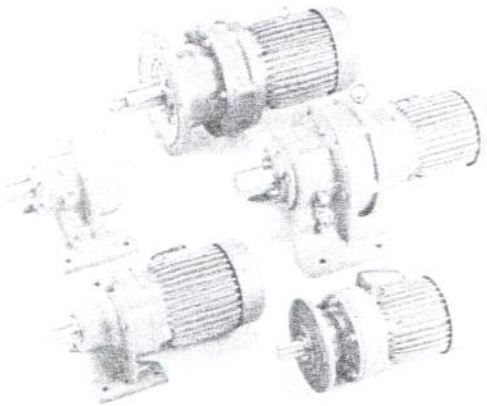
TRANSCYKO

CYCLOIDAL SPEED REDUCERS
and GEARMOTORS

Installation and Operating Manual



TRANSTEC HEAVY INDUSTRY (SUZHOU) CO.,LTD.
New • High-Tech Enterprise of Jiangsu Province

TRANSCYKO
Cycloidal Speed Reducers and Gearmotors

This is a **modular** product line and offers a wide range of sizes, ratios, input horsepowers, mounting arrangements and assembly configurations.

Unlike conventional gear teeth with sliding contact friction and only a few teeth at a time transmitting the load, the **cycloidal design** transmits torque by rolling from one element to the next with many teeth sharing the load. This load sharing provides **momentary 500% overload** capability. The drive operates virtually **vibration free** and efficiency exceeds 90% for Single Reduction Units and 80% for Double Reduction models.

TRANSCYKO Cycloidal Speed Reducers and Gearmotors have **proven** themselves throughout the world in a wide range of industrial applications as highly efficient and dependable, replacing conventional helical, worm and spur gearboxes.

Installation and Operating Manual

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1. VERIFICATION
   Prior to beginning the installation, confirm that the Speed Reducer or Gearmotor is the correct model, as ordered for the application, by reviewing the nameplate data.
2. LOCATION
   Units are designed for rugged use but a preferred installation, considering inspection and maintenance, is in a clean, dry location with good ventilation. Avoid areas of high humidity, wet or oily conditions and high dust concentrations, where possible.
3. ACCESS
   Units should be mounted in easily accessible locations to permit lubrication and other routine maintenance and inspection procedures to be performed.
4. MOUNTING PLANE
   Unless an oil-filled unit is specifically designed to be mounted vertically, it must generally be mounted on a horizontal plane. If the mounting plane is not horizontal, confirm that the actual mounting plane angle was specified when the unit was ordered. Modifications may be required to prevent damage to a unit that is to be mounted on a plane other than horizontal.
5. FOUNDATION
   The supporting foundation under a unit must be able to withstand greater shock and stress loads than would be applied to the unit itself in the worst conditions. A unit can be damaged through movement in the supporting structure.
6. MOUNTING BOLTS
   Fitted dowel pins should be used in the mounting feet of a unit, as well as bolts, to secure the unit to the foundation under conditions of vibration, frequent stops and starts, or high recurring peak loads. This reduces the bending and shearing stresses on the bolts.
7. ALIGNMENT
   Correct alignment between the unit and the driven shaft is essential. Coupling must be accurately installed and belts and chains must be tensioned correctly to prevent damage to the unit or the driven system components. Follow proper alignment procedures for all shaft connections.
8. OVERHUNG LOADS
   When a gear, sprocket or pulley is mounted on the output (slow speed) shaft of the unit, it should be located as close as possible to the face of the unit to minimize side loads on the shaft bearings and prevent shaft deflection. It is important to ensure the actual applied overhung load is within the limit permitted for each unit. Contact TRANSCYKO. (hereafter referred to as "TRANSCYKO" - see back cover) or their representative if assistance in determining the allowable load is required.
9. SAFETY CODES
   The installation of TRANSCYKO Speed Reducers and Gearmotors must conform with applicable safety codes. This includes appropriate guards over shafts and belts.

1. Grease lubricated units are filled with grease prior to delivery and are ready for use.

   Oil lubricated units are delivered without oil. Fill a unit with the required amount of recommended oil. Fill to the upper red mark on the sight gauge when the unit is not in operation. When operating, the oil level must not drop below the lower red mark.

   DO NOT OVERFILL the unit. Overfilling will likely result in excessive operating temperatures and/or seal leakage.

2. Confirm that the unit is fastened securely to its foundation and that the driven load is properly secured.

3. Confirm the unit is correctly connected to the driven shaft.

   The following points 4. through 7. apply to Gearmotors

4. Check all electrical connections to the motor and confirm the connection box and motor frame are properly grounded.

5. Confirm the supply voltage is correct.

6. Supply power to the unit under a no-load condition.

7. If the shaft of the unit rotates in the wrong direction, reverse any two leads of the three phase supply. NOTE: The low speed shaft of a single or triple reduction unit turns in the opposite direction to the high speed shaft. The low speed and high speed shafts of a double reduction unit turn in the same direction.

8. If the unit is very slow to start or makes unusual noises, stop it immediately and contact TRANSCYKO (see back cover) or their representative.

LUBRICATION

Grease or Oil Lubrication

TRANSCYKO Cycloidal Speed Reducers and Gearmotors are lubricated with grease or oil, or sometimes both, dependent upon the unit configuration. NOTE that some double reduction units are lubricated with grease in the first stage and oil in the second (output) stage.

Determine the type of lubrication used in your unit.

The following listings for confirming how a unit is lubricated are determined when operation is at the nominal **motor input speed** of **1800RPM**. Contact TRANSCYKO or their representative if a unit is not standard or further information is required.

LUBRICATION of SINGLE REDUCTION UNITS

FRAME SIZE	607	608	609	610	611	612	613	614	615
Horizontal & Vertical Units	GREASE - maintenance free						OIL BATH		
Horizontal Unit	OIL BATH								
FRAME SIZE	616	617	618	619	620	621	622		
Vertical Unit	FORCED OIL (plunger pump)								
Horizontal Unit	OIL BATH								
FRAME SIZE	623	624	625	626	627				
Vertical Unit	FORCED OIL (plunger pump)				FORCED OIL (motor-driven pump)				

LUBRICATION of DOUBLE REDUCTION UNITS

FRAME SIZE	607/07	608/08	609/08	610/08	611/08 611/09
Horizontal & Vertical Units	GREASE - maintenance free				
Horizontal Unit**	OIL BATH				
FRAME SIZE	613/08 613/09 613/10	614/08 614/09 614/10	616/09 616/10	617/09 617/10	618/10
Vertical Unit	GREASE				
Horizontal Unit	OIL BATH				
FRAME SIZE	616/11	617/11	618/13	619/11 619/13	620/11 620/13	621/13 621/16	622/13 622/17
Vertical Unit	FORCED OIL (plunger pump)						
Horizontal Unit							
FRAME SIZE	623/16 623/18	624/16 624/18	625/17 625/19	626/19	627/19		
Vertical Unit	FORCED OIL (plunger pump)			FORCED OIL (motor-driven pump)			

Contact TRANSCYKO (see back cover) or their representative for information on Triple Reduction Units

Grease Lubrication

Grease lubricated units are filled with grease prior to delivery and are ready for use. Units designated "maintenance free" are filled with special long-life grease. As indicated, these units do not need to be refilled - but complete grease replacements is required every 20,000 hours of operation (or every 4-5 years) to ensure continued service life.
Other grease lubricated units must either refill, or replace, the grease lubricant according to the following chart.

Recommended Grease* for TRANSCYKO Units

MAINTENANCE FREE	For REFILLING and REPLACEMENT
SHELL Alvania RA - or equivalent	SHELL Alvanaia No.2 Cosmo Dynamax SH No.2 - or equivalent

* for operation in ambient temperature range 5°F to 122°F (-15°C to 50°C)

Mixing of two specified greases or their equivalents listed for the same use is acceptable.

Frequency for Refilling and Replacing Grease

MODEL	Grease for	Operating Condition or Component Greased	Frequency
Single Reduction Unit	Refill	N/A	NOT REQUIRED Maintenanced free
	Overhaul*	N/A	Every 20,000 hours or every 4 to 5 years
Double Reduction Unit	Refill	Less than 10 hours/day	Every 3 to 6 months
		10 to 24 hours/day	Every 500 to 1000 hours
	Replace	Speed Reduction Mechanism & High Speed Shaft Bearings	Every 2 to 3 years
		Slow Speed Shaft Bearings	Every 3 to 5 years

* Overhaul consists of disassembling the unit, cleaning the internal parts, replacing the seals and gaskets, and then repacking the unit with grease.

Quantities*(ounces) of Grease - for Replacement at Overhaul

SINGLE REDUCTION: Horizontal & Vertical Units

FRAME SIZE - mintenance free	607	608	609	610	611	612
Speed Reduction Mechanism	0.7	0.7	2.2	3.4	8.7	8.7
Slow Speed Shaft Bearings	0.4	0.9	2.4	4.0	5.1	5.1

DOUBLE REDUCTION: Horizontal & Vertical Units

FRAME SIZE	607/07	608/07	609/08	610/08	611/08 611/09
Speed Reduction Mechanism (First stage)	0.7	0.7	0.7	0.7	2.2
Speed Reduction Mechanism (Second stage)	0.7	0.7	2.2	3.6	8.6
Slow Speed Shaft Bearings	0.4	0.9	2.4	3.9	4.8

DOUBLE REDUCTION: Vertical Units

FRAME SIZE	613/08 613/09 613/10	614/08 614/09 614/10	616/09 616/10	617/09 617/10	618/10
Speed Reduction Mechanism (First stage)	0.7	0.7	0.7	0.7	2.2
Speed Reduction Mechanism (Second stage)	0.7	0.7	2.2	3.6	8.6
Slow Speed Shaft Bearings	0.4	0.9	2.4	3.9	4.8

* These quantities will occupy approximately 80% of the space in the Speed Reduction Mechanism and the Slow Speed Shaft Bearings of Single Reduction units and 50% of the space in both stages of Double Reduction units. The eccentric bearing and cam on the High Speed Shaft must be greased thoroughly. The bearings on the High Speed Shaft and Slow Speed Shaft should be greased as regular bearings.

When refilling (that is, topping up) a unit, use 1/3 to 1/2 of the quantity specified in the tables above.

NOTE: Too much and too little grease can both raise the operating temperature of the unit. However, a temperature rise of the ring gear housing surface of approximately 100°F (40°C) above ambient is acceptable.

Oil Lubrication

Oil lubricated units are delivered without oil.
Before running an oil lubricated unit, ensure that it is filled to the upper red mark on the sight gauge with recommended Mild EP oil when the unit is not in operation. When operating, the oil level must not drop below the lower red mark on the sight gauge.
Before filling Vertical Units, remove the air plug in the upper side of the housing. After filling, apply Teflon sealing tape to the threads of the air plug before replacing. If the vinyl tube on the sight gauge becomes discolored and obscured it should be replaced. A glass sight gauge, or alternatively, a dipstick, is recommended where the ambient temperature does not fall into the -4°F to 100°F (-20°C to 40°C) range.

Vertical Units are Forced Oil lubricated by two types of pumps.
1. Most units have a plunger pump actuated by a cam on the Slow Speed (output) Shaft. As the shaft rotates, oil is circulated by the pump. The amount of oil pumped is regulated by the number of lobes on the cam. The frame size and reduction ratio of the unit determine the amount of oil required. For non-standard input speeds, contact TRANSCYKO.

PLUNGER PUMPS*

FRAME SIZE	616 to 619	620 to 626
Pump Model	Small size	Large size

* Plunger pumps are supplied in two sizes and are used in Single and Couble Reduction Vertical Units.

2. Frame Size 627 has an electric motor-driven pump. This pump motor should be interlocked with the main motor driving the reducer. The oil pump motor should start at least 30 seconds before the main motor.

MOTOR DRIVEN PUMPS*

FRAME SIZE	627	627/19
Pump Model	TOP-216HA	TOP-204HA
Motor Required	1 HP (0.75kw), 4 pole, 60Hz	1/2 HP (0.4kw), 4 pole, 60Hz

* Motor-driven pumps are supplied in two sizes and are used in Vertical Units

Recommended Oil (or equivalent)

Ambient Temperature	SHELL	MOBIL	ESSO	GULF
5°F to 41°F (-15°C to 5°C)	Omala 86	Mobil Gear 626 (ISO VG 86)	Spartan EP 68	EP HD 68
32°F to 95°F (0°C to 35°C)	Omala 100 Omala 150	Mobil Gear 627 Mobil Gear 629 (ISO VG 100-150)	Spartan EP 100 Spartan EP 150	EP HD 100 EP HD 150
86°F to 122°F (30°C to 50°C)	Omala 220 Omala 320 Omala 460	Mobil Gear 630 Mobil Gear 632 Mobil Gear 633 Mobil Gear 634 (ISO VG 200-460)	Spartan EP 220 Spartan EP 320 Spartan EP 460	EP HD 220 EP HD 320 EP HD 460

NOTE: Use a lower viscosity oil for winter

Frequency for Changing Oil

Oil Requirement	Operating Condition	Frequency
Initial Oil Change	N/A	After 500 hours of primary operation
Routine Oil Change	Less than 10 hours/day	Every 6 months
	10 to 24 hours/day	Every 2500 hours
	Heavy service such as high ambient temperature and high humidity	Every 1 to 3 months

Quantities (gallons) of Oil - for Replacement at Overhaul

SINGLE REDUCTION UNITS

FRAME SIZE	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627
Horizontal Unit	0.2	0.2	0.2	0.4	0.5	0.6	1.1	1.5	2.3	2.6	4.0	4.2	5.6	7.7	14.8
Vertical Unit	0.3	0.3	0.3	0.3	0.5	0.5	0.7	1.5	2.0	2.6	3.2	4.0	11.1	13.5	15.9

DOUBLE REDUCTION UNITS

FRAME SIZE	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627
Horizontal Unit	0.2	0.2	0.2	0.4	0.6	0.9	1.6	1.6	2.7	2.9	4.5	4.8	6.1	8.5	18.5
Vertical Unit	0.3	0.3	0.3	0.3	0.5	0.5	0.7	2.9	3.7	4.8	6.1	7.7	11.1	13.5	15.9

To drain the oil from a unit, remove the lower sight gauge fitting or, the drain plug on the other side of the housing opposite the lower sight gauge fitting. Horizontal units are made to permit installation of the sight gauge on either side of the housing.

NOTE: DO NOT OVERFILL the unit. Overfilling will likely result in excessive operating temperatures and/or seal leakage.

Fig. A Type THH (Horizontal Reducer)
Single Reduction (Example: Frame xize 617)

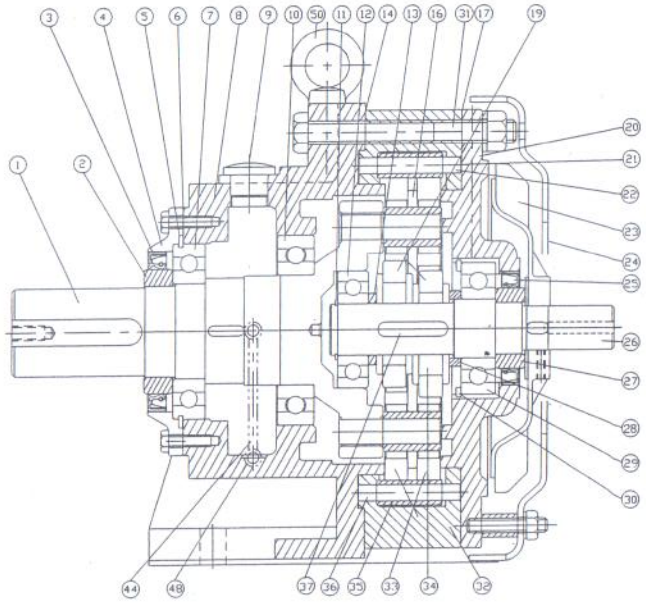

Fig. B Type TVV (Vertical Reducer)
Single Reduction (Example: Frame size 622)

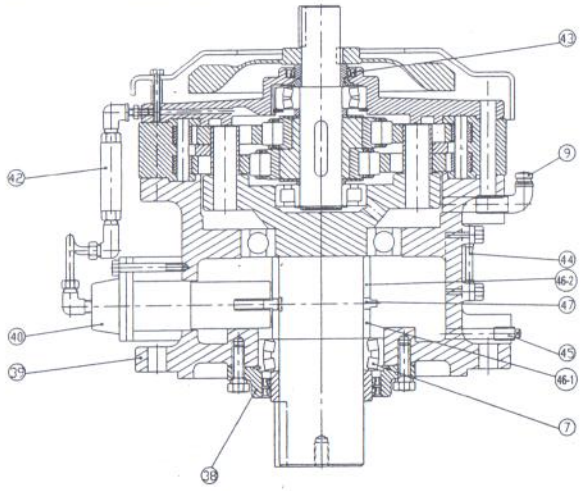

Fig. C Type THHM (Horizontal Gearmotor)
Single Reduction (Example: Frame xize 622)

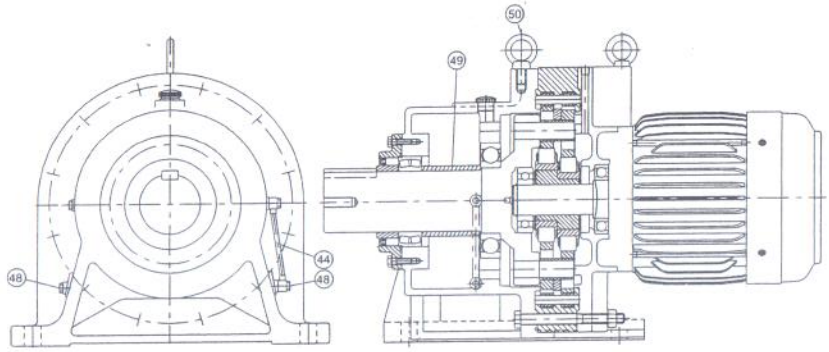

Fig. D Type THM (Horizontal Gearmotor)
Single Reduction (Example: Frame size 608)

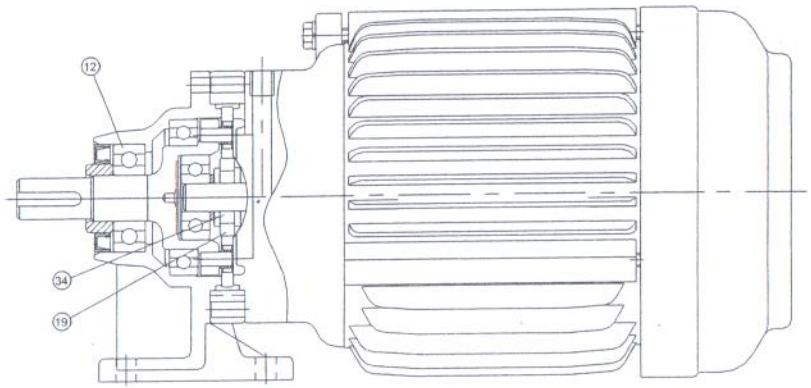

Fig. E Type TH (Horizontal Reducer)
Single Reduction (Example: Frame xize 610)

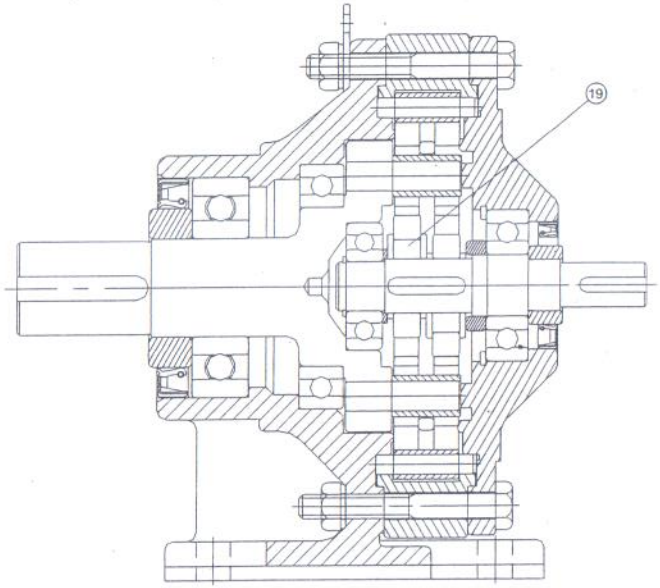

Fig. F Type THHM (Horizontal Gearmotor)
Double Reduction (Example: Frame size 618/13 Grease Lubricated)

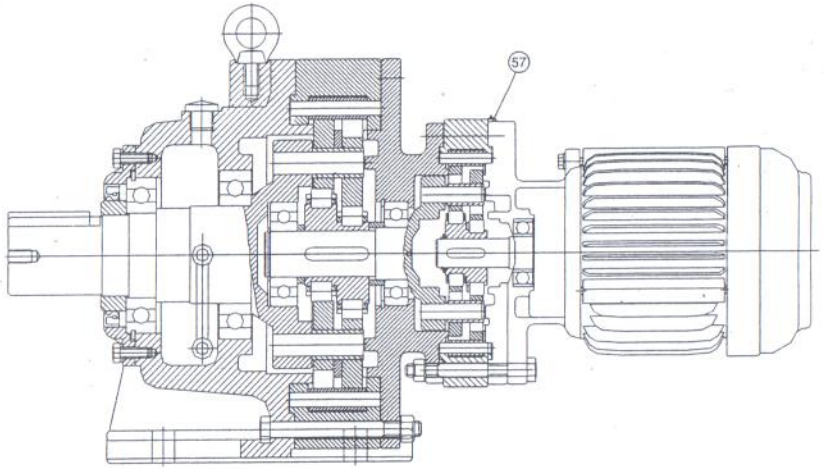

Fig. G Type THH (Horizontal Reducer)
Double Reduction (Example: Frame xize 618/13)

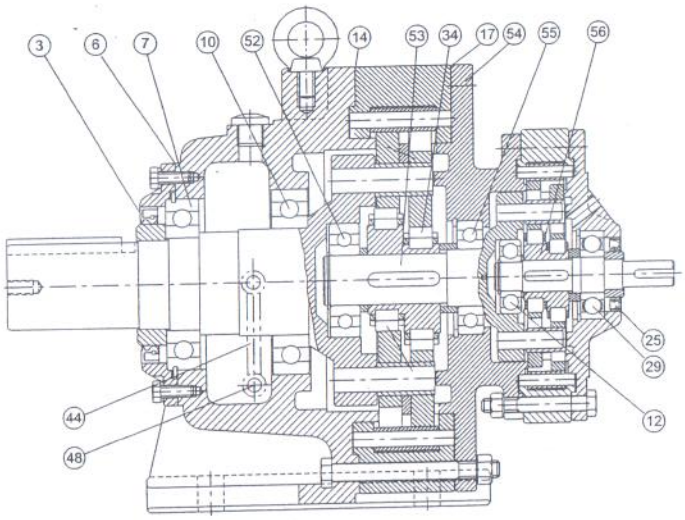

Fig. H Type THHM (Horizontal Gearmotor)
Double Reduction (Example: Frame size 622)

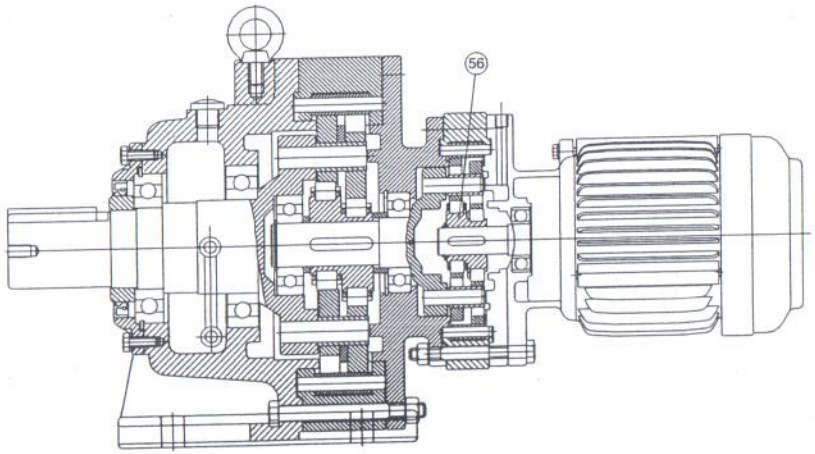

Fig. I Type TDVM (Vertical Gearmotor)
Single Reduction (Example: Frame xize 614)

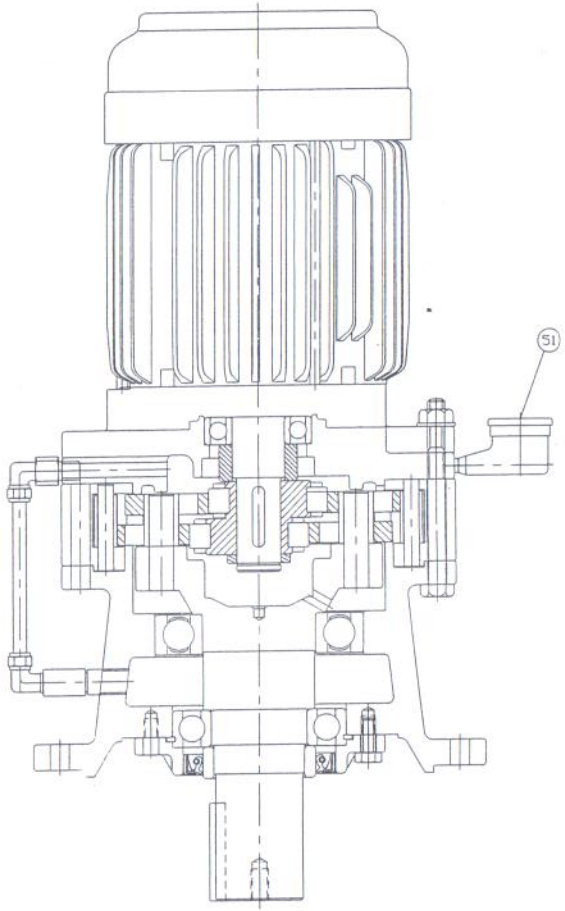

Fig. J Type TVV (Vertical Reducer)
Double Reduction (Example: Frame xize 613/08)

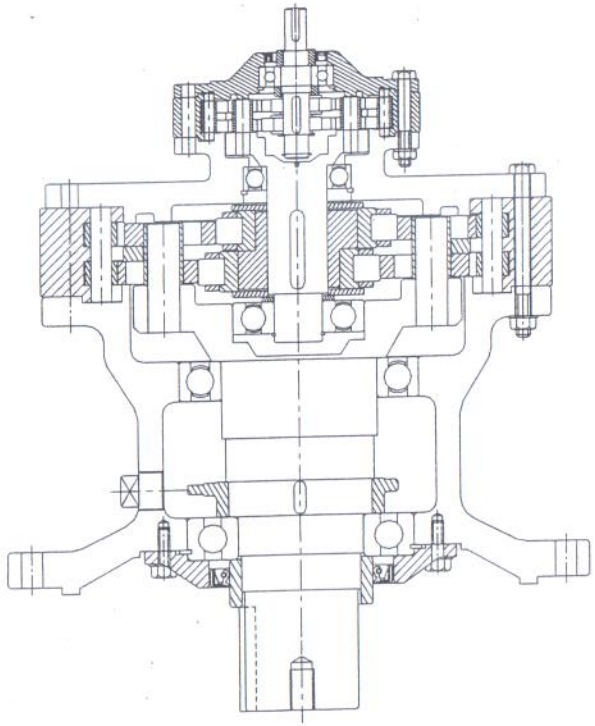

Table: Principal Parts

No.	Parts Name	No.	Parts Name	No.	Parts Name	No.	Parts Name
1	Slow Speed Shaft	16	Spacer Ring	31	Bolt for Ring Gear Housing	46	Spacer
2	Collar *(slow speed shaft)*	17	Gasket C *	32	Ring Gear Housing	47	Cam
3	Oil Seal	18	Air Vent Plug	33	Cycloid Disc	48	Plug *(oil drain)*
4	Slow Speed End Cap	19	Eccentric Assembly	34	Eccentric Assembly	49	Spacer
5	Retaining Ring	20	High-Speed End Shield	35	Ring Gear Roller	50	Eye Bolt
6	Gasket A *	21	Slow Speed Shaft Roller	36	Ring Gear Pin	51	Oil Filler
7	Bearing A *(slow speed shaft)*	22	Slow Speed Shaft Pin	37	Key	52	Bearing A *(intermediate shaft)*
8	Horizontal Casing	23	Cooling Fan	38	Gland	53	Intermediate Shaft
9	Oil Filler Plug	24	Fan Cover	39	Flanged Casing	54	Intermediate Cover
10	Bearing B *(slow speed shaft)*	25	Oil Seal	40	Plunger Pump	55	Bearing B *(intermediate shaft)*
11	Retaining Ring	26	High Speed Shaft	41	Air Vent Plug	56	Eccentric Assembly
12	Bearing A *(high speed shaft)*	27	Collar *(high speed shaft)*	42	Oil Signal	57	Grease Nipple
13	Spacer	28	Spacer	43	Oil Slinger		
14	Gasket B *	29	Bearing B *(high speed shaft)*	44	Oil Level Gauge		
15	End Plate	30	Retaining Ring	45	Plug *(oil drain)*		

*Note: Gaskets sold in sets.

TRANSCYKO® Motor
Trouble – Shooting and Repair

Problem with the Motor		Possible Cause	Suggested Remedy
Load is disconnected but motor doesn't rotate	Makes a groaning sound	Faulty switch contact.	Adjust the contact
		Blown fuse	Replace
		One phase wire of the power supply open	Replace
		Stator coil open	Repair by specialist
		Stator and rotor touching due to bearing housing wear	Replace the bearing and bracket
	Starts in either direction when turned by hand.	Threephase is operating as singlephase	Check the power source with a voltmeter
	Doesn't make any noise	Stator coil open	Repair by specialist
		Outside the motor Power failure Open wire connection Faulty switch contact Faulty starter contact	Contact the power company Check the source wiring Adjust the contact
Rotates with the load disconnected but	Rotates in the wrong direction	Connection error	Change any two of the three phase
	Fuse blows	Shorted lead wire	Replace
	Speed doesn't pitched	Faulty starter contact	Adjust
	Groans	Overcurrent/ Overheating	Rotor and stator touching — Repair by a specialist
		Overcurrent	One phase of stator coil shorted — Replace the stator winding
	Makes a high-pitched metallic noise	Faulty bearing	Replace the bearing
Rotates when the load is disconnected but when the load is connected it:	Switch overheated	Insufficient switch capacity	Replace with one having the rated capacity
		Overload	Drop to the rated load
	Fuse blows	Insufficient fuse capacity	Replace with one having the rated capacity
	Overheats	Overload	Drop to the rated load
		Voltage drop	Consult with power company
	Speed suddenly drops	Voltage drop	Consult with power company
		Overload	Drop to the rated load
	Stops	Bearing damaged by overheat	Replace the bearing

TRANSCYKO

CYCLOIDAL SPEED REDUCERS
and GEARMOTORS

For more TRANSCYKO information,please contact:

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