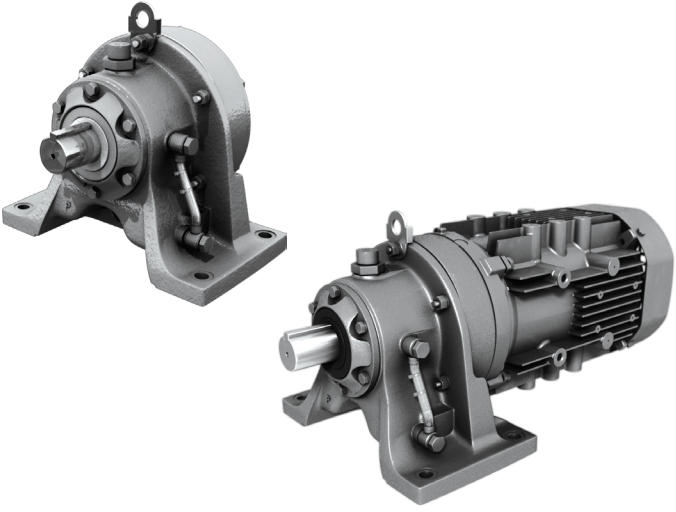
Sumitomo Drive Technologies

Cyclo® 6000

Installation and Quick-Start Guide



Manual 04.601.61.012

www.sumitomodrive.com *1-800-SM-CYCLO*

Note: For additional operation and maintenance instructions, please refer to the Cyclo 6000 Series O&M Manual.

Safety

- Consult the factory if Cyclo® speed reducers are driven by DC motors, variable frequency AC drives or speeds other than standard catalog input speeds.
- Be sure to install and operate Cyclo® speed reducers, gearmotors and brakemotors in compliance with applicable local and national safety codes. Appropriate guards for rotating shafts should be used and are available from the factory.
- When Cyclo® speed reducers, gearmotors or brakemotors are a component in a system for human transport, install a secondary safety device in order to minimize the risk of accidents that may result in personal injury, death or equipment damage.

Inspection

Upon receipt verify that:

- The information on the nameplate (Figures 1 & 2) matches the specifications of the unit you ordered.
- The unit was not damaged during shipment.
- All nuts and bolts are securely tightened.
- There are no missing parts or accessories.

Daily:

- Check for loose nuts and bolts.
- On gearmotors, check for obstructions to the cooling fan.
- Listen for abnormal sounds. Stop the unit and inspect it if you hear any abnormal internal sounds.
- Check for high temperature and abnormal vibration.
  Caution: If you suspect the temperature is elevated, be extremely careful when touching the unit! A temperature rise of up to 104°F (40°C) above ambient on the ring gear housing surface is acceptable if the fluctuation is small. However, a rapid rise in temperature may indicate that the lubricant is low.
- Check for lubricant leaks.

Nameplate

The nameplate, which is secured to the housing, lists your unit's essential identification information. You will need to give your sales representative or distributor the complete description shown on the nameplate when ordering replacement parts or requesting service.

Fig. 1 Gearmotor Nameplate

Fig. 2 Reducer Nameplate

Note: Nameplate style may differ depending on your order specification.

Mounting and Alignment

Mounting

Horizontal type, oil lubricated units must be mounted on horizontal surfaces. **Do not** mount a unit on an inclined surface unless it was specified when your order was placed and it has the necessary modifications.

The unit must be mounted in a location that allows easy accessibility for lubrication maintenance purposes.

When the unit is mounted in a separate enclosure, be sure it has adequate ventilation.

Foundations

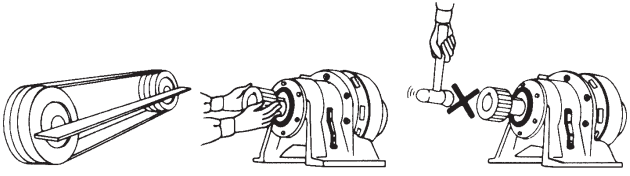
Foundations must be designed to withstand shock and stress applied from the load side through the reducer.

Secure Housing

When the unit's operating conditions include excessive vibration and/or frequent starts and stops, secure it on the mounting surface by inserting dowel pins into the holes provided in the casing feet. This ensures that bending or shearing forces are reduced on the mounting bolts. Be sure the dowel pins are inserted securely, especially when the unit will be operated under severe, recurrent peak loads.

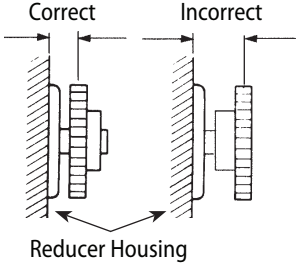
Accurate Alignment

When the reducer is connected to the motor and driven machine with couplings, the shafts **must** be properly aligned. When the reducer is connected by V-pulleys or sprockets, ensure that the belts or chains are neither too tight nor too slack.



Overhung Load Positions

Overhung loads should be located as close to the reducer housing as possible.



Motor

Mounting

Reducer Supplied with Motor:

Some units may come from the factory with the motor attached. In this case, no additional preparation is required.

Quill Input Reducer (Non-Food Grade)

Supplied without Motor:

Inspect the hollow bore of the high-speed shaft for debris or other material that may prevent the insertion of the motor shaft into the hollow quill input shaft – carefully clean if necessary.

Inspect the motor shaft for any damage or material that may affect the installation of the motor into the reducer – carefully clean if necessary.

To enable easy installation and removal of the motor, apply anti-seize paste to both the reducer hollow bore and the motor shaft.

Place the motor key into the motor shaft and carefully insert the motor into the quill high-speed shaft of the reducer.

Ensure that the motor flange bolts are aligned with the through-holes of the reducer flange, and also ensure that the motor is properly aligned with the reducer.

Bolt the motor into place. Refer to the motor operating instructions for proper bolt tightening torque.

Quill Input Reducer (Non-Food Grade)

Supplied without Motor:

Hollow input shaft units for the Food and Beverage industry have either an o-ring or a gasket for installation between the motor and reducer.

Installation Instructions

1. Make sure that the o-ring is in the o-ring groove, or that the gasket is in place.
2. Apply a thin film of the supplied food-grade anti-seize paste to the hollow shaft. Save enough anti-seize paste to coat the Cyclo output shaft.

Lubrication

Caution: Before following the instructions below, **read all lubrication stickers on the unit** to determine the lubrication type. Instructions listed on stickers supersede the instructions in this guide.

Oil

Some oil-lubricated models may be shipped from the factory already filled to the correct level with oil. A unit pre-lubricated with oil has a tag attached that identifies it as pre-filled. If a unit is pre-lubricated with oil, no additional oil is needed. **Before starting the unit, replace the oil fill plug with the air breather shipped with the reducer.**

Models ordered without oil must be filled with lubricant before startup. To fill the unit with oil, first remove the oil fill and fill the reducer with oil until the oil reaches the upper red line on the oil level gauge. **Do not overfill with oil!** If overfilled, the unit's operating temperature will rise too high and/or oil will leak through the high speed shaft oil seal. Once the reducer is filled with the correct amount of lubricant, install the air breather in the oil fill hole.

Note: Refer to **Tables 1, 2 and 3** on pages 15 and 16 for approved oils and approximate quantities.

To drain the oil, remove the drain plug. Replace plug once drain is complete.

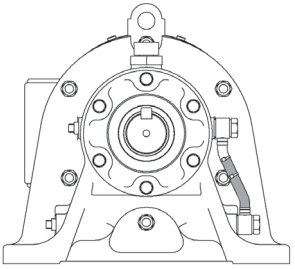
Note: It is highly recommended that reducer oil be changed after 500 hours of primary operation.

Grease

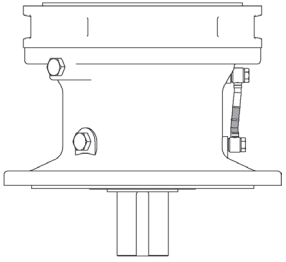
Grease lubricated models **are filled** with grease prior to shipping.

For additional operation and maintenance instructions, please refer to the Cyclo® 6000 Series O&M Manual.

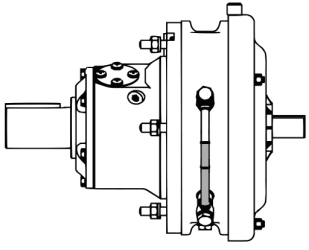
Oil Fill Levels



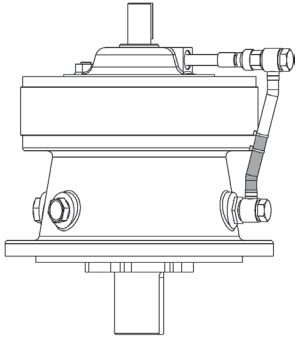
Horizontal



Vertical



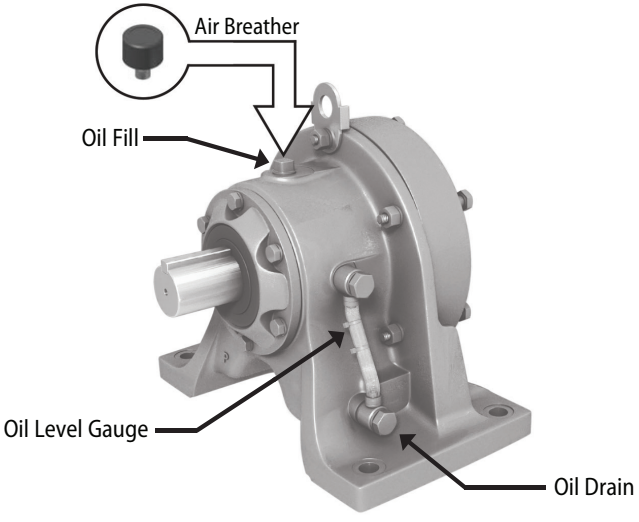
Horizontal Flange Mount



Vertical

Sizes 6130/5 and 6140/5 only

Oil Fill Level for Food-Grade Cyclo® Option



Lubrication Cont'd

Table 1. Approved Food Grade Oil
(For Cyclo® Frame Sizes 613 through 6165 only)

Ambient Temp.		ISO	Recommended Oil
°F	°C	Grade	
32 to 95	0 to 35	460	Klüebersynth UH1 6-460

Approved Oils

Oil lubricated reducers must be filled with oil prior to operation. Fill the reducer to the correct level with the recommended oil.

ExxonMobil	Spartan EP	**Idemitsu**	Daphne Super Gear Oil
Mobil	Mobilgear 600XP	**Kluber**	Kluberoil GEM1
Shell	Omala S2 G	**Caltex**	Meropa
BP	Energol GR-XP	**Gulf**	EP Lubricant HD
Castrol	Alpha SP	**Total**	Carter EP

°F	14	32	50	68	86	104	122
°C	-10	0	10	20	30	40	50
ISO VG		68					
			100/150				
					220/320/460		

Table 3. Approximate Oil Quantities

Single Reduction				Double Reduction			
Frame Size	Mounting Configuration			Frame Size	Mounting Configuration		
	CHH or CHV	CVV	CHF		CHH or CHV	CVV	CHF
6130, 6135	0.18	0.29	0.07	6160DC, 6165DC	0.40	0.26	0.26
6140, 6145, 614H	0.18	0.29	0.07	6170DC, 6175DC	0.63	0.50	0.53
6160, 6165, 616H	0.37	0.26	0.24	6180DB, 6185DB	0.92	0.53	0.61
6170, 6175	0.50	0.50	0.34	6190DA, 6195DA	1.5	0.71	1.0
6180, 6185	0.66	0.53	0.40	6190DB, 6195DB	1.6	0.71	1.1
6190, 6195	1.1	0.71	0.53	6205DA, 6205DB	1.6	2.9	1.1
6205	1.5	1.5	0.79	6215DA, 6215DB	2.6	3.7	1.5
6215	2.2	2.0	1.1	6225DA, 6225DB	2.9	4.8	1.6
6225	2.6	2.6	1.3	6235DA, 6235DB	4.5	6.1	2.5
6235	4.0	3.2	2.0	6245DA, 6245DB	4.8	7.7	2.6
6245	4.2	4.0	2.1	6255DA, 6255DB	6.1	11.1	3.4
6255	5.5	11.1	2.9	6265DA	8.5	13.5	4.5
6265	7.7	13.5	3.7	6275DA	15.9	15.85*	
6275	14.8	15.9*	7.9				

CHH = *Cyclo Horizontal Foot Mounted*
CHV = *Cyclo Horizontal V-Flange Mounted*
CVV = *Cyclo Vertical V-Flange Mounted*
CHF = *Cyclo Horizontal Flange Mounted*

* *With trochoid pump*

Note: Please consult factory for oil quantities for when the reducer is mounted in any other position or angle.

Start-up

Check the following under no load prior to start-up:

- Be sure the Cyclo® reducer is filled with the correct amount of approved oil or grease.
- Ensure that the driven load and the Cyclo® reducer or gear-motor are properly secured.
- Verify the rotation direction. If a reverse direction is required, simply reverse any two power leads. Check the voltage supply and current (line and phase) to verify balancing for a three-phase power source.
- When power is supplied to the motor, if start-up is abnormally long, is not completed or any abnormal sound is heard, immediately shut-off the power and consult the factory.
- Measure the current draw. The current measured at full load should not exceed the nameplate rating.

Long Term Storage Procedure

Caution: Consult the factory before operating units stored for periods longer than one year or for additional details.*

Preparation for Six Months to One Year Storage

- Fill Shell VSI Circulating Oil 100 to 5% of required lubricating oil volume and tightly seal airflow opening (i.e., replace breather with plug). For extended storage, Circulating Oil must be changed every year.
- **Grease lubricated** models are filled with grease prior to shipping and do not require additional lubricant during long term storage.
- Operate the unit every 2 or 3 months after delivery by hand while ensuring a minimum of one and a half rotations of the output shaft.
- Consult the factory for storage procedures if you plan to store your unit for longer than one year.

Operation After Six Months to One Year Storage

- For **oil lubricated** units:
  ~Completely drain the rust preventive or circulating oil from the unit.
  ~Flush the unit with the recommended operating oil (see **Table 1 or 2, page 15**).
  ~After flushing, fill the unit with the correct quantity of recommended oil (see **Table 3, page 16**).
  ~Follow the steps listed in the **Start-up** section of this document before operating.
- **Grease lubricated** units do not require any special procedures following storage, however, you should follow the steps listed in the **Start-up** section of this document before operating.

**For additional Long Term Storage Information, please refer to our Long Term Storage Procedure on our website*

Motor Wiring

This section details wiring for standard Sumitomo three-phase motors and brakemotors.

The motor diagram found inside Sumitomo supplied motor conduit box cover is correct. If using a motor manufactured by a company other than Sumitomo, please refer to that manufacturer's instruction manual for wiring, operating and maintenance details. When wiring motors into the power supply, Sumitomo recommends the use of terminal rings to facilitate the connection.

- Do not handle the unit when cables are live. Be sure to turn-off the power; otherwise electric shock may result.
- Connect the power cables to the unit according to the connection diagram shown inside the terminal box or in the maintenance manual; otherwise electric shock or fire may result.
- Correctly ground the grounding bolt; otherwise electric shock may result.
- Keep all wiring and electrical parts dry and moisture free.
- Follow local electrical codes and regulations when wiring; otherwise burning, electrical shock, injury and/ or fire may result.
- The motor is not equipped with an overload device. Sumitomo strongly recommends that another protective device (i.e.: ground fault interrupters, etc.), in addition to an overload device, be installed in order to prevent burning, electric shock, personal injury and/or fire.
- For Single Phase motors, exercise caution so as to not damage the vinyl cover of the starting capacitor, otherwise shock may result.

- For Brakemotors, do not electrify a brake coil continuously when the motor is stopped otherwise the brake coil may burn and fire may result.
- For Brakemotors, install the rectifier where the temperature is less than 140°F (60°C).
- Long wires cause the voltage to drop. Select cables with appropriate diameter so that the voltage drop will be less than 2%.
- After wiring the motor, check that the terminal box mounting bolts are tight.

Motor Protection

- Use a molded case circuit breaker for protection against short circuit.
- Use an overload protection device that protects the unit against voltage surges.

Notes

Sumitomo Machinery Corporation of America

Headquarters & Manufacturing
4200 Holland Boulevard
Chesapeake, VA 23323
Tel: +1-757-485-3355 • 1-800-SMCYCLO
Fax: +1-757-485-7490
www.sumitomodrive.com
E-mail: customercare@suminet.com

After Hours Technical Support
service@suminet.com 1-800-983-1000

Cyclo® 6000

www.sumitomodrive.com/cyclo6000

World Headquarters

Japan
Sumitomo Heavy Industries, Ltd.
Power Transmission & Controls Group
ThinkPark Tower, 1-1, Osaki 2-chome,
Shinagawa-ku, Tokyo 141-6025 Japan
Tel: +81-367-37-2511 • Fax: +81-368-66-5160

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For worldwide locations, please visit www.sumitomodrive.com/worldwide