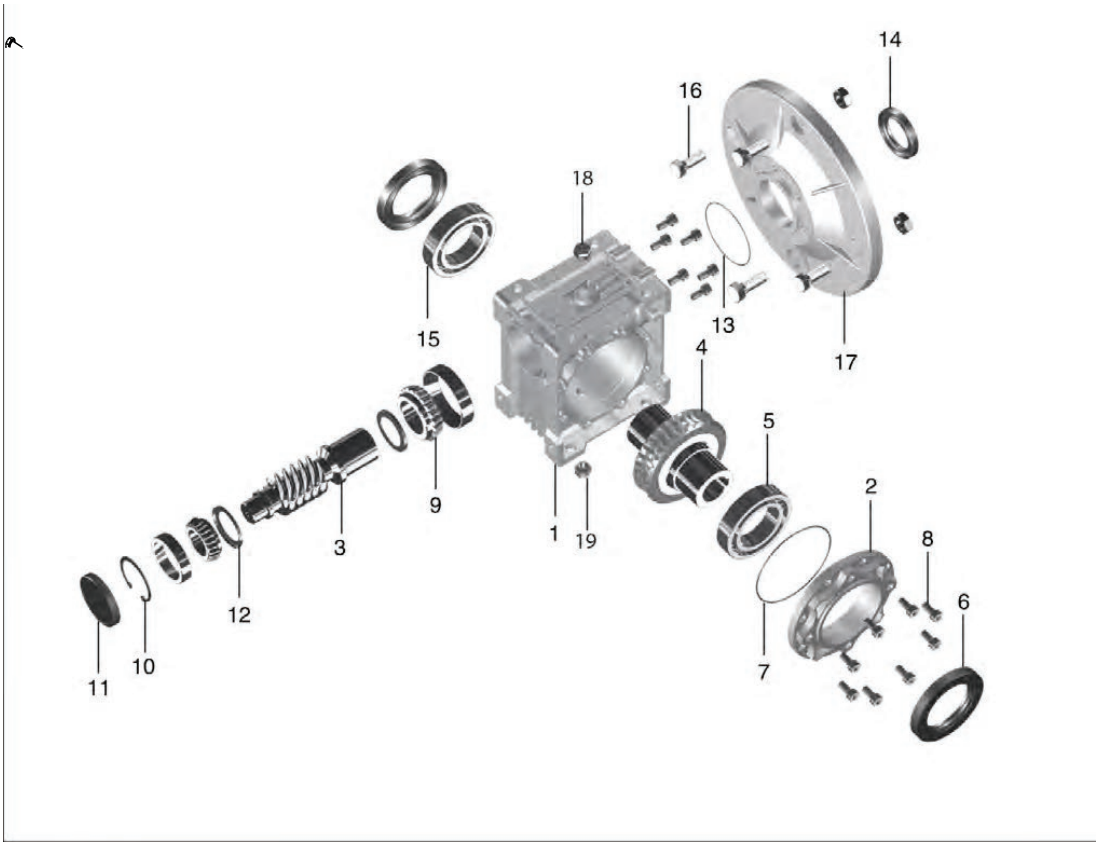
OPERATION AND MAINTENANCE MANUAL

www.dualsystem.com.pl

1. Construction diagram.



1. Body
2. Cover
3. Worm wheel
4. Wom
5. Bearing
6. Seal
7. Gasket
8. Screw
9. Bearing
10. Seger ring
11. Gasket
12. Spacer ring
13. Gasket
14. Seal
15. Bearing
16. Screw
17. IEC flange
18. Breather plug
19. Oil plug

2. Storage.

1. Do not store outside, in areas exposed to weather conditions or excessive humidity.

2. For storage periods longer than 60 days, processed and unpainted surfaces such as flanges and shafts must be protected by a suitable antioxidant product,

3. Oil seals must be in contact with the oil. Before starting, check the amount and type of oil,

4. When stored, output shaft must be rotated at intervals of 4 to 5 months,

3. Installation.

1. Ensure that the device is well secured to avoid vibrations,

2. Incase of repeating shocks and overload, installation of hydraulic clutch, electronic torque limiters or control unit is recommended.

3. For the proper performance of the drive, it is necessary to correct and precise adjust motor and gear connection,

4. When possible, application of flexible joints is recommended,

5. Driven elements should be accurately and linearly adjusted and balanced, because any disparities may result in a high overload and, consequently, damage of bearings or shafts,

6. Prior to painting of the gear unit, vent hole, machined surfaces and rubber sealants should be carefully covered to prevent reaction of the paint with non-metal parts.

7. Before starting the gear unit, make sure that the oil level is in accordance with the mounting position specified in manual by checking the oil level plug,

8. For outdoor installation ensure appropriate casing to protect the drive from rain, as well as direct solar heating,

9. Prior to installation, clean and lubricate all mating surfaces,

10. In case of external loads, we recommend usage of locking pins,

11. Bolts and connecting elements of gear drive should be protected with self-locking adhesive,

12. Do not use a hammer for assembly / disassembly,

13. It is recommended to validate the rotation speed of the output shaft before assembling the product,

4. Routine inspection,

1. From time to time to see if all external surfaces and cooling points are clean,

2. Make sure the a bolt holes are clean,

3. Regularly make sure that there are no indications of oil leaks,

4. Periodically check the quantity of oil,

5. Working temperature,

1.Working temperature depends on many factors, such as the type of transmission, the type and quantity of oil characteristics, structure of gear unit and the environment where the transmission is installed,

2. Acceptable operating temperature range is 50°C more than the ambient temperature due to the quantity of oil contained in modern gear units,

3. In case of the standard gear unit, the maximum ambient temperature is 80°C. Higher temperatures may damage the oil seals,

4. When performing the maintenance, it is important to check whether the operating temperature during operation at normal speed is constant - this means that the device operates as expected,

6. Maintenance,

1. Maintenance is limited to refilling oil when needed, and cleaning the gear unit body to prevent overheat,

2. When refilling the gear unit with different oil than aleady applied, it is necessary to drain the old oil, clean the gear unit and refill it with new one,

7. Lubrication,

Unless stated otherwise, each gear unit is supplied with a mineral oil, and requires no maintenance. After a possible adjustment of oil level, gear unit can be mounted in any position.

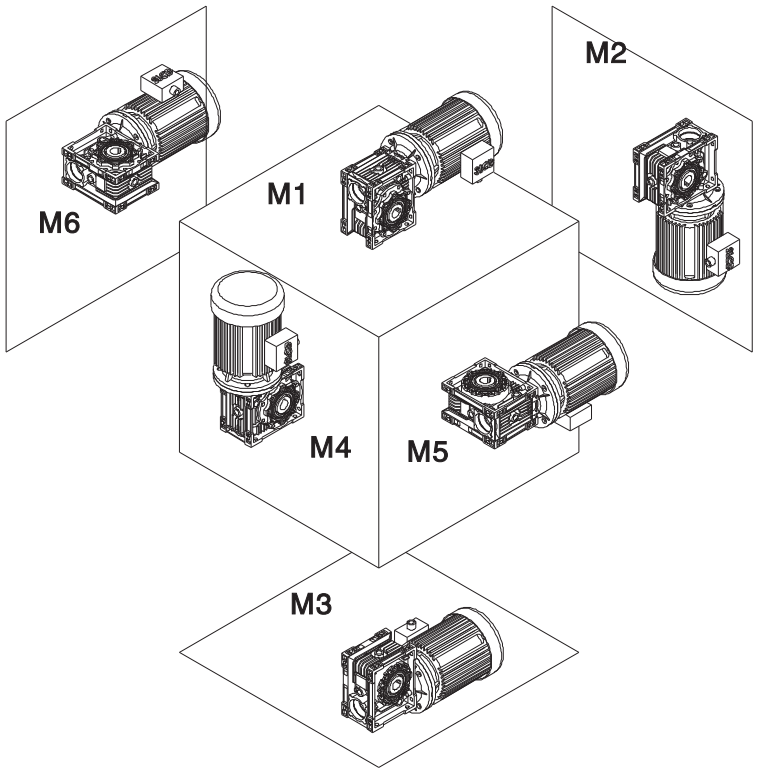
All devices are supplied with the oil plugs, drain plugs, oil level plugs and vent plugs, so they can be configured to operate in any mounting position,

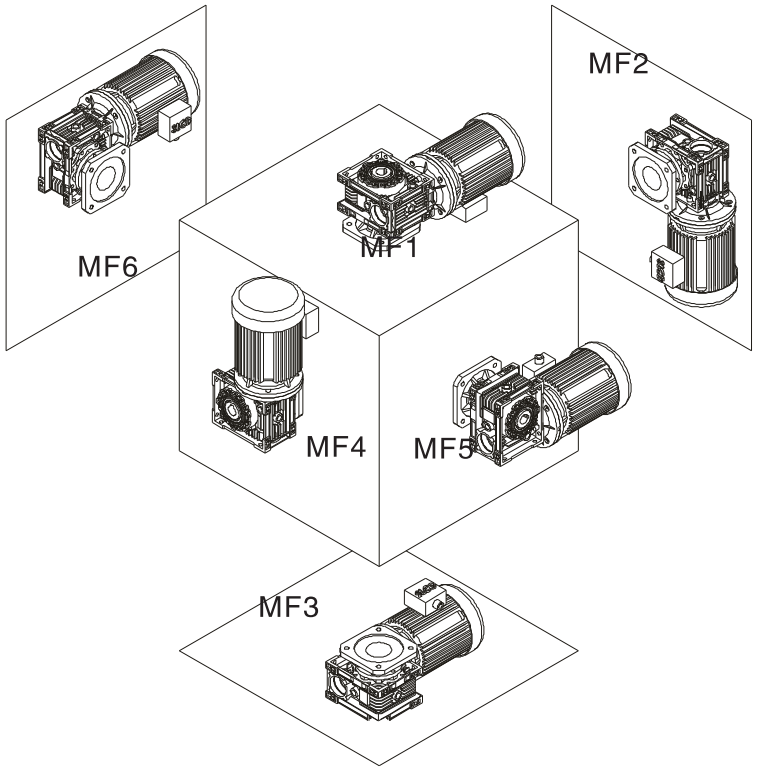
Before starting, the vent plug must be installed on top of the gear unit.

The quantity of oil required to operate in a suitable position (in liters)

	M1 MF6	M2 MF2	M3 MF5	M4 MF4	M5 M6 MF1 MF3
RV 25	0.03				
RV 30	0.05				
RV 40	0.1				
RV 50	0.15				
RV 63	0.3				
RV 75	0.6				
RV 90	1				
RV 110	3.5	3.2	2.5	3.2	2.5
RV 130	4.5	4.5	3.5	4.5	3.5
RV 150	6	6	5	6	5
RV 185	8.5	8.5	7.5	8.5	7.5

8. Mounting positions diagram,





9. Sealing

When the shaft seal does not work properly, it should be replaced as soon as possble, otherwise the escaping oil can damage other components.

When replacing sealing element:

- Ensure that the new sealing element is in good condition, especially when it has been stored in unknown conditions,

- Check whether the outlet gasket is in good condition, if the place where the seal is in contact with the shaft differs by more than 0.3 mm, do not install the gasket,

- Ensure that the new sealing element is arranged in the same way as the old one,

- Adjust the sealing element perpendicular to the axis of the shaft, the seal can not be curled or bent,

- Install the sealing element so that it is directed towards the exerted pressure,

- When new sealing element is not dustproof, additional grease should be applied on edges,

- Gasket seat on the shaft should be lubed with grease,

- When installing the gasket, keep it in line with the outer edge,

- Always use the proper tools to avoid damaging new seals,

- Use only dedicated sealing elements specifically designed for your gear unit,

10. Common problems,

Problem	Possible cause	Option 1	Option 2
Electric motor is not starting	- power supply malfunction, - power cables malfunction, - electric motor is damaged, - wrong size of the electric motor	- Check the power connections	- Replace the electric motor
Power consumption is too high	- electric motor is damaged, - wrong size of the electric motor	- Check the power connections	- Replace the electric motor
Electric motor is overheating	- electric motor is damaged, - wrong size of the electric motor, - ambient temperature is too high,	- Check the power connections - Check the ambient temperature	- Replace the electric motor - Check temperature without load,
Gear unit is overheating	- wrong size of the gear unit, - ambient temperature is too high, - not enough oil, - damaged bearing,	- Recalculate gear unit parameters,	- check oil level, - check bearings condition,
Output speed different than expected	- wrong gear ratio, - wrong polarity of the electric motor,	- Recalculate gear unit parameters, - Check engine polarity	- Replace gear unit and/or electric motor
Oil leak from input/output shaft	- damaged sealing, - misaligned shaft,	- Replace sealing element, - Check shaft align,	- Contact our customer service
Oil leak from sealing element	- damaged sealing, - flanges not tightened properly,	- Replace sealing element, - Check flanges alignment,	- Contact our customer service
Reversed rotation	- reversed electric motor polarity	- Reverse polarity	- Contact our customer service
Constant noise when operating	- damaged gear wheels, - loose elements of the drive	- If no other symptoms are present, some noise is expected under load,	- Contact our customer service
Temporary noise when operating	- loose elements inside the gear unit, - dirt inside the gear unit,	- If no other symptoms are present, some noise is expected under load,	- Contact our customer service
Whistling noise when operating	- damaged bearing, - damaged gear wheel, - insufficient oil level,	- Check bearings condition, - Check oil level,	- Contact our customer service
Vibrations of the electric motor	- Problem with the clutch geometry,	- Check clutch geometry, - Replace clutch,	- Contact our customer service

DUAL SYSTEM Sp. z o.o.
ul. Miodowa 2C
65-602 Zielona Gora

+48 68 323 13 68
www.dualsystem.com.pl
dual@dualsystem.com.pl

NIP: 6912508240
KRS: 0000541178
REGON: 360711268