



# CONVEYOR DRIVE REDUCER LUBRICATION



## 1. Importance of proper lubrication

Proper gearbox lubrication is essential in order to reduce friction, heat, and component wear. Lubricants reduce heat and wear by inserting a protective "fluid boundary" between mating parts and preventing direct metal to metal contact. Lubricants also help prevent corrosion and oxidation, minimize foam, improve heat transfer, optimize reducer efficiency, absorb shock loads and reduce noise.

## 2. Factory oil type

All SK 9055 and SK9155 Conveyor Drive reducers shipped from the factory with a pre-determined oil fill level in accordance to the specified mounting position. Oil filling before shipment prevents damage from dry start-ups and helps assure that the proper lubrication is used.

### Standard Oil Fill

The standard oil fill for the SK 9055 and SK 9155 Conveyor Drive is ISO VG 220, Mineral Oil.

### Optional Oil Fill

Both synthetic and food grade oil options are also available upon request.

	<b>IMPORTANT NOTE</b>	
Consult the sticker adjacent to the fill plug to determine the type of lubricant installed at the factory. Some units have special lubricants designed to operate in certain environments or intended to extend the service life or service temperature range of the lubricant. If in doubt about which lubricant is needed for a certain application, please contact NORD Gear.		

## 3. Lubrication replacement

If the gear unit is filled with mineral oil, the lubricant should be replaced at least after every 10,000 operating hours or after every two years. If the gear unit is filled with synthetic oil, the lubricant should be replaced at least after every 20,000 operating hours or after every four years. Often gear reducers are exposed to extreme ambient conditions, hostile environments, wet conditions, or dirty and dusty operating areas. Especially in these situations, it is important to establish a condition-based oil service interval.

## 4. Oil viscosity

Viscosity, or the oil's resistance to shear under load, is often considered the single most important property of any gear oil.

- Often one will consider making a viscosity correction to the oil to improve the performance when operating the gear unit at low temperature or high temperature.
- In cases of extreme load conditions, gear pairs and antifriction bearings may be more susceptible to sliding or scuffing wear. In these operating conditions, it may also be beneficial to consider an increased lubrication viscosity and/or a lubrication with improved antiwear additive packages.

	<b>IMPORTANT NOTE</b>	
The user should consult with their primary lubrication supplier before considering changes in oil type or viscosity.		

## 5. Maximum oil sump temperature limit

To prevent reducer overheating, the reducer's maximum oil sump temperature limit must not be exceeded for prolonged periods of operation (up to 3 hours continuous operation depending upon reducer size).

Oil Type	Maximum Oil Temperature Limit	
	NORD	AGMA 9005-D94
Mineral	80-85°C (176-185°F)	95°C (203°F)
Synthetic	105°C (220°F)	107°C (225°F)

	<b>IMPORTANT NOTE</b>	
<b>Use caution when specifying gear reducers for high temperature service.</b> If there is concern about exceeding the allowable safe operating temperatures, please consult NORD to discuss alternatives.		



## 6. The importance of routine oil analysis

Routine oil analysis, sound lubrication practices, and good tracking of oil performance trends will help establish proper lubrication maintenance and change-out intervals. To maximize equipment reliability, NORD Gear generally recommends a condition-based lubrication maintenance program. One may take exceptions to this general recommendation on sealed-for-life or maintenance-free gear units or smaller and less costly gear units. In these instances, the replacement cost of the gear unit is often small compared to the costs associated with this type of oil analysis program.

STOP	<i>HARMFUL SITUATION</i>	STOP
<p>NORD suggests replacing the gear oil if oil analysis indicates any of the following:</p> <ul style="list-style-type: none"> <li>• Viscosity has changed by approximately 10% or more.</li> <li>• Debris particles (silicon, dust, dirt or sand) exceed 25 ppm.</li> <li>• Iron content exceeds 150-200 ppm.</li> <li>• Water content is greater than 0.05% (500 ppm).</li> <li>• The total acid number (TAN) tests indicate a significant level of oxidative break-down of the oil, and a critical reduction in performance; If the TAN number measured changes by more than 5% over the new oil, then an oil change would be recommended.</li> </ul>		

## 7. Mounting position and oil fill quantity

Please see the separate mounting position diagrams and the corresponding oil fill quantity tables for the specified gear unit.

The gearbox nametag will indicate the mounting position that was provided. **For mounting orientations other than shown in the mounting position charts, please consult NORD Gear.**

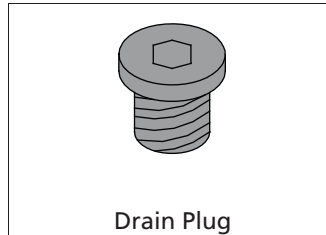
STOP	<i>HARMFUL SITUATION</i>	STOP
<p>Actual oil volume can vary slightly depending upon the gear case size, mounting and ratio. Prior to commissioning the reducer, check the oil-fill level using the reducer's oil-level plug and drain or add additional oil as needed.</p>		

## 8. Oil plug locations

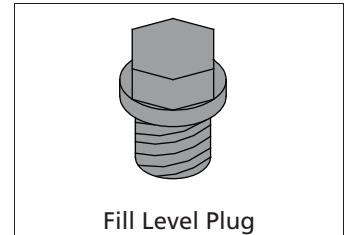
All gear units are assembled with the oil fill-level, oil-drain and vent plugs installed in their proper locations, according to the specified mounting position. All standard plugs are metric and utilize sealing gaskets between the head of the plug and the reducer housing.

## 9. Drain and fill-level plugs

All reducer drain plugs are metric socket head cap screws. For ease of draining the used oil from the gear reducer use the socket head screw located at the lowest part of the gearbox. For ease of identification, it is NORD's standard practice to provide a hex-head screw for the fill-level plug.



Drain Plug

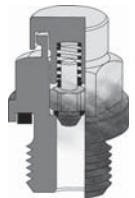


Fill Level Plug

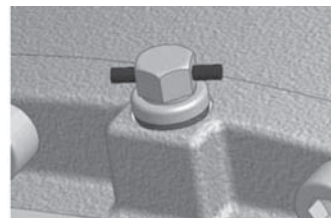
## 10. Vent plug locations

Reducer venting allows for air pressure differences that occur during operation, between the inner space of the reducer and the atmosphere, while ensuring leak-free operation. The AUTOVENT™ is standard on all helical-inline gear units.

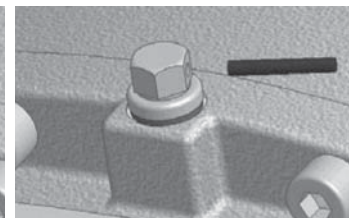
**AUTOVENT™** - The AUTOVENT™ helps prevent bearing and gear damage by blocking entry of foreign material (water, dust, corrosives, etc.). The breather acts like a check valve that opens at approximately 2 psi during operation, closes tightly as the gearbox cools, and produces a slightly negative pressure. This option is perfect for humid conditions and wash-down environments, helping to maintain proper oil cleanliness, and reducing foaming and oxidation.



**Open Vent** - An optional open vent can be supplied on NORD reducers. The open vent will be closed upon delivery to prevent oil leakage. Before the reducer is put into operation the open vent should be activated by removing the sealing plug.



Sealed open vent



Activated open vent

**Filtered Vent** - NORD may offer an optional filtered vent, which allows gases to permeate, but does not allow dust and debris to pass through the vent.



# CONVEYOR DRIVE EXTENDED BEARING LUBRICATION

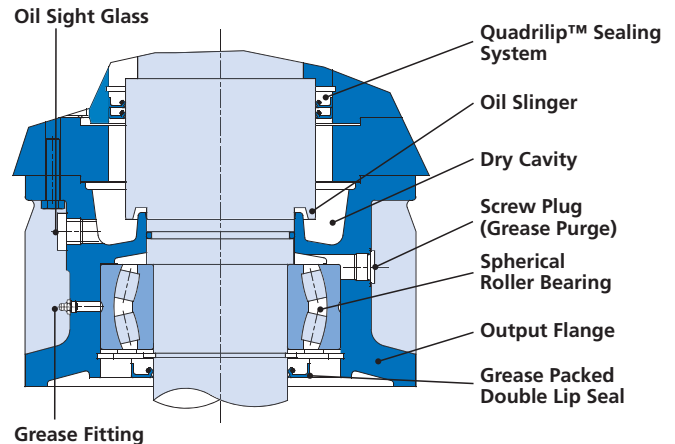


## 1. SK 9055 and SK 9155 Conveyor Drive Units

The NORD SK 9055 and SK 9155 Conveyor Drive reducers are designed to be a 'mounting flange and output shaft drop-in' for existing 'industry-standard' overhead conveyor drives.

## 2. Spread Bearing Design with Dry Cavity

The SK 9055 and SK 9155 Overhead Conveyor Drive gear units have two main features: a spread bearing design or large output bearing span and an oil leakage protection system. The spread bearing design enables the NORD box to handle high, overhung loads. The top bearing is a cylindrical roller bearing and the bottom bearing is a spherical roller bearing, selected for its high radial load capacity.



## 3. Service Guidelines for the Extended Bearing Flange

The spherical roller bearing on the extended bearing housing should be re-greased with 0.75 to 1.0 ounces (20-25 grams) of grease after every 2,500 hours of service or at least every 6 months. Prior to re-greasing the screw plug located opposite to the grease nipple should be unscrewed. After re-greasing the screw plug must be reinstalled and tightened. The extended bearing is factory assembled with the proper amount and type of grease. The type of grease supplied depends upon the type of oil specified at time of order.

### Bearing Grease Options

Reducer Oil Type	Grease Type	Thickener Type	NLGI Grade	Ambient Temperature Range	Manufacture Brand / Type
Mineral	Standard	Li-Complex	NLGI 2	-30 to 60 °C (-22 to 140 °F)	Mobil Grease XHP222
Synthetic	High-Temperature	Polyurea	NLGI 2	-25 to 80 °C (-13 to 176 °F)	Mobil / Polyrex EP 2
Food-Grade	Food-Grade	Al-Complex	NLGI 2	-25 to 40 °C (-13 to 104 °F)	Mobil / FM222

### HARMFUL SITUATION

Grease compatibility depends upon the type of thickener or soap complex used, the base oil type suspended within the thickener, and the type of additives used. The user should check with the lubrication supplier before making substitutions in brand and type in order to assure compatibility and to avoid causing possible damage to the extended bearing.



# CONVEYOR DRIVE LUBRICATION TYPES



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## Lubrication Tables – SK 9055 and SK 9155 Gear Units

### Standard Oil Lubricants

ISO Viscosity	Oil Type	Ambient Temperature Range	Manufacturer Brand / Type
VG220	MIN-EP	0 to 40 °C (32 to 104 °F)	Mobil / Spartan EP220 ♠ ①
	PAO	-35 to 60 °C (-31 to 140 °F)	Mobil / SHC630 ♠
	FG	-15 to 40 °C (5 to 104 °F)	Shell / FM220 ♠

### Optional Oil Lubricants

ISO Viscosity	Oil Type	Ambient Temperature Range	Manufacturer Brand / Type
VG460	PAO	-35 to 80 °C (-31 to 176 °F)	Mobil / SHC634
	FG-PAO	-35 to 80 °C (-31 to 176 °F)	Mobil / Cibus SHC460 ♠
VG220	FG-PAO	-35 to 50 °C (-31 to 122 °F)	Mobil / Cibus SHC220 ♠
VG150	PAO	-35 to 25 °C (-30 to 77 °F)	Mobil / SHC629

### Grease Options (applied to greased bearings and seal cavities)

NLGI Grade	Grease Type / Thickener	Ambient Temperature Range	Manufacturer Brand / Type
NLGI 2	Standard / Li-Complex	-30 to 60 °C (-22 to 140 °F)	Mobil Grease XHP222 ♠ ①
	High-Temperature / Polyurea	-25 to 80 °C (-13 to 176 °F)	Mobil Polyrex EP 2 ♠
	Food-Grade / Al-Complex	-25 to 40 °C (-13 to 104 °F)	Mobil Grease FM222 ♠

♠ Stocked Lubricants

① Standard product on serviceable gear units



## IMPORTANT NOTES



- The “Ambient Temperature” is intended to be an operation guideline based upon the typical properties of all the lubricant. The viscosity and other properties of the lubricant change based upon load, speed, ambient conditions, and reducer operating temperatures. The user should consult with their lubrication supplier & NORD gear before considering changes in oil type or viscosity.
- To prevent reducer overheating, observe the maximum operating oil temperature limits:  
Mineral Oil: 80-85 °C (176 – 180 °F).  
Synthetic Oil: 105 °C (225 °F).
- In the following instances, please consult NORD for specific recommendations:
  - √ Gear units will operate in high ambient temperature conditions exceeding 40 °C (104 °F).
  - √ Gear units will operate in cold ambient temperature conditions approaching 0 °C (32 °F) or lower.
  - √ Lower than an ISO VG100 viscosity oil is being considered for a cold-temperature service.
  - √ Fluid grease is required for lubricating the gear unit.
- Observe the general lubrication guidelines outlined in user manual U10750.

### Oil Formulation Codes

MIN-EP	-	Mineral Oil with EP Additive
PAO-EP	-	Synthetic Polyalphaolefin Oil with EP Additive
PAO	-	Synthetic Polyalphaolefin Oil
PG	-	Synthetic Polyglycol Oil
FG	-	Food-Grade Oil
FG-PAO	-	Food-Grade, Synthetic Polyalphaolefin Oil
FG-PG	-	Food-Grade, Synthetic Polyglycol Oil

### Lubrication Notes

- Avoid using (EP) gear oils in worm gears that contain sulfur-phosphorous chemistries, as these additives can react adversely with bronze worm gears and accelerate wear.
- Food grade lubricants must be in compliance with FDA 212 CFR 178.3570 and qualify as a NSF-H1 lubricant. Please consult with lubrication manufacturer for more information.
- When making a lubrication change, check with the lubrication supplier to assure compatibility and to obtain recommended cleaning or flushing procedures.
- Do not to mix different oils with different additive packages or different base oil formulation types. Polyglycol (PG) oils are not miscible with other oil types and should never be mixed with mineral oil or polyalphaolefin (PAO) synthetic oil.

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# CONVEYOR DRIVE LUBRICATION TYPES



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Oil Cross-reference Chart

ISO Viscosity	Oil Type	Ambient Temperature Range	Mobil	Shell	Castrol	FUCHS	KLÜBER LUBRICATION
VG460	MIN-EP	0 to 40 °C (32 to 104 °F)	Spartan EP460	Omala 460	Alpha SP460	Renolin EP460	Klüberoil GEM 1-460N
	PAO-EP	-20 to 80 °C (-4 to 176 °F)	Mobilgear SHC460	Omala HD460	Alphasyn EP460	Gearmaster SYN460/NA	Klübersynth EG 4-460
	PAO	-20 to 80 °C (-4 to 176 °F)	Mobil SHC634	Omala RL460	Alphasyn T460	Gerallyn SF460	Klübersynth GEM 4-460N
	PG	-20 to 80 °C (-15 to 176 °F)	Mobil Glygoyle 460	Tivela S460	Alphasyn PG460	Renolin PG460	Klübersynth GH 6-460
	FG	0 to 40 °C (32 to 104 °F)	Mobil DTE FM460	Shell FM460	N/A	Gerallyn AW 460	N/A
	FG-PAO	-20 to 80 °C (-4 to 176 °F)	Mobil Cibus SHC460	Cassida GL460	N/A	Gerallyn SF460	Klüberoil 4 UH 1-460N
	FG-PG	-20 to 80 °C (-4 to 176 °F)	Mobil Glygoyle 460	Cassida WG460	N/A	N/A	Klübersynth UH1 6-460
VG220	MIN-EP	0 to 40 °C (32 to 104 °F)	Spartan EP220	Omala 220	Alpha SP220	Renolin EP220	Klüberoil GEM 1-220N
	PAO-EP	-30 to 60 °C (-22 to 140 °F)	Mobilgear SHC220	Omala HD220	Alphasyn EP220	Gearmaster SYN220/NA	Klübersynth EG 4-220
	PAO	-30 to 60 °C (-22 to 140 °F)	Mobil SHC630	Omala RL220	Alphasyn T220	Gerallyn SF220	Klübersynth GEM 4-220N
	PG	-25 to 60 °C (-13 to 140 °F)	Mobil Glygoyle 220	Tivela S220	Alphasyn PG220	Renolin PG220	Klübersynth GH 6-220
	FG	0 to 40 °C (32 to 104 °F)	Mobil DTE FM 220	Shell FM220	N/A	Gerallyn AW220	N/A
	FG-PAO	-25 to 60 °C (-13 to 140 °F)	Mobil Cibus SHC220	Cassida GL220	N/A	Gerallyn SF220	Klüberoil 4 UH 1-220N
	FG-PG	-25 to 60 °C (-13 to 140 °F)	Mobil Glygoyle 220	Cassida WG220	N/A	N/A	Klübersynth UH1 6-220
VG150	MIN-EP	0 to 25 °C (32 to 77 °F)	Spartan EP150	Omala 150	Alpha SP150	Renolin EP150	Klüberoil GEM 1-150N
	PAO-EP	-30 to 25 °C (-22 to 77 °F)	Mobilgear SHC150	Omala HD150	Alphasyn EP150	Gearmaster SYN150/NA	Klübersynth EG 4-150
	PAO	-30 to 25 °C (-22 to 77 °F)	Mobil SHC629	Omala RL150	Alphasyn T150	Gerallyn SF150	Klübersynth GEM 4-150N
	PG	-25 to 25 °C (-13 to 77 °F)	Mobil Glygoyle 150	Tivela S150	Alphasyn PG150	Renolin PG150	Klübersynth GH 6-150
	FG	0 to 25 °C (32 to 77 °F)	Mobil DTE FM 150	N/A	N/A	N/A	N/A
	FG-PAO	-25 to 25 °C (-13 to 77 °F)	N/A	Cassida GL150	N/A	Gerallyn SF150	Klüberoil 4 UH 1-150N
	FG-PG	-25 to 25 °C (-13 to 77 °F)	Mobil Glygoyle 150	N/A	N/A	N/A	Klübersynth UH1 6-150

Low-end service temperature limit may vary for a specific lubricant; Please also see the important notes on Page 1.



# CONVEYOR DRIVE OIL FILL QUANTITIES



DRIVESYSTEMS

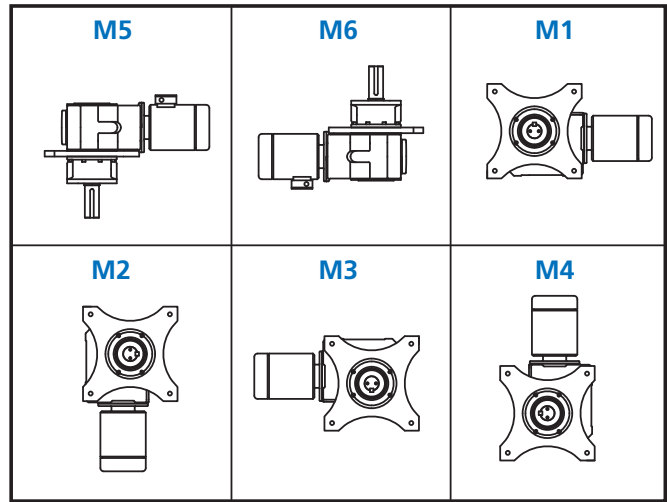
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## SK 9055 and SK 9155

All SK 9055 and SK 9155 NORD Gear reducers are shipped from the factory with a pre-determined oil fill level in accordance to the specified reducer size and mounting position. For additional information, please refer to the "Oil Plug & Vent Locations" documentation for your gear unit.

STOP	<b>HARMFUL SITUATION</b>	STOP
<p>Actual oil volume can vary slightly depending upon the gear case size, mounting and ratio. Prior to commissioning the reducer, check the oil-fill level using the reducer's oil level plug and drain or add additional oil as needed.</p> <p>For mounting orientations other than shown please consult NORD Gear. Reducer modifications may be required.</p>		



Type	Stages	Ratio Range	M1		M2		M3		M4		M5		M6	
			Quarts	Liters	Quarts	Liters	Quarts	Liters	Quarts	Liters	Quarts	Liters	Quarts	Liters
SK 9055	3	8.83 - 329.69:1	3.80	3.60	10.25	9.70	12.05	11.40	12.15	11.50	6.87	6.50	8.66	8.20
SK 9055	4	172.08 - 4246.38:1	6.02	5.70	10.78	10.20	15.53	14.70	15.53	14.70	6.97	6.60	10.14	9.60
SK 9155	3	9.16 - 245.76:1	Ⓐ 12.68	12.00	29.06	27.50	24.87	33.00	40.68	38.50	20.08	19.00	27.47	26.00
SK 9155/32	5	311.10 - 3251.68:1	Ⓐ 12.68	21.00	29.06	27.50	24.87	33.00	40.68	38.50	20.08	19.00	27.47	26.00
			Ⓑ 1.37	1.30	3.07	2.90	3.49	3.30	3.28	3.10	2.54	2.40	2.54	2.40
SK 9155/42	5	134.14 - 269.39:1	Ⓐ 12.68	12.00	29.06	27.50	34.87	33.00	40.68	38.50	20.08	19.00	27.47	26.00
			Ⓒ 1.90	1.80	4.65	4.40	4.76	4.50	4.23	4.00	3.91	3.70	3.91	3.70

Ⓐ SK 9155 oil level    Ⓑ SK 32 oil level    Ⓒ SK 42 oil level





# CONVEYOR DRIVE OIL PLUG & VENT LOCATIONS



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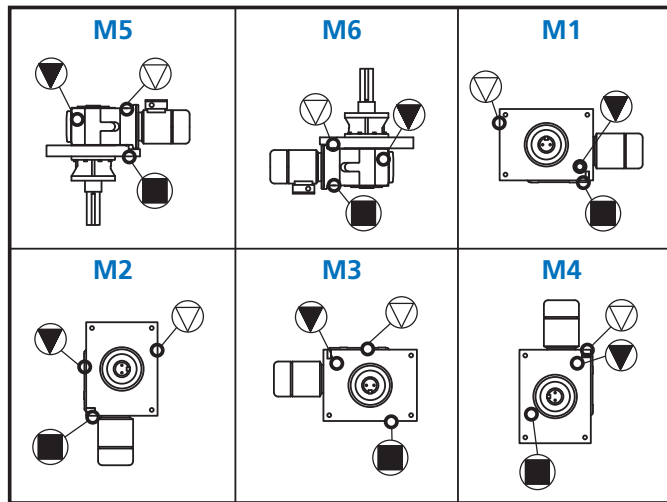
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## Oil Plug Locations

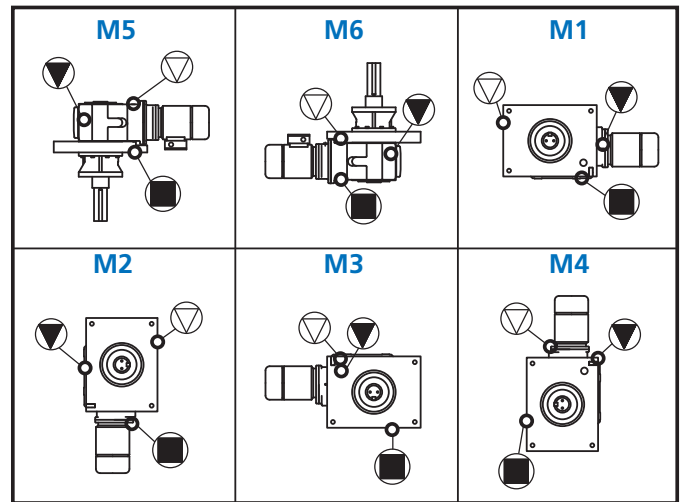
The NORD SK 9055 and SK 9155 Conveyor Drive reducers are designed to be output flange mounted. The following charts detail the six basic mounting positions for the SK 9055 and SK 9155 gear units. The standard or most typical mounting position is M5.

All SK 9055 and SK 9155 NORD gear reducers are shipped from the factory with a pre-determined oil fill level in accordance to the specified reducer size and mounting position. The mounting position also determines the position of the oil drain, oil fill and oil vent locations on the gear unit. SK 9155/42 and SK 9155/32 compound gear unit assemblies have separate oil sump areas.

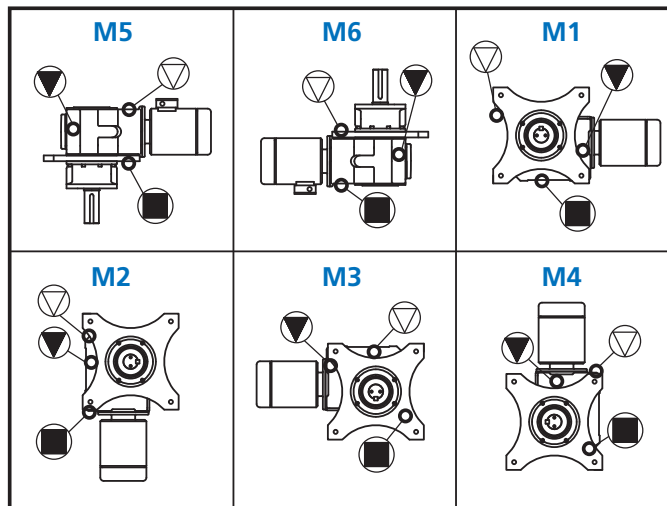
### SK 9055 (3 Stage)



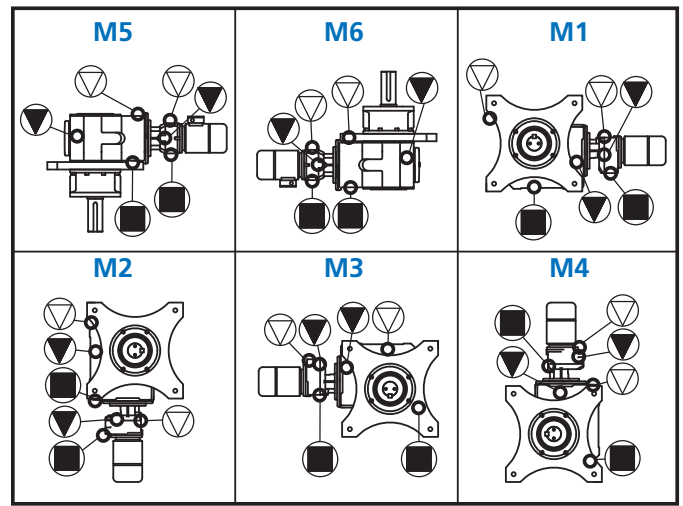
### SK 9055 (4 Stage)



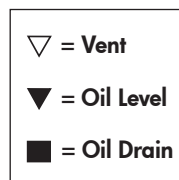
### SK 9155



### SK 9155/42



For mounting positions other than shown, please consult NORD Gear.





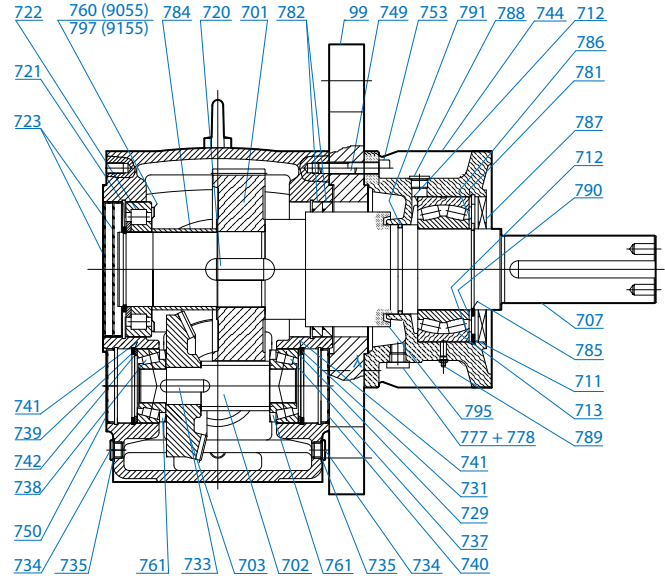
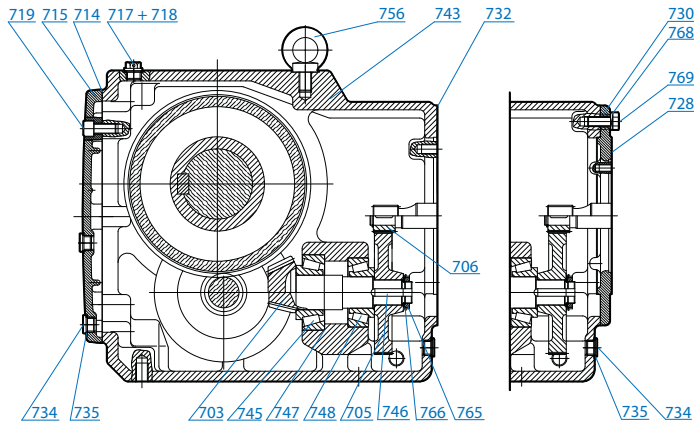
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# CONVEYOR DRIVE PARTS LIST DRAWINGS



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## SK 9055 - SK 9155

99	Flange	730	Input cover	756	Eyebolt
701	Output gear	731	Snap ring	760	Nilos ring
702	Output pinion shaft	732	Gasket	761	Nilos ring
703	Bevel gerset	733	Key	765	Lock nut
705	Driving gear	734	Drain plug	766	Lock washer
706	Driving pinion	735	Gasket	768	Lock washer
707	Solid shaft	737	Taper roller bearing	769	Hex head screw
711	Snap ring	738	Taper roller bearing	777	Oil level indicator
712	Shim	740	Bore plug	778	Gasket
713	Taper roller bearing	741	Shim	781	Shim
714	Gasket	742	Shim	782	Seal
715	Gear case cover	743	Bevel housing	784	Spacer
717	Vent plug	744	VLII/III housing	785	Circlip
718	Gasket	745	Taper roller bearing	786	Shim
719	Socket head screw	746	Key	787	Seal
720	Key	747	Shim	788	Drain plug
721	Snap ring	748	Taper roller bearing	789	Grease nipple
722	Cylindrical roller bearing	749	Grooved pin	790	Shim
723	Bore plug	750	Bore plug	791	O ring
728	Gasket	753	Socket head screw	795	Oil slinger
729	Shim	755	Socket head screw	797	Nilos ring

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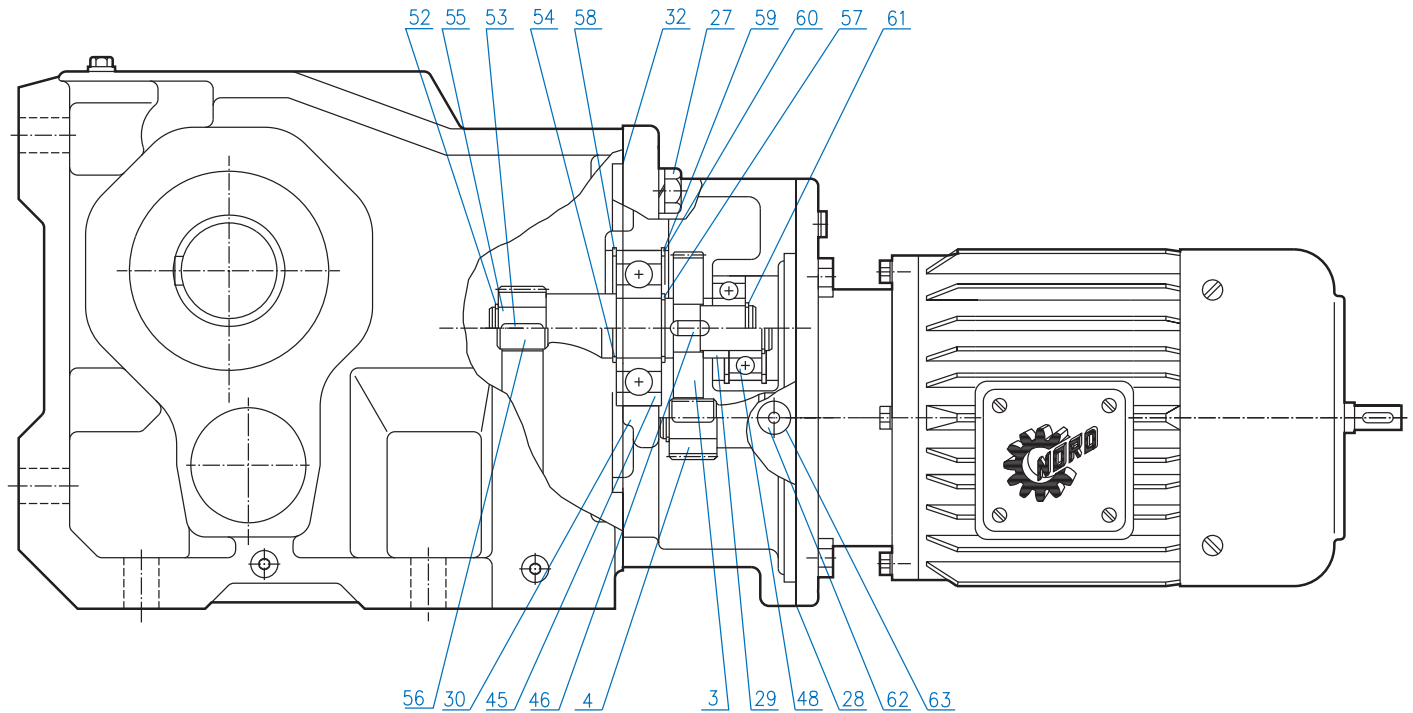
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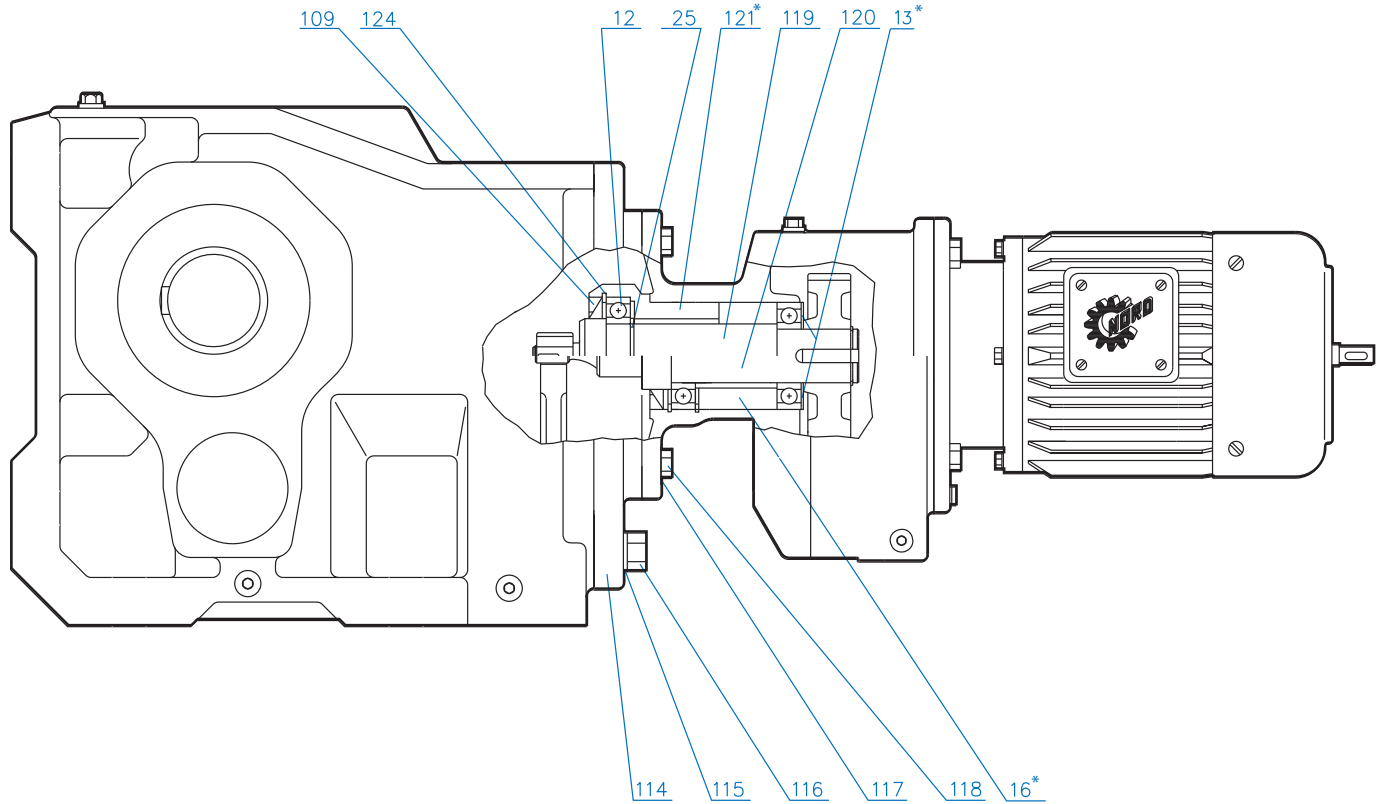
## SK9055 (4 Stage) - Input Reduction

3	Gear	46	Key	58	Snap Ring
4	Pinion	48	Anti-Friction Bearing	59	Shim
27	Bolt	52	Snap Ring	60	Snap Ring
28	Gasket	53	Key	61	Snap Ring
29	Spacer	54	Snap Ring	62	Oil Plug
30	Third Reduction Gearcase	55	Intermediate Shaft, Plain	63	Gasket
32	Gasket	56	Intermediate Shaft, Gearcut		
45	Anti-Friction Bearing	57	Snap Ring		

\* Conditionally used part



# CONVEYOR DRIVE PARTS LIST DRAWINGS



## SK9155/32 and SK9155/42

11 Bearing	114 Intermediate Flange	119 Intermediate Shaft, Plain
13 Nilos Ring*	115 Lock Washer	120 Intermediate Shaft, Gearcut
16 Spacer*	116 Bolt	121 Bearing Sleeve *
25 Snap Ring	117 Lock Washer	124 Snap Ring
109 Oil Seal	118 Bolt	

\* Conditionally used part