

Lubrication

❖ OIL LUBRICATION

- ◆ Lubrication oil on most models is drained before shipment. **Please check to make sure the appropriate amount and type of oil supply has been added before attempting operation.**
- ◆ Use low viscosity oil during winter or in low ambient temperature. Use high viscosity oil during summer or in high ambient temperature. Use **Mild EP Oil**.
- ◆ Please use lubrication oils recommended on the right. Do not mix different brands of oils.

AMBIENT TEMPERATURE	ISO VISCOSITY GRADE	AGMA VISCOSITY GRADE	SAE GRADE GEAR OIL
5°F ~ 32°F (-15°C ~ 0°C)	68	2EP	80W
32°F ~ 95°F (0°C ~ 35°C)	100 ~ 150	3EP 4EP	85W 90
95°F ~ 122°F (35°C ~ 50°C)	220 ~ 460	5EP 7EP	90 140

Approximate Volume of Oil Filling - Horizontal Configuration

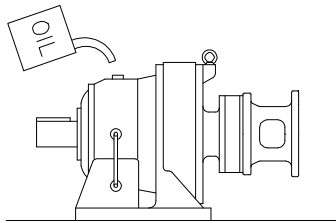
Frame Size	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27
Volume in Gallon	0.2	0.2	0.2	0.4	0.5	0.6	1.1	1.5	2.3	2.6	4.0	4.2	5.6	7.7	14.8
Volume in Liter	0.7	0.7	0.7	1.4	1.9	2.5	4.0	5.5	8.5	9.8	15	16	21	28	56

Frame Size	B1611	B1711	B1813	B1911	B1913	B2011	B2013	B2113	B2116	B2213	B2217	B2316	B2318	B2416	B2418	B2517	B2519	B2619	B2719
Volume in Gallon	0.4	0.6	0.9	1.6	1.6	1.6	1.6	2.7	2.7	2.9	2.9	4.5	4.5	4.8	4.8	6.1	6.1	8.5	18.5
Volume in Liter	1.5	2.4	3.5	5.8	6.0	6.0	6.0	10	10	11	11	17	17	18	18	23	23	32	70

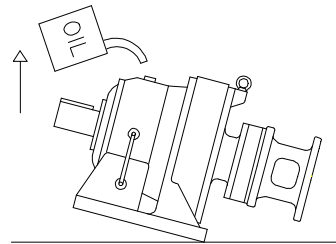
❖ LUBRICATION FOR DOUBLE REDUCTION UNITS

- ◆ The following double reduction frame sizes are **grease lubricated on the first reduction stage, and oil lubricated on the second reduction stage**: B1310, B1409, B1611, B1711, B1911, B2011.
- The first stage of above frame sizes are always packed with grease from the factory. Unless otherwise specified, the second stage of above frame sizes are empty without oil. You must add appropriate type and amount of oil before attempting operation.
- ◆ The following double reduction frame sizes are **oil lubricated on both first and second reduction stage**: B1813, B1913, B2013, B2113, B2116, B2213, B2217, B2316, B2318, B2416, B2418, B2517, B2519, B2619, B2719.
- Unless otherwise specified, both reduction stages of above frame sizes are shipped empty without oil. You must add appropriate type and amount of oil before attempting operation. In order for the unit to run properly, you must have sufficient lubrication in both stages. See below for the oil filling recommendation. Insufficient oil amount will cause premature failure.

NOTE !



Oil flows **SLOWER** toward the first reduction stage

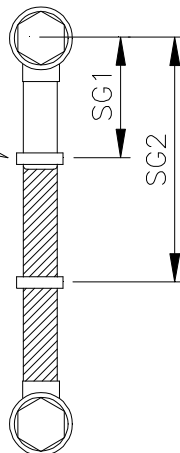


Raise the output shaft up helps oil reaching the first reduction stage **EASIER** and **QUICKER**

❖ SIDE GLASS MARKERS

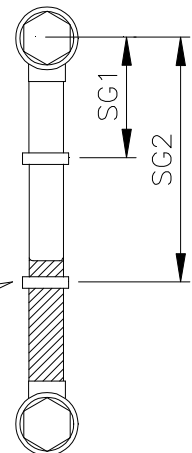
The oil level must be filled to the upper mark of side glass when the unit is not in operation.

REDUCER NOT IN OPERATION



REDUCER IN OPERATION

The oil level must be at least above the lower mark when the unit is in operation.



Lubrication

❖ SIDE GLASS MARKERS DIMENSIONS

Frame Size	Dimension SG1		Dimension SG2	
	(mm)	(inch)	(mm)	(inch)
B13	25	0.98	50	1.97
B14	25	0.98	50	1.97
B15	25	0.98	50	1.97
B16	35	1.38	45	1.77
B1611	30	1.18	45	1.78
B17	40	1.57	60	2.36
B1711	30	1.18	45	1.77
B18	50	1.97	75	2.95
B1813	35	1.38	55	2.17
B19	50	1.97	85	3.35
B1911	30	1.18	45	1.77
B1913	35	1.38	50	1.97
B20	55	2.17	70	2.76
B2011	30	1.18	50	1.97
B2013	30	1.18	55	2.17
B21	50	1.97	75	2.95
B2113	30	1.18	50	1.97

Frame Size	Dimension SG1		Dimension SG2	
	(mm)	(inch)	(mm)	(inch)
B2116	40	1.57	70	2.76
B22	55	2.17	85	3.35
B2213	30	1.18	50	1.97
B2217	45	1.77	85	3.35
B23	65	2.56	90	3.54
B2316	40	1.57	70	2.76
B2318	50	1.97	85	3.35
B24	70	2.76	95	3.74
B2416	40	1.57	70	2.76
B2418	50	1.97	85	3.35
B25	80	3.15	105	4.13
B2517	50	1.97	85	3.35
B2519	55	2.17	80	3.15
B26	80	3.15	105	4.13
B2619	60	2.36	85	3.35
B27	85	3.35	115	4.53
B2719	70	2.76	110	4.33

** Comparing single reduction and double reduction models of the same mounting frame size (i.e. B18 vs. B1813), the upper side glass markers of double reduction models are always located higher than the upper side glass markers of single reduction models.

❖ OIL LUBRICATION REPLENISHMENT

- ◆ Under all operating conditions, the DARALI® Cycloidal Reducer needs the initial oil change after 2 months of service.
- ◆ Based on an 8 hours per day application, subsequent oil change shall be performed every 6 months. For an 8 ~ 24 hours per day application, perform subsequent oil change every 2500 hours. A more frequent oil change will help achieving much longer service life.
- ◆ If the unit is running under heavy operating condition or in a high temperature, high humidity, or corrosive environment, the lubricants have to be changed more frequently. (i.e. every 1 ~ 3 months)

Oil Change Interval

OPERATING CONDITION	RECOMMENDED OIL CHANGE INTERVAL
Initial Oil Change	Two Months
Up to 8 Hours / Day	Every 6 Months
8 ~ 24 Hours / Day	Every 2500 Hours
High Temperature	Every 1 ~ 3 Months
High Humidity	Every 1 ~ 3 Months

❖ GREASE LUBRICATION

- ◆ Frame sizes B07~B12 are filled with appropriate amount of grease before leaving factory. Please do not refill upon receiving of the DARALI® Cycloidal Reducers.
- ◆ Frame sizes B07~B12, filled with long duration grease as mentioned above, require no lubrication replenishment for 20,000 hours or about 4~5 years of service.
- ◆ Depending on operating conditions, users may re-lubricate grease packed units as needed.
- ◆ If the unit experiences a sudden temperature rise, supply grease immediately.

Recommended Grease

AMBIENT TEMPERATURE	Single Reduction (6:1 ~ 87:1)		Double Reduction (102:1 ~ 7569:1)	
	Shell Oil	Mobile Oil	Shell Oil	Mobile Oil
5 °F (-15° C) to 122 °F (50° C)	Darina EP Grease No. 2	Mobilux EP2	Darina EP Grease No. 2	Mobilux EP2

