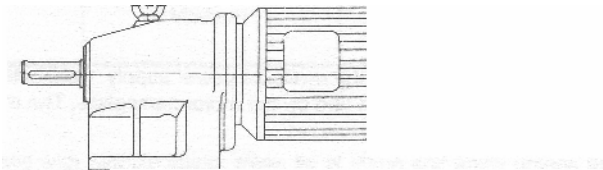
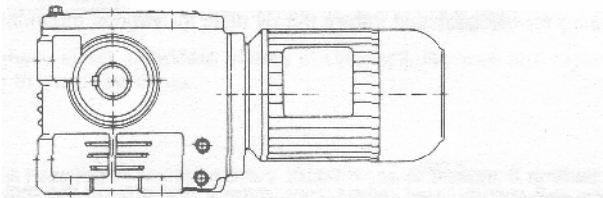


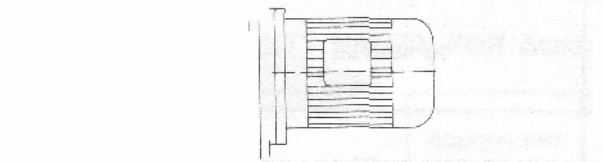
OPERATING & MAINTENANCE INSTRUCTIONS



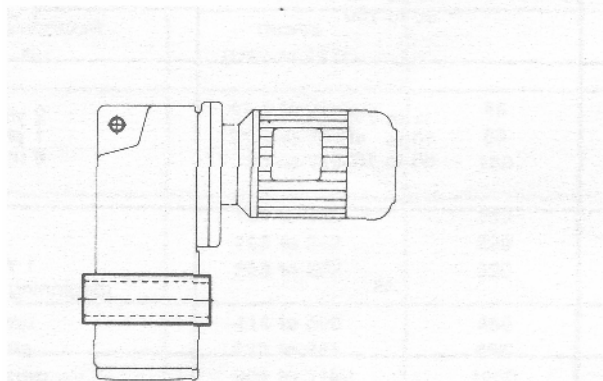
HELICAL



HELICAL-WORM



BEVEL-HELICAL



SHAFT MOUNT



NORD GEAR CORPORATION

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INSTALLATION

The gearmotor or reducer should be mounted on a structure with enough rigidity to prevent vibration or flexure caused by dynamic loading. The mounting surface should be flat so stresses are not introduced during assembly of the unit on the structure. Externally mounted gears, sprockets and sheaves should be carefully aligned to prevent stresses caused by poorly aligned members.

If a coupling is used it should be a flexible coupling and the halves should be aligned in accordance with the coupling manufacturer's recommendations.

When mounting anything on the shaft of the gear unit the member should be heated if possible to make assembly easier.

Gears, sprockets or sheaves should be mounted as close to the gear housing as possible. Coupling guards should be provided by the customer

ELECTRICAL CONNECTIONS

Check the motor nameplate to verify the phase, hertz and voltage agrees with the available power supply. Connection should conform to local codes. A connection diagram for the motor is located inside the conduit box and on the motor nameplate. The motor starter should incorporate an overload protector,

START-UP

All units are lubricated before shipment. The breather is plugged for shipment. Before start-up or prolonged storage remove the plastic wick from the breather. The lubricant level should be checked with the unit mounted in its correct operating position. Lubricant should be added or removed to bring it to the correct level. The catalog for the gear unit shows the oil level for various mounting positions.

MAINTENANCE

A. MOTOR

During maintenance, inspect the fan guard and remove any accumulated debris from under it and around the motor and gear. Motor bearings are greased during assembly. For re-lubrication the following suggestions are offered:

HOURS OF SERVICE PER YEAR	HP RANGE	SUGGESTED RELUBEINTERVAL
5,000	1/4 to 7 1/2 10 to 40 50 to 150	5 years 3 years 1 year
CONTINUOUS Normal Application	1/4 to 7 1/2 10 to 40 50 to 150	2 years 1 year 9 months
SEASONAL SERVICE Motor is idle for 6 months or more	All	1 year (beginning of season)
CONTINUOUS High ambients, dirty or moist locations, high vibrations, or where shaft is hot (pumps-fans).	1/4 to 40 50 to 190	6 months 3 months

Use high quality ball bearing grease. Use consistency of grease suitable for class of insulation stamped on nameplate as follows:

INSULATION CLASS	CONSISTENCY	TYPE	TYPICAL	FRAME TYPE
A & 8	#2	Lithium Base	Shell Alvania Grease R 3	215 T & smaller
A & B	Medium	Polyurea	Shell Dolium Grease R	254T-& larger
F & H	Medium	Polyurea	Shell Dolium Grease R	All

Procedure:

If motor is equipped with Alemite fitting, clean tip of fitting and apply grease gun. Use 1 to 2 full strokes on motors in NEMA 215 frame and smaller. Use 2 to 3 strokes on NEMA 254 through NEMA 365 frame. Use 3 to 4 strokes on NEMA 404 frames and larger. On motors having drain plugs, remove grease drain plug and operate motor for 20 minutes before replacing drain plug.

On motors equipped with slotted head grease screw, remove screw and apply grease tube to hole. Insert 3 to 3 inch length of grease string into each hole on motors in NEMA 215 frame and smaller. Insert 3 to 5 inch length on larger motors. Motors having grease drain plugs, remove plug and operate motor 20 minutes before replacing drain plug.

Caution: Keep grease clean. Lubricate motors at standstill. Remove and replace drain plugs at standstill. Do not mix petroleum grease and silicone grease in motor bearings.

B. GEARS

Gear units should have the oil changed every 10,000 hours or 2 years. If synthetic lubricant is used it should be changed every 20,000 hours or 4 years. For adverse operating conditions the interval should be shorter. DO NOT MIX SYNTHETIC & MINERAL BASE OILS. Units should be checked periodically for increased noise, surface temperature, vibration, shaft movement & amperage draw. Units with inspection covers should not be operated with the inspection cover removed.

The table below offers suggestions on the viscosity & manufacturers of recommended lubricants.

VISCOSITY RANGE FOR AGMA LUBRICANTS

RUST AND OXIDATION INHIBITED GEAR OILS	VISCOSITY RANGE	EQUIVALENT ISO GRADE	EXTREME PRESSURE GEAR LUBRICANTS	VISCOSITIES OF FORMER AGMA SYSTEM
AGMA Lubricant No.	MM2/S (cSt) at 400C		\$4 AGMA Lubricant No.	SSU at 11000F
1	41.4 to 50.6	46		193 to 235
2	61.2 to 74.8	68	2 EP	284 to 347
3	90 to 110	100	3 EP	417 to 510
4	135 to 165	150	4 EP	626 to 765
5	198 to 242	220	5 EP	918 to 1122
6	288 to 352	320	6 EP	1335 to 1632
7 Comp	414 to 506	460	7 EP	1919 to 2346
8 Comp	612 to 748	680	8 EP	2837 to 3467
8A Comp	900 to 1100	1000	8A EP	4171 to 5098

NOTE. Viscosity ranges for AGMA lubricant numbers will henceforth be identical to those of ASTM 2422. "Viscosity System for Industrial Fluid Lubricants", ASTM 2422. Also British Standards Institute, B.S. 4231.

⁻⁴ "Industrial Liquid Lubricants-ISO Viscosity Classification." International Standard, ISO 3448. AGMA 250.03, May, 1972 and AGMA 251.02, November, 1974. Oils marked Comp are compounded with 3% to 10% fatty or synthetic fatty oils.

RECOMMENDED LUBRICANTS FOR HELICAL & BEVEL-HELICAL GEARING

Type of Lubricant	Ambient Temperature Range (°F)	kin Viscosity (cst) at 40°C (mm 2/S)	Viscosity SLIS 175 100°F	AGMA Lubricant No.	ISO Grade	AMOCO	CHEVRON	EXXON	MOBIL	SHELL	TEXACO
Oil	15 to 125	198 to 242	900 to 1100	5EP	220EP	AMOGEAR EP220	NL GEAR Compound 220	SPARTAN EP220	Mobil Gear 630	Omala Oil 220	Meropa 220
	-10 to +75*	90 to 765	465 to 165	3-4EP	100-150EP	AMOGEAR EP150	NL GEAR Compound 150	SPARTAN EP 150	Mobil 629	Omals Oil 100	Meropa 150
	Below 10-#	15 to 680	135 to 165	-			E.P. Hydraulic Oil 22	UNIVIS J13	Mobil D.T.E. 11	-	Texamatic Fluid 9226 or Texamatic Type F
Oil-Synthetic	-40* to 1754	-	90 to 4000	-					Mobil SHC 629 or 634	-	Synstar GL75W-140
Fluid Grease	5* to 120*	-							-	-	MARKFAK 00

For bearings not lubricated in oil bath use a lithium base bearing grease, NLGI #2 or #3

Ambient temperatures below -20 OF and above 140 OF require special oil seals

**Consult with Nord Gear Corporation for these applications

Bold ambient temperature indicates factory filled

Actual capacity should be established by opening the oil level plug and filling until oil runs out of the oil level hole.

RECOMMENDED LUBRICANTS FOR HELICAL-WORM GEARING

TYPE OF LUBRICANT	AMBIENT TEMP RANGE OF	KIN VISCOSITY (CSt) AT 400C (mm 2/S)	VISCOSITY SUS 175 1000F	ISO GRADE	MOBIL	TEXACO
Oil Synthetic	-400 to 1750*	198 to 352	900 to 1600	220	Glygoyle 30	Synstar GL75W 140

For bearings not lubricated in oil bath use a lithium base bearing grease, NLGI #2 or #3

*Ambient temperatures below OOF and above 100OF require special oil seals

Consult NORD GEAR CORPORATION for these applications

STORAGE

Units shipped from Nord are intended to be used within 30 days after receipt and presumed to be stored indoors in a heated building. If you intend storing units under adverse conditions or for a long period of time special storage precautions will be necessary.

1. Store in a sheltered area away from chemical vapors or steam.
2. Cover.
3. Do not store in sunlight or near high heat.
4. Remove plastic wick from breather.
5. Spray oil on exposed shafts & seals. Remove oil on start-up.
6. Rotate output shaft 3600 every 3-4 weeks.