaft or output hub before disassembly or reassembly.

### **Ordering Parts**

When ordering parts for a Torque-Arm reducer, specify reducer part number, part name, and quantity required.

When a pinion or gear is replaced, it is strongly recommended that the mating pinion or gear is replaced as well.

If the large gear on the output hub must be replaced, it is recommended that an output hub assembly consisting of a gear assembled on a hub be ordered to ensure undamaged surfaces on the output hub where the output seals rub. However, if it is desired to use the old output hub, press the gear and bearing off and examine the rubbing surface under the oil seal carefully for possible scratching or other damage resulting from the pressing operation. To prevent oil leakage at the shaft oil seals, the smooth surface of the output hub must not be damaged.

If any parts must be pressed from a shaft or from the output hub, this should be done before ordering parts to make sure that none of the bearings or other parts are damaged in removal. Do not press against rollers or cage of any bearing. Because old shaft oil seals may be damaged in disassembly, it is advisable to order replacements for these parts.

#### **Removing Reducer from Shaft**

WARNING: To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Remove all external loads from drive before removing or servicing drive or accessories. Failure to observe these precautions could result in bodily injury.

## **Tapered-Bushed Reducer**

- 1. Disconnect and remove belt guard, V-drive, and motor mount as required. Disconnect torque arm rod from reducer adapter.
- 2. Remove bushing screws.
- 3. Place the screws in the threaded holes provided in the bushing flanges. Tighten the screws alternately and evenly until the bushings are free on the shaft. For ease of tightening screws, make sure screw threads and threaded holes in bushing flanges are clean. A tap can be used to clean out the threads. Use caution to use the proper size tap to prevent damage to the threads.
- 4. Remove the outside bushing, the reducer, and then the inboard bushing.

# Straight-Bore Reducer

- 1. Disconnect and remove belt guard, V-drive, and motor mount as required. Disconnect torque arm rod from reducer adapter.
- 2. Loosen and remove the set screws in both output hub collars.
- 3. Remove the collar from the output hub closest to the end of the shaft. This will expose three puller holes in the output hub to permit the use of a three prong puller. In removing the reducer from the shaft, use care not to damage the reducer output hub.

#### Disassembly

- 1. Drain all oil from the reducer.
- 2. Remove all locking collars, retaining rings, and bushing backup plates as required. Position the reducer on its side and remove all housing bolts. Using the three pry slots around the periphery of the flange, gently separate the housing halves and open evenly to prevent damage to the parts inside. Remove the two dowel pins.
- 3. Lift input shaft, all gear assemblies, and bearing assemblies from housing.
- 4. Remove seals from housing.
- 5. Remove bearings from shafts and hubs. Be careful not to scratch or damage any assembly or seal area during bearing removal. The hub assembly can be disassembled for gear replacement but if scratching or grooving occurs on the hub, seal leakage will occur and the hub will need to be replaced.

### (H)TXT 1E and (H)TXT 2E Reassembly

- 1. **Output Hub Assembly:** Heat gear from 325 °F to 350° to shrink onto hub. Heat bearings from 270 °F to 290 °F to shrink onto hub. Any damage to the hub surfaces where the oil seals rub will cause leakage, making it necessary to replace the hub.
- 2. **Countershaft Assembly:** Heat gear from 325 °F to 350 °F and bearings from 270 °F to 290 °F to shrink onto shaft.
- 3. Input Shaft Assembly: Heat bearings from 270 °F to 290 °F and shrink onto shaft.
- 4. Drive the two dowel pins into place in the right-hand housing half (backstop side).
- 5. Make sure both housing halves are clean and free of RTV residue. Place R.H. housing half on blocks to allow for protruding end of output hub.
- 6. Install and mesh the output hub gear assembly and small countershaft gear assembly in place in the right-hand housing.
- 7. Install and mesh the input shaft assembly in place.
- 8. Apply a continuous 1/8" diameter bead of Dow Corning RTV732 sealant on the flange surface of the R.H. housing, making sure RTV is placed around all bolt holes. Set the lefthand housing half in position onto the dowel pins located in the right-hand housing and gently tap with a soft hammer until housing bolts can be used to draw housing halves together. Make sure reducer shafts do not bind when tightening housing bolts.
- 9. Torque housing bolts per torque values listed in Table 6.
- 10. Install input and output seals. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Seals should be pressed or tapped with a soft hammer evenly into place in the reducer housing, applying pressure only on the outer edge of the seals.

NOTE: Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. A slight oil leak at the seals may be evident during initial running but should disappear unless seals have been damaged.

# (H)TXT 3E and (H)TXT 4E Reassembly

- 1. Follow step 1 through step 5 listed under (H)TXT 1E and (H) TXT 2E.
- 2. Install all bearing cups in the right-hand housing half, making sure they are properly seated.
- 3. Install and mesh the output hub gear assembly and small countershaft gear assembly together and set in place in housing.
- 4. Install and mesh the input shaft assembly in-place in the righthand housing.
- 5. Install all bearing cups without shims into the left-hand housing half. Set the left-hand housing half in position onto the dowel pins located in the right-hand housing and gently tap with a soft hammer until the housing bolts can be used to draw the housing halves together. Torque housing bolts per Table 6.
- 6. Rotate the input shaft by hand to seat the bearing cups.
- 7. Using an indicator and magnetic base, measure record the axial endplay of the input shaft, countershaft assembly, and output hub assembly.
- 8. Remove all housing bolts and remove the left-hand housing. Remove the bearing cups from the left-hand housing. Based on the recorded readings, shim behind each bearing cup to set the correct endplay per Table 5. Reinstall the bearing

cups into the left-hand housing. Repeat the above procedure and adjust the axial endplay as required per Table 5. Once the endplay is set, remove the left-hand housing and apply a continuous 1/8" diameter bead of Dow Corning RTV732 sealant or equivalent on the flange surface of the R.H. housing (to prevent oil leaks, make sure RTV is placed around all bolt holes).

- 9. Set the left-hand housing half in position onto the dowel pins located in the right-hand housing and torque housing bolts per Table 6.
- 10. Install input and output seals. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Seals should be pressed or tapped with a soft hammer evenly into place in the reducer housing, applying pressure only on the outer edge of the seals.

NOTE: Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. A slight oil leak at the seals may be evident during initial running but should disappear unless seals have been damaged.

# (H)TXT 5E through TXT 10E Reassembly

- 1. Follow step 1 through step 5 listed under (H)TXT 1E and (H) TXT 2E.
- 2. Install all bearing cups in right-hand housing half, making sure they are properly seated.
- Install and mesh the output hub gear and smaller countershaft gear together and set in-place in housing. Make sure bearing cones are properly seated in their cups. Install and mesh the input shaft assembly into the right-hand housing. Set bearing cups for left-hand housing half in-place on their respective cones.
- 4. Make sure both housing halves are clean and free of RTV residue. Apply a continuous 1/8" diameter bead of Dow Corning RTV732 sealant on the flange surface of the right-hand housing (to prevent oil leaks, make sure RTV is placed around all bolt holes). Set the left-hand housing half in position onto the dowel pins and gently tap with a soft hammer until the housing bolts can be used to draw the housing halves together. Make sure reducer shafts do not bind when tightening the housing bolts. Torque housing bolts per torque values listed in Table 6.
- 5. Install the output seal carrier and draw down with two bolts 180° apart to 50 in-lbs of torque. Loosen both bolts then retighten finger tight only. Measure the clearance between the housing and output seal carrier flange at each bolt and average the two values. Add 0.010" to the average reading and make up shim pack.
- 6. Install shim pack between the carrier flange and reducer housing. Torque the bolts to the value shown in Table 6. Using a magnetic base and dial indicator, check the axial endplay reading of the output hub and verify the endplay is per Table 5. Adjust if necessary. Once endplay is correct, remove the output seal carrier and apply RTV to the output seal carrier at the inside diameter of the shims.
- 7. Repeat steps 5 and 6 above for adjusting the countershaft and input bearings. Adjust the axial endplay per table 5.
- 8. Install input and output seals. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Seals should be pressed or tapped with a soft hammer evenly into place in the reducer housing, applying pressure only on the outer edge of the seals.

NOTE: Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. A slight oil leak at the seals may be evident during initial running but should disappear unless seals have been damaged.

#### **TXT 12E Reassembly**

- 1. Follow step 1 through step 5 listed under (H)TXT 1E and (H) TXT 2E.
- 2. Install all bearing cups in right-hand housing half, making sure they are properly seated.
- 3. Install and mesh output hub assembly and countershaft assemblies together in the right-hand housing. Install and mesh the input shaft assembly (input shaft and pinion gear) in position in the right-hand housing. Make sure bearing cones are properly seated in their cups.
- Input pinion and countershaft gears must be timed for 4. proper sharing of loads. With reducer laying flat on table viewing input shaft, lift up the input shell pinion on the input shaft (the pinion should slide freely on the shaft). Notice the countershaft gears should rotate equal amounts in opposite directions. If this occurs, check the shell pinion on the input shaft for being approximately centered between the bearings. Using the larger countershaft gears, rotate the gears in both directions and check for smoothness of rotation. No binding should exist. If the countershaft gears rotate equal amounts in opposite directions and the input shell pinion is approximately centered between the bearings and the gears rotate smoothly, the gears should be timed properly. If all of the above does not occur, the gear timing is not correct. Lift one of the countershaft gear sets out of mesh and rotate one tooth in either direction and re-mesh the gears. Repeat the timing check process. Repeat this procedure until the timing is correct. The timing of the gears is a must for proper operation of the reducer. Consult Dodge engineering if assistance is required.
- 5. Clean housing flange surfaces on both halves, making sure not to nick or scratch flange face. Place a new bead of gasket RTV 732 on flange face and spread evenly over entire flange leaving no bare spots. Place other housing half into position and tap with a soft hammer until housing bolts can be used to draw housing halves together. Torque housing bolts per torque values listed in Table 6.
- 6. Place output seal carrier into position without shims. Install four bolts and torque to 25 lb-ins. Rotate output hub assembly to seat bearings. Torque bolts to 50 lb-ins. Again rotate the output hub to seat bearings (tap down on output hub with rawhide mallet while rotating). Using feeler gage check gap between carrier flange and housing. Remove carrier, add gap measurement plus 0.002 shims, reinstall carrier and torque bolts to values in Table 3. Using dial indicator check axial endplay of hub assembly. Axial endplay value is 0.001 to .003. Add or remove shims to obtain proper setting.
- 7. Repeat process for the countershaft assemblies. End play value is 0.001 to 0.003.
- 8. Repeat the process for the input shaft. End play value is 0.002 to 0.004.

# NOTE: Apply 1/8" bead of RTV732 or equivalent inside carriers at I.D. of shims to prevent leaks.

9. Install input and output seals. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Seals should be pressed or tapped with a soft hammer evenly into place in the reducer housing, applying pressure only on the outer edge of the seals. NOTE: Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. A slight oil leak at the seals may be evident during initial running but should disappear unless seals have been damaged.

#### Table 5–Bearing Adjustment Tolerances

Reducer	В	earing endplay valu	es	
size	Input	Countershaft	Ouput	
(H)TXT1E	-	-	-	
(H)TXT2E	-	-	-	
(H)TXT3E	0.002-0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose	
(H)TXT4E	0.002-0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose	
(H)TXT5E	0.002-0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose	
(H)TXT6E	0.002-0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose	
(H)TXT7E	0.002-0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose	
TXT8E	0.002-0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose	
TXT9E	0.002-0.004 loose	0.0005—0.003 loose	0.0005—0.003 loose	
TXT10E	0.002-0.004 loose	0.0005-0.003 loose	0.0005-0.003 loose	
TXT12E	0.002-0.004 loose	0.0005-0.003 loose	0.0005-0.003 loose	

#### Table 6–Recommended Bolt Torque Values

Recommended torque values (ft-lbs)							
Reducer size	Hous bol	ing ts	Output seal carrier	C/S bearing cover	Input seal carrier		
(H)TXT1E	30—	-27	-	-	-		
(H)TXT2E	30—	-27	-	-	-		
(H)TXT3E	50—	-45	17—15	17—15	17—15		
(H)TXT4E	50—	-45	30—27	30—27	30—27		
(H)TXT 5E	75—	-68	30—27	30—27	30—27		
(H)TXT6E	75—	-68	30—27	30—27	30—27		
(H)TXT7E	150—	-135	30—27	30—27	30—27		
TXT 8E	150—	-135	30—27	30—27	30—27		
TXT9E	150—	-135	30—27	30—27	30—27		
TXT10E	150—	-135	30—27	30—27	30—27		
TXT12E	150—	-135	30—27	30—27	30—27		
Bacl	kstop co	over bo	olt recommen	ded torque va	lues		
Reducers	size	Fa	astener size	Torqu	Torque (ft-lbs)		
(H)TXT1	LE		10-24x3/8	5	5—4		
(H)TXT2	2E		10-24x3/8	5	5—4		
(H)TXT3	3E	:	10-24x3/8	5	5—4		
(H)TXT4	ŧΕ	:	1/4-20 x1/2	8	8—7		
(H)TXT 5	δE	:	1/4-20 x1/2	8	8—7		
(H)TXT6E		1/4-20 x1/2	8	—7			
(H)TXT7E		:	1/4-20 x1/2	8	—7		
TXT 8E			1/4-20 x1/2	8	—7		
TXT9E			1/4-20 x1/2	8	—7		
TXT 10	E		1/4-20 x1/2	8	—7		
TXT 12	E		3/8-16 x 3/4	25	25—20		

# **REPLACEMENT PART AND KIT NUMBERS**

Table 7-Part Numbers for Replacement Bearings, Double-Reduction Reducers

Г

Deducersing	Output hub bearing – LH and RH sides					
Reducersize	Part number	Mfr part number				
(H)TXT1E	424020	6011NR				
(H)TXT2E	424022	6013NR				
(H)TXT 3E	402272/403127	LM814849/LM814810				
(H)TXT4E	402268/403163	498/492A				
(H)TXT 5E	402193/403016	42381/42584				
(H)TXT 6E	402050/403140	JM822049/JM822010				
(H)TXT7E	402058/403111	48290/48220				
TXT8E	402147/403105	36690/36620				
TXT9E	402160/403110	46790/46720				
TXT 10E	402168/403116	67790/67720				
TXT12E	402039/403119	67983/67920				

Deducercize	Input shaft bearing – LH input side					
Reducersize	Part number	Mfr part number				
(H)TXT1E	424112	6205NR				
(H)TXT 2E	424019	206NR				
(H)TXT 3E	402204/403139	LM48548A/LM48510				
(H)TXT4E	402280/403027	2788/2720				
(H)TXT 5E	402144/403104	28579/28521				
(H)TXT6E	402196/403091	395A/3920				
(H)TXT7E	402150/403106	39590/39520				
TXT8E	402098/403072	566/563				
TXT9E	402114/403080 745A/742					
TXT 10E	402114/403080	745A/742				
TXT 12E	402125/403087	6484/6420				

Т

Deducercize	Countershaft bearing – LH input side					
Reducersize	Part number	Mfr part number				
(H)TXT1E	424006	6304NR				
(H)TXT2E	424000	305NR				
(H)TXT 3E	402273/403094	15102/15245				
(H)TXT4E	402000/403000	M86649/M86610				
(H)TXT 5E	402203/403027	2789/2720				
(H)TXT 6E	402054/403159	HM807040/HM807010				
(H)TXT7E	402256/403053	JHM807045/ JHM807012				
TXT8E	402057/403143	JH211749/JH211710				
TXT9E	402109/403078	655/652A				
TXT10E	402232/402231	JH415647/JH415610				
TXT12E	402127/403089	6575/6535				

Deducersing	Countershaft bearing – RH backstop side				
Reducer size	Part number	Mfr part number			
(H)TXT1E	424006	6304NR			
(H)TXT2E	424000	305NR			
(H)TXT3E	40227/403094	15102/15245			
(H)TXT4E	402000/403000	M86649/M86610			
(H)TXT 5E	402203/403027	2789/2720			
(H)TXT6E	402052/403142	HM803149/HM803110			
(H)TXT7E	402256/403053	JHM807045/ JHM807012			
TXT8E	402148/403106	39585/39520			
TXT9E	402109/403078	655/652A			
TXT10E	402232/402231	JH415647/JH415610			
TXT12E	402127/403089	6575/6535			

Deducersize	Input shaft bearing – RH backstop side					
Reducer size	Part number	Mfr part number				
(H)TXT1E	424111	6204NR				
(H)TXT2E	424090	6305NR				
(H)TXT 3E	402273/403094	15102/15245				
(H)TXT4E	402142/403102	26118/26283				
(H)TXT 5E	402266/403073	350A/352				
(H)TXT 6E	402197/403091	396/3920				
(H)TXT7E	402088/403047	455/452				
TXT8E	402097/403072	565/563				
TXT9E	402107/403076	639/633				
TXT10E	402112/403080	745S/742				
TXT12E	402125/403087	6484/6420				

Note: Bearing part numbers refer to cup/cone combinations, respectively, and apply to all ratios unless otherwise specified. For actual reducer ratios, refer to Table 9.

#### Table 8-Replacement parts kit numbers

Badaaaaiaa	Output hub assembly Cour		Countershaft		O annu la ta a birra bita		
Reducer size	Ratio	Seal Kit	Tapered hub	Straight hub	assembly	Bearing Kit(s)	Complete shim kit
	9:1				392100		
TXT 1E	15:1	392119	390878	390151	392090	389905 All	-
	25:1				392091		
	9:01				392101		
TXT 2E	15:1	392120	392111	392110	392092	389906 All	-
	25:1				392093		
	9:1				389729		
ТХТ ЗЕ	15:1	389720	389703	389702	389700	392345 All	243800
	25:1				389701		
	9:1				389730		
TXT 4E	15:1	389721	389710	389709	389707	392347 All	244800
	25:1				389708		
	9:1				389731		245139
TXT 5E	15:1	389722	389717	389716	389714	392350 All	
	25:1				389715		
	9:1				392140		
TXT 6E	15:1	246340	390935	390988	391171	335368 All	246166
	25:1				391186		
	9:1				392141		
TXT7E	15:1	247345	390941	390990	391196	392353 All	247138
	25:1				391197		
TVT OF	15:1	040040	2000/1/1	200000	391184		0/0111
IXI8E	25:1	248340	390944	390993	391185	392355 All	248111
TYTOF	15:1	040240	2000//0	200150	390124	200257 41	0/0120
IXI9E	26:1	249340	390949	390159	390139	392357 All	249139
	15:1	070//60	20005/	200160	390983	200250 4	070610
IXITOE	24:1	272460	390954	390700	390998	392359 All	272610

Notes:

1.

2. 3.

s: Seal Kit consists of Input Seal, Output Seals, Backstop Cover Gasket, and RTV Sealant Output Hub Assembly consists of Output Hub, Output Gear, and Gear Key Countershaft Assembly consists of Countershaft Pinion, Countershaft Gear, and Gear Key Bearing Kit consists of LH and RH Output Bearing Cup/Cone, LH and RH Countershaft Bearing Cup/Cone (double-reduction only), and LH and RH Input Bearing Cup/Cone Complete Shim Kit consists of all input, countershaft, and output bearing shims 4.

5.

#### **Table 9–Actual Ratios**

Deducersize	Nominal ratios						
Reducer size	9:1	15:1	25:1*				
(H)TXT 1E	9.44	15.35	25.64				
(H)TXT 2E	9.25	14.10	23.46				
(H)TXT 3E	8.91	14.88	24.71				
(H)TXT 4E	9.67	15.13	24.38				
(H)TXT 5E	8.95	15.40	25.56				
(H)TXT 6E	9.20	15.33	25.13				
(H)TXT7E	9.61	15.23	24.59				
TXT 8E	N/A	15.08	24.62				
TXT 9E	N/A	15.12	25.66				
TXT 10E	N/A	15.16	24.30				
TXT 12E	N/A	14.89	24.65				

\* TXT 9E is 26:1 Nominal Ratio and TXT 10E is 24:1 Nominal Ratio

# Parts for (H)TXT 1E and (H)TXT 2E Straightand Tapered-Bushed Double-Reduction Reducers



# Parts for (H)TXT 3E and (H)TXT 4E Straightand Tapered-Bushed Double-Reduction Reducers







# Parts for (H)TXT 1E through (H)TXT 4E Straightand Tapered-Bushed Double-Reduction Reducers

Ref.	Description	Qty.	(H)TXT 1E	(H)TXT 2E	Qty.	(H)TXT 3E	(H)TXT 4E
$\begin{array}{c} 12 \\ 1 \\ 2 \\ 3 \\ 0 \\ 16 \\ 18 \\ 20 \\ 22 \\ 0 \\ 25 \\ 26 \\ 0 \\ 34 \\ 38 \\ 39 \\ \end{array}$	Backstop Assembly Housing LH – TXT Housing RH – TXT/HXT Housing RH - Flange Housing LH, - HXT RTV Sealant Air Vent Housing Bolt Housing Bolt - Adapter and Lifting Lug Lock-washer Hex Nut Dowel Pin Magnetic Oil Plug Oil Plug Sensor Adapter Shim Kit Input Shaft Cover Input shaft Cover Lock-washer	11111 53 6 21311166	241737 241712 241713 241733 241741 465044 900287 032018032CR 032018036CR 034017014AF 033102014AM 420063 430060 430031 966905 - 241738 032130004AF 034020012AE	242709 242712 242733 242734 465044 900287 032018032CR 032018036CR 034017014AF 033102014AM 420063 430060 430031 966905 - 901279 032130004AF 034020012AE	$1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 5 \\ 3 \\ 8 \\ 2 \\ 1 \\ 3 \\ 1 \\ 1 \\ 1 \\ 6 \\ 6 \\$	243737 243712 243713 243715 243735 465044 900287 032018044NR 032018044NR 032018044NR 034017015AF 033102015AM 420063 430060 430031 966905 243800 901279 032130004AF 034020012AE	903102 244712 244713 244715 244727 465044 900287 032018048NR 032018048NR 034017015AF 033102015AM 420063 430060 430031 966905 244800 903279 032130004AF 032020012AE
36 42 78	Seal Kit Backstop Cover Gasket Input Oil Seal Output Hub Oil Seal	1 1 2	241739 241457 241214	901280 242211 242213	1 1 2	901280 A73106 902286	903280 A73108 A73109
40 130 41	Input Pinion 9:1 Ratio ④ 15:1 Ratio ④ 25:1 Ratio ④ Hydroil Input Pinion 9:1 Ratio ④ 15:1 Ratio ④ 9:1 Ratio ④ 9:1 Ratio Hydroil 6-B Pinion ④ 15:1 Ratio Hydroil 6-B Pinion ④ 25:1 Ratio Hydroil 6-B Pinion ④ 25:1 Ratio Hydroil 6-B Pinion ④ Input Pinion Key	1 1 1 1 1 1 1 1	241701 241702 241703 - 241705 241706 - - - 443008	242701 242702 242703 - 242705 242706 - - - 443013	1 1 1 1 1 1 1 1 1	243701 243702 243703 - 243705 243706 - 243709 443032	244701 244702 244703 243704 243705 243706 243707 243708 243709 443082
44 46 54 80	Input Ball Bearing, Input Side Input Ball Bearing, Backstop Side Countershaft Ball Bearing Output Ball Bearing	1 1 2 2	424112 424111 424006 424020	424019 424090 424000 424022		- - - -	
44 45 46 47	Input Bearing Cone, Input Side Input Bearing Cup, Input Side Input Bearing Cone Backstop Side Input Bearing Cup Backstop Side			- - -	1 1 1 1	402204 403139 402273 403094	402280 403027 402142 403102
54 55 80 81	Countershaft Bearing Cone Countershaft Bearing Cup Output Bearing Cone Output Hub Bearing Cup			- - -	2 2 2 2	402273 403094 402272 403127	402000 403000 402268 403163
60 62 64 59 61	Tapered-Bore Output Hub Assembly Straight-Bore Output Hub Assembly Output Hub Straight-Bore Tapered-Bore Output Gear Output Gear Key Output Gear Key Output Hub Snap Ring Straight-Bore Output Hub Key	1 1 1 1 1 2 2	390878 390151 241208 241265 241007 241217 421013 241296	392111 392110 242208 242134 242181 443399 421017 242296	1 1 1 1 1 2 1	389703 389702 243557 243556 243570 243216 243250	389710 389709 244589 244588 244188 354087 
68 70 72 74	Straight-Bore Output Hub Collar Straight-Bore Output Hub Collar Screw Tapered-Bore Bushing Backup Plate Bushing Backup Plate Retaining Ring	2 4 2 2	241209 400062 241266 421111	242209 400094 242137 421112	2 4 2 2	243572 400098 243308 421109	244658 400150 244099 421108
76 80 81	Output Hub Seal Carrier, Input Side Output Hub Bearing Kit Output Hub Bearing, Cone Output Hub Bearing, Cup 3		- - - -	- - -	1 1 2 2	389589 402272 403127	- 389592 402268 403163

# Parts for (H)TXT 1E through (H)TXT 4E Straight-and Tapered-Bushed Double-Reduction Reducers

Ref.	Description	Qty.	(H)TXT 1E	(H)TXT 2E	Qty.	(H)TXT 3E	(H)TXT 4E
84	Tapered-Bore Bushing Assembly <sup>(2)</sup> Bushing <sup>(3)</sup> 1" Bore 1-1/16" Bore 1-1/8" Bore 1-3/16" Bore 1-3/16" Bore 1-5/16" Bore 1-5/16" Bore 1-7/16" Bore 1-1/2" Bore 1-5/8" Bore 1-5/8" Bore 1-3/4" Bore 1-3/4" Bore 2-1/8" Bore 2-1/8" Bore 2-1/8" Bore 2-1/8" Bore 2-1/6" Bore 2-7/16" Bore	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	241278 241282 241286 241290 241294 241292 - - - - - - - - - - - - - - - - - -	242146 242148 242150 242152 242154 242156 242166 242164 242166 	111111111111111111111111111111111111111	- - - - 243282 243284 243260 243262 243264 243266 243270 243272 243274 - - 243276 -	- - - - - - - - - - - - - - - - - - -
86	Bushing Screw 3	6	032018007BR	032018008BR	6	032018008CR	032018010CR
88	Lock Washer ®	6	034017013AF	034017013AF	6	034017014AF	034017014AF
90	Key, Tapered-Bore Bushing to Shaft ③ 1" Bore 1-1/16" Bore 1-1/8" Bore 1-3/16" Bore 1-3/16" Bore 1-3/16" Bore 1-3/8" Bore 1-7/16" Bore 1-7/16" Bore 1-1/2" Bore 1-5/8" Bore 1-3/4" Bore 1-3/4" Bore 1-15/16" Bore 2" Bore 2-1/8" Bore 2-3/16" Bore 2-1/4" Bore 2-7/16" Bore	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	443274 - 443271 241308 241307 241306 241310 241305 - - - - - - - - - - - - - - - - - - -	- 443281 443281 443264 443280 443282 242282 242172 242171 242170 - - - - - - - - -		- - - - - - - - - - - - - - - - - - -	$\begin{array}{c} - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - $
94 96 98 100 102 104 106 110	Torque-Arm Assembly Torque-Arm Rod End RH Nut Torque-Arm Turnbuckle Torque-Arm Extension LH Nut Torque-Arm Fulcrum Fulcrum Screw Hex Nut	1 1 1 1 1 1 1 1	964263 A73092 033102018AM A73086 A73085 A73261 241249 032018012DR 033102016AM	A73091 A73087 407295 A73089 A73088 A73262 243249 032018016ER 033102018AM	1 1 1 1 1 1 1 1	A73091 A73087 407295 A73089 A73088 A73262 243249 032018016ER 033102018AM	964268 A73146 033102022AB A73147 A73148 A73263 246249 032018016ER 033102018AM
112 114 116 118 120 122	Adapter Assembly RH Torque-Arm Adapter Bracket LH Torque-Arm Adapter Bracket Adapter Bushing Adapter Bolt Lock Washer Hex Nut	1 1 1 1 1 1	259151 241242 241241 964256 032018014CR 034017014AF 033102014AM	259152 242136 242135 964257 032018016NR 034017015AF 033102015AM	1 1 1 1 1 1	259153 243242 243241 964257 032018016NR 034017015AF 033102015AM	259154 244244 964259 032018018DR 034017016AF 033102016AM
124 126 128 111 ①	Hydraulic (Hydroil) Motor Adapter 15:1 Ratio 25:1 Ratio Hydroil 6B Motor Adapter, 15:1 and 25:1 Ratio Adapter Screw Lock-washer Input Pinion Seal Hydroil Motor to Adapter Screw 15:1 Ratio Hydroil Motor to Adapter Screw 25:1 Ratio Hydroil Motor to Adapter Lock-washer 15:1 Ratio Hydroil Motor to Adapter Lock-washer 25:1 Ratio Hydroil Motor Hydroil Motor 4 Adapter 25:1 Ratio Hydroil Motor 4 Adapter 25:1 Ratio Hyd	1 1 6 1 2 2 2 2	241454 241454 032130008BF 034020013AE 241457 032018010CR 032018010CR 034017014AF 034017014AF	242454 242454 032130008BF 034020013AE 242457 032018012CR 032018012CR 034017014AF 034017014AF	1 1 4 4 1 2 2 2 2	243539 243541 243467 032130008BF 034020013AE A73106 032018012DR 032018012CR 034017016AF 034017014AF	244572 244572 244573 032130010CF 034020014AE A73108 032018012DR 032018012DR 032018012DR 034017016AF 034017014AF

Notes: <sup>(1)</sup> Not shown on drawing. <sup>(2)</sup> Includes parts listed immediately below <sup>(3)</sup> Makes up assembly under which it is listed.

(a) See Table 9 for actual ratio.
(a) See Table 9 for actual ratio.
(b) 3 Required for TXT1E, 4 Required for TXT2E.
(c) 6 Required for TXT1E, 7 required for TXT2E.

# Parts for TXT 5E Through TXT 10E and HXT 5E Through HXT 7E Straight- and Tapered-Bushed Double-Reduction Reducers



Pa	Parts for (H)TXT 5E thru TXT 10E Straight- and Tapered-Bushed Double-Reduction Reducers							
Ref.	Description	Qty.	(H)TXT 5E	(H)TXT6E	(H)TXT 7E	TXT 8E	TXT 9E	TXT 10E
$\begin{array}{c} 12\\ 1\\ 2\\ 2\\ 2\\ 0\\ 0\\ 16\\ 18\\ 20\\ 22\\ 0\\ 0\\ 0\\ 25\\ 28\\ 32\\ 33\\ 34\\ 38\\ 39\\ \end{array}$	Backstop Assembly Housing LH – TXT Housing LH – TXT Housing RH – TXT Housing RH – TXT Housing RH – Flange RTV Sealant Air Vent Housing Bolt Housing Bolt – Adapter & Lifting Lug Lock-washer Hex Nut Dowel Pin Sensor Adapter Oil Plug Magnetic Oil Plug Input Shaft Seal Carrier Carrier Bolt Lock-washer Backstop Cover Backstop Cover Screws Backstop Cover Lock-washer	1 1 1 1 1 2 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	905102 245671 245671 245672 245674 465044 904287 0320180440R 034017016AF 033102016AM 304624 966906 430033 430062 245655 032018008CR 034017014AF 905279 032130006BF 034020013AE	246800 246789 246789 246790 246792 465044 904287 032018044DR 032018044DR 034017016AF 033102016AM 304624 966906 430033 430062 246184 032018010CR 034017014AF 906279 032130006BF 034020013AE	247690 247670 247670 247671 247672 465044 904287 032018052FR 032017020AF 033102020AM 304624 966907 430035 430064 247320 032080010NR 034017015AF 906279 032130006BF 034020013AE	907102 248711 - 248713 465044 904287 032018055FR 032018056FR 034017020AF 033102020AM 304624 966907 430035 430064 258023 032018010CR 034017014AF 907279 032130006CF 034102014AE	907102 249712 - 249713 249715 465044 904287 032018060FR 032018060FR 034017020AF 033102020AM 304624 966907 430035 430064 249211 032018010CR 034017014AF 907279 032130006CF 034020014AE	272869 272862 272863 272865 465044 904287 032018060FR 032018072FR 034017020AF 033102020AM 304624 966907 430035 430064 249211 032018010CR 034017014AF 910279 032130006CF 034020014AE
36 42 78	Seal Kit Backstop Cover Gasket Input Pinion Shaft Seal Output Hub Oil Seal	1 1 1 2	389722 245220 355011 245545	246340 246220 242210 246310	247345 246220 242210 247310	248340 248220 248211 258019	249340 248220 248211 249210	272460 248220 248211 250010
40 130	Input Pinion 9:1 Ratio 15:1 Ratio 25:1 Ratio 25:1 Ratio 4) (9) 9:1 Ratio Hydroil Pinion (4) 15:1 Ratio Hydroil Pinion (4) 25:1 Ratio 15:1 Ratio 5 Hydroil Pinion (4) 25:1 Ratio 5 Hydroil Pinion (4)	1 1 1 1 1 1	245660 245661 245662 245663 245664 245665 245666 245666 245667	246777 246778 246779 - 246780 246781 246802 246782	247660 247661 247662 - 247663 247664 - 247665	248701 248702 - - - - - -	249702 249703 - - - - - -	272852 272853 - - - - -
41	Input Pinion Shaft Key	1	443096	443113	443127	443133	443123	443123
44 45 46 47	Input Bearings Input Shaft Bearing Cone, Input Side Input Shaft Bearing Cup, Input Side Input Shaft Bearing Cone, Backstop Side Input Shaft Bearing Cup, Backstop Side	1 1 1 1	389594 402144 403104 402266 403073	402196 403091 402197 403091	402150 403106 402088 403047	402098 403072 402097 403072	402114 403080 402107 403076	402114 403080 402112 403080
48 50 52	Countershaft Pinion Assembly (2) 9:1 Ratio (4) 15:1 Ratio (4) 25:1 Ratio (4) (9) Countershaft Pinion (3) First Reduction Gear (3) 9:1 Ratio (4) 15:1 Ratio (4) 25:1 Ratio (4) (9) First Reduction Gear Key	1 1 1 1 1 1 1	389731 389714 389715 245596 245482 245214 245212 D8243	392140 391171 391186 246294 246482 246492 246293 246293 245218	392141 391196 391197 247002 247478 247008 247008 247005 247218	391184 391185 248002 - 248213 248214 248218	- 390124 390139 249006 - 249008 249005 248218	390983 390998 272249 - 250031 250005 248218
54 55 56 57 58	Countershaft Bearing Kit C/S Bearing Cone Input Side C/S Bearing Cup Input Side C/S Bearing Cone Backstop Side C/S Bearing Cup Backstop Side C/S Bearing Cover Input Side	1 1 1 1	389595 402203 403027 402203 403027 245657	402054 403159 402052 403142 246185	402256 403053 402256 403053 247194	402057 403143 402148 403106 248223	402109 403078 402109 403078 249225	402232 402231 402232 402231 272251
60 62 64	Tapered-Bore Output Hub Assembly Straight-Bore Output Hub Assembly Straight-Bore Hub Tapered-Bore Hub Output Gear S Output Gear Key S	1 1 1 1 2	389717 389716 245591 245590 245186 355064	390935 390988 246338 246269 246295 245217	390941 390990 247338 272137 247215 245217	390944 390993 248332 272036 248215 248217	390949 390159 250090 249140 021764 443413	390954 390160 250008 272241 250007 250017
68 70	Output Hub Collar, Straight-Bore Output Hub Collar Screw	2 4	245598 400154	246309 400154	247309 400190	248209 400190	249209 400194	250009 400194
72 74 76	Bushing Backup Plate, Tapered-Bore Output Hub Retaining Ring Output Hub Seal Carrier, Input Side	2 2 1	245114 421107 245592	246270 421055 246187	272138 421099 247315	272037 421098 258021	272082 421097 249221	272242 421069 250011
80 81	Output Hub Bearing Kit 1 Output Hub Bearing, Cone Output Hub Bearing, Cup	1 2 2	389596 402193 403016	402050 403140	402058 403111	402147 403105	402160 403110	402168 403116

# Parts for (H)TXT 5E thru TXT 10E Straight- and Tapered-Bushed Double-Reduction Reducers

Ref.	Description	Otv.	(H)TXT 5E	(H)TXT6E	(H)TXT7E	ТХТ 8Е	ТХТ 9Е	TXT 10E
0/1	Taparad Bara Bushing Assambly	<u>, , , , , , , , , , , , , , , , , , , </u>	(,					
84	1apered-Bore Busning Assembly (2)         1-15/16" Bore         2" Bore         2-3/16" Bore         2-1/4" Bore         2-7/16" Bore         2-1/2" Bore         2-11/16" Bore         2-13/16" Bore         2-15/16" Bore         2-15/16" Bore         3" Bore         3-3/16" Bore         3-7/16" Bore	1 1 1 1 1 1 1 1 1 1	245086 245088 245090 245092 245094 245099 245110 - - - - - - - - - - - - -	- 246261 246262 246263 246264 246265 - 246266 246267 246267 246283	- 272125 272147 - 272132 272133 272133 272134 272135	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - - -	
86 88	3-15/16" Bore 4-3/16" Bore 4-7/16" Bore 4-15/16" Bore 5-7/16" Bore Tapered-Bushing Screw Tapered-Bushing Lock-washer	1 1 1 1 6 6	- - - 032018012NR 034017015AF	- - - - - 032018010CR 034017014AF	272136 - - - 032018012DR 034017016AF	272033 272034 272035 - 032018014DR 034017016AF	272077 272079 272080 032018016ER 034017018AF	272214 272238 272239 272240 032018016ER 034017018AF
90	Key, Bushing to Shaft ③ 1-15/16" Bore 2" Bore 2-3/16" Bore 2-1/4" Bore 2-7/16" Bore 2-1/2" Bore 2-12" Bore 2-13/16" Bore 2-13/16" Bore 2-15/16" Bore 3" Bore 3-3/16" Bore 3-3/16" Bore 4-3/16" Bore 4-7/16" Bore 4-7/16" Bore 5-7/16" Bore	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	443251 443251 443251 443243 443244 443245 - - - - - - - - - - - - - - - - - - -	- 443211 443214 443214 443238 - 443236 443237 443252 - 443213 - - - - - - - -	- 443248 - 443248 - 443199 443216 443235 443217 443218 - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -
1	Key, Bushing to Output Hub ③ 1-15/16" thru 2-1/4" Bore 2-3/16" thru 2-1/2" Bore 2-7/16" thru 3" Bore 2-3/16" thru 3-15/16" Bore 2-15/16 thru 3-7/16" Bore 3-7/16" Bore 3-15/16" thru 4-7/16" Bore	1 1 1 1 1 1 1	443202 - - - - - -	443212 - - - -	- 443198 - - -	- - 443162 443162	- - 443121 443121	- - - - 443191
94 96 98 100 102 104 106 108 110	Torque-Arm Rod Kit <sup>®</sup> Torque-Arm Rod End <sup>®</sup> RH Nut <sup>®</sup> Torque-Arm Turnbuckle <sup>®</sup> Torque-Arm Extension <sup>®</sup> LH Nut <sup>®</sup> Fulcrum <sup>®</sup> Fulcrum Screw <sup>®</sup> Lockwasher <sup>®</sup> Hex Nut <sup>®</sup>	1 1 1 1 1 1 1 1 1	964268 A73146 033102022AM A73147 A73148 A73263 246249 032018016ER 034017018AF 033102018AM	964268 A73146 033102022AM A73147 A73148 A73263 246249 032018016ER 034017018AF 033102018AM	964269 A73269 033102024AM A73267 A73265 A73266 247248 032018028ER 034017018AF 033102018AM	964275 A73101 033102028AM A73102 963479 A73270 271054 032018040HR 034017024AF 033102024AM	964275 A73101 033102028AM A73102 963479 A73270 271054 032018040HR 034017024AF 033102024AM	964275 A73101 033102028AM A73102 963479 A73270 271054 032018040HR 034017024AF 033102024AM
112 114 116 118 120 122	Adapter Assembly <sup>(2)</sup> RH Adapter Plate <sup>(3)</sup> LH Adapter Plate <sup>(3)</sup> Adapter Bushing <sup>(3)</sup> Adapter Bolt <sup>(3)</sup> Lockwasher <sup>(3)</sup> Hex Nut <sup>(3)</sup>	1 1 1 1 1 1	259155 245242 245241 964259 032018018DR 034017016AF 033102016AM	259156 246242 246241 964259 032018018DR 034017016AF 033102016AM	259157 247242 247241 964260 032018028ER 034017018AF 033102018AM	248110 272053 272053 964262 032018026HR 034017024AF 033102024AM	249110 249241 964262 032018028HR 034017024AF 033102024AM	250110 250041 250041 964262 032018028HR 034017024AF 033102024AM
124 126 128 ① ①	Hydroil Motor Adapter – 9:1 and 15:1 Hydroil Motor Adapter – 25:1 Hydroil Motor Adapter – 6B Adapter To Reducer Screw Adapter To Reducer Lock-washer Motor To Adapter Screw Motor To Adapter Lock-washer	1 1 6 6 2 2	245606 245607 245643 032130010CF 034020014AE 032018012DR 032017016AF	246465 246465 246522 032130010CF 034020014AF 032018012DR 032017016AF	247464 247464 247522 032130010ZF 034017015AF 032018012DR 032017016AF			

Notes: ① Not shown on drawing. ② Includes parts listed immediately below. ③ Makes up assembly under which it is listed. ④ See Table 9 for actual ratio. ⑤ 3 Required on (H)TXT 5E, 4 Required on (H)TXT 6E and (H)TXT 7E, 7 required on TXT 8E and TXT 9E, and 9 Required on TXT 10E. ⑥ 3 Required on (H)TXT 5E, 4 Required on (H)TXT 6E, (H)TXT 7E, TXT 8E, TXT 9E, and TXT 10E. ⑥ 3 Required on (H)TXT 5E, 8 Required on (H)TXT 6E and (H)TXT 7E, 11 required on TXT 8E and TXT 9E, and 13 Required on TXT 10E. ⑧ 15 Required on (H)TXT 5E, 18 Required on (H)TXT 6E and (H)TXT 7E, 24 required on TXT 8E, and 13 Required on TXT 10E. ⑧ Nominal Ratio on (H)TXT 5E, (H)TXT 6E, (H)TXT 7E, and TXT 8E is 25:1, Nominal Ratio on TXT 9E, and Nominal Ratio on TXT 10E is 24:1.



Ref.	Description	Quantity	TXT 12E
12 1 1 16 18 20 21 22 1 22 23 25 28 32 33 34 38 39	Backstop Assembly Housing Assembly RTV Sealant Air Vent Assembly Housing Bolt - Adapter Lock-washer Plain Washer Hex Nut Dowel Pin Sensor Adapter Oil Plug Magnetic Oil Plug Input Seal Carrier Carrier Bolt Lock-washer Backstop Cover Backstop Cover Screws Backstop Cover Lock-washer	$ \begin{array}{c} 1\\ 1\\ 1\\ 1\\ 12\\ 4\\ 14\\ 4\\ 16\\ 2\\ 1\\ 7\\ 1\\ 40\\ 40\\ 1\\ 12\\ 12\\ 12 \end{array} $	272889 272881 465044 271040 032018072FR 032018080FR 034017020AF 034000020AJ 033102020AM 420133 966907 430035 430064 272019 032018014ER 034017018AF 912279 032130006CF 034020014AE
36 42 78	Backstop Cover Gasket Input Pinion Shaft Seal Output Hub Oil Seal	1 1 2	912280 272211 272010
40 43	Input Shaft Input Pinion 15:1 Ratio Input Pinion 25:1 Ratio	1 1 1	272872 272212 272003
41	Input Pionon Shaft Key	1	443122
44 45 46 47	Input Shaft Bearing Cone Input Side Input Bearing Cup Input Side Input Bearing Cone Backstop Side Input Bearing Cup Backstop Side	1 1 1 1	402125 403087 402125 403087
48 50 52	Countershaft Pinion LH First Reduction Gear 15:1 Ratio (2) RH First Reduction Gear 15:1 Ratio (2) LH First Reduction Gear 25:1 Ratio (2) RH First Reduction Gear 25:1 Ratio (2) First Reduction Gear Key	2 1 1 1 4	272006 272026 272028 272005 272011 301491
59 54 55 56 57 58	Shim Kit – Complete Set Countershaft Bearing Cone Countershaft Bearing Cup Countershaft Bearing Spacer Countershaft Bearing Cover Countershaft Cover Oil Plug	2 4 4 2 4 4	272611 402127 403089 272017 272016 430035
60 62 64 72 74	Tapered-Bore Output Hub Output Gear Output Gear Key Bushing Back-up Plate Retaining Ring	1 1 3 2 2	272220 272007 272027 272221 421053
84	Bushing Assembly 5-7/16" Bore 5-15/16" Bore 6" Bore 6-7/16" Bore 6-1/2" Bore	1 1 1 1 1	272215 272216 272217 272218 272219
61	Key – Bushing to Shaft 5-7/16" Bore 5-15/16" Bore 6" Bore 6-7/16" Bore 6-1/2" Bore	1 1 1 1 1	272223 272225 272227 272229 272231
86 88 78 82 32 33	Bushing Screw Bushing Screw Lock-washer Output Hub Seal Output Seal Carrier Seal Carrier Screw Seal Carrier Lock-washer	8 8 2 2 16 16	032018016ER 034017018AF 272010 272014 032018014FR 034017020AF
80 81 90 92 93	Output Hub Bearing Cone Output Hub Bearing Cup Output Hub Bearing Spacer Output Carrier Bolt Lock-washer	2 2 1 16 16	402039 403119 272012 032018014FR 034017020AF

# Parts for TXT 12E Tapered-Bushed Double-Reduction Reducers

# Parts for TXT 12E Tapered-Bushed Double-Reduction Reducers

Ref.	Description	Quantity	TXT 12E
94	Rod End	1	964278
96	RH Hex Nut	1	033102032AM
98	Turnbuckle	1	964279
100	Rod Extension	1	964280
102	LH Hex Nut	1	965051
104	Fulcrum	1	272054
106	Fulcrum Screw	1	032018048JR
110	Fulcrum Hex Nut	1	033102028AM
112	Fulcrum Lock-washer	1	034017028AF
114	Adapter Bracket	2	272049
116	Rod End Adapter Bushing	1	272046
118	Adapter Screw	1	032018032JR
120	Adapter Lock-washer	1	034017028AF
122	Adapter Hex Nut	1	033102028AM

Notes: ① Not shown on drawing ② See Table 9 for actual ratio

**Dodge Industrial, Inc.** 1061 Holland Road

Simpsonville, SC 29681 +1 864 297 4800

© DODGE INDUSTRIAL, INC. AN RBC BEARINGS COMPANY

