

Installation and Parts Replacement Manual For

Dodge® TORQUE-ARM II™ Speed Reducers Ratios 5, 9, 15, 25, and 40:1

TA0107L

TA1107H

TA2115H

TA3203H

TA4207H

TA5215H

TA6307H

TA7315H

TA8407H

TA9415H

TA10507H

TA12608H

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 Rockwell Automation, nor are the responsibility of Rockwell Automation. This unit and its associated equipment must be installed, adjusted and maintained by qualified personnel who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. When risks 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.

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INSTALLATION

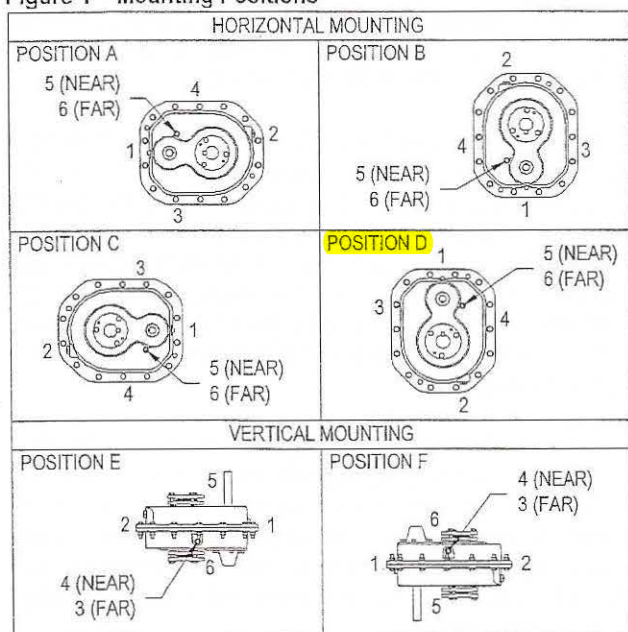
1. Use lifting bracket to lift reducer.

2. Determine the running positions of the reducer. (See Fig. 1) Note that the reducer is supplied with 6 plugs; 4 around the sides for horizontal installations and 1 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. Throw away the tape that covers the filter/ventilation plug in shipment and install plug in topmost hole. Of the 2 remaining plugs on the sides of the reducer, the lowest one 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 as installed. If space is restricted on the upper face, install the vent in the highest hole on the side of the reducer per Figure 1. Install a plug in the hole in the bottom face of the reducer. Do not use this hole for the magnetic drain plug. Of the remaining holes on the sides of the reducer, use the plug in the upper housing half for the minimum oil level plug.

Figure 1 – Mounting Positions



Output Speeds Above 15 RPM						
Mounting Position	Vent and Plug Locations					
	1	2	3	4	5	6
Position A	Level	Plug	Drain	Vent	Plug	Plug
Position B	Drain	Vent	Level	Plug	Plug	Plug
Position C	Plug	Level	Vent	Drain	Plug	Plug
Position D	Vent	Drain	Level	Plug	Plug	Plug
Position E	Level	Plug	Plug	Drain	Vent	Plug
Position F	Plug	Drain	Level	Plug	Plug	Vent

Output Speeds 15 RPM and Below ●						
Mounting Position	Vent and Plug Locations					
	1	2	3	4	5	6
Position A	Plug	Level	Drain	Vent	Plug	Plug
Position B	Drain	Vent	Plug	Level	Plug	Plug
Position C	Level	Plug	Vent	Drain	Plug	Plug
Position D	Vent	Drain	Level	Plug	Plug	Plug
Position E	Level	Plug	Plug	Drain	Vent	Plug
Position F	Plug	Drain	Level	Plug	Plug	Vent

● 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. Consult Dodge.

The running position of the reducer in a horizontal application is not limited to the four positions shown in Fig. 1. However, if running position is over 20° in position "B" & "D" or 5° in position "A" & "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° for position "A" & "C" or 5° for position "B" & "D" of the positions shown in Fig. 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.

3. Mount reducer on driven shaft as follows:

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.

For Taper Bushed Reducer: Mount reducer on driven shaft per instruction in Torque-Arm II Bushing Installation section of this manual.

4. Install sheave on input shaft as close to reducer as practical. (See Fig. 2)

5. If not using a Dodge Torque-Arm II 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 Fig. 3) This will permit tightening the V-belt with the torque arm.

6. Install torque arm and adapter plates reusing the reducer bolts. The adapter plates will fit in any position around the input end reducer.

7. 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 Fig. 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

8. Fill gear reducer with recommended lubricant. See Table 2.

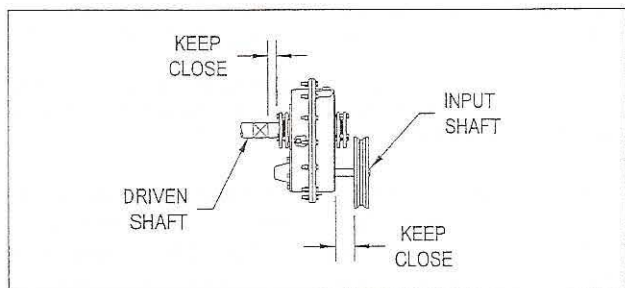


Figure 2 – Reducer and Sheave Installation

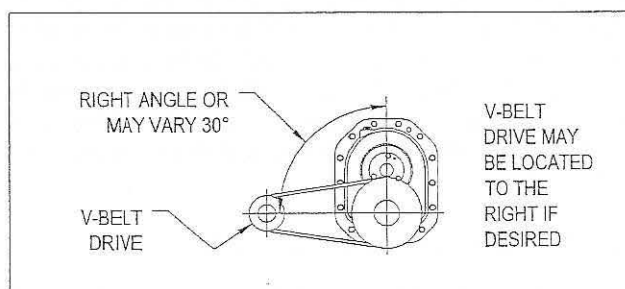


Figure 3 – Angle of V-Drive

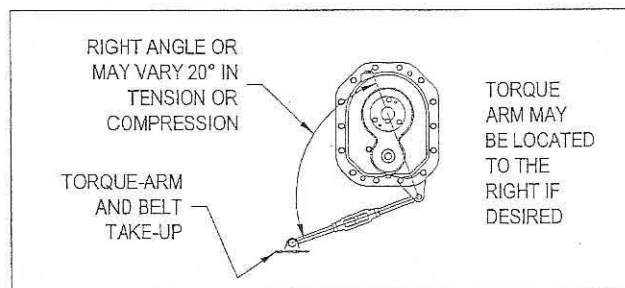


Figure 4 – Angle of Torque-Arm

TORQUE-ARM II BUSHING INSTALLATION

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.

The Dodge Torque-Arm II reducer is designed to fit both standard and short length driven shafts. The Standard Taper Bushings series is designed where shaft length is not a concern. The Short Shaft Bushing series is to be used where the driven shaft does not extend through the reducer.

Standard Taper 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, two bushing backup plates and retaining rings, and necessary shaft key or keys. The driven shaft must extend through the full length of the reducer. If the driven shaft does not extend through the reducer do not use the standard tapered bushings; instead use the short shaft bushings as described in the Short Shaft Bushings section that follows. 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.

2. Install one bushing backup plate on the end of the hub and secure with the supplied retaining ring. Repeat procedure for other side.

3. 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 for future bushing and reducer removal.

4. Insert the output key in the shaft and bushing. For easy of installation, rotate the driven shaft so that the shaft keyseat is at the top position.

5. 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.

6. 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.

7. 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.

8. 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.

Short Shaft Bushings:

1. One bushing assembly is required to mount the reducer on the driven shaft. An assembly consists of one long tapered bushing, one short tapered bushing, one tapered bushing wedge, bushing screws and washers, two bushing backup

plates and retaining rings, and necessary shaft key or keys. The driven shaft does not need to extend through the reducer for the short shaft bushing to operate properly. 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.

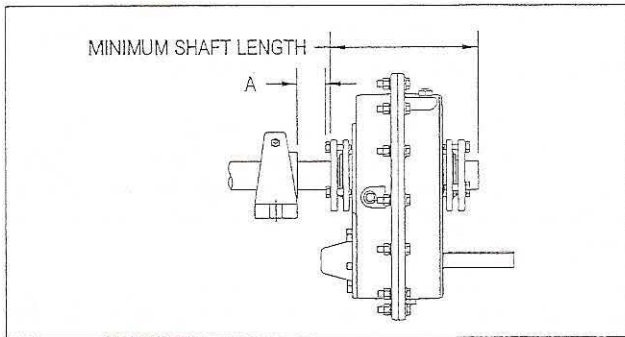


Figure 5 – Minimum Recommended Dimensions

Table 1 – Minimum Mounting Dimensions and Bolt Torques

Reducer Size	Minimum Required Shaft Length	
	Standard Taper Bushing	Short Shaft Bushing
TA0107L	6.83	4.32
TA1107H	6.95	4.43
TA2115H	7.80	4.80
TA3203H	8.55	5.46
TA4207H	8.94	5.66
TA5215H	10.33	6.35
TA6307H	10.82	6.72
TA7315H	11.87	7.62
TA8407H	12.82	8.10
TA9415H	13.74	8.56
TA10507H	15.46	9.67
TA12608H	18.32	11.60

Bushing Screw Information and Minimum Clearance for Removal			
Reducer Size	Fastener Size	Torque in Ft.-Lbs.	A
TA0107L	5/16-18	20 – 17	1.08
TA1107H	5/16-18	20 – 17	1.20
TA2115H	3/8-16	20 – 17	1.20
TA3203H	3/8-16	20 – 17	1.20
TA4207H	3/8-16	26 – 23	1.48
TA5215H	1/2-13	77 – 67	1.81
TA6307H	1/2-13	77 – 67	1.81
TA7315H	1/2-13	77 – 67	2.06
TA8407H	1/2-13	77 – 67	2.06
TA9415H	5/8-11	86 – 75	2.39
TA10507H	5/8-11	86 – 75	2.39
TA12608H	5/8-11	86 – 75	2.39

2. The long bushing is designed to be installed from the side of the reducer opposite the driven equipment as shown in Figure 6. The long bushing when properly installed is designed to capture the end of the customer shaft that does not extend through the reducer. Normally the reducer would be mounted such that the input shaft extends from the side of the reducer opposite the driven equipment however the reducer design allows installation of the reducer to be mounted in the opposite direction.

3. Install the tapered bushing wedge into the hollow bore of the reducer from the same side as the long bushing will be installed. When installing the tapered bushing wedge into the reducer

hub, install the flange end first so that the thin taper is pointing outwards towards the long bushing as shown in Figure 6. The wedge is properly installed when it snaps into place in the reducer hub.

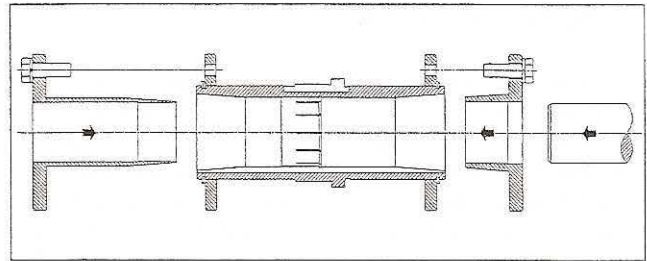


Figure 6 – Short Shaft Bushing and Output Hub Assembly

4. Align the tapered bushing wedge keyway with the reducer hub keyway. The keyway in the wedge is slightly wider than the keyway in the reducer hub allowing for easier installation.

5. Install one bushing backup plate on the end of the hub and secure with the supplied retaining ring. Repeat procedure for other side.

6. Install the short bushing; flange first, on the driven shaft and position per dimension "A", as shown in Table 1. This will allow the bolts to be threaded into the bushing for future bushing and reducer removal.

7. Insert the output key in the shaft and bushing. For easy of installation, rotate the driven shaft so that the shaft keyseat is at the top position.

8. 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.

9. 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.

10. Place the long bushing in position on the shaft and align the bushing keyway with the shaft key. Use care to locate the long bushing with the tapered bushing wedge installed earlier. 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.

11. 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.

Bushing Removal for Standard Taper or Short Shaft Bushings:

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, and then the inboard bushing.

LUBRICATION



IMPORTANT: Because reducer is shipped without oil, it is necessary to add the proper amount of oil before operating reducer. Use a high-grade petroleum base rust and oxidation inhibited (R&O) gear oil - see tables. Follow instructions on reducer warning tags, and in the installation manual.

Under average industrial operating conditions, the lubricant should be changed every 2500 hours of operation or every 6 months, whichever occurs first. Drain reducer and flush with kerosene, clean magnetic drain plug and refill to proper level with new lubricant.

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 bodily injury.

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.

Table 2 – Oil Volumes

Reducer Size		Approximate Volume of Oil to Fill Reducer to Oil Level Plug  											
		† Position A		† Position B		† Position C		† Position D		† Position E		† Position F	
		▲ Qt	L	▲ Qt	L	▲ Qt	L	▲ Qt	L	▲ Qt	L	▲ Qt	L
TA0107L	Single	0.7	0.6	0.5	0.5	0.7	0.6	1.4	1.3	1.3	1.2	1.5	1.4
	Double	0.7	0.6	0.5	0.5	0.6	0.6	1.3	1.3	1.2	1.2	1.4	1.3
TA1107H	Single	1.3	1.3	0.7	0.7	0.7	0.6	1.7	1.6	1.5	1.4	1.9	1.8
	Double	1.3	1.3	0.7	0.7	0.6	0.6	1.7	1.6	1.5	1.4	1.9	1.8
TA2115H	Single	2.1	2.0	1.2	1.2	1.1	1.0	2.7	2.5	2.3	2.2	3.1	2.8
	Double	2.1	2.0	1.1	1.1	1.0	1.0	2.6	2.5	2.4	2.3	3.0	2.9
TA3203H	Single	2.8	2.7	1.6	1.6	1.8	1.7	4.1	3.9	3.3	3.1	4.4	4.2
	Double	2.8	2.7	1.5	1.4	1.7	1.6	4.0	3.8	3.4	3.3	4.2	4.0
TA4207H	Single	4.4	4.2	2.6	2.5	2.9	2.8	7.4	7.0	6.3	6.0	7.8	7.3
	Double	4.4	4.2	2.5	2.4	2.8	2.6	7.3	6.9	6.4	6.0	7.5	7.1
TA5215H	Single	7.4	7.0	4.9	4.7	5.8	5.5	13.2	12.5	11.6	11.0	13.1	12.4
	Double	7.4	7.0	4.7	4.4	5.5	5.2	12.9	12.2	11.4	10.8	12.6	11.9
TA6307H	Single	8.8	8.4	5.8	5.5	6.6	6.2	16.1	15.3	13.2	12.5	16.1	15.3
	Double	8.8	8.4	5.5	5.2	6.2	5.9	15.8	15.0	13.9	13.1	15.3	14.5
TA7315H	Single	8.4	8.0	11.8	11.1	13.9	13.2	22.5	21.3	22.1	20.9	25.1	23.7
	Double	8.4	8.0	10.8	10.3	13.2	12.5	22.0	20.9	22.4	21.2	23.1	21.8
TA8407H	Single	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Double	7.7	7.3	11.7	11.1	13.7	12.9	25.1	23.8	24.0	22.7	25.8	24.4
TA9415H	Single	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Double	17.0	16.1	16.8	15.9	18.1	17.1	33.2	31.4	33.2	31.4	38.6	36.5
TA10507H	Single	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Double	38.0	36.0	27.6	26.1	25.8	24.4	53.5	50.6	53.8	50.9	56.1	53.0
TA12608H	Single	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Double	53.0	50.2	41.5	39.3	37.1	35.1	70.7	66.9	72.2	68.3	80.4	76.1

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

† Refer to Figure 1 for mounting positions.

▲ US measure: 1 quart = 32 fluid ounces = .94646 liters.

● 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. Consult Dodge.

Table 3 – Oil Recommendations

Output RPM	ISO Grades For Ambient Temperatures of 50°F to 125°F *											
	Torque-Arm II Reducer Size											
	TA0107L	TA1107H	TA2115H	TA3203H	TA4207H	TA5215H	TA6307H	TA7315H	TA8407H	TA9415H	TA10507H	TA12608H
301 – 400	320	320	320	220	220	220	220	220	220	220	220	220
201 – 300	320	320	320	220	220	220	220	220	220	220	220	220
151 – 200	320	320	320	220	220	220	220	220	220	220	220	220
126 – 150	320	320	320	220	220	220	220	220	220	220	220	220
101 – 125	320	320	320	320	220	220	220	220	220	220	220	220
81 – 100	320	320	320	320	320	220	220	220	220	220	220	220
41 – 80	320	320	320	320	320	220	220	220	220	220	220	220
11 – 40	320	320	320	320	320	320	320	320	320	320	220	220
1 – 10	320	320	320	320	320	320	320	320	320	320	320	320

Output RPM	ISO Grades For Ambient Temperatures of 15°F to 60°F *											
	Torque-Arm II Reducer Size											
	TA0107L	TA1107H	TA2115H	TA3203H	TA4207H	TA5215H	TA6307H	TA7315H	TA8407H	TA9415H	TA10507H	TA12608H
301 – 400	220	220	220	150	150	150	150	150	150	150	150	150
201 – 300	220	220	220	150	150	150	150	150	150	150	150	150
151 – 200	220	220	220	150	150	150	150	150	150	150	150	150
126 – 150	220	220	220	150	150	150	150	150	150	150	150	150
101 – 125	220	220	220	220	150	150	150	150	150	150	150	150
81 – 100	220	220	220	220	220	150	150	150	150	150	150	150
41 – 80	220	220	220	220	220	150	150	150	150	150	150	150
11 – 40	220	220	220	220	220	220	220	220	220	220	150	150
1 – 10	220	220	220	220	220	220	220	220	220	220	220	220

* Notes:

1. Assumes auxiliary cooling where recommended in the catalog.
2. Pour point of lubricant selected should be at least 10°F lower than expected minimum ambient starting temperature.
3. Extreme pressure (EP) lubricants are not necessary for average operating conditions. When properly selected for specific applications, TORQUE-ARM II backstops are suitable for use with EP lubricants.
4. Special lubricants may be required for food and drug industry applications where contact with the product being manufactured may occur. Consult a lubrication manufacturer's representative for his recommendations.
5. 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 Gear Application Engineering (864) 288-9050 for lubrication recommendation.
6. Mobil SHC630 Series oil is recommended for high ambient temperatures.

GUIDELINES FOR TORQUE-ARM II REDUCER LONG-TERM STORAGE

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.

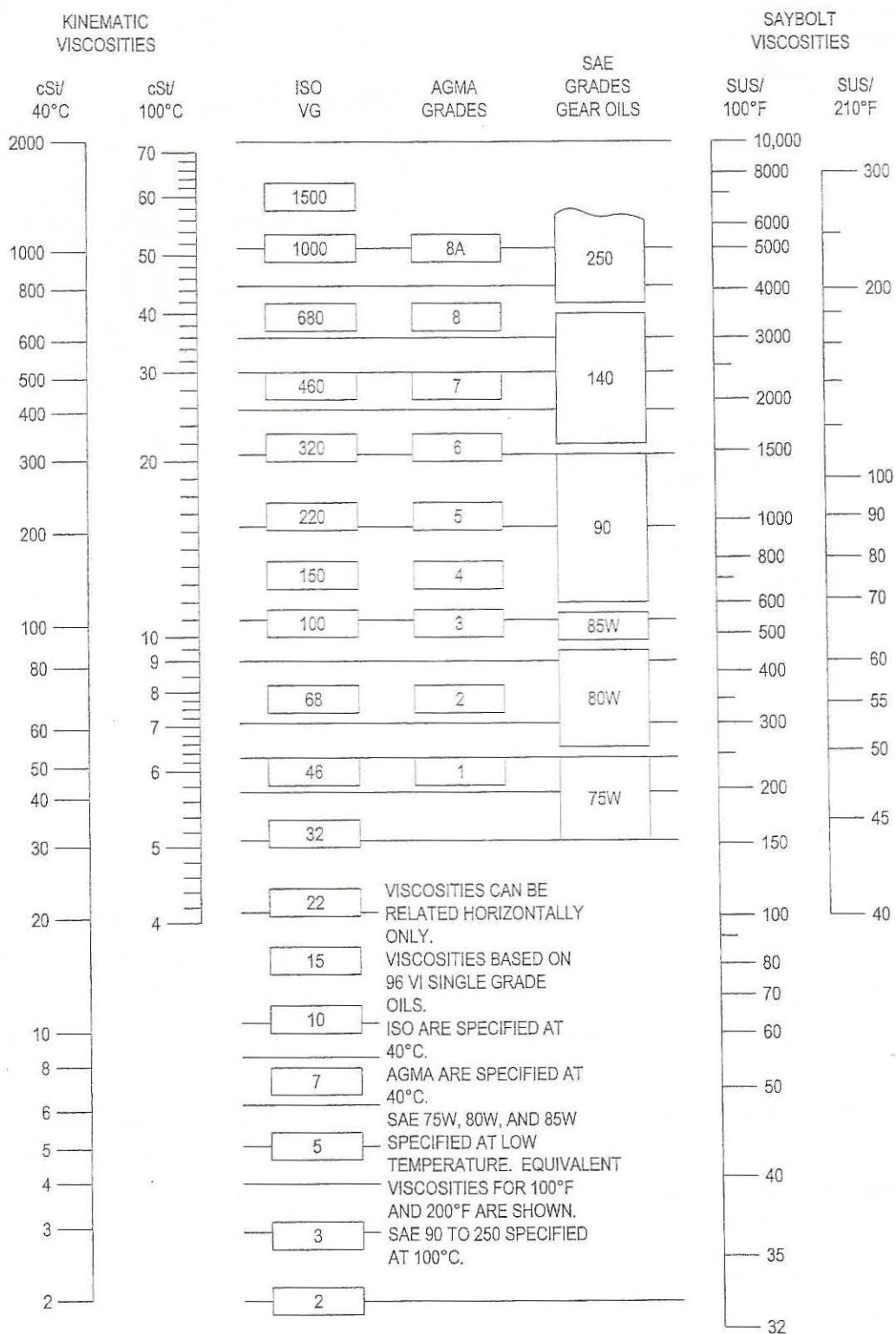
Follow the installation instructions provided in this manual.

Table 4 – Quantities of VCI #105 Oil

Reducer Size	Quantity (Ounces / Milliliter)
TA0107L	1 / 30
TA1107H	1 / 30
TA2115H	1 / 30
TA3203H	1 / 30
TA4207H	1 / 30
TA5215H	2 / 59
TA6307H	2 / 59
TA7315H	3 / 89
TA8407H	3 / 89
TA9415H	4 / 118
TA10507H	6 / 177
TA12608H	8 / 237

VCI #105 and #10 are interchangeable.
VCI #105 is more readily available.

OIL VISCOSITY EQUIVALENCY CHART



SCREW CONVEYOR ADAPTER ASSEMBLY

1. Install seals (408) into adapter housing as shown in Figure 13. If the optional packing adapter is to be used, install only one seal in the small end of the adapter. Use extreme care when installing seals to avoid damage to the seals. Press or tap seals into place by applying pressure only on the outer edge of the seal. Make sure seals are install evenly and are not tilted.
2. If using the optional packing adapter, install the two studs (413), retaining ring (412), and two nuts (414). Thread the nuts onto the studs about 4-5 threads. Install the three braided type seals (415) in a circular direction into the adapter cavity. Shoulder the braided seals against the adjustable retaining ring (412). To aid in installation of the driveshaft in step 7, the braided seals can be flattened out slightly with a soft hammer prior to installation. When installing the braided seals offset the joints from each other.
3. Lightly tap the large washer (407) into the counterbore on the large end of the adapter to seal the braided material installed in step 2 or the seal installed in step 1.
4. Place reducer on blocks so that it lays flat with the input shaft down.
5. Position screw conveyor adapter (400) on the reducer output hub so that the small end (end with four drilled holes) rests on reducer. The approximate 1/8" piloting projection should locate in the output seal bore next to the auxiliary seal. Adapter projection should not touch the face of the gear case casting.
6. Place four adapter screws (409) and lock washers (410) through the adapter and thread into the reducer. Tighten the four cap screws (409) to the torque specified in Table 9.
7. Turn reducer onto its side. Use caution not to damage either type seals and install driveshaft through the adapter housing into the reducer. Line up the keyway in the driveshaft with the keyway in the reducer hub bore. Slide or gently tap key into reducer through the input shaft side of the output hub.
8. Install the retaining ring (411) into the screw conveyor wedge (402). Making sure the driveshaft is fully seated into the reducer, slide the wedge onto driveshaft.
9. Install keeper plate (401), driveshaft cap screw (404), and lockwasher (405). Torque to specifications in Table 9.

DRIVESHAFT REMOVAL

To remove the driveshaft from the reducer the following steps are required.

1. Remove the driveshaft retaining bolt (404) and lock washer (405), the keeper plate (401), and the retaining ring (411).

2. Referring to Table 7, install the correct size hex head set screw into the end of the driveshaft until flush. Note TA6307H and TA7315H does not require a set screw.

3. Position the keeper plate (401) flush against the end of the driveshaft and with the small end facing out. Next install the retaining ring (411). When properly installed, the retaining ring holds the keeper plate (401) in place.

4. Screw removal bolt(s) into the keeper plate (401) and tighten until the driveshaft wedge (402) is dislodged. Once the driveshaft wedge (402) is dislodged, pull the assembly free from the reducer. If installed, remove the hex head set screw from the end of the driveshaft. The driveshaft can now be easily removed from the reducer by pulling the driveshaft straight out of the reducer.

Note: The removal bolt is not the same bolt as the retaining bolt. Refer to Table 7 for the correct bolt to be used for removal.

Table 7 – Removal Hardware

Reducer Size	Removal Bolt	Hex head set screw
TA0107L	3/4-10 x 2	5/8-11 x 3/4
TA1107H	3/4-10 x 2	5/8-11 x 3/4
TA2115H	3/4-10 x 2	5/8-11 x 3/4
TA3203H	7/8-9 x 2	3/4-10 x 3/4
TA4207H	7/8-9 x 2	3/4-10 x 3/4
TA5215H	7/8-9 x 2	3/4-10 x 3/4
TA6307H	3/8-16 x 2 (4 required)	N/A
TA7315H	1/2-13 x 2 (4 required)	N/A

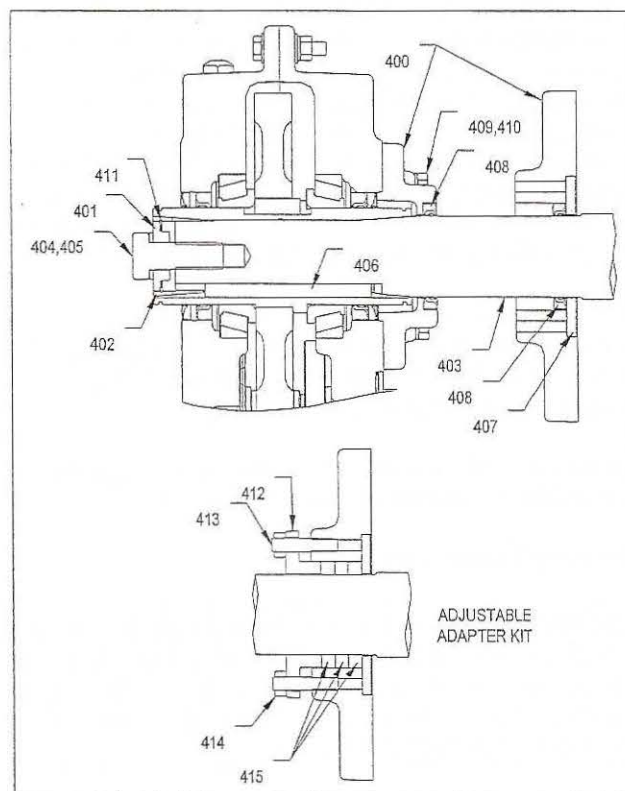


Figure 13 – Screw Conveyor Adapter Assembly

REPLACEMENT OF PARTS

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

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.

Our factory is prepared to repair reducers for customers who do not have proper facilities or who, for any reason, desire factory service.

The oil seals are contact lip seals. 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. Also, 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 reducer, specify reducer size number, reducer model number, part name, part number, and quantity.

It is strongly recommended that, when a pinion or gear is replaced, the mating pinion or gear is replaced also.

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.

Taper Bushed:

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.

Disassembly:

1. Drain all oil from the reducer.
2. Position the reducer on its side and remove all housing bolts. Drive dowel pins from housing. Using the three pry slots around the periphery of the flange, gently separate the housing halves.. Open housing evenly to prevent damage to the parts inside.
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.

Reassembly:

1. Output Hub Assembly: Heat gear to 325°F to 350°F to shrink onto hub. Heat bearings to 270°F to 290°F to shrink onto hub. Any injury to the hub surfaces where the oil seals rub will cause leakage, making it necessary to use a new hub.
2. Countershaft Assembly: Shaft and pinion are integral. Press gear and bearings on shaft. Press against inner race (not cage or rollers) of bearings.
3. Input Shaft Assembly: Shaft and pinion are integral. Press bearings on shaft. Press against inner race (not cage or rollers) of bearings.
4. Drive the two dowel pins into place in the right-hand housing half.
5. Place R.H. housing half on blocks to allow for protruding end of output hub.

6. Install bearing cups in right-hand housing half, making sure they are properly seated. The output hub assembly has one bearing pressed against the gear and the other bearing pressed against a shoulder on the hub. For double reduction reducers, install the output hub assembly so that the end where the bearing is pressed against the gear is up. For single reduction reducers, install the output hub assembly so that the end where the bearing is pressed against the gear is down.

7. Mesh output hub gear and small countershaft gear together and set in place in housing. Set input shaft assembly in place in the housing. Make sure bearing rollers (cones) are properly seated in their cups. Set bearing cups for left-hand housing half in place on their rollers.

8. Making sure both housing halves are clean, set left-hand housing half into position and tap with a soft hammer (rawhide, not lead hammer) until housing bolts can be used to draw housing halves together. Make sure reducer shafts do not bind while tightening housing bolts.

9. Rotate the input shaft and seat all bearings with a soft hammer. Using a magnetic base and indicator, measure and record the endplay of the input shaft, countershaft, and output hub. Remove left housing half and shim behind the bearing cup as required to achieve the correct bearing end play or preload per Table 8. Repeat this process and check endplay until proper endplay is obtained. Note that the output shaft is preloaded. After endplay is determined, add the correct shim thickness to the endplay reading to obtain the correct preload.

10. Remove left housing half and clean housing flange surfaces on both halves, making sure not to nick or scratch flange face. Place a 1/8" bead of Dow RTV732 sealant or equivalent on flange face (make sure RTV is placed around bolt holes and inside of flange face). Place left housing half into position and tap with a soft hammer (rawhide, not lead hammer) until housing bolts can be used to draw housing halves together. Torque housing bolts per torque values listed in Table 9.

11. Install input seal, output seals, and auxiliary seals. Extreme care should be used when installing seals to avoid damage due to contact with sharp edges on the input shaft or output hub. The possibility of damage and consequent oil leakage can be decreased by covering all sharp edges with tape prior to seal installation. Lightly coat the seal lips with Mobilith AW2 All-Purpose grease or equivalent. 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. A slight oil leakage at the seals may be evident during initial running, but should disappear unless seals have been damaged.

12. Install bushing backup plates and snap rings on Taper Bushed reducers or hub collars on straight bore reducers.

Table 8 – Bearing Adjustment Tolerances

Reducer Size	Bearing Endplay Values		
	Input	Countershaft	Output
TA0107L	.002-.004 Loose	.0005-.003 Loose	.002-.004 Preload
TA1107H	.002-.004 Loose	.0005-.003 Loose	.002-.004 Preload
TA2115H	.002-.004 Loose	.0005-.003 Loose	.002-.004 Preload
TA3203H	.002-.004 Loose	.0005-.003 Loose	.002-.004 Preload
TA4207H	.002-.004 Loose	.0005-.003 Loose	.002-.004 Preload
TA5215H	.002-.004 Loose	.0005-.003 Loose	.003-.005 Preload
TA6307H	.002-.004 Loose	.0005-.003 Loose	.006-.008 Preload
TA7315H	.002-.004 Loose	.0005-.003 Loose	.006-.008 Preload
TA8407H	.002-.004 Loose	.0005-.003 Loose	.004-.006 Preload
TA9415H	.002-.004 Loose	.0005-.003 Loose	.004-.006 Preload
TA10507H	.002-.004 Loose	.0005-.003 Loose	.006-.008 Preload
TA12608H	.002-.004 Loose	.0005-.003 Loose	.006-.008 Preload

Table 9 – Recommended Bolt Torque Values

Housing Bolt Recommended Torque Values		
Reducer Size	Fastener Size	Torque in Ft.-Lbs.
TA0107L	5/16-18	17 – 15
TA1107H	5/16-18	17 – 15
TA2115H	3/8-16	30 – 27
TA3203H	3/8-16	30 – 27
TA4207H	1/2-13	75 – 70
TA5215H	1/2-13	75 – 70
TA6307H	1/2-13	75 – 70
TA7315H	5/8-11	90 – 82
TA8407H	5/8-11	90 – 82
TA9415H	5/8-11	90 – 82
TA10507H	3/4-10	148 – 138
TA12608H	3/4-10	148 – 138

Backstop Cover Bolt Recommended Torque Values		
Reducer Size	Fastener Size	Torque in Ft.-Lbs.
TA0107L	1/4-20	8 – 7
TA1107H	1/4-20	8 – 7
TA2115H	1/4-20	8 – 7
TA3203H	1/4-20	8 – 7
TA4207H	1/4-20	8 – 7
TA5215H	5/16-18	17 – 15
TA6307H	5/16-18	17 – 15
TA7315H	3/8-16	30 – 27
TA8407H	5/16-18	17 – 15
TA9415H	3/8-16	30 – 27
TA10507H	3/8-16	30 – 27
TA12608H	3/8-16	30 – 27

Screw Conveyor Adapter Bolt Recommended Torque Values		
Reducer Size	Fastener Size	Torque in Ft.-Lbs.
TA0107L	3/8-16	30 – 27
TA1107H	3/8-16	30 – 27
TA2115H	7/16-14	50 – 45
TA3203H	1/2-13	75 – 70
TA4207H	1/2-13	75 – 70
TA5215H	5/8-11	90 – 82
TA6307H	3/4-10	148 – 138
TA7315H	3/4-10	148 – 138

Screw Conveyor Drive Shaft Retainer Bolt Recommended Torque Values		
Reducer Size	Fastener Size	Torque in Ft.-Lbs.
TA0107L	5/8-11	90 – 82
TA1107H	5/8-11	90 – 82
TA2115H	5/8-11	90 – 82
TA3203H	3/4-10	148 – 138
TA4207H	3/4-10	148 – 138
TA5215H	3/4-10	148 – 138
TA6307H	1-8	210 – 190
TA7315H	1-8	210 – 190

REPLACEMENT PART AND KIT NUMBERS

Table 10—Dodge and Timken Part Numbers for Replacement Bearings, Single and Double Reduction Reducers

Reducer Size	Output Hub Bearing – LH and RH Sides	
	Dodge Part Number	Timken Part Number
TA0107L	900250/900251	LM104911/LM104949
TA1107H	901250/901251	382A/387A
TA2115H	403003/402003	JLM714110/JLM714149
TA3203H	903252/402268	493/498
TA4207H	403016/402193	42584/42381
TA5215H	403140/402050	JM822010/JM822049
TA6307H	906250/906251	68712/68462
TA7315H	403105/402147	36620/36690
TA8407H	403105/402147	36620/36690
TA9415H	403110/402160	46720/46790
TA10507H	910250/910251	JM738210/JM38249
TA12608H	912250/912251	LM742710/LM742749

Reducer Size	Countershaft Bearing – LH Side	
	Dodge Part Number	Timken Part Number
TA0107L	304833/304740	LM11710/LM11749
TA1107H	403165/402265	LM11910/LM11949
TA2115H	304836/411626-05-B	M12610/M12649
TA3203H	403101/402271	02820/02872
TA4207H	304809/304710	25821/25877
TA5215H	403005/402001	3820/3877
TA6307H	403026/906257	45220/45280
TA7315H	403159/907260	HM807010/HM807046
TA8407H	411626-06-BE/411626-05-BM	65500/65237
TA9415H	403036/304701	6320/6379
TA10507H	403087/402023	6420/6461
TA12608H	402233/912253	HH221410/HH221434

Reducer Size	Countershaft Bearing – Backstop (RH) Side	
	Dodge Part Number	Timken Part Number
TA0107L	304833/304740	LM11710/LM11749
TA1107H	403165/402265	LM11910/LM11949
TA2115H	304836/411626-05-B	M12610/M12649
TA3203H	403101/402271	02820/02872
TA4207H	304809/304710	25821/25877
TA5215H	403005/402001	3820/3877
TA6307H	403026/906257	45220/45280
TA7315H	403159/907260	HM807010/HM807046
TA8407H	411626-06-BE/908253	65500/65200
TA9415H	403036/304701	6320/6379
TA10507H	403087/402023	6420/6461
TA12608H	402233/912253	HH221410/HH221434

Reducer Size		Input Shaft Bearing – LH Side	
		Dodge Part Number	Timken Part Number
TA0107L	5:1	403165/402265	LM11910/LM11949
	9:1		
	15:1		
	25:1		
	40:1		
TA1107H	5:1	403063/411626-05-AY	09195/09081
	9:1		
	15:1		
	25:1		
TA2115H	5:1	403063/402108	09195/09067
	9:1		
	15:1		
	25:1		
TA3203H	5:1	403094/304753	15245/15113
	9:1		
	15:1		
	25:1		
TA4207H	5:1	403094/304707	15245/15101
	9:1		
	15:1		
	25:1		
TA5215H	5:1	304809/411626-05-K	25821/25880
	9:1		
	15:1		
	25:1		
TA6307H	5:1	403101/402271	02820/02872
	9:1		
	15:1		
	25:1		
TA7315H	5:1	304809/411626-05-K	25821/25880
	9:1		
	15:1		
	25:1		
TA8407H	5:1	403005/402001	3820/3877
	9:1		
	15:1		
	25:1		
TA9415H	5:1	403005/304717	3820/3880
	9:1		
	15:1		
	25:1		
TA10507H	5:1	403026/906260	45220/45290
	9:1		
	15:1		
	25:1		
TA12608H	5:1	304802/402041	HM212011/HM212049
	9:1		
	15:1		
	25:1		
TA12608H	5:1	908259/908260	H414210/H414242
	9:1		
	15:1		
	25:1		
TA12608H	5:1	403036/304701	6320/6379
	9:1		
	15:1		
	25:1		
TA12608H	5:1	402231/402232	JH415610/JH415647
	9:1		
	15:1		
	25:1		
TA12608H	5:1	402231/402232	JH415610/JH415647
	9:1		
	15:1		
	25:1		

Reducer Size		Input Shaft Bearing – RH Side	
		Dodge Part Number	Timken Part Number
TA0107L	5:1	403165/402265	LM11910/LM11949
	9:1		
	15:1		
	25:1		
	40:1		
TA1107H	5:1	403063/402108	09195/09067
	9:1		
	15:1		
	25:1		
	40:1		
TA2115H	5:1	403094/304707	15245/15101
	9:1		
	15:1		
	25:1		
	40:1		
TA3203H	5:1	403101/402271	02820/02872
	9:1		
	15:1		
	25:1		
	40:1		
TA4207H	5:1	904256/904257	2523/2585
	9:1		
	15:1	904256/904258	2523/2578
	25:1		
	40:1		
TA5215H	5:1	403005/402001	3820/3877
	9:1		
	15:1	403005/411626-05-V	3820/3875
	25:1		
	40:1		
TA6307H	5:1	403026/906260	45220/45290
	9:1		
	15:1	403026/906257	45220/45280
	25:1		
	40:1		
TA7315H	5:1	403159/907260	HM807010/HM807046
	9:1		
	15:1	403159/402054	HM807010/HM807040
	25:1		
	40:1		
TA8407H	15:1	908256/908257	HM813810/HM813844
	25:1		
	40:1	304804/908258	6220/6277
TA9415H	15:1	411626-06-BE/411626-05-BM	65500/65237
	25:1		
	40:1	304804/908258	6220/6277
TA10507H	15:1	411626-06-BE/411626-05-BM	65500/65237
	25:1		
	40:1	304804/908258	6220/6277
TA12608H	15:1	403036/304701	6320/6379
	25:1		
	40:1	403036/912258	6320/6381

Note: LH is input side of reducer, and RH is backstop or output side of reducer. Bearing part numbers refer to Timken Roller Bearing Cup/Cone combinations, respectively, and apply to all ratios unless otherwise specified. For actual reducer ratios, refer to Table 12.

Table 11 – Replacement Parts Kit Numbers

Reducer Size	Ratio	Seal Kit	Output Hub Assembly	Countershaft Assembly	Bearing Kit
TA0107L	5:1	900126	900120	---	900128
	9:1			900122	900129
	15:1			900123	
	25:1			900124	
	40:1			900125	
TA1107H	5:1	901126	901120	---	901128
	9:1			901122	901129
	15:1			901123	
	25:1			901124	901130
	40:1			901125	
TA2115H	5:1	902126	902120	---	902128
	9:1			902122	902129
	15:1			902123	
	25:1			902124	
	40:1	902127		902125	902130
TA3203H	5:1	903126	903120	---	903128
	9:1			903122	903129
	15:1			903123	
	25:1			903124	
	40:1	903127		903125	903130
TA4207H	5:1	904126	904120	---	904128
	9:1			904122	904129
	15:1			904123	
	25:1			904124	
	40:1			904125	904130
TA5215H	5:1	905126	905120	---	905128
	9:1			905122	905129
	15:1			905123	
	25:1			905124	905130
	40:1			905125	905131
TA6307H	5:1	906126	906120	---	906128
	9:1			906122	906129
	15:1			906123	
	25:1			906124	906130
	40:1			906125	
TA7315H	5:1	907126	907120	---	907128
	9:1			907122	907129
	15:1			907123	
	25:1			907124	
	40:1			907125	907130
TA8407H	15:1	908126	908120	908123	908129
	25:1			908124	
	40:1			908125	908130
TA9415H	15:1	909126	909120	909123	909129
	25:1			909124	
	40:1			909125	909130
TA10507H	15:1	910126	910120	910123	910129
	25:1			910124	
	40:1			910125	910130
TA12608H	15:1	912126	912120	912123	912129
	25:1			912124	
	40:1			912125	912130

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.

Parts for TA0107L thru TA5215H Taper Bushed Double and Single Reduction Reducers

Ref.	Description	Qty.	TA0107L	TA1107H	TA2115H	TA3203H	TA4207H	TA5215H
1	Housing-LH	1	900202	901202	902202	903202	904202	905202
2	Housing-RH	1	900203	901203	902203	903203	904203	905203
3	RTV Sealant, Tube	1	465044	465044	465044	465044	465044	465044
4	Housing Bolt	14	411253	411253	411412	411412	411460	411460
5	Flat Washer	28	900241	900241	902241	902241	904241	904241
6	Nut	14	407085	407085	407087	407087	407091	407091
7	Lock-Washer	14	419010	419010	419011	419011	419013	419013
8	Dowel Pin	2	901248	901248	304624	901248	304624	304624
9	Backstop Shaft Cover	1	901279	901279	901279	903279	904279	905279
10	Backstop Cover Gasket	1	901280	901280	901280	903280	904280	905280
11	Backstop Cover Screw	6	417038	417038	417038	417038	417038	417074
12	Lock-Washer	6	419045	419045	419045	419045	419045	419046
13	Input Oil Seal							
	5:1, 9:1, 15:1	1	901235	901235	902235	304924	244524	304932
	25:1 Ratio	1	901235	901235	902235	304924	244524	304932
	40:1 Ratio	1	901235	901235	902233	903235	244524	304932
14	Output Oil Seal	2	900234	352122	243578	244673	245545	246310
15	Air Vent	1	241237	241237	241237	241237	245237	245237
16	Bushing	1	N/A	N/A	N/A	N/A	430079	430079
17	Oil Plug	4	430031	430031	430031	430031	430035	430035
18	Magnetic Oil Plug	1	430060	430060	430060	430060	430064	430064
21	Output Bearing Shim-As Req'd							
	.015" Shim		900263	901263	902263	903263	904263	905263
	.007" Shim		900265	901265	902265	903265	904265	905265
	.005" Shim		900264	901264	902264	903264	904264	905264
22	Input Bearing Shim-As Req'd							
	.015" Shim		901267	901271	902271	903267	903267	905271
	.007" Shim		901269	901273	902273	903269	903269	905273
	.005" Shim		901268	901272	902272	903268	903268	905272
41	Counter-Shaft Bearing Shim-As Req'd							
	.015" Shim		900267	901267	901271	903267	903267	905271
	.007" Shim		900269	901269	901273	903269	903269	905273
	.005" Shim		900268	901268	901272	903268	903268	905272
23	Output Gear	1	900208	901208	902208	903208	904208	905208
26	Output Hub	1	900230	901230	902230	903230	904230	905230
27	Output Gear Key	1	900275	901275	901275	903275	904275	905275
28	Input Pinion Key							
	5:1, 9:1, 15:1, 25:1 Ratio	1	901277	901277	902277	903277	904277	905277
	40:1 Ratio	1	901277	901277	902277	903298	904277	905277
29	Input Pinion							
	5:1 Ratio	1	900222	901222	902222	903222	904222	905222
	9:1 Ratio	1	900221	901221	902221	903221	904221	905221
	15:1 Ratio	1	900220	901220	902220	903220	904220	905220
	25:1 Ratio	1	900219	901219	902219	903219	904219	905219
	40:1 Ratio	1	900218	901218	902218	903218	904218	905218
38	First Stage Gear							
	9:1 Ratio	1	900217	901217	902217	903217	904217	905217
	15:1 Ratio	1	900215	901215	902215	903215	904215	905215
	25:1 Ratio	1	900213	901213	902213	903213	904213	905213
	40:1 Ratio	1	900211	901211	902211	903211	904211	905211
39	Counter-Shaft Pinion	1	900209	901209	902209	903209	904209	905209
40	First Stage Gear Key	1	900276	901276	902276	903276	904276	905276
600	Backstop Assembly							
	5:1, 9:1, 15:1, 25:1 Ratio	1	901102	901102	902102	903102	904102	905102
	40:1 Ratio	1	901102	901102	902102	903102	904103	905103
100	Torque-Arm Adapter Bracket	2	900500	901500	902500	903500	904500	905500
	Torque-Arm Rod Kit	1	241244	241244	242244	242244	244245	244245
101	Torque-Arm Rod End	1	241245	241245	243245	243245	245245	245245
102	Torque-Arm Extension	1	241247	241247	243247	243247	245247	245247
103	Torque-Arm Turnbuckle	1	241246	241246	243246	243246	245246	245246
104	RH Nut	1	407093	407093	407095	407095	407097	407097
105	LH Nut	1	407242	407242	407244	407244	407246	407246
106	Torque-Arm Bushing	1	242243	242243	243243	243243	245243	245243
107	Torque-Arm Fulcrum	1	241249	241249	243249	243249	246249	246249
108	Torque-Arm Bolt	1	411412	411412	411437	411437	411460	411460
109	Torque-Arm Lock-Washer	1	419011	419011	419012	419012	419013	419013

Parts for TA1107H thru TA5215H Taper Bushed Double and Single Reduction Reducers

Ref.	Description	Qty.	TA0107L	TA1107H	TA2115H	TA3203H	TA4207H	TA5215H
110	Torque-Arm Nut	1	407087	407087	407089	407089	407091	407091
111	Torque-Arm Bolt	1	411456	411456	411484	411484	411484	411484
112	Torque-Arm Nut	1	407091	407091	407093	407093	407093	407093
113	Lock-washer	1	N/A	N/A	N/A	N/A	N/A	N/A
200	Bushing Back-Up Plate	2	241266	901301	243308	903301	904301	905301
203	Retaining Ring	2	421111	901304	421109	903304	421107	421055
204	Bushing Cap Screw	6	411405	411390	902306	411408	411408	411456
205	Bushing Lock-Washer	6	419010	419010	419011	419011	419011	419013
24	Output Bearing Cup	2	900250	901250	403003	903252	403016	403140
25	Output Bearing Cone	2	900251	901251	402003	402268	402193	402050
30	Input Bearing Cup-LH							
	5:1 Ratio ⚙	1	403165	403063	403094	304809	304809	403005
	9:1 Ratio ⚙	1	403165	403063	403094	304809	304809	403005
	15:1 Ratio ⚙	1	403165	403063	403094	304809	304809	403005
	25:1 Ratio ⚙	1	403165	403063	403094	304809	304809	403005
	40:1 Ratio ⚙	1	403165	403063	403094	403101	304809	403005
31	Input Bearing Cup-RH							
	5:1 Ratio ⚙	1	403165	403063	403094	403101	904256	403005
	9:1 Ratio ⚙	1	403165	403063	403094	403101	904256	403005
	15:1 Ratio ⚙	1	403165	403063	403094	403101	904256	403005
	25:1 Ratio ⚙	1	403165	403063	403094	403101	904256	403005
	40:1 Ratio ⚙	1	403165	403063	403094	403101	904256	403005
32	Input Bearing Cone-LH							
	5:1 Ratio ⚙	1	402265	411626-05-AY	304753	411626-05-K	411626-05-K	402001
	9:1 Ratio ⚙	1	402265	411626-05-AY	304753	411626-05-K	411626-05-K	402001
	15:1 Ratio ⚙	1	402265	411626-05-AY	304753	411626-05-K	411626-05-K	402001
	25:1 Ratio ⚙	1	402265	402108	304753	411626-05-K	411626-05-K	304717
	40:1 Ratio ⚙	1	402265	402108	304707	402271	411626-05-K	304717
33	Input Bearing Cone-RH							
	5:1 Ratio ⚙	1	402265	402108	304707	402271	904257	402001
	9:1 Ratio ⚙	1	402265	402108	304707	402271	904257	402001
	15:1 Ratio ⚙	1	402265	402108	304707	402271	904257	402001
	25:1 Ratio ⚙	1	402265	402108	304707	402271	904257	402001
	40:1 Ratio ⚙	1	402265	402108	304707	402271	904258	411626-05-V
34	Counter-Shaft Bearing Cup-LH	1	304833	403165	304836	403101	304809	403005
35	Counter-Shaft Bearing Cup-RH	1	304833	403165	304836	403101	304809	403005
36	Counter-Shaft Bearing Cone-LH	1	304740	402265	411626-05-B	402271	304710	402001
37	Counter-Shaft Bearing Cone-RH	1	304740	402265	411626-05-B	402271	304710	402001
44	Auxiliary Output Seal	2	900236	901236	902236	903236	904236	905236
45	Auxiliary Input Seal							
	5:1, 9:1, 15:1, 25:1 Ratio ⚙	1	901238	901238	902238	903238	904238	905238
	40:1 Ratio ⚙	1	901238	901238	-----	-----	904238	905238
400	Screw Conveyor Adapter	1	900401	901401	902401	903401	904401	905401
401	Screw Conveyor Keeper Plate	1	900402	901402	902402	903402	904402	905402
402	Screw Conveyor Wedge	1	900403	901403	902403	903403	904403	905403
403	Screw Conveyor Drive Shaft							
	1-1/2" Shaft	1	900421	901421	902421	903421	N/A	N/A
	1-1/2" Shaft, Stainless Steel	1	900429	901429	902429	903429	N/A	N/A
	2" Shaft	1	900422	901422	902422	903422	904422	905422
	2" Shaft, Stainless Steel	1	900430	901430	902430	903430	904430	905430
	2-7/16" Shaft	1	900423	901423	902423	903423	904423	905423
	2-7/16" Shaft, Stainless Steel	1	900431	901431	902431	903431	904431	905431
	3" Shaft	1	900424	901424	902424	903424	904424	905424
	3" Shaft, Stainless Steel	1	900432	901432	902432	903432	904432	905432
	3-7/16" Shaft	1	N/A	N/A	N/A	N/A	904425	905425
	3-7/16" Shaft, Stainless Steel	1	N/A	N/A	N/A	N/A	904433	905433
404	Retaining Bolt	1	411549	411549	411549	411551	411551	411551
405	Lock-Washer	1	419014	419014	419014	419016	419016	419016
406	Drive Shaft Key	1	900405	901405	902405	903405	904405	905405
407	Drive Shaft Washer	1	900404	901404	902404	903404	904404	905404
408	Seal	2	901411	901411	902411	353085	904411	905411
409	Bolt	4	411410	411410	411435	411456	411456	411483
410	Lock-Washer	4	419011	419011	419012	419013	419013	419014
411	Retaining Ring	1	900406	901406	902406	903406	904406	905406

Parts for TA0107L thru TA5215H Taper Bushed Double and Single Reduction Reducers

Ref.	Description	Qty.	TA0107L	TA1107H	TA2115H	TA3203H	TA4207H	TA5215H
412	Adjustable Packing Retainer	1	900413	901413	902413	903413	904413	905413
413	Adjustable Packing Gland Stud	2	400404	400404	400404	400404	400404	400404
414	Adjustable Packing Gland Nut	2	407202	407202	407202	407202	407202	407202
415	Sealing Rings	3	900416	901416	902416	903416	904416	905416

Notes:

- § Not shown on drawing.
- ★ Includes parts listed immediately below marked "▲".
- ▲ Makes up assembly under which it is listed.
- ♣ 8 required on TA5215H.
- ♠ See Table 12 for actual ratio.

Parts for 6307H thru TA12608H Taper Bushed Double and Single Reduction Reducers

Ref.	Description	Qty.	TA6307H	TA7315H	TA8407H	TA9415H	TA10507H	TA12608H
409	Bolt	4	411983	411493	N/A	N/A	N/A	N/A
410	Lock-Washer	4	419016	419016	N/A	N/A	N/A	N/A
411	Retaining Ring	1	906406	907406	N/A	N/A	N/A	N/A
412	Adjustable Packing Retainer	1	906413	907413	N/A	N/A	N/A	N/A
413	Adjustable Packing Gland Stud	2	400404	400404	N/A	N/A	N/A	N/A
414	Adjustable Packing Gland Nut	2	407202	407202	N/A	N/A	N/A	N/A
415	Sealing Rings	3	906416	907416	N/A	N/A	N/A	N/A

Notes:

- § Not shown on drawing.
- ★ Includes parts listed immediately below marked "▲".
- ▲ Makes up assembly under which it is listed.
- ⚙ 8 required on TA5215H, TA6307H, TA7315H, TA8407H, and TA9415H, 12 required on TA10507 and TA12608H.
- ⚙ See Table 12 for actual ratio.
- ♦ 18 required on TA9415H, 20 required on TA10507H, 22 required on TA12608H.
- ♥ 36 required on TA9415H, 40 required on TA10507H, 44 required on TA12608H.
- 2 required on TA7315H, TA8407H, TA9415H, and TA10507H
- * 8 required on TA12608H.

ACTUAL RATIOS

Table 12 – Actual Ratios

Reducer Size	Nominal Ratios				
	5:1	9:1	15:1	25:1	40:1
TA0107L	5.200	9.000	14.928	25.091	30.942
TA1107H	5.000	8.990	14.912	25.064	30.909
TA2115H	5.200	9.103	15.619	25.067	33.333
TA3203H	4.913	9.234	15.067	24.954	32.451
TA4207H	5.000	9.231	15.000	25.125	39.107
TA5215H	5.105	9.183	14.923	24.996	38.907
TA6307H	4.944	9.215	15.451	24.868	38.319
TA7315H	5.188	9.716	14.914	24.837	39.656
TA8407H	N/A	N/A	15.120	24.965	39.667
TA9415H	N/A	N/A	15.103	25.435	39.406
TA10507H	N/A	N/A	15.092	25.184	39.676
TA12608H	N/A	N/A	14.788	25.025	38.188