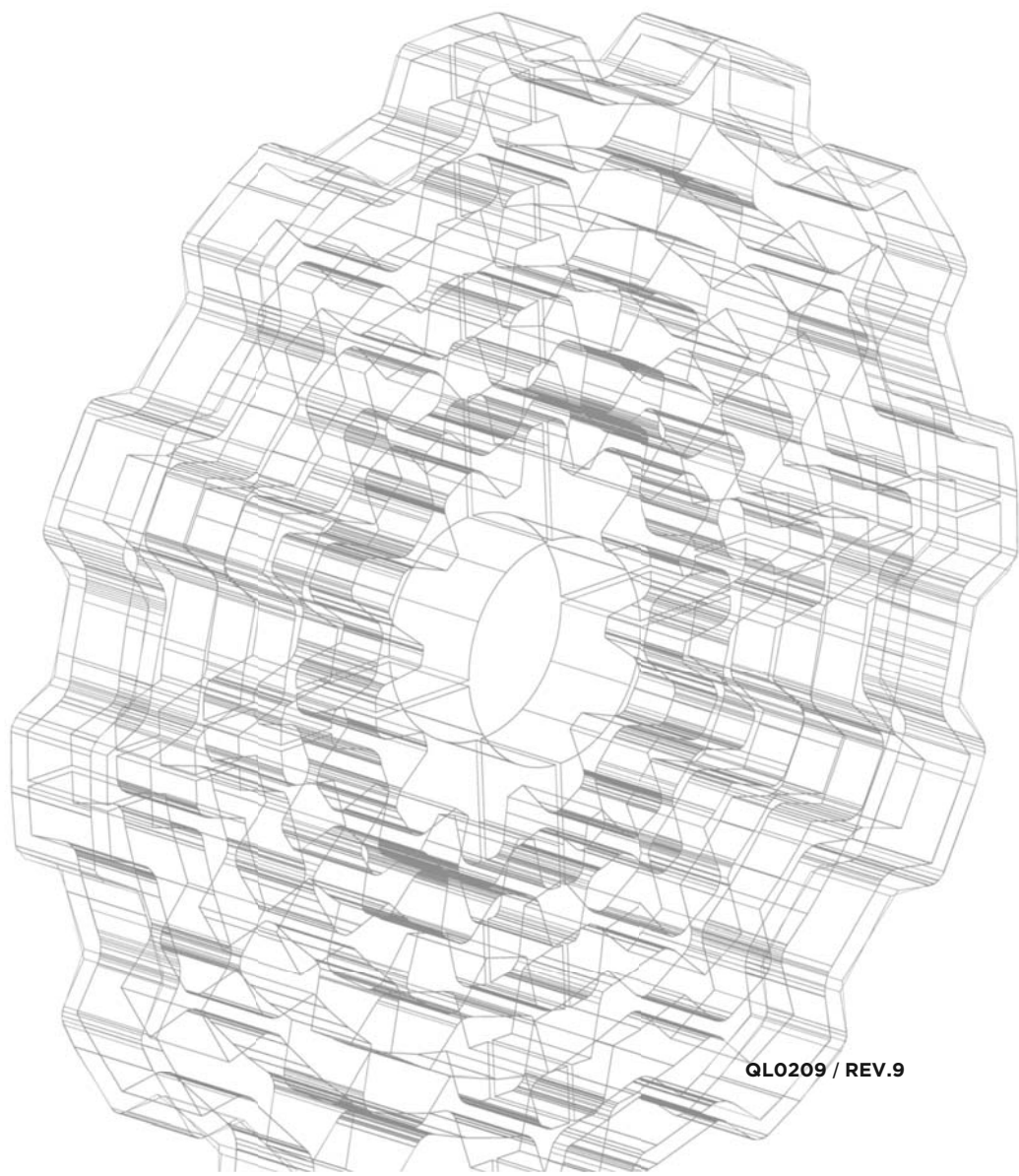


Istruzioni per installazione ed uso Riduttori e Variatori

Installation and use instructions Gear reducers and variators

ONLY ENGLISH VERSION



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**ORIGINAL VERSION IN ITALIAN
TRANSLATED VERSION IN ENGLISH**

IMPORTANT! The data and information given in this document substitute those given in previous editions which are thus to be considered obsolete; periodically consult the technical documentation available on Motovario web site for up-to-date performance information and specifications. For the motor section relating to motorvariators and geared motors, consult the motors manual available on Motovario web site.

1. INTENDED USE OF THE MANUAL

INSTRUCTIONS FOR INSTALLATION AND USE FOR MOTOVARIO-SPAGGIARI PRODUCTS:

STANDARD

GEAR REDUCERS, GEARMOTORS, VARIATORS, MOTOVARIATORS, VARIATOR-GEAR REDUCERS AND MOTOVARIATOR-GEAR REDUCERS SERIES H, B, S, NMRV, NMRX, SW, SWX, SWFX, R, TX, S, VH, SR





2. GENERAL INFORMATION

2.1 PURPOSE

Before commissioning the unit, read the installation instructions carefully. For proper maintenance ensure full safety precautions have been applied, including the use of safety clothing and equipment, as required by current legislation regarding safety in the workplace. In case of need, refer to the complete Use and Maintenance booklet available on the website Motovario.

For the manual regarding the motor, refer to the motor's booklet.

2.2 SYMBOLS

	<p>CAUTION - DANGER Indicates a serious personal health and safety hazard.</p>
	<p>CAUTION - HOT PARTS Indicates a serious heat personal health and safety hazard.</p>
	<p>CAUTION - HIGH VOLTAGE Indicates a serious personal health and safety hazard due to the presence of dangerous voltage.</p>
	<p>IMPORTANT INFORMATION Indicates important technical information.</p>

2.3 PRODUCT IDENTIFICATION

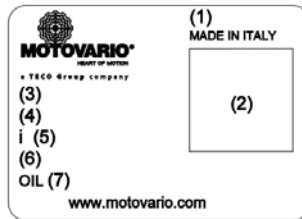
In order to identify the product, the unit bears a label of the following model. The nameplate must not be removed and must be kept intact and readable. In case you need a copy of it just contact MOTOVARIO TECHNICAL SERVICE.

2.3.2 Product identification

Gear reducer label

Information contained on the nameplate:

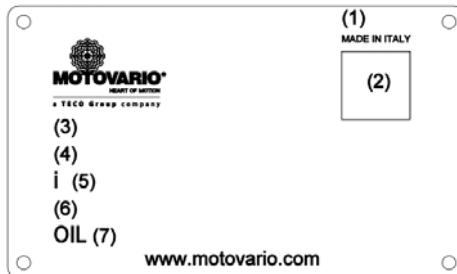
1. Mounters team.
2. QR CODE.
3. Serial number (Order number-Order progressive number-Manufacturing year).
4. Unit abbreviation.
5. i: reduction ratio.
6. Mounting position.
7. Oil type



Heavy duty reducer label

Information contained on the nameplate.

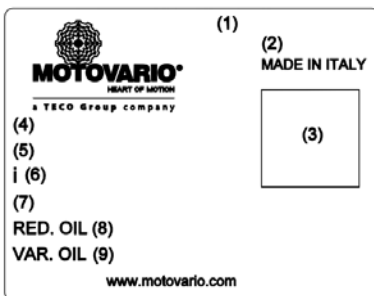
1. Mounters team
2. QR CODE
3. Serial number (No. of the order-Progressive no. of the order-Year of manufacturing)
4. Symbol of the gear reducer/variator
5. i: reduction ratio
6. Operating position
7. Oil type



S series variator label

Information contained on the nameplate:

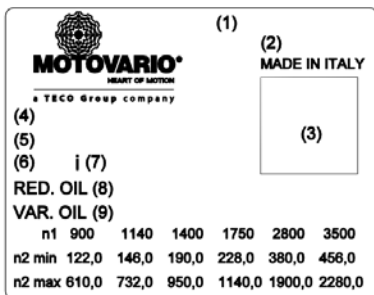
1. Pump (not present if not installed).
2. Mounters team.
3. QR CODE.
4. Serial number (Order number-Order progressive number-Manufacturing year).
5. Unit abbreviation.
6. i: reduction ratio.
7. Mounting position.
8. Gear reducer oil type.
9. Variator oil type.



TX series variator label

Information contained on the nameplate:

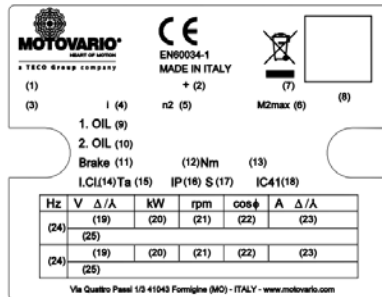
1. Special features (if any).
2. Mounters team.
3. QR CODE.
4. Serial number (Order number-Order progressive number-Manufacturing year).
5. Unit abbreviation.
6. Mounting position.
7. i: reduction ratio.
8. Gear reducer oil type.
9. Variator oil type.



Gearmotor nameplate (located on the motor)

Information contained on the nameplate:

1. Gearmotor symbol.
2. Motor type identification symbol (series/size/no. of poles).
3. Mounting position.
4. i: reduction ratio.
5. n2: Number of output revolutions [rpm].
6. M2max: maximum transmissible torque [Nm].
7. Order number-Progressive number-Year.
8. Mounters team.
- 9.OIL: gear reducer oil.
10. OIL: variator oil.
11. Brake type.
12. Nominal braking torque [Nm].
13. Brake supply voltage.
14. Insulation class.
15. Maximum ambient operating temperature.
16. Protection rating.
17. Duty.
18. Cooling method.
19. Motor voltage (depending on connection).
20. Nominal power output [kW].
21. Nominal speed [rpm].
22. Nominal power factor.
23. Nominal current (depending on connection) [A].
24. Supply frequency [Hz].
25. Code IE1, IE2 or IE3 (depending on the type of motor and whether applicable) followed by efficiency values at 4/4, 3/4 and 2/4 of nominal power (self-braking motors only).



3. TECHNICAL INFORMATION

The gearmotors, motor variators and motor variator reducers are designed to satisfy applicable safety requirements under the terms of the Machinery Directive 2006/42/CE and are supplied with the Declaration of Incorporation. Note that the Machinery Directive 2006/42/CE applies to the entire system of which the gearmotor forms a part. Motovario electric motors comply with the Low Voltage Directive 2014/35/UE and EMC Directive 2014/30/UE regarding their intrinsic characteristics in relation to emissions and levels of immunity.

3.2 CRITICAL APPLICATIONS

The performance specified in the catalogue corresponds to position B3 or similar. For different mounting positions and/or particular input speeds, refer to the tables that highlight any critical situations for each size of the unit. Also bear in mind the following applications, and contact MOTOVARIO TECHNICAL SERVICE for further information:

- Use in conditions which could lead to injury if the unit fails;
- Applications with especially high inertia;
- Use as a lifting hoist;
- Applications with high dynamic loading of the unit casing;
- Use in conditions with T° lower than -5°C or higher than 40°C;
- Use in environment with presence of aggressive chemical agents;
- Use in a salty environment (recommended use of gear reducers/gearmotors NMRX, SWX);
- Mounting positions not provided by the catalogue;
- Use in a radioactive environment;
- Use in ambient with pressure other than the atmospheric one;
- Use of self-braking motors coupled to variators/variator-gear reducers;
- Applications providing immersion, even partial, of the unit;
- Use as multiplier.

Note: The maximum torque bearable by the unit can get twice the Mn2 stated on the label, but only intended for momentary, non-repetitive overload due to starting at full load, braking, impacts and other dynamic causes.

✓ Verified application.

A- Application not recommended.

B-Check the application and/or call MOTOVARIO TECHNICAL SERVICE.

The shrink disc is designed only to transmit the output torque. In case of mounting position with radial and/or axial loads, please contact MOTOVARIO TECHNICAL SERVICE.

H	A31	A30	A40	A50	A60
V5 - V1: 1500 < n1 < 3000	✓	✓	✓	✓	✓
n1 > 3000	B	B	B	B	B
V3 - V6	B	B	B	B	B

H	030	040	050	060	080	100	125	140
V5 - V1: 1500 < n1 < 3000	✓	✓	✓	✓	✓	✓	B	B
n1 > 3000	B	B	B	B	B	B	A	A
V3 - V6	B	B	B	B	B	B	B	B

HR	041	051	061	081	101	121
V5 - V1: 1500 < n1 < 3000	✓	✓	✓	✓	✓	B
n1 > 3000	B	B	B	B	B	A
V3 - V6	B	B	B	B	B	B

B	A40			A50			A70		
2000 < n1 < 3000	✓			✓			✓		
V6	B			B			B		
n1 > 3000	B			B			B		
...L: B6 - B7	B			B			B		

B	060	080	100	125	140	150	160
2000 < n1 < 3000	✓	✓	✓	B	B	B	B
V6	B	B	B	B	B	B	B
n1 > 3000	B	B	B	B	A	A	A
...L: B6- B7	B	B	B	B	B	B	B

S	050	060	080	100	125	140	150
2000 < n1 < 3000	✓	✓	✓	✓	✓	B	B
V6	B	B	B	B	B	B	B
n1 > 3000	B	B	B	B	B	A	A
...L: V5 - V6	B	B	B	B	B	B	B
...L	B	B	B	B	B	B	B

NMRV	025	030	040	050	063	075	090	110	130	150
V5: 1500 < n1 < 3000	✓	✓	✓	✓	B	B	B	B	B	B
n1 > 3000	B	B	B	B	B	A	A	A	A	A
V6	B	B	B	B	B	B	B	B	B	B

NMRX	040	050	063	075	090
V5: 1500 < n1 < 3000	✓	✓	B	B	B
n1 > 3000	B	B	B	B	B
V6	B	B	B	B	B

NMRV-P	063	075	090	110
V5: 1500 < n1 < 3000	B	B	B	B
n1 > 3000	B	B	A	A
V6	B	B	B	B

HW+NMRV-P	030+063	030+075	040+090	040+110
1500 < n1 < 3000	B	B	B	B
n1 > 3000	A	A	A	A
V5 - V6	B	B	B	B

SW-SWX-SWFX	030	040	050	063	075	090	105
V5: 1500 < n1 < 3000	✓	✓	✓	✓	B	B	B
n1 > 3000	B	B	B	B	A	A	A
V6	B	B	B	B	B	B	B

TXF - SF	002-003	005	010	020	030	050	100
2000 < n1 < 3000	✓	✓	✓	B	A	A	A
n1 > 3000	B	B	B	A	A	A	A
V3 - V6	B	B	B	B	B	B	B

R	040	050	063	080	100	125
1500 < n1 < 3000	✓	✓	✓	B	B	B
n1 > 3000	A	A	A	A	A	A
V3 - V6	B	B	B	B	B	B

4. SAFETY INFORMATION

Staff working on the units must be technically qualified and experienced to do so, and must also be equipped with the necessary safety equipment (as provided by current legislation). Failure to observe this requirement may result in injury or damage. For specific safety information, refer to the respective paragraphs.

The group can reach high temperatures in operation. Do not touch the casings with bare hands - use appropriate safety equipment.

5. HANDLING AND STORAGE

On delivery, check that the consignment corresponds to the bill of sale and is not damaged or faulty; contact Motovario in case of need.

Dispose of the packaging as required by the law.

Make sure all safety requirements are satisfied when handling the unit.

It is not always possible to move the unit manually due to its shape and weight; use appropriate handling equipment to prevent damage and injury. The weight to be handled is listed in the catalogue. Identify the groups lifting points (eyebolts on series B, holes on series S units, tapped hole in the solid shaft of series H and R, and holes in the feet of series NMRV). Handle SW series reducers by harnessing the unit with belts around the pam mounting area. Move SWX-SWFX gearmotors wit belts; harness the unit around the pam mounting area and motor eyebolt (for motor sizes 100 to 132). Never use only the motor eyebolt. Handle the units with extreme caution and care. Employ all possible safety precautions and take care during handling not to break or damage the unit's external components due to collision or dropping.

If the unit is to be stored for a long time (2/4 months), or if conditions are particularly aggressive, apply appropriate protective and water repellent products to prevent damage to the shafts and rubber components.

Before commissioning the unit, run the following controls:

- check the nameplate data for the group and electric motor (as applicable);
- check for lubricant leaks;
- if possible, clean off any dirt from the shafts and around the seal rings.

If the unit is to be stored for a particularly long time (4/6 months), if the seal ring is not submerged in the lubricant inside the casing, it should be replaced, since the rubber may be adhering to the shaft or have lost its elasticity.

6. INSTALLATION

Pay special attention to the installation conditions as these are the main cause of damage and downtime. When choosing the motor, consider the mounting position and presence, below the motor itself, of parts, things or materials which may be damaged by oil leaks, however limited in amount. Choosing the right mounting position can eliminate many problems. It is often sufficient to place a guard under the motor to ensure operation in optimal safety.



The unit can only be mounted in the mounting position indicated on the nameplate: a different mounting position must be authorised by Motovario. Changes in angle or inclination with respect to the horizontal are allowed by $\pm 5^\circ$.

Before the commissioning of the unit, carry out the following operations:

- Check the nameplate data of the unit and/or electric motor;
- Check that the supply corresponds to what was required by the order;
- Fixing to the structure of the machine must be stable, vibration-free. The structure shall not be subject to torsional movements, must ensure a continuity of transmission of any electrical and electrostatic charges. Otherwise provide a grounding system, via a cable securely attached to the mounting areas, making sure to remove any paint in the contact area and using conductors of adequate cross section;
- For fixing use the fixing screws of minimum 8.8 quality and be sure not to buckle the casings due to improper fixing, making sure that the support surface is coplanar to the fixing surface (refer to FIXING SCREW TIGHTENING TORQUE table);
- Do not install the unit in mounting positions other than those stated in the order, since different positions provide different positions of the loading, unloading and oil level caps, in addition to a different amount of lubricant, if indicated/present;
- Check the position of the level cap. If the casing is provided with a hole closed with cap symmetric with respect to the level cap itself, if necessary, for level visibility, reverse their positions. Check the accessibility to oil loading/unloading caps.
- Check, if possible, the correct quantity of oil, according to the mounting position required. If the oil level of the unit is restored, do it according to the cap diagram and use oil of the same type indicated on the label.
- Replace, if any, the closing cap with the vent cap provided in the supplied kit;
- Check for any leakage of lubricant;
- If possible, remove any traces of dirt from the shafts and from the areas around the sealing rings;
- Lubricate the contact surfaces to prevent oxidation or seizure;
- Check the static seals and the bolted joints;
- Do not install the unit in an environment with fumes or abrasive and/or corrosive dust;
- Do not install the unit in direct contact with food products in bulk. Occasional contact with foodstuff is allowed only with series SWFX gearmotors;
- Install all the protections designed for the rotary organs so as to ensure the system safety according to the current rules;
- Check for the correct rotation direction of the output shaft of the unit;
- In case of shaft-mounted configuration it is recommended to use the torque arms that can be supplied by Motovario, specially designed;
- Ensure proper cooling of the motor through a good flow of air from the fan side;
- Avoid solar radiation or other heat sources, the cooling air temperature must never exceed 40°C;
- Check that the assembly of the various parts (pulleys, sprockets, couplings, etc.) on shafts is performed by using the proper threaded holes or any other systems able to ensure a correct operation without risking damage to the bearings or the outer parts of the units.

For the operating fields with temperatures below 0°C, please consider the following:

- For the gear reducers, please contact MOTOVARIO TECHNICAL SERVICE beforehand;
- The motors must be suitable for operation with the expected ambient temperature;
- The electric motor power must be adjusted when exceeding the higher starting torques required.

In addition for variators:

- The change in revolutions, using the appropriate command, must be executed solely when the unit is running;
- There must be an oil seal in the coupling area between the variator and the motor.

In case of ambient temperature not listed in the table LUBRICANTS RECOMMENDED BY MOTOVARIO, please contact MOTOVARIO TECHNICAL SERVICE. If the temperature is lower than -30°C or higher than 60°C use special mixture sealing rings.



Check that all accessible surfaces do not exceed the temperature limits established by EN ISO 13732-1. Should these temperatures be reached or exceeded, arrange suitable protective systems (insulation or guards) or signs, clearly visible to the operator, carrying the symbol CAUTION HOT PARTS according to EN ISO 7010 standard.

Table of FIXING SCREW TIGHTENING TORQUE with resistance class 8.8 - 10.8 - 12.9

	Mn [Nm] +5% / -10%		
	8,8	10,8	12,9
M 3	1,3	1,9	2,3
M 4	3,0	4,4	5,1
M 5	5,9	8,7	10,2
M 6	10,3	15,1	17,7
M 8	25	36	43
M 10	49	72	85
M 12	85	126	147
M 14	133	202	237
M 16	215	316	370
M 18	306	435	560
M 20	436	618	724
M 22	600	851	997
M 24	750	1064	1245
M 27	1111	1579	1848
M 30	1507	2139	2504
M 33	2049	2911	3407
M 36	2628	3735	4370
M 39	3417	4858	5685
M 42	4212	5999	7070
M 45	5278	7518	8847
M 48	6366	9067	10609
M 52	8210	11693	13684
M 56	10232	14572	17053
M 60	12726	18125	21210
M 64	15303	21795	25505

7. SPECIFIC ASSEMBLING

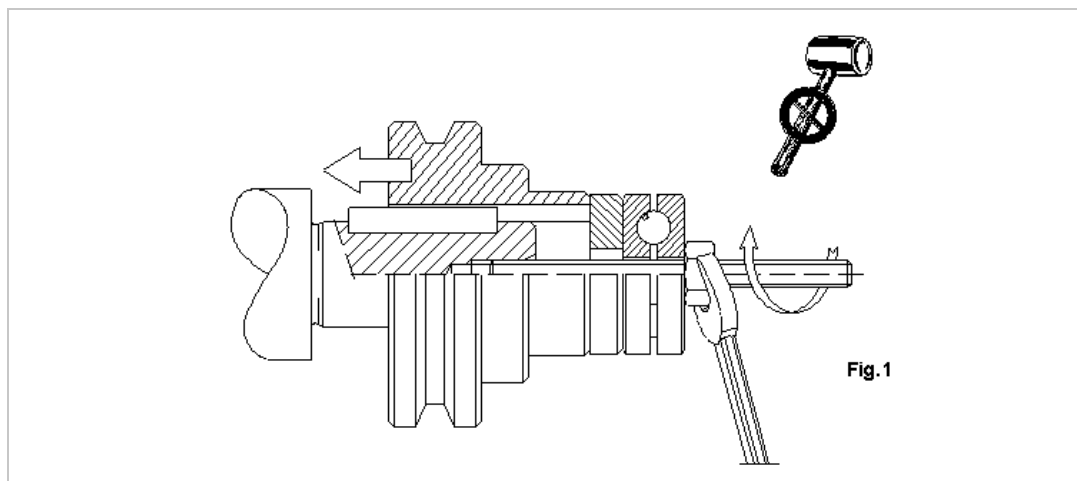
7.1 OUTPUT SHAFT CONNECTIONS

7.1.1 Solid shaft

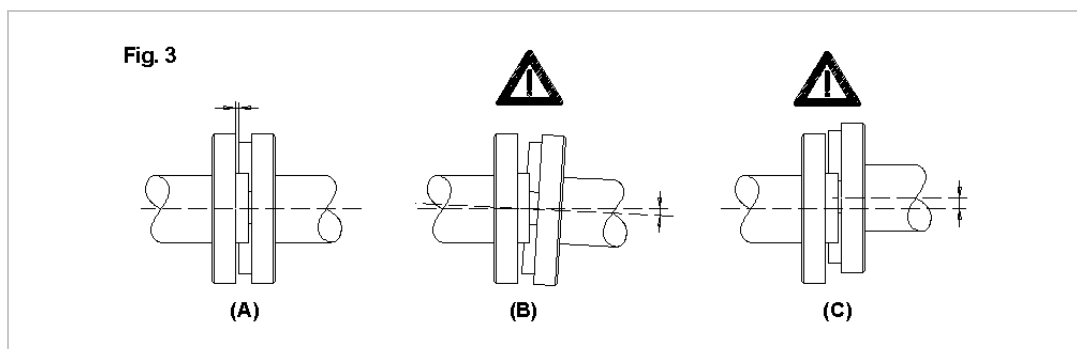
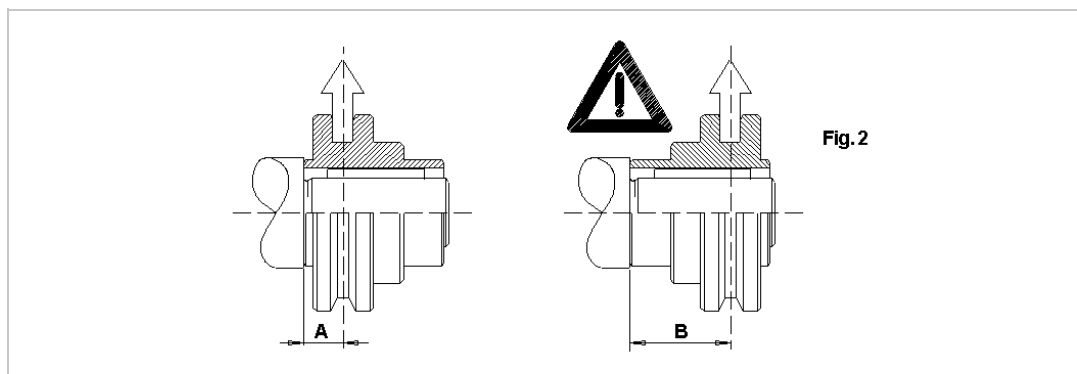
See the information supplied by the following figures 1-2-3.

- Fig. 1 **Example of correct installation of a part to the slow shaft of a gear reducer.** We recommend to avoid using inadequate tools.

In any case, refer to the installation manual of the part to be assembled.



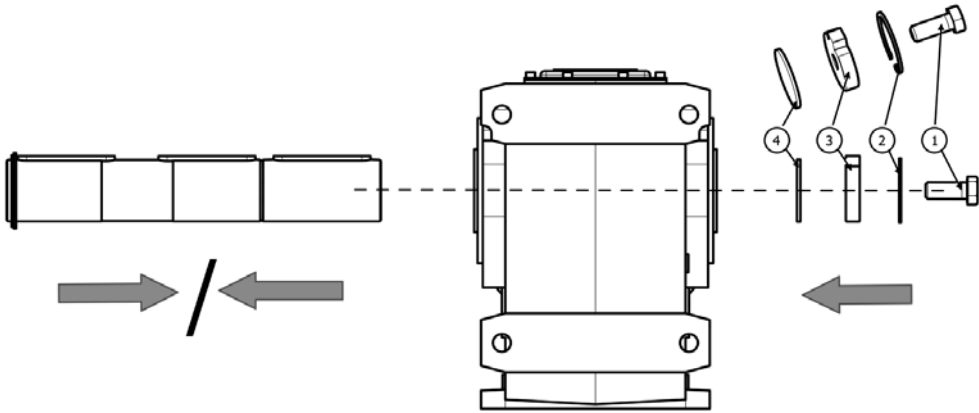
- Fig. 2, 3: Examples of correct and incorrect installation () on the output shaft of the gear reducer.



7.1.2 Hollow shaft with key series B, S

B and S series gear reducers (except sizes S140 and S150) may be supplied with an optional Motovario installation/removal kit for the driven shaft. Upon request the supply includes:

1. Fixing screw;
2. Safety ring;
3. Lug nut;
4. Thrust disk.

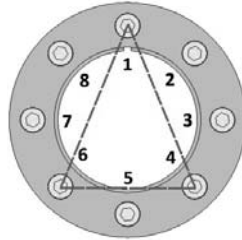


	<p>Assembly Install the safety ring (2), insert the lug nut/washer(3), tighten the fixing screw (1) of the Motovario installation kit on the shaft end of the driven machine</p>
	<p>Removal Fit the thrust disk (4) and lug nut/washer (3) from the Motovario removal kit between the driven machine's shaft and the safety ring (2). Insert the safety ring (2), and tighten the fixing screw (1). You can now extract the gear reducer from the shaft.</p>

7.1.3 Mounting with locking series B, S

Only standard groups and ATEX 3G/3D. Gear reducers may be fitted with a locking set to lock the hollow shaft on the driven shaft. For fitting the locking unit proceed as follows:

- Undo the locking set screws, in sequence and gradually;
- Degrease with care the surfaces of the hollow shaft and of the machine pin to couple;
- Check that the locking shaft diameter is correct (h7);
- Mount the locking unit on the gear reducer hollow shaft, lubricating beforehand the outer surface of the hollow shaft;
- Tighten slightly a first set of three screws placed at approx. 120° as shown in the figure;



- Tighten the locking unit gradually and uniformly with a torque wrench up to the torque indicated in the table below, with continuous sequence (not crossed) making ¼ of a turn at a time until reaching the prescribed tightening torque;
- Keep applying the torque for 1 or 2 further steps and at the end check the bolt tightening torque;
- In case of stressful working cycles with frequent motion inversions, check again, after a few hours of operation, the screws' tightening torque.

	MT 12.9 (Nm)
BA40-50-70 B063-083-103 S050-060-080-100	15
B123 - S125	40
B143	50
B153-163 S140	70
S150	103

For disassembling the locking unit proceed as follows:

Clean all the oxidized areas. Loosen one fixing screw after the other only by rotating them of ½ a turn at a time, with continuous sequence (not crossed), until the locking unit can be moved on the hollow shaft. Remove the customer's shaft or gear reducer.

In any case, refer to the installation manual of the part to be assembled.



**In case of safety problems, unfavourable mounting positions (shaft pointing down), vibration or external axial loads, arrange suitable devices to prevent the shaft from sliding out!
Do not remove completely the fixing screws before releasing the locking rings. Risk of serious injury!**

7.2 INPUT SHAFT CONNECTIONS

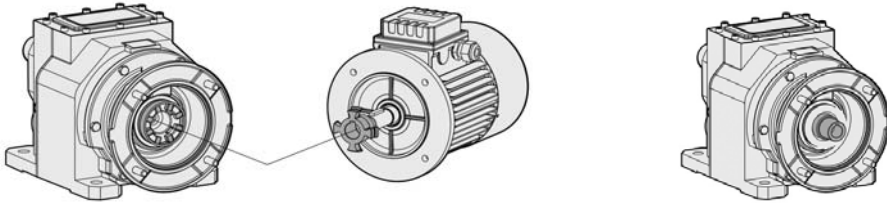
7.2.1 Motor mounting flanges

When the unit is supplied without motor, observe the following recommendations to ensure proper installation of the electric motor:

- Check that the tolerances of the shaft and motor flange correspond to at least "normal" quality;
- Thoroughly clean the shaft, spigot and flange surface from dirt and paint;
- Put on the motor shaft protective paste that promotes mating and prevents oxidation (recommended MACONGREASE TBL SPECIAL 2 antifretting grease);
- Place the proper gasket (supplied by Motovario on request) on the motor flange **(or spread a layer of sealant)** and proceed to the mechanical connection to the gear reducer.

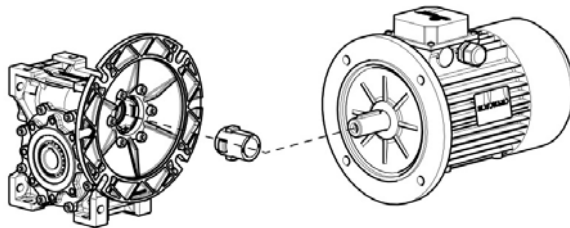
For input version with elastic coupling

Before the mechanical connection to the gear reducer, proceed mounting the coupling half (see figure) on the shaft of the electric motor that must be done without applying excessive force to avoid damaging the motor bearings. Otherwise check the correct position and the tolerance of the motor key. Then mount the motor complete with coupling half, timing the motor side coupling half drive teeth with those of the elastic element on the gear reducer side coupling half.



For version with input bushing (NMRV-P)

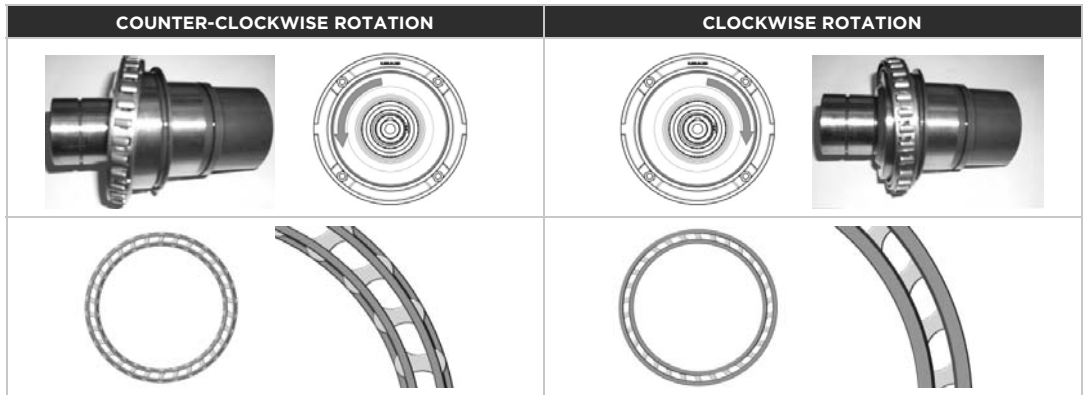
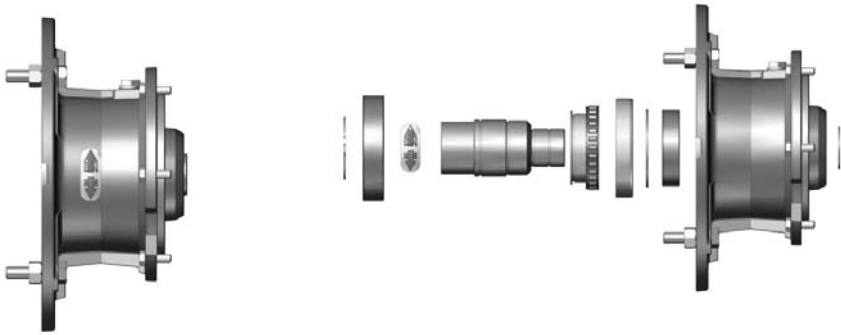
Before the mechanical connection to the gear reducer, proceed checking the mounting of the bushing (see figure) on the shaft of the electric motor, that must take place without applying excessive force, to avoid damaging the motor bearings. Otherwise check the correct position and the tolerance of the motor key. Then reassemble the bushing on the gear reducer, timing the teeth of the bushing with those of the screw. Then mechanically connect the motor to the gear reducer. Check the direction of rotation of the output shaft of the unit before installing the unit on the machine.



7.3 ACCESSORIES

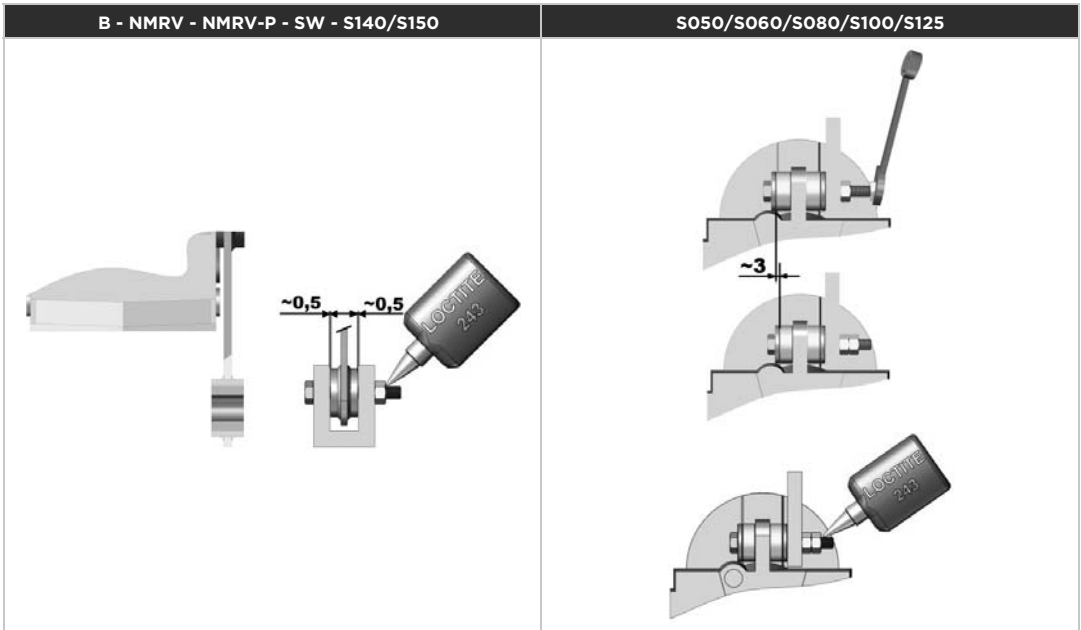
7.3.1 Backstop device (H, B, S)

Only standard groups and ATEX 3G/3D. The gear reducer may be supplied with a backstop device on the fast axis. The backstop device allows the rotation of the shafts in one direction only; depending on the size is available in the PAM flange or in the motor, without additional space (with the exception of the PAM configurations for H/B/S configurations, flange type PAM 100/112). In the S series the device is not available for sizes S140-150. It is essential to specify the input side direction of rotation (clockwise/counter-clockwise) in the order. On the PAM flange is applied a nameplate showing the free direction of rotation of the unit. Check that the free direction of rotation corresponds to what is required.



7.3.2 Shaft mounting with reaction arm (B, S, NMRV, NMRV-P, SW)

The B, NMRV, NMRV-P, SW, S140-150 series gear reducers can be equipped with anti-vibration torque arm; the S-series gear reducers (of remaining sizes) can only be equipped with anti-vibration anchors. Make sure, upon mounting completed, that the axial pre-load of the anti-vibration anchor is absent (for B, NMRV, NMRV-P, SW series gear reducers, with anchor to support on both sides) or moderate (for S series gear reducers). Check the absence of abnormal vibrations, during the start-up, on both the unit and the support structure.



7.3.3 Reinforced seals

H-B-S-NMRX-SWX-SWFX series gear reducers may be equipped with reinforced seals. Reinforced seals, depending on the size of the unit, will be composed of two sealing rings or a standard sealing ring + VRM ring. Coaxial gear reducers, sizes 060 to 140 (excluding single stage units) in mounting positions V1/V5 already have 2 sealing rings as standard supply. It is not necessary to pay special attention during installation, only make sure that the machine is running at start-up.

7.3.4 Torque limiter

Series NMRV, NMRV-P and SW reducers may be equipped with torque limiters. This device protects the reducer and the mechanical components connected to it against accidental or unexpected overloads. It is also useful when the slow shaft must be rotated when the machine is stopped: to do so, slacken off the adjuster collar (mark the position of the collar first to restore the setting or recalibrate the unit afterwards). The device is not recommended in use on lifting equipment since it can compromise safety. It has no effect on the mounting of the reducer. The unit is supplied set to around 80% of the nominal torque given in the catalogue. When installing to the machine, if necessary, set the torque limit with the collar to suit the actual requirements of the application; to calibrate, check the torque and method with the plant designer. In case of need, to ensure proper safety, run operational checks.

7.4 VARIATOR ACCESSORIES

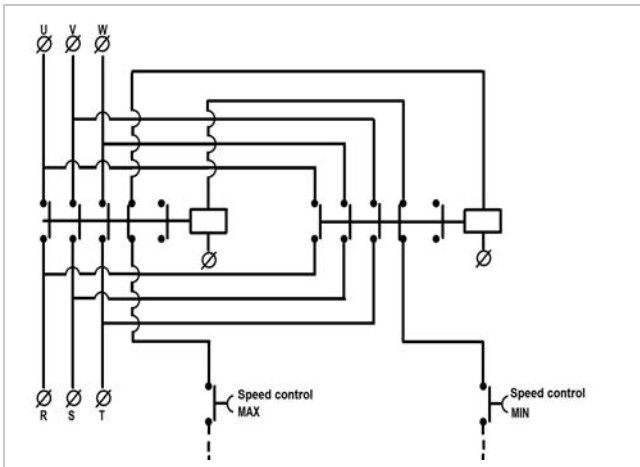
In order to know exactly the number of revolutions of the variator, it is possible to fit directly on the variator casing (or on the differential casing) a NAMUR-compliant inductive sensor -1mm distant from a crown wheel (9 or 18 teeth).

For reading the number of revolutions it is possible to use a digital tachometer, connected to the probe that reads on the wheel (9/18 teeth) the speed of the motovariator (both powered by voltage in direct or alternating current 24V/110V/220V; for the calibration refer to the relevant instructions in the box).

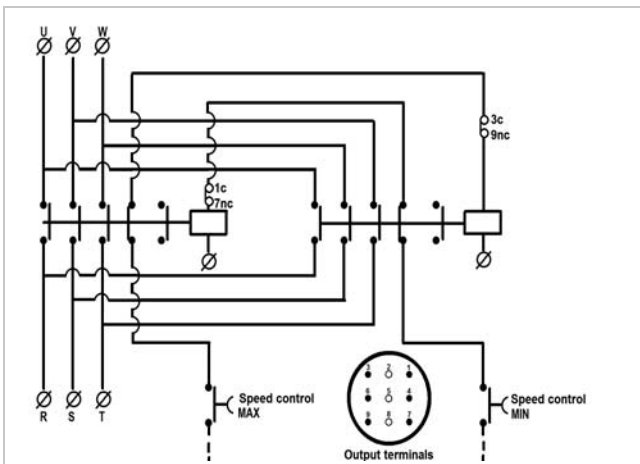
Instead the gravitational indicator is enclosed (installed by the customer) and it is used for showing the variator adjusting position.

If the handwheel is in position 1, the gravitational indicator reading scale is counter-clockwise, in position 2 it is clockwise. For the calibration bring the two hands to position "0".

Three-phase connection diagram of variator electrical servo-control



Three-phase connection diagram of variator electrical limit switch



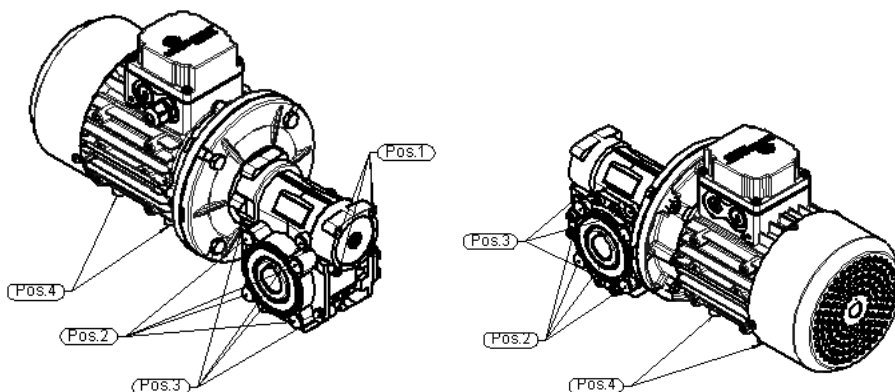
7.5 UNITS FOR DIFFICULT ENVIRONMENTS AND FOOD INDUSTRY

In the event of accidental damage to the paint, restore it as soon as possible by using the repair kit available on request.

Close unused mounting holes with the provided plugs as shown in the enclosed diagram.

- The screw shaft hole plugs pos. 1 must always be installed.
- The output flange hole plugs pos. 2 must be installed in relation to which accessories are installed.
- The mounting foot hole plugs pos. 3 must be installed if the mounting feet are not installed.
- The feet hole plugs pos. 4 must always be installed.
- The screw shaft hole plugs pos. 5 must always be installed.
- The output axis hole plugs pos. 6 must always be installed.

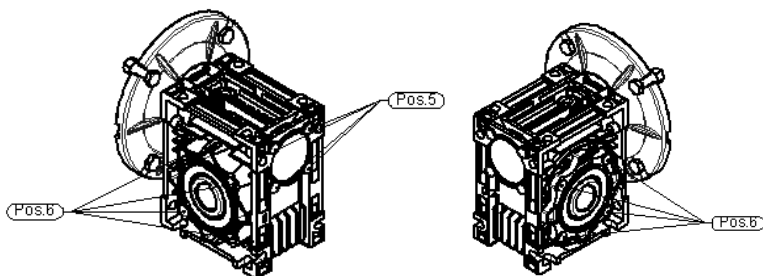
SWX - SWFX



SWX - SWFX	Pos.1		Pos.2		Pos.3	
	Ø	N°	Ø	N°	Ø	N°
030	4,7	4	5	8	-	no
040	4,7	4	5	8	5	8
050	6	4	7	8	5	8
063	6	4	7	16	7	8
075	6	4	7	16	7	8
090	6	4	8,8	16	8,8	8
105	6	4	9,3	16	7,3	16

Mot.	Pos.4	
	Ø	N°
63	6	4
71	6	4
80	6	4
90	8	4
100	8	4
112	8	4

NMRX



NMRX	Pos.5		Pos.6	
	Ø	N°	Ø	N°
40	6	3	5	8
50	6	4	7	8
63	8	4	7	16
75	8	4	7	16
90	8	4	8,8	16

8. STARTUP

Before starting up the machine incorporating the unit make sure that:

- The machine is compliant with Machinery Directive 2006/42/EC, in addition to other safety regulations in force;
- It is compliant with regulations EN60204-1 and EN50014;
- The voltage corresponds to the expected one;
- The facility complies with all applicable standards on safety and health of people at the workplace;

Moreover:

- Remove all the installed safety devices used for handling;
- Fill up with the quantity and type of oil indicated on the proper label on the gear reducer. Fill in the label. If topping up is necessary, use the same brand and type of lubricant as the one already used. Use Motovario approved lubricants (see table). Check for correct amount of oil through the appropriate level indicator, or dipstick, if any. In case of pressure-fed lubrication, or if a cooling system is present, make sure that oil is in contact with the system at suitable level;
- Make sure that the vent cap is free from obstructions;
- The start-up should be done in a gradual manner, avoiding the immediate application of the maximum load the machine can bear, in order to check for the absence of operating failures or residual application criticality;
- During start-up, to allow the oil to spread and reach optimum temperature and therefore viscosity, it is advisable to make the unit run with no load for some minutes;
- Check that all the installed devices and accessories are working properly during operation;
- For the variator/variator-gear reducer the change in revolutions, using the appropriate command, must be done when the unit is running;
- During the first hour of operation check for any anomalous vibration and noises or overheating. If necessary stop immediately the motor and contact the MOTOVARIO TECHNICAL SERVICE. After stopping the motor, wait 30' before disassembly.



Do not use the unit:

- In an environment with fumes or abrasive and/or corrosive dust;
- In direct contact with food products in bulk.

Dangerous area

The dangerous area of the unit is the rotating shaft extension where any person could be subject to mechanical risks from direct contact (cutting, dragging, crushing). Make the machine compliant with DIRECTIVE 2006/42/EC providing a safety guard when the unit works in accessible zones.

For B, S, NMRV and SW series gear reducers the units can be fitted with protective covers if so required.

9. MAINTENANCE



Maintenance must be done by a technician familiar with workplace safety legislation and environmental issues.

Do not dump polluting fluids, replaced parts or maintenance waste into the environment.

Never improvise repairs!



Before working on the unit disconnect its power supply, being careful to be protected against inadvertent reactivation, and in any case against the mobility of the components of the unit itself. Wait until the unit reaches the ambient temperature.

Inform staff working in the area or nearby, by duly signalling the areas nearby and preventing access.

Put in place all necessary measures for environmental safety (dust, gas...).

1. Keep the unit in good running order with periodic checks of vibration and noise, absorption and voltage, wear of friction surfaces, lubricant leaks, gaskets, bolted gaskets for wear, deformation and corrosion and restore them as necessary;
2. Keep the unit clean of dust and process residues (do not use solvents or other products incompatible with the materials of construction, and do not direct high pressure jets of water directly at the unit).

Following the above mentioned rules ensures the operation of the unit and the provided safety level.

ROUTINE MAINTENANCE table:

Frequency	Object	Check	Intervention
Daily	Whole unit.	Check temperature and noise level.	Stop and check.
Weekly	Vent plug.	Obstruction due to the presence of dust. For the positions of the caps please refer to the MOUNTING POSITIONS.	Release the vent cap.
1,000,h / 5 months	Oil.	Level.	Topping up.
	Sealing rings, gaskets and caps	Oil leaks and ageing.	Replacement.
	Torque arms (polymer bushings).	Ageing.	Replacement.
Yearly or, anyway, at variable intervals (based on the external conditions)	Whole unit.	Check and inspection of tightening and of the operating conditions of the installed devices.	Tightening. Clean and restore operation of devices (if necessary, replace).
4,000,h / 3 years (T=80°C)	Mineral oil (gear reducers not lubricated "for life").	None.	Replacement.
18,000,h / 6 years (T=80°C)	Synthetic oil (gear reducers not lubricated "for life").	None.	Replacement.

10. LUBRICATION

Proper lubrication makes for:

- Lower friction;
- Less heating;
- Increased efficiency;
- Lower oil temperature;
- Less wear.



Check the oil level before starting up the unit; this operation must be carried out when the unit is arranged in the predetermined mounting position, if necessary restore the level with oil of the same type shown on the nameplate (see the table ALTERNATIVES TO FIRST SUPPLY LUBRICANTS). In case of unavailability, please contact MOTOVARIO TECHNICAL SERVICE. For possible use of different oil (after checking with MOTOVARIO TECHNICAL SERVICE), change completely and in case of synthetic oil, only after washing the inside of the reducer. Fill the oil through the special holes or the inspection cap using a filling filter, then restore the gasket (to be replaced) or the sealant.
PLEASE NOTE: For units supplied without oil, check, in the specific additional nameplate, the oil that may be used and the required quantity according to the mounting position and specify the indications required on the same nameplate. Fill the unit with oil following the plug diagram.



If there is an oil leak, find the cause before restoring the lubricant level.
 Do not dump the lubricant in the environment, adopt all the necessary environmental safety measures, dispose of the lubricant in compliance with the current regulations.

In case of ambient temperature not listed in the table, contact MOTOVARIO TECHNICAL SERVICE. If the temperature is lower than -30 °C or higher than 60 °C use special mixture sealing rings.

For oil changes follow what indicated in the "ORDINARY MAINTENANCE Table".



Periodically check that oil level is never below the minimum level; this operation has to be carried out with stopped gear reducer and after cooling.

10.1.2 Lubricants

Table ALTERNATIVES TO FIRST SUPPLY LUBRICANTS

	H A30 ÷ A60 H 030 ÷ 140 HR 041 ÷ 121 B 060 ÷ 160 S 050 ÷ 150 R 040 ÷ 125		B A40 ÷ A70	NMRV 025 ÷ 150 NMRV-P 063 ÷ 110 HW 030 ÷ 040 SW 030 ÷ 105 NMRX 040 ÷ 090 SWX 030 ÷ 105	SWXF 030 ÷ 105	TX002 ÷ 010 S003 ÷ 100
	Mineral oil		Mineral oil	Synthetic oil	Synthetic oil	Mineral oil
*T _{amb} °C ISO/SAE	(-5) ÷ (+40) ISO VG220	(-15) ÷ (+25) ISO VG150	(-5) ÷ (+40) SAE 85W-140	(-25) ÷ (+50) ISO VG320	(-15) ÷ (+40) ISO VG320	(-10) ÷ (+40) ISO VG32
ENI	BLASIA 220	BLASIA 150	ROTRA MP (85W-140)	TELIUM VSF320	-	BLASIA 32
SHELL	OMALA S2 G 220	OMALA S2 G 150	SPIRAX S2 A 85W-140	OMALA S4 WE320	-	SPIRAX S3 ATF MD3
KLUBER	Kluberoil GEM 1-220N	Kluberoil GEM 1-150N	Klubersynth GH 6-460	Klubersynth GH 6-320	Klubersynth UHI-6 320	-
MOBIL	MOBILGEAR 600 XP220	MOBILGEAR 600 XP150	-	SHC 632	-	ATF 220
CASTROL	ALPHA SP 220	ALPHA SP 150	-	ALPHASYN PG320	-	DEXRON II
BP	ENERGOL GR-XP220	ENERGOL GR-XP150	-	ENERGOL SG-XP320	-	AUTRAN DX III
PETRONAS	GEAR MEP 220	GEAR MEP 150	TUTELA TRANSMISSION W 140/M-DA	GEAR SYN PAG 320	-	TUTELA TRANSMISSION G/A

Standard supply

- T_{amb}°C - Ambient operating temperature.
- Units belonging to the H series 125-140 size, B series 140-150-160 size and S series 125 size are supplied with no oil. All remaining units are supplied with ENI oil, unless otherwise specified by the customer.

10.1.3 Special lubricants

Table SPECIAL LUBRICANTS

	T _{amb} °C	Polyglycol synthetic oil
ENI	(-30) ÷ (+30)	Blasia S 150 (ISO VG150)
	(-20) ÷ (+40)	Blasia S 220 (ISO VG220)
MOBIL	(-45) ÷ (+0)	SHC 624 (ISO VG32)
	(-40) ÷ (+5)	SHC 626 (ISO VG68)
KLUBER	(-40) ÷ (+5)	Klubersynth GH 6-32 (ISO VG32)
	(-35) ÷ (+10)	Klubersynth GH 6-80 (ISO VG80)
	(-30) ÷ (+40)	Klubersynth GH 6-150 (ISO VG150)
	(-25) ÷ (+40)	Klubersynth GH 6-220 (ISO VG220)
	(-15) ÷ (+50)	Klubersynth GH 6-460 (ISO VG460)
	(-10) ÷ (+70)	Klubersynth GH 6-680 (ISO VG680)

	T _{amb} °C	Polyglycol synthetic oil for food grade
KLUBER	(-30) ÷ (+15)	Klubersynth UHI-6 100 (ISO VG100)
	(-25) ÷ (+40)	Klubersynth UHI-6 220 (ISO VG220)
	(-15) ÷ (+40)	Klubersynth UHI-6 320 (ISO VG320)
	(-15) ÷ (+50)	Klubersynth UHI-6 460 (ISO VG460)
	(-10) ÷ (+50)	Klubersynth UHI-6 680 (ISO VG680)

T_{amb}°C - Ambient operating temperature.

If 'special' lubricant is required please contact MOTOVARIO TECHNICAL SERVICE.

10.2 AMOUNT



The amount of oil in the table are indicative only and for the proper topping up you will have to refer to the level cap or the dipstick, if any. Any deviations in level can depend on construction tolerances, transmission ratio but also by the placement of the unit or by the mounting surface at the customers' premises. For this reason it is appropriate that the customer checks and, if necessary, restores the level when the unit are installed. Once the unit is installed, make sure to replace the closed plug used for shipping with the breather plug supplied with the reducer. For the plug positions, refer to the mounting positions.

Table OIL CAPACITIES IN LITRES - [I]

H - CH	HA41	CHA41	A51	A61	A32	A42	A52	A62	A33	A43	A53	A63
B3-B5	0,23	0,13	0,25	0,62	0,68	0,7	1,2	1,9	1,1	1,16	1,9	2,4
B8												
B6-B7												
V5-V1							1,6	2,1	2,5	3,1		
V6-V3												

HR - CHR	O41	O51	O61	O81	101	121	O41M	O51M	O61M	O81M	101M	121M
B3-B5	0,5	0,7	0,7	1,45	3,5	4,7	0,5	0,5	0,5	1,5	3,5	3,9
B5R	0,5	0,5	0,5	1,5	3,5	3,9	-	-	-	-	-	-
B8	0,5	0,5	0,5	1,5	3,5	3,9	0,5	0,7	0,7	1,45	3,5	4,7
B6-B7	0,5	0,7	0,7	1,5	3,5	4,1	0,5	0,7	0,7	1,5	3,5	4,1
V5-V1	0,5	0,7	0,9	1,5	3,5	4,7	0,5	0,7	0,9	1,5	3,5	4,7
V6-V3	0,5	0,7	0,7	1,5	3,5	4,1	0,5	0,7	0,7	1,5	3,5	4,1

H - CH	O41	O51	O61	O81	101	121	O41M	O51M	O61M	O81M	101M	121M
B3-B5	0,5	0,7	0,7	1,45	3,5	4,7	0,5	0,5	0,5	1,5	3,5	3,9
B8	0,5	0,5	0,5	1,5	3,5	3,9	0,5	0,7	0,7	1,45	3,5	4,7
B6-B7	0,5	0,7	0,7	1,5	3,5	4,1	0,5	0,7	0,7	1,5	3,5	4,1
V5-V1	0,5	0,7	0,9	1,5	3,5	4,7	0,5	0,7	0,9	1,5	3,5	4,7
V6-V3	0,5	0,7	0,7	1,5	3,5	4,1	0,5	0,7	0,7	1,5	3,5	4,1

H - CH	O32/O33	O42/O43	O52/O53	O62/O63	O82/O83	102/103	122/123	142/143
B3-B5	0,8	1,2	1,4	2,4	4,5	8,1	12,5	22,5
B8	0,85	1,2	1,4	3,1	5	8,9	12,5	20
B6-B7	1	1,2	1,8	3	4,6	8,4	12,1	22,5
V5-V1	1,3	1,75	2,15	3,9	7,6	12,7	20,5	30,5
V6-V3	1,2	1,7	2,1	4,4	7,5	14,2	21	38

B	A42	A52	A53	A72	A73
B3	0,33	0,42	0,63	1	1,21
B8					
B6-B7					
V5					
V6					

CB	A42	A52	A53	A72	A73
B3	0,33	0,42	0,55	1	1,21
B8					
B6-B7					
V5					
V6					

B - CB	O63	O83	103	123	143	153	163
B3	1,2	2,5	3,7	5,7	11,1	19	33
B8	1,5	2,8	4,2	7,9	13	17,5	42,8
B6	1,5	3,5	6	8,5	14,5	26	43
B7	1,5	2,8	3,9	7,3	11,8	19	30
V5	2,1	3,7	7	9,9	18,5	32,5	54,5
V6	1,3	2,6	4,5	6,7	10,8	16,5	37,3

S - CS	052/053	062/063	082/083	102/103	122/123	142	143	152	153
B3	2,05	2,4	6	9	14,7	22	20	29,7	27
B8	1,8	2,3	4	6	11,8	20	20	31	31
B6	2,4	2,9	5,7	8	16	22 (25)	18 (24,5)	29,3 (42)	24 (40)
B7	2,1	2,6	4,5	6,8	11,3	17,5	14	22,5	18
V5	2,8	3,5	6,8	10,3	19	24,5	23,5	34,4	33
V6	2,4	2,9	6,4	9,9	18	20,8	20	33,3	32

(...) 142-143-152-153 quantity of oil [l] for gearbox with backstop device

NMRV	025	030	040	050	130	150
B3					4,5	7
B8					3,3	5,1
B6-B7	0,02	0,04	0,08	0,15	3,5	5,4
V5					4,5	7
V6					3,3	5,1

The gear reducers NMRV040 and NMRV050 may be supplied with reduction pre-stage unit and may be mounted with gear reducer HA31, for the corresponding oil quantity refer to the relevant table.

NMRV-P	063	075	090	110
B3				
B8				
B6-B7	0,33	0,55	1,15	1,6
V5				
V6				

HW	HW030		HW040	
	NMRV-P063	NMRV-P075	NMRV-P090	NMRV-P110
B3-B6-B7-B8-V5-V6	0,06	0,09	0,11	0,12

H	A31
B3-B5	0,07

SW - SWX - SWFX	030	040	050	063	075	090	105
B3							
B8							
B6-B7	0,04	0,08	0,15	0,3	0,55	1	1,6
V5							
V6							

NMRX	040	050	063	075	090
B3					
B8					
B6-B7	0,08	0,15	0,3	0,55	1
V5					
V6					

TX	002	005	010
B5 - B6 - B7	0,11	0,15	0,4
B8 - V1 - V5	0,3	0,5	0,9
V3 - V6	0,3	0,5	0,9

Var S	003	005	010	020	030/050	100
B3 - B5 - B6 - B8	0,17	0,24	0,4	0,7	1,4	2,3
V1 - V5	0,24	0,4	0,8	1,2	2,5	4,1
V3 - V6	0,26	0,4	0,4	0,7	2,5	3,7

RM	40/1	50/1	63/1	80/1	100/1	125/1
B3	0,18	0,3	0,55	1,1	1,6	3,7
B8	0,18	0,35	0,68	1,67	3,6	5,4
B6-B7	0,2	0,3	0,68	1,1	2,7	3,7
V5	0,16	0,3	0,6	1,2	1,45	2,8
V6	0,21	0,3	0,68	1,75	3,6	4,9

RT - RF/1	40/1	50/1	63/1	80/1	100/1	125/1
B3-B5	0,18	0,35	0,68	1,67	3,6	5,4
B8	0,18	0,3	0,55	1,1	1,6	3,7
B6-B7	0,2	0,3	0,68	1,1	2,7	3,7
V5-V1	0,16	0,3	0,6	1,2	1,45	2,8
V6-V3	0,21	0,3	0,68	1,75	3,6	4,9

RT - RF/2	40/1	50/1	63/1	80/1	100/1	125/1
B3	0,42	0,8	1,5	3,6	6,8	13
B8	0,42	0,8	1,4	3,6	6,2	13
B6-B7	0,42	0,8	1,5	3,2	6,8	11
V5	0,42	0,86	1,6	3,45	7	12
V6	0,63	1,1	2,2	4,2	10,6	17

RT - RF/3	40/1	50/1	63/1	80/1	100/1	125/1
B5	0,42	0,8	1,5	3,6	6,8	13
B8	0,42	0,8	1,4	3,6	6,2	13
B6-B7	0,42	0,8	1,5	3,2	6,8	11
V5	0,63	1,1	2,2	4,7	9,2	16,2
V6	0,7	1,25	2,4	4,9	11,4	18

SRM/1	003-40/1	005-50/1	010-63/1	020-80/1	030/050-100/1	100-125/1
B3	0,16	0,32	0,55	1,1	1,8	2,8
B8	0,18	0,35	0,6	1,3	2,7	4,2
B6D-B6S	0,18	0,32	0,6	1,1	2,7	3,7
V5	0,18	0,35	0,65	1,2	1,45	2,8
V6	0,2	0,32	0,65	1,5	3,4	4,5

SRT - SRF/1	003-40/1	005-50/1	010-63/1	020-80/1	030/050-100/1	100-125/1
B3-B5	0,18	0,35	0,6	1,3	2,7	4,2
B8	0,16	0,32	0,55	1,1	1,8	2,8
B6D-B6S	0,18	0,32	0,6	1,1	2,7	3,7
V5-V1	0,18	0,35	0,65	1,2	1,45	2,8
V6-V3	0,2	0,32	0,65	1,5	3,4	4,5

SRT-SRF/2-3	003-40/2-3	005-50/2-3	010-63/2-3	020-80/2-3	030/050-100/2-3	100-125/2-3
B3-B5	0,42	0,8	1,6	3,8	6,8	14
B8	0,42	0,8	1,4	3,6	6,2	13
B6D-B6S	0,42	0,8	1,2	3,2	6,2	12
V5-V1	0,6	1	2,2	4,7	9,2	16,2
V6-V3	0,5	1,1	2,2	4,7	9,2	17

For SRT-SRF-SRM units the quantity indicated in the table applies only to the gear reducers, for the variator part consult the values in table Var S.

11. UNIT DISPOSAL

During unit disassembling the plastic material must be separated from the metal or the electric material. The operation may be performed only by skilled operators and in compliance with the current regulations concerning health and safety at the workplace.

For determining the consecutive and interconnected stages of the company products (life cycle), from the acquisition of raw materials up to final disposal, the different parts of the products that must be sent to recycling / disposal in compliance with the current environmental laws are listed here below:

Parts of the gear reducer/motor	Material
Gear wheels, shafts, bearings, connecting keys, safety rings,	Steel
Casing, parts of the casing	Cast iron
Light alloy casing, parts of the light alloy casing,....	Aluminium
Crowns, bushings,....	Bronze
Sealing rings, covers, rubber parts,...	Elastomers with steel springs
Coupling elements, protection covers, variator knobs, motor terminals...	Plastic
Flat gaskets	Sealing material
Motor terminals, variator screw blocks,...	Brass
Rotor and stator	Copper
Gear reducer oil	Mineral oil
Gear reducer oil	Synthetic oil
Sealants	Resins
Packaging materials	Paper, cardboard



Do not dump in the environment non-biodegradable material, oils, non-ferrous components (PVC, rubber, resins, etc.).




Do not reuse components which may appear in good order on inspection, have them replaced by specialised personnel only.



The crossed out wheeled bin symbol on the nameplate or label indicates that the motor must be collected separately from other waste at the end of its useful life. The separate collection for the delivery of the motor to recycling, to treatment and environmentally compatible disposal helps avoiding possible negative effects on the environment and health and promotes the reuse and/or recycling of materials that make up the motor.

12. MOUNTING POSITION

Install the unit in the intended mounting position. Otherwise, please contact MOTOVARIO TECHNICAL SERVICE.

	VENT CAP
	LEVEL CAP

12.1.2 HA - H - HR / 1


HA - H / 1 - STANDARD			
T	B3	B6	B7
	B8	V5	V6
M	B3	B6	B7
	B8	V5	V6
F	B5	V1	V3

Plugs only on sizes: H081/101/121. Closing plugs on all other holes.

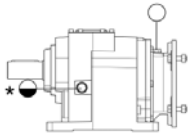
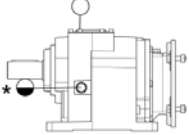
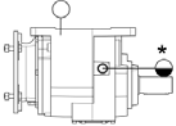
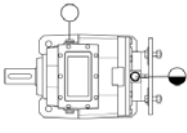
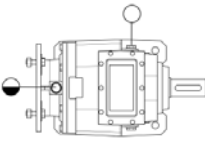
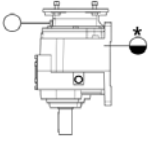
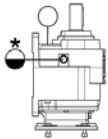
	VENT CAP
	LEVEL CAP

HR / 1 - STANDARD			
T	B3	B6	B7
	B8	V5	V6
M	B3	B6	B7
	B8	V5	V6
F	B5	B5R	V1
			V3

Plugs only on sizes: HR081/101/121. Closing plugs on all other holes.

	VENT CAP
	LEVEL CAP

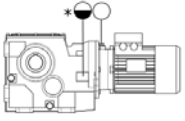
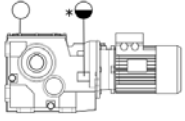
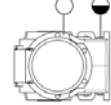
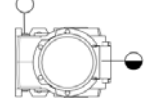
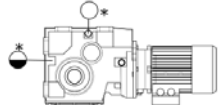
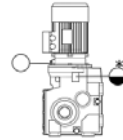
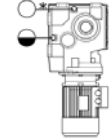
12.1.3 HA - H / 2-3

HA - H / 2-3 - STANDARD		
B3 - B5 (HA - H030:H100)	B3 - B5 (H125:H140)	B8
		
B6	B7	V5 - V1
		
		V6 - V3
		

Plugs only on sizes: H060/080/100/125/140. Closing plugs on all other holes.
*Plug on the opposite side.

	VENT CAP
	LEVEL CAP

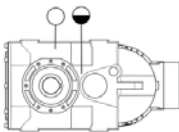
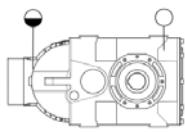
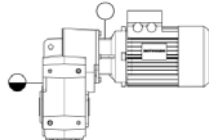
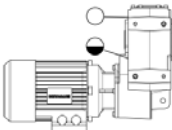
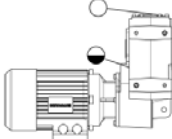
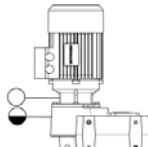
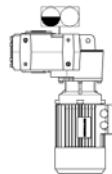
12.1.4 BA - B

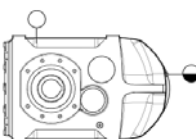
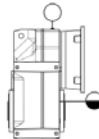
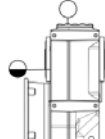
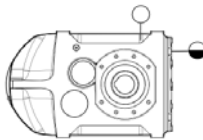
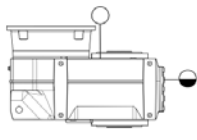
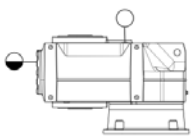
BA - B - STANDARD			
B3 (BA - B060:B125)	B3 (B140:B160)	B6	B7
			
B8		V5	V6
			

Plugs only on sizes: B080/100/125/140/150/160. Closing plugs on all other holes.
 *Plug on the opposite side.

	VENT CAP
	LEVEL CAP

12.1.5 S

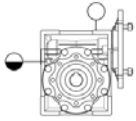
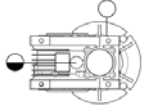
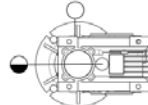
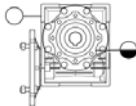
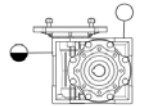
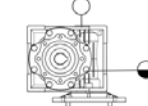
S - STANDARD (S052/3:S122/3)			
B3		B8	
			
			
B7 (S052/3:S102/3)	B7 (S122/3)	V5	V6
			

S - STANDARD (S142/3:S152/3)		
B3	B6	B7
		
B8	V5	V6
		

Plugs only on sizes: S080/100/125/140/150. Closing plugs on all other holes.

	VENT CAP
	LEVEL CAP
	VENT PLUG WITH DIPSTICK

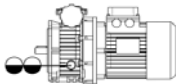
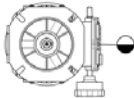
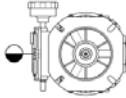
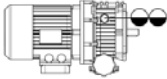
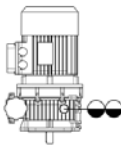
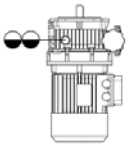
12.1.6 VSF

NMRV - NMRV-P - SW - NMRV+HA31 - NMRV-P/HW - NMRX - SWX - SWFX - STANDARD		
B3	B6	B7
		
B8	V5	V6
		

Plugs only on sizes: NMRV110/130/150. Closing plugs on all other holes.

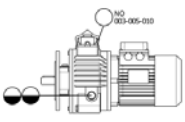
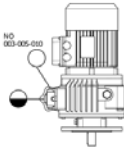
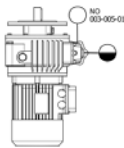
	VENT CAP
	LEVEL CAP

12.1.7 VAR

TXF - STANDARD		
B5	B6	B7
		
B8	V1	V3
		

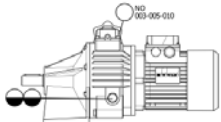
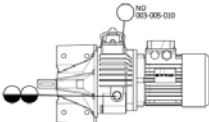
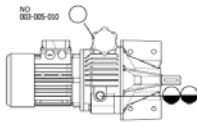
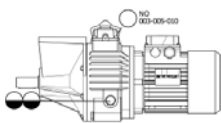
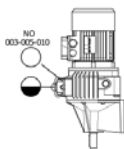
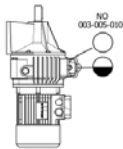
Closing plugs on all other holes.

	LEVEL CAP
---	-----------

SF - STANDARD		
B5	V1	V3
		

Closing plugs on all other holes.

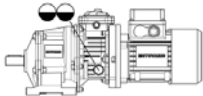
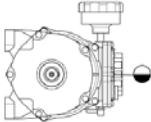
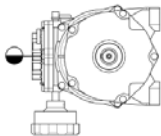
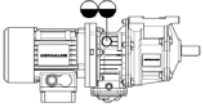
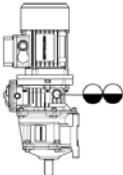
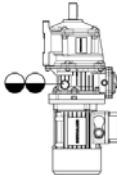
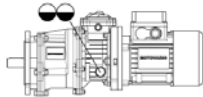
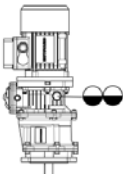
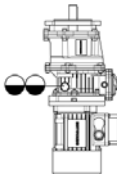
	VENT CAP
	LEVEL CAP

ST - STANDARD		
B3	B6S	B6D
		
B8	V5	V6
		

Closing plugs on all other holes.

	VENT CAP
	LEVEL CAP

12.1.8 VHA

VHA - VHFA - STANDARD		
B3	B6	B7
		
B8	V5	V6
		
B5	V1	V3
		

Closing plugs on all other holes.

	LEVEL CAP
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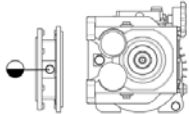
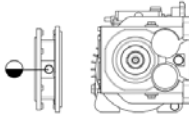
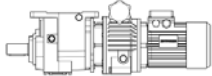
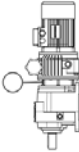
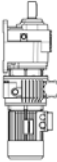
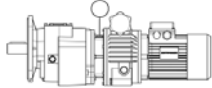

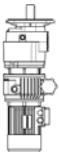
12.1.9 VH - VHR / 1

VH - VHR / 1 - STANDARD			
T	B3	B6	B7
	B8	V5	V6
M	B3	B6	B7
	B8	V5	V6
F	B5	B5R	V1
			V3

Plugs on connecting covers only on sizes VH020/081-VH030/081-VH030/101-VH030/121-VH050/101-VH050/121-VH100/101-VH100/121. Closing plugs on all other holes.
 For the positions of the plugs on the variator, see the respective mounting position page.
 For the positions of the plugs on the gear reducer, see the respective mounting position page.

	VENT CAP
	LEVEL CAP

12.1.10 VH / 2-3

VH / 2-3 - STANDARD		
B3	B6	B7
		
B8	V5	V6
		
B5	V1	V3
		

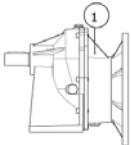

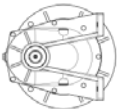
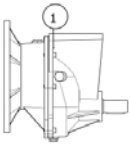
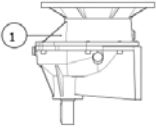

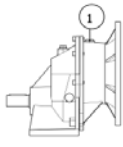
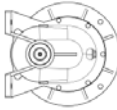
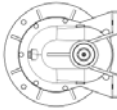
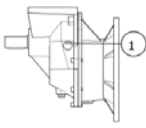
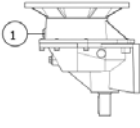

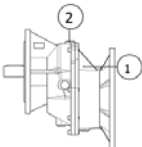
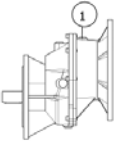
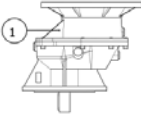
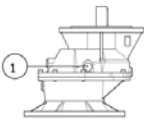
Plugs on connecting covers only on sizes VH010/060-VH010/080-VH020/060-VH020/080-VH030/060-VH030/080-VH030/100-VH030/125-VH050/100-VH050/125-VH100/100-VH100/125. Closing plugs on all other holes.

For the positions of the plugs on the variator, see the respective mounting position page.

For the positions of the plugs on the gear reducer, see the respective mounting position page.

	VENT CAP
	LEVEL CAP

12.1.11 R / 1

R / 1 - STANDARD			
T	B3	B6	B7
			
	B8	V5	V6
			
M	B3	B6	B7
			
	B8	V5	V6
			
F	B5	B5R	V1
			
			V3
			

RT							
		B3	B6	B7	B8	V5	V6
041	1	-	-	-	-	-	-
051	1	○	-	-	-	-	-
061	1	-	-	-	-	-	-
081-101-121	1	○	-	-	○	○	-

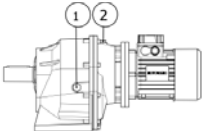
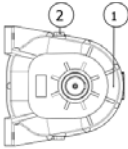
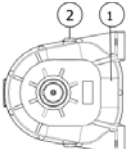
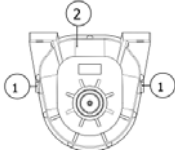
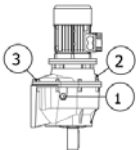
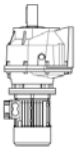
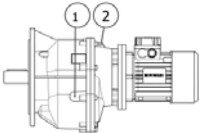
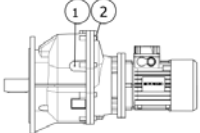
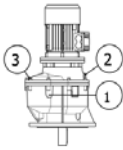
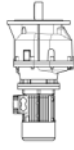
RM							
		B3	B6	B7	B8	V5	V6
041-051-061	1	-	-	-	-	-	-
081	1	○	-	-	-	○	-
101-121	1	○	-	-	○	○	-

RF					
		B5	B5R	V1	V3
041-051-061	1	-	-	-	-
	2	-	-	-	-
081	1	○	○	○	●
	2	-	-	-	-
101	1	-	○	○	-
	2	○	-	-	-
121	1	○	○	○	-
	2	-	-	-	-

Closing plugs on all other holes.

	VENT CAP
	LEVEL CAP

12.1.12 R / 2-3

R / 2-3 - STANDARD			
T	B3	B6	B7
			
F	B8	V5	V6
			
F	B5	B5R	V1
			
			V3
			

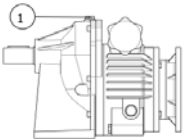
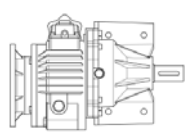
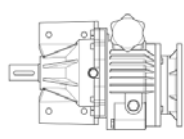
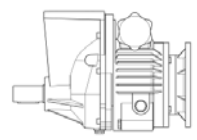
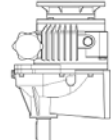
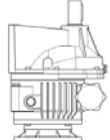
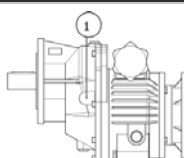
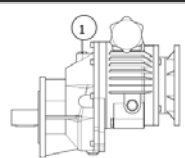
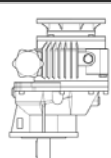
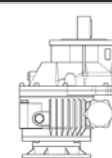
		RT					
		B5	B6	B7	B8	V5	V6
042/3-052/3	1	-	-	-	-	-	-
	2	-	-	-	-	○	-
062/3	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
082/3-102/3	1	●	●	●	●	●	-
	2	○	○	○	○	○	-
122/3	1	●	-	-	●	●	-
	2	-	○	○	○	-	-
	3	-	-	-	-	○	-

		RF			
		B5	B5R	V1	V3
042/3-052/3	1	-	-	-	-
	2	-	-	○	-
062/3	1	-	-	-	-
	2	-	-	-	-
082/3-102/3	1	●	●	●	-
	2	○	○	○	-
122/3	1	●	●	●	-
	2	-	○	-	-
	3	-	-	○	-

Closing plugs on all other holes.

○	VENT CAP
●	LEVEL CAP

12.1.13 SR / 1

SR / 1 - STANDARD			
T	B3	B6D	B6S
			
M	B8	V5	V6
			
F	B5	B5R	V1
			
			V3
			

SRT-SRM							
		B3	B6D	B6S	B8	V5	V6
003/041	1	-	-	-	-	-	-
005/051	1	-	-	-	-	-	-
010/061	1	-	-	-	-	-	-
020/081	1	○	-	-	-	-	-
030/101 050/101	1	○	-	-	-	-	-
100/121	1	○	-	-	-	-	-

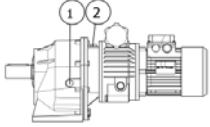
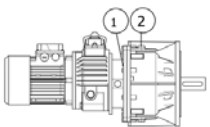
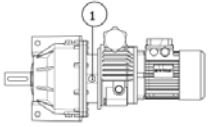
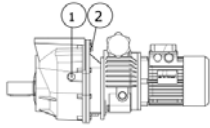
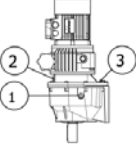
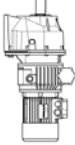
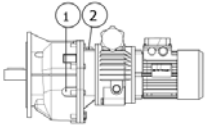
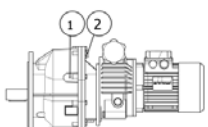
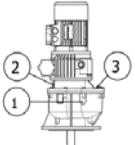
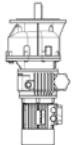
SRF					
		B5	B5R	V1	V3
003/041	1	-	-	-	-
005/051	1	-	-	-	-
010/061	1	-	-	-	-
020/081	1	○	○	-	-
030/101 050/101	1	○	○	-	-
100/121	1	○	○	-	-

Closing plugs on all other holes.

For the positions of the plugs on the variator, see the respective mounting position page.

	VENT CAP
	LEVEL CAP

12.1.14 SR / 2-3

SR / 2-3 - STANDARD			
T	B3	B6D	B6S
			
	B8	V5	V6
			
F	B5	B5R	V1
			
			V3
			

SRT							
		B3	B6D	B6S	B8	V5	V6
003/042-3 003/052-3 003/063 005/042 005/052-3 005/062-3 010/052 010/062-3 020/062	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
005/083 010/082-3 010/103 020/082-3 020/102-3 030/082 030/102-3 050/082 050/102-3 100/102-3	1	●	●	●	●	●	-
	2	○	○	-	○	○	-
	3	-	-	-	-	-	-
010/123 020/123 030/122-3 050/122-3 100/122-3	1	●	○	-	●	●	-
	2	-	-	-	○	-	-
	3	-	-	-	-	○	-

SRF					
		B5	B5R	V1	V3
003/042-3 003/052-3 003/063 005/042 005/052-3 005/062-3 010/052 010/062-3 020/062	1	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
005/083 010/082-3 010/103 020/082-3 020/102-3 030/082 030/102-3 050/082 050/102-3 100/102-3	1	●	●	●	-
	2	○	○	○	-
	3	-	-	-	-
010/123 020/123 030/122-3 050/122-3 100/122-3	1	●	●	●	-
	2	-	○	-	-
	3	-	-	-	-

Closing plugs on all other holes.

For the positions of the plugs on the variator, see the respective mounting position page.

○	VENT CAP
●	LEVEL CAP

13. RESPONSIBILITY

Motovario declines any responsibility in case of:

- Use of the gear reducer not compliant with national laws on safety and accident prevention;
- Work done by unqualified personnel;
- Incorrect installation;
- Tampering with the product;
- Incorrect or failure to follow the instructions in the manual;
- Incorrect or failure to follow the indications marked on the identification labels fixed on the units;
- For gearmotors, wrong delivery of power supply;
- Incorrect connections and/or use of temperature sensors (when present).

The products supplied by Motovario are intended to be incorporated into "complete machines", so it is prohibited to put them into service until the entire machine has not been declared compliant.



The configurations provided in the catalogue of the unit are the only ones allowed. Do not use the product in contrast with the indications provided in it. The instructions provided in this manual do not replace but compensate the obligations of current laws concerning safety regulations

This manual refers to MOTOVARIO products on sale when it is issued. Motovario reserves the right to modify in the future the data of this manual without prior communication.

For updates and any missing data, refer to the complete "Instructions for installation, use and maintenance" booklet available on the website Motovario.

14. DECLARATION OF INCORPORATION OF A PARTLY COMPLETED MACHINERY

MOTOVARIO S.p.a.
Sede operativa ed amm.va:
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 Fax +39 059 579710
 info@motovario.it
 www.motovario.com



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 41042 Ubersello (MO) Italia
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 spedizioni@motovario.it

Dichiarazione di Incorporazione di quasi-macchina MOTOVARIO S.p.A

Via Quattro Passi 1/3, 41043 Formigine (MO) Italy

Dichiara sotto la propria esclusiva responsabilità che nella progettazione e nella realizzazione dei seguenti prodotti:

motoriduttori composti alternativamente da:

- un **riduttore** serie PBH – PBZ montato alternativamente con:
- un **motore a marchio Motovario o DRdrives** serie: T–TS–TH–TP–TSX–THX–TPX–TB–TBS–TBH–TBP–TBSX–TBHX–TBPX–D–DB–S–HSE o a **marchio TECO** serie: AESV3E–AESU3E–AERV–AEQV
- un **motoinverter DRIVON** serie: DV340

in una qualunque combinazione fino alla commessa di produzione n°

Destinazione d'uso prevista: impianti/macchinari ad uso civile o industriale.

Sono stati applicati e rispettati i seguenti requisiti essenziali di sicurezza e di tutela della salute dell'allegato I della Direttiva 2006/42/CE: 1.1.2, 1.1.3, 1.1.5, 1.2.6 (se presenti sistemi di comandi elettronici), 1.3.1, 1.3.2, 1.3.4, 1.3.7, 1.3.8, 1.4.1, 1.4.2.1, 1.5.1, 1.5.2, 1.5.4, 1.5.6, 1.5.7, 1.5.8, 1.5.9, 1.5.11 (solo per conformità alla Direttiva sotto riportata 2004/108/CE nei casi previsti), 1.6.1, 1.6.4, 1.7.1, 1.7.2, 1.7.3, 1.7.4, 2.1.1

È fatto divieto alla quasi-macchina oggetto della presente dichiarazione di essere messa in servizio prima che la macchina in cui sarà incorporata o con cui verrà assemblata sia stata dichiarata conforme alle disposizioni della Direttiva 2006/42/CE.

- L'azienda firmataria della presente DICHIARA sotto la sua esclusiva responsabilità che la quasi-macchina a cui la presente dichiarazione si riferisce, se presenti equipaggiamenti elettrici, è conforme alle prescrizioni della Direttiva 2014/35/UE (Direttiva Bassa Tensione) e della Direttiva 2014/30/UE (Direttiva ECM).
- L'azienda firmataria della presente si impegna a trasmettere, in risposta a una richiesta adeguatamente motivata delle autorità nazionali, informazioni pertinenti sulla quasi-macchina oggetto della presente dichiarazione, fatti salvi i diritti di proprietà intellettuale del fabbricante della quasi-macchina. Le informazioni verranno trasmesse direttamente all'autorità nazionale che le ha richieste.

Formigine, / /

Direzione Generale

Franco Pacini

La presente dichiarazione di incorporazione è stata redatta secondo quanto indicato nell'allegato I, punto B, della Direttiva 2006/42/CE

VERSIONE ORIGINALE IN LINGUA ITALIANA, VERSIONE TRADOTTA IN LINGUA INGLESE

Motovario SpA – Società con socio unico
 Società soggetta all'attività di direzione e coordinamento della TECO Electric & Machinery Co.Ltd.
 Sede legale: Via Quattro passi 1/3, 41043 Formigine (MO) - Italia - Cap. Sociale: Euro 18.010.000 i.v. R.E.A. di Modena n.350898 - P.IVA e C.F. 02569681204



