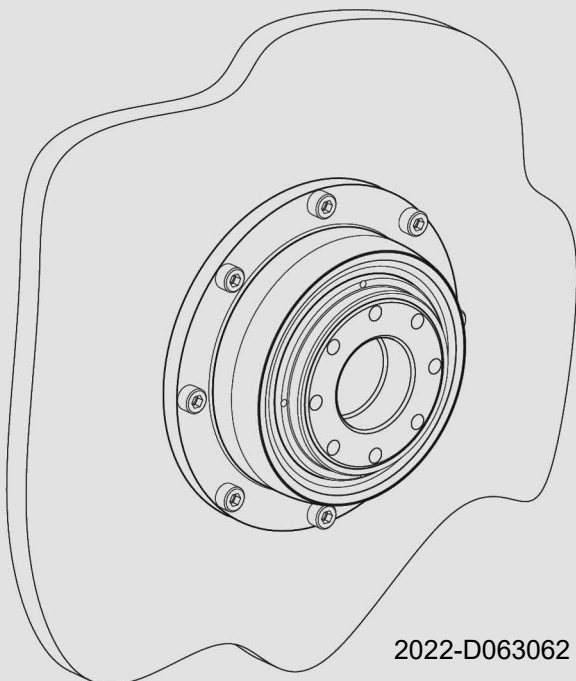
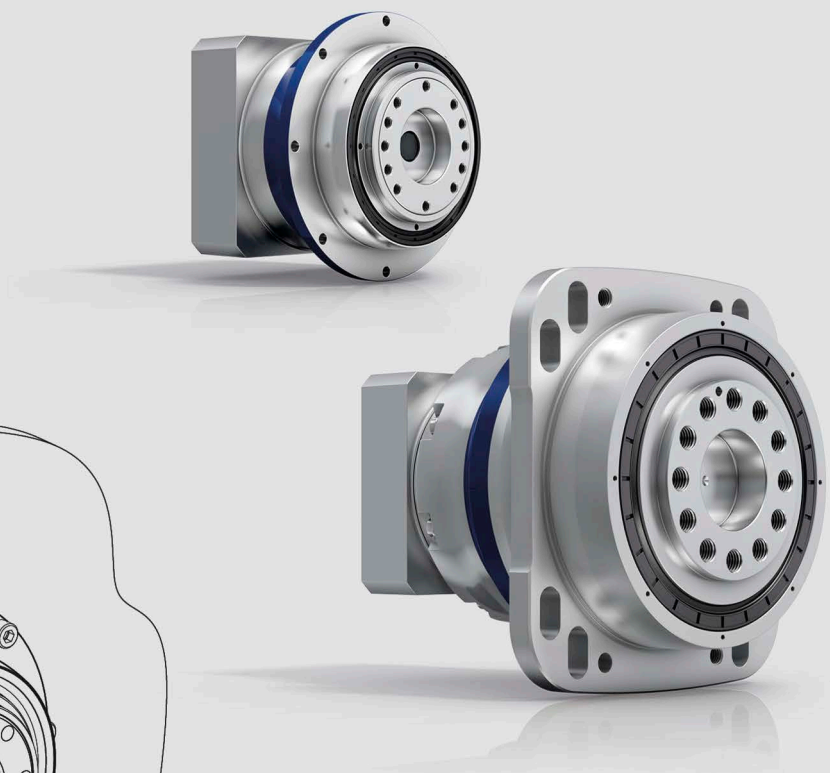


Instruction Sheet

Replacing the adapter plate / Rear centering TP⁺/ DP⁺/ RP⁺



2022-D063062



Revision: 03

WITTENSTEIN alpha GmbH

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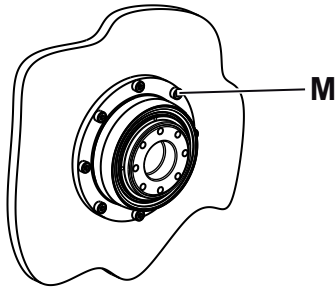
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1 About this manual



These instructions describe the replacement of the adapter plate on the gearbox as well as the motor-side installation of a gearbox with rear centering [M] on a machine. It is an amendment to the standard operating manual. Contradictory specifications in the standard manual thereby become void.

The operator must ensure that all persons assigned to install, operate, or maintain the gearbox have read and understood these instructions in full.

Store these instructions within reach of the gearbox.

These **safety instructions** should be shared with colleagues working in the vicinity of the device to ensure individual safety.

The original instructions were prepared in German; all other language versions are translations of these instructions.

The signal words, safety symbols, and information symbols are explained in the standard manual.

2 Safety

These instructions, especially the safety instructions and the rules and regulations valid for the operating site, must be observed by all persons working with the gearbox.

In addition to the safety instructions in this manual and in the standard manual, also observe any (legal and otherwise) applicable environmental and accident prevention rules and regulations (e.g. personal safety equipment).

2.1 Personnel

Only technicians who have read and understood this operating manual may perform work on the gearbox. Based on their training and experience, technicians must be able to evaluate the tasks assigned to them, in order to recognize and avoid risks.

3 Disassembly / replacement

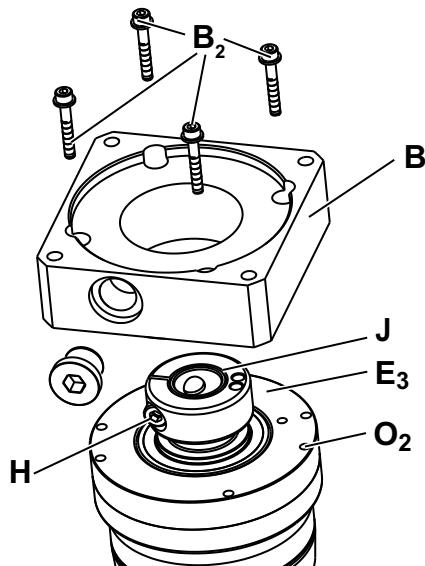
| | |
|--|---|
| | <ul style="list-style-type: none"> Also observe all instructions in the standard manual. |
|--|---|

① Before motor-side installation on a machine, the adapter plate must be disassembled depending on the product type and gearbox size.

3.1 Disassembling the adapter plate

The fastening screws of the adapter plate can also hold the gearbox housing together.

- When reusing the adapter plate, mark its position.
- Clamp the gearbox vertically (with the adapter plate [B] upwards).



- Loosen the fastening screws [B₂] in the adapter plate [B] and remove the adapter plate.
 - Remove any adhesive residues from the threaded holes [O₂] for the fastening screws.
- ① Use a suitable thread cutter.
- ① If you only want to replace the adapter plate, please observe the instructions for installation of the new adapter plate in chapter 4.3 "Mounting the adapter plate".

4 Assembly

| | |
|--|--|
| | <ul style="list-style-type: none"> • Also observe all instructions in the standard manual. • Observe the safety and processing instructions for the threadlocker to be used. |
|--|--|

4.1 Preparations

| | |
|--|---|
| | NOTICE |
| | Pressurized air can damage the gearbox seals. <ul style="list-style-type: none"> • Do not use pressurized air to clean the gearbox. |
| | Directly sprayed cleaning agents can alter the frictional values of the clamping hub. <ul style="list-style-type: none"> • Only spray cleaning agents onto a cloth for wiping off the clamping hub. |
| | Operation without an adapter plate might lead to damage. <ul style="list-style-type: none"> • Only install your own adapter plate or replace an adapter plate according to the specifications of WITTENSTEIN alpha GmbH. • Operation without an adapter plate is prohibited. |
| | <p>In rare cases, seeping may occur at the drive (slight, non-continuous discharge of lubricant). This does not apply to gearboxes in Hygienic Design.</p> <p>For optimized sealing of the motor / gearbox interface, we recommend sealing the surfaces between</p> <ul style="list-style-type: none"> - the adapter plate and drive housing (gearbox), as well as between - the adapter plate and motor, <p>using a surface sealing adhesive (e.g. Loctite® 573 or 574).</p> <p>① For further information, see the separate manuals "Adapter plate replacement" (doc no. 2022-D063062) and "Adapter plate with sealing adhesive" (doc no. 2098-D021746). The manual will be provided by our Sales / Customer Service department on request. Always state the serial number when making the request.</p> |

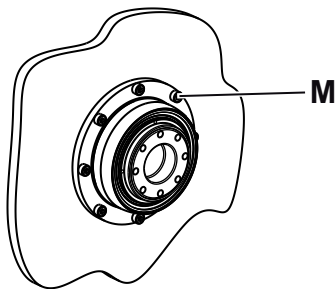
- Clean / degrease and dry the following components using a clean and lint-free cloth and a grease-dissolving, non-aggressive cleaning agent:
 - All fitting surfaces to neighboring components
 - Adapter plate
 - Fastening screws
- Dry all fitting surfaces to neighboring components in order to achieve the proper friction values for the screw connections.
- In addition, check the fitting surfaces for damage and impurities.

4.2 Attaching gearboxes with rear centering to a machine

This section is only valid for TP⁺/ DP⁺/ RP⁺ gearboxes with rear centering.

- Center the gearbox in the machine bed.
- Apply threadlocker (e.g. Loctite® 243) to the fastening screws.
- ① Mount the gearbox so that the identification plate can still be read.
- ① The specified screw sizes and tightening torques can be found in the standard manual.

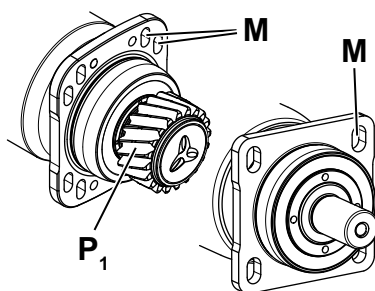
4.2.1 Mounting with through-holes



- ① We recommend doing without washers as long as the material of the screw surface features sufficient interface pressure.
- Fasten the gearbox on the machine with the fastening screws through the through-holes [M].

4.2.2 Mounting with slotted holes

- Use only the washers included within the scope of delivery for fastening the gearbox to a machine.

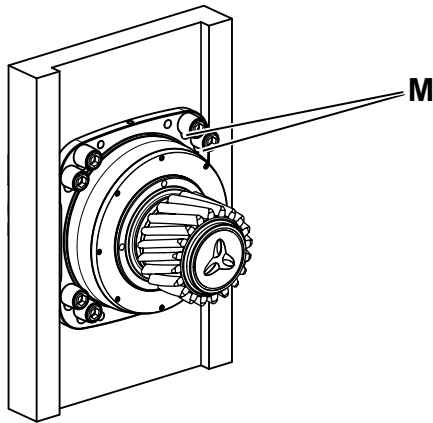


The gearbox can be optionally equipped with an output pinion [P₁]. The gearing backlash between output pinion and toothed rack / counter-wheel can be adjusted using the slotted holes [M] and the lateral guides. An additional adjustment mechanism is no longer necessary.

- ① Detailed information on the design of the gearbox interface is available on request.
- ① For the proper setting of the gearing backlash, you will find further information in the "alpha rack and pinion system" manual (doc. no. 2022–D001333). The manual will be provided by our Sales / Customer Service department on request. Please always provide the serial number.

Operating the gearbox without a motor (e.g. using a hand wheel) is permitted for setting / aligning the output pinion on the toothed rack.

- When doing so, ensure **never** to tilt / bend the clamping hub.

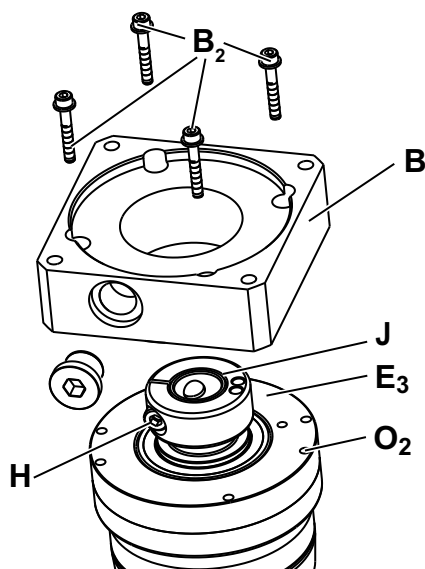


- Slide the washers onto the fastening screws.
- Fasten the gearbox to the machine with the fastening screws through the slotted holes [M].
- Carry out the pinning of the gearbox according to the standard manual.

4.3 Mounting the adapter plate

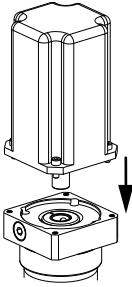
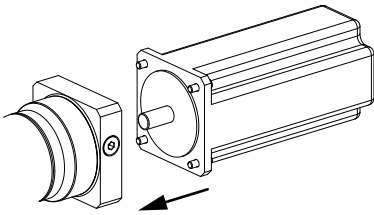
| | |
|--|---|
| | NOTICE |
| | <p>Operation without an adapter plate might lead to damage.</p> <ul style="list-style-type: none"> • Only install your own adapter plate or replace an adapter plate according to the specifications of WITTENSTEIN alpha GmbH. • Operation without an adapter plate is prohibited. |

- When attaching a **new** adapter plate, only use new screws (DIN EN ISO 4762) and clamping washers (DIN 6796).
 - ① Only use adapter plates approved by **WITTENSTEIN alpha GmbH**.
 - ① Notes on the disposal of components no longer in use can be found in chapter 5.5 "Disposal".



- Position the adapter plate **centrally** on the input side [E₃].
- Select the correct fastening screws (see chapter 5.3 "Information for mounting the adapter plate").
- Place the clamping washers on the fastening screws [B₂].
- Coat the fastening screws with a threadlocker (e.g. Loctite® 243).
- Screw in the fastening screws and tighten them in a criss-cross pattern using a torque wrench.
- ① For the specified tightening torque, see chapter 5.4 "Tightening torques for common thread sizes in general mechanical engineering".

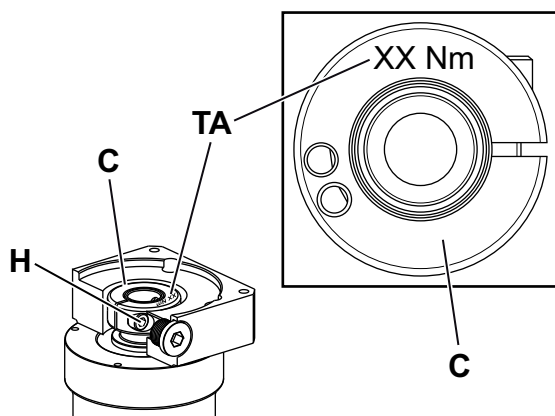
- Carry out the motor mounting, see table "Tbl-1".

| | Motor mounting gearbox | For detailed information, see |
|---|------------------------|--|
|  | Vertical | Chapter 4.4 "Mount the motor vertically on the gearbox" |
|  | Horizontal | Chapter 4.5 "Mounting the motor horizontally to the gearbox" |

Tbl-1: Motor mounting gearbox

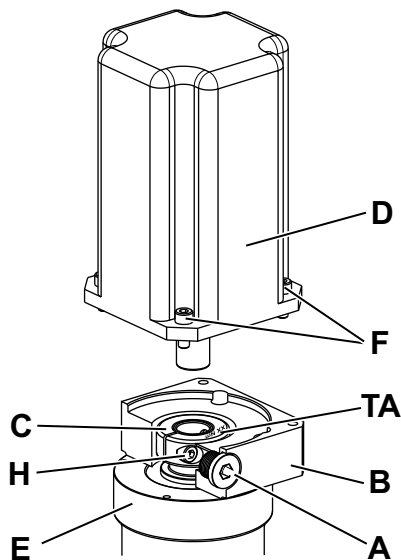
4.4 Mount the motor vertically on the gearbox

| | |
|--|---|
| | <ul style="list-style-type: none"> • Observe the specifications and safety instructions of the motor manufacturer. • Observe the safety and processing instructions for the threadlocker to be used. <p>Valid only for corrosion resistant gearboxes and gearboxes in Hygienic Design:</p> <ul style="list-style-type: none"> • Adjust the fitting surface to the gearbox before mounting the motor. • For corrosion-resistant gearboxes, use sealing adhesives (e.g. Loctite® 573) to avoid any ingress of foreign media. • Place an appropriate sealing ring between the adapter plate and motor for gearboxes in Hygienic Design to avoid any ingress of foreign media. <p>① In addition, WITTENSTEIN alpha GmbH offers a suitable sealing plate. For more information, please see the separate manual for "Sealing plate installation" (doc. no 2098–D038000). The manual can be found in the download area on our website www.wittenstein-alpha.de.</p> |
|--|---|



The tightening torque value [TA] of the clamping bolt [H] can be found on the clamping hub [C].

① The value for the tightening torque can also be found in the standard instructions.



- Preferably, the motor should be mounted in a vertical orientation.
 - Remove the locking screw / set screw / stopper plug [A] from the mounting bore in the adapter plate [B].
 - Rotate the clamping hub [C] until the clamping bolt [H] can be reached via the mounting bore.
 - Loosen the clamping bolt [H] of the clamping hub [C] by one revolution.
 - Slide the motor shaft into the clamping hub of the gearbox [E].
- ① The motor shaft should slide in easily. If this is not the case, the clamping bolt needs to be loosened some more.

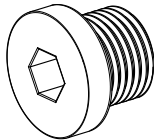
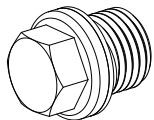
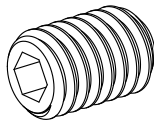
- ① If the clamping bolt [H₁] is loosened too far or removed, the clamping ring [I] can rotate on the clamping hub. Align it so that the clamping bolt [H₁] is in the keyway of the clamping hub (see table "Tbl-2").
- ① For certain motor shaft diameters and applications, a slotted bushing needs to be installed in addition.
- ① For the version with **clamping bolt, eccentric [H₁]**:
The slot of the bushing (if present) and the clamping hub must be flush with the groove (if present) of the motor shaft; see Table "Tbl-2".
- For the version with **clamping bolt, central [H₂]**:
The slots of the bushing (if present) and clamping hub have to be aligned with the keyway (if present) of the motor shaft and rotated 90° from the clamping bolt, see Table "Tbl-2".
- ① No gap is permitted between the motor [D] and the adapter plate [B].

| | Designation | |
|--|----------------|----------------------------|
| | H ₁ | Clamping bolt, eccentric |
| | H ₂ | Clamping bolt, central |
| | I | Clamping ring |
| | J | Bushing |
| | K | Keyed motor shaft |
| | L | Motor shaft with shaft key |
| | L ₁ | Shaft key |

Tbl-2: Arrangement of motor shaft, clamping bolt and bushing

- Apply threadlocker (e. g. Loctite® 243) to the four screws [F].
 - Position the four screws on the motor [D] and screw them into the adapter plate [B] by hand. The screws must screw in smoothly. If this is not the case, contact our Customer Service department.
 - Evenly tighten the screws crosswise with increasing torque.
 - Tighten the clamping bolt [H] of the clamping hub [C].
- ① The value for the tightening torque can also be found in the standard instructions.

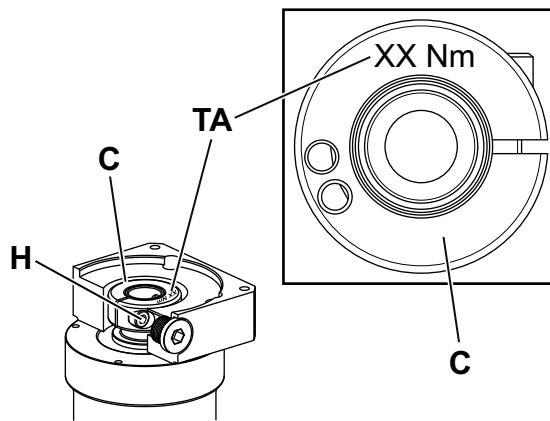
- For version with
 - **sealing plug**, push it into the adapter plate [B] all the way to the stop.
 - **locking screw** [A₁], screw it into the adapter plate [B].
 - **locking screw with screw head seal** [A₂] (Hygienic Design only), screw it into the adapter plate [B].
 - **set screw** [A₃], screw it flush into the adapter plate [B].
- ① For screw size and specified tightening torque, see table "Tbl-3".

| [A] | | Width across flats [mm] | Tightening torque [Nm] | | | | | | | |
|----------------|--|---|---------------------------|----|---|----|----|----|----|-----|
| | | | 3 | 5 | 6 | 8 | 10 | 12 | 13 | 17 |
| A ₁ |  | Locking screw | – | 10 | – | 35 | 50 | 70 | – | – |
| A ₂ |  | Locking screw with screw head seal (Hygienic Design only) | – | – | – | – | 3 | – | 5 | 5.5 |
| A ₃ |  | Set screw | 1.5 | 3 | 3 | 6 | – | – | – | – |

Tbl-3: Tightening torques for the locking screw / set screw

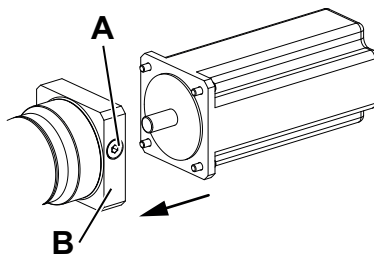
4.5 Mounting the motor horizontally to the gearbox

| | |
|--|---|
| | <ul style="list-style-type: none"> ● Observe the specifications and safety instructions of the motor manufacturer. ● Observe the safety and processing instructions for the threadlocker to be used. <p>Valid only for corrosion resistant gearboxes and gearboxes in Hygienic Design:</p> <ul style="list-style-type: none"> ● Adjust the fitting surface to the gearbox before mounting the motor. ● For corrosion-resistant gearboxes, use sealing adhesives (e.g. Loctite® 573) to avoid any ingress of foreign media. ● Place an appropriate sealing ring between the adapter plate and motor for gearboxes in Hygienic Design to avoid any ingress of foreign media. <p>① In addition, WITTENSTEIN alpha GmbH offers a suitable sealing plate. For more information, please see the separate manual for "Sealing plate installation" (doc. no 2098–D038000). The manual can be found in the download area on our website www.wittenstein-alpha.de.</p> |
|--|---|

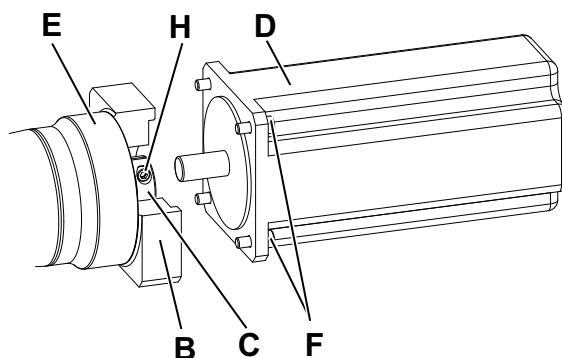


The tightening torque value [TA] of the clamping bolt [H] can be found on the clamping hub [C].

① The value for the tightening torque can also be found in the standard instructions.



- Align the gearbox and the motor horizontally.
- Remove the locking screw / set screw / stopper plug [A] from the mounting bore in the adapter plate [B].



- Rotate the clamping hub [C] until the clamping bolt [H] can be reached via the mounting bore.
 - Loosen the clamping bolt [H] of the clamping hub [C] by one revolution.
 - Slide the motor shaft into the clamping hub of the gearbox [E].
- ① The motor shaft should slide in easily. If this is not the case, the clamping bolt needs to be loosened some more.

① If the clamping bolt [H₁] is loosened too far or removed, the clamping ring [I] can rotate on the clamping hub. Align it so that the clamping bolt [H₁] is in the keyway of the clamping hub (see table "Tbl-4").

① For certain motor shaft diameters and applications, a slotted bushing needs to be installed in addition.

① For the version with **clamping bolt, eccentric [H₁]**:

The slot of the bushing (if present) and the clamping hub must be flush with the groove (if present) of the motor shaft; see Table "Tbl-4".

For the version with **clamping bolt, central [H₂]**:

The slots of the bushing (if present) and clamping hub have to be aligned with the keyway (if present) of the motor shaft and rotated 90° from the clamping bolt, see Table "Tbl-4".

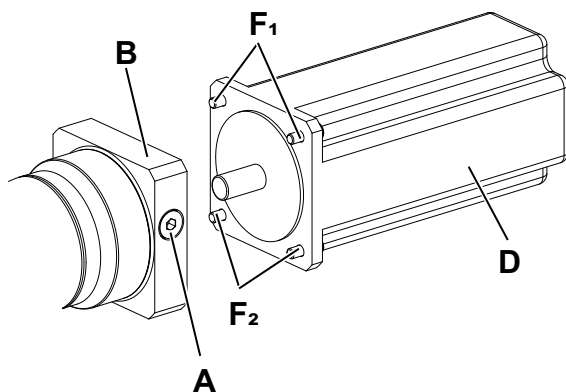
① No gap is permitted between the motor [D] and the adapter plate [B].

| | | Designation |
|--|----------------|----------------------------|
| | H ₁ | Clamping bolt, eccentric |
| | H ₂ | Clamping bolt, central |
| | I | Clamping ring |
| | J | Bushing |
| | K | Keyed motor shaft |
| | L | Motor shaft with shaft key |
| | L ₁ | Shaft key |

Tbl-4: Arrangement of motor shaft, clamping bolt and bushing

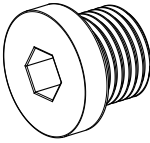
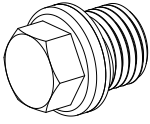
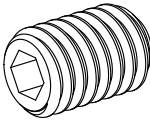
- Slightly tighten the clamping bolt [H] of the clamping hub [C] by hand (approx. 5% of the tightening torque).

① The value for the tightening torque can also be found in the standard instructions.



- Apply threadlocker (e.g. Loctite® 243) to the four screws [F].
 - Position the four screws on the motor [D] and screw them into the adapter plate [B] by hand. The screws must screw in smoothly. If this is not the case, contact our Customer Service department.
 - Evenly tighten the upper screws [F₁] crosswise with increasing torque.
 - Evenly tighten the lower screws [F₂] crosswise with increasing torque.
 - Slightly loosen the clamping bolt (H) of the clamping hub (I) to release possible tension.
 - Tighten the clamping bolt [H] of the clamping hub [C].
- ① The value for the tightening torque can also be found in the standard instructions.

- For version with
 - **sealing plug**, push it into the adapter plate [B] all the way to the stop.
 - **locking screw** [A₁], screw it into the adapter plate [B].
 - **locking screw with screw head seal** [A₂] (Hygienic Design only), screw it into the adapter plate [B].
 - **set screw** [A₃], screw it flush into the adapter plate [B].
- ① For screw size and specified tightening torque, see table "Tbl-5".

| [A] | | Width across flats [mm] | Tightening torque [Nm] | | | | | | | |
|----------------|---|---|---------------------------|----|---|----|----|----|----|-----|
| | | | 3 | 5 | 6 | 8 | 10 | 12 | 13 | 17 |
| A ₁ |  | Locking screw | – | 10 | – | 35 | 50 | 70 | – | – |
| A ₂ |  | Locking screw with screw head seal (Hygienic Design only) | – | – | – | – | 3 | – | 5 | 5.5 |
| A ₃ |  | Set screw | 1.5 | 3 | 3 | 6 | – | – | – | – |

Tbl-5: Tightening torques for the locking screw / set screw

- Carry out any further tasks according to the standard manual.

5 Appendix

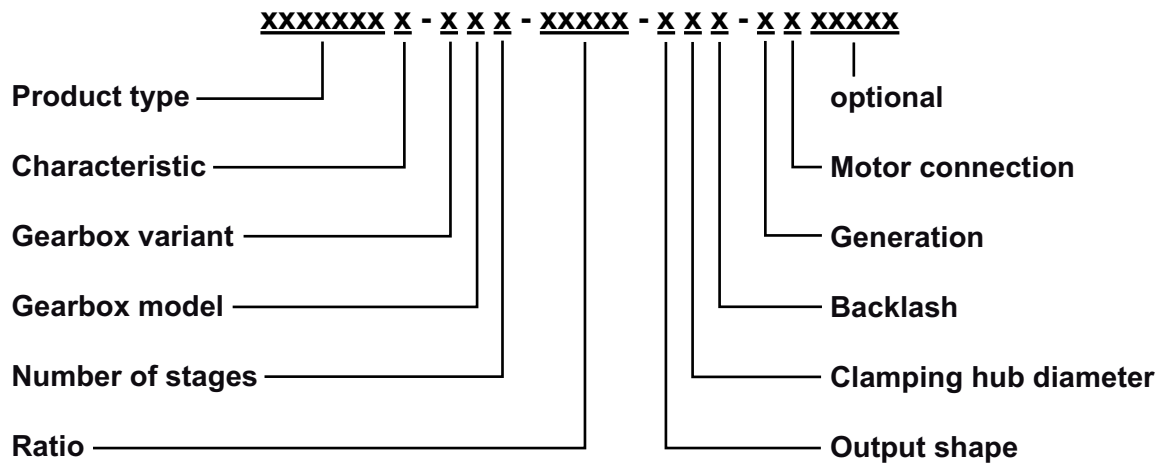
5.1 Name plate

The name plate is attached or lasered to the gearbox housing or the input flange.

| | Designation |
|---|---|
| A | Ordering code (see Chapter 5.2 "Ordering code") |
| B | Ratio i |
| C | Customer material number (optional) |
| D | Serial number |
| E | Lubricant |
| F | Production date |
| G | DataMatrix code (access to WITTENSTEIN Service Portal) |
| H | Code (identifier and entry WITTENSTEIN Service Portal) |

Tbl-6: Name plate (sample values)

5.2 Ordering code



More information is available in our catalog or at www.wittenstein-alpha.de.

5.3 Information for mounting the adapter plate

| Product type overview | | | | | | |
|-----------------------|------------------------------------|--|-------------------------------------|---|------------------------------------|-------------------------------------|
| Product type | CP / CPS | CPK / CPSK | CVH / CVS | DP ⁺ | DPK ⁺ | HDP ⁺ / HDV |
| see table | "Tbl-10" | x* | "Tbl-11" | "Tbl-8" | x* | x* |
| Product type | HG ⁺ | LK ⁺ / LPK ⁺ / LPBK ⁺ | LP ⁺ / LPB ⁺ | NPK / NPLK / NPSK / NPRK / NPTK | NP / NPL / NPS / NPR / NPT / NTP | NVH / NVS |
| see table | x* | x* | x* | x* | "Tbl-9" | "Tbl-11" |
| Product type | PKF | RP ⁺ | RPC ⁺ / RPK ⁺ | SC ⁺ / SPC ⁺ | SK ⁺ / SPK ⁺ | SP ⁺ |
| see table | x* | "Tbl-8" | x* | x* | x* | "Tbl-8" |
| Product type | TK ⁺ / TPK ⁺ | TP ⁺ | TPC ⁺ | VH ⁺ / VS ⁺ / VT ⁺ | XP ⁺ | XPC ⁺ / XPK ⁺ |
| see table | x* | "Tbl-8" | x* | "Tbl-11" | "Tbl-8" | x* |

x*: upon request

Tbl-7: Product type overview

5.3.1 DP⁺ / HG⁺ / RP⁺ / SP⁺ / TP⁺ / XP⁺

| Fastening screws (DIN EN ISO 4762) for adapter plate**, Property class 12.9, Screw size x Length [] x [mm] | | | | | | | | | |
|--|------------------|------------------|-------|-------|-------|-------|---|---|---|
| Gearbox size | Number of stages | Code letter (.)* | | | | | | | |
| | | B | C | E | G / H | I / K | M | N | O |
| DP ⁺ 004 | 1 | M3x25 | | M4x20 | - | - | - | - | - |
| SP ⁺ 060 | 2 | M3x16 | M3x45 | - | - | - | - | - | - |
| TP ⁺ 004 | | | | | | | | | |
| XP ⁺ 010 | | | | | | | | | |

| Fastening screws (DIN EN ISO 4762) for adapter plate**, Property class 12.9, Screw size x Length [] x [mm] | | | | | | | | | |
|---|---------------------|------------------|-------|-------|-------|--------|--------|--------|--------|
| Gearbox size | Number of stages | Code letter (.)* | | | | | | | |
| | | B | C | E | G / H | I / K | M | N | O |
| DP ⁺ 010 SP ⁺ 075 TP ⁺ 010 XP ⁺ 020 | 1 | - | M4x30 | | M5x18 | - | - | - | - |
| | 2 | M3x16 | | M4x55 | - | - | - | - | - |
| | 3 | - | M3x16 | - | - | - | - | - | - |
| DP ⁺ 025 RP ⁺ 030 SP ⁺ 100 TP ⁺ 025 XP ⁺ 030 | 1 | - | - | M5x35 | | M6x25 | - | - | - |
| | 2 | - | M4x20 | | M5x70 | - | - | - | - |
| | 3 | - | - | M4x20 | - | - | - | - | - |
| DP ⁺ 050 RP ⁺ 040 SP ⁺ 140 TP ⁺ 050 XP ⁺ 040 | 1 | - | - | - | M6x45 | | M8x30 | - | - |
| | 2 | - | - | M5x20 | | M6x90 | - | - | - |
| | 3 | - | - | - | M5x20 | - | - | - | - |
| DP ⁺ 110 RP ⁺ 050 SP ⁺ 180 TP ⁺ 110 XP ⁺ 050 | 1 | - | - | - | - | M8x50 | | | - |
| | 2 | - | - | - | M6x25 | | M8x105 | - | - |
| | 3 | - | - | - | - | M6x25 | - | - | - |
| RP ⁺ 060 TP ⁺ 300 | 1 | - | - | - | - | - | - | M10x35 | - |
| | 2 | - | - | - | - | - | M8x30 | - | - |
| | 3 | - | - | - | - | M6x25 | - | - | - |
| RP ⁺ 080 TP ⁺ 500 | 1 | - | - | - | - | - | - | - | M12x40 |
| | 2 | - | - | - | - | - | M8x30 | - | - |
| | 3 | - | - | - | - | M8x105 | - | - | - |
| SP ⁺ 210 | 1 | - | - | - | - | - | - | M10x40 | - |
| | 2 | - | - | - | - | - | M8x30 | - | - |
| SP ⁺ 240 | 1 | - | - | - | - | - | - | - | M12x45 |
| | 2 | - | - | - | - | - | M8x30 | - | - |

* Ordering code: xxxxxxxx-xxx-xxxxx-x(.)*x-xx (see chapter 5.1 "Name plate")

** The value for the tightening torque can be found in chapter 5.4 "Tightening torques for common thread sizes in general mechanical engineering".

Tbl-8: Fastening screws (DIN EN ISO 4762) for adapter plate DP⁺ / RP⁺ / SP⁺ / TP⁺ / XP⁺

5.3.2 NP / NPL / NPR / NPS / NPT / NTP

| Fastening screws (DIN EN ISO 4762) for adapter plate**, Property class 10.9, Screw size x Length [] x [mm] | | | | | | | | | |
|--|------------------|------------------|-------|---|-------|-------|-------|-------|-------|
| Gearbox size | Number of stages | Code letter (.)* | | | | | | | |
| | | Z | A | B | C | D | E | G / H | I / K |
| Nxx005 | 1 | M3x20 | | | M3x10 | - | - | - | - |
| | 2 | M3x20 | | | M3x10 | - | - | - | - |
| Nxx015 | 1 | - | M3x20 | | | M4x16 | | - | - |
| | 2 | M3x20 | | | M3x35 | M4x16 | | - | - |
| Nxx025 | 1 | - | - | - | M4x30 | | | M5x16 | - |
| | 2 | - | M3x20 | | | M4x50 | | M5x16 | - |
| Nxx035 | 1 | - | - | - | - | - | M5x30 | | M6x22 |
| | 2 | - | - | - | M4x30 | | | M5x55 | M6x22 |
| Nxx045 | 1 | - | - | - | - | M8x50 | | | M6x45 |
| | 2 | - | - | - | - | - | M5x30 | | M6x75 |
| * Ordering code: xxxxxxxx-xxx-xxxxx-x(.)*x-xx (see chapter 5.1 "Name plate") | | | | | | | | | |
| ** The value for the tightening torque can be found in chapter 5.4 "Tightening torques for common thread sizes in general mechanical engineering". | | | | | | | | | |

TbI-9: Fastening screws (DIN EN ISO 4762) for adapter plate NP / NPL / NPS / NPR / NPT / NTP

5.3.3 CP / CPS

| Fastening screws (DIN EN ISO 4762) for adapter plate**, Screw size x Length [] x [mm] | | | | | | |
|--|------------------|--------------------|---------------------|----------|----------|-------|
| Gearbox size | Number of stages | Code letter (.)* | | | | |
| | | B | C | E | G / H | I / K |
| | | Property class 8.8 | Property class 10.9 | | | |
| CP005 | 1 | M3x20 | - | - | - | - |
| | 2 | M3x20 | - | - | - | - |
| CPx015 | 1 | - | M3x25 | M4x22 | - | - |
| | 2 | - | M3x25*** | M4x22 | - | - |
| CPx025 | 1 | - | - | M4x30 | M6x25 | - |
| | 2 | - | - | M4x30*** | M6x25 | - |
| CPx035 | 1 | - | - | - | M6x45 | M6x30 |
| | 2 | - | - | - | M6x45*** | M6x30 |
| CP045 | 1 | - | - | - | - | M6x45 |
| | 2 | - | - | M5x30 | | M6x75 |
| * Ordering code: xxxxxxxx-xxx-xxxxx-x(.)*x-xx (see chapter 5.1 "Name plate") | | | | | | |
| ** The value for the tightening torque can be found in chapter 5.4 "Tightening torques for common thread sizes in general mechanical engineering". | | | | | | |
| *** The following only applies to gearboxes with ratio i=32, 64: Deviating screw length; measure the correct screw length. | | | | | | |

TbI-10: Fastening screws (DIN EN ISO 4762) for adapter plate CP / CPS

5.3.4 VT⁺, VH⁺, VS⁺ / NVH, NVS / CVH, CVS

| Fastening screws (DIN EN ISO 4762) for adapter plate *, Property class 12.9, Screw size x Length [] x [mm] | | | | | | | |
|---|------------------|------------------------------|-----------|-------|-------|------------|--------|
| Ordering code: xxxxxxxx-xxx-xxxxx-x(.) [*] x-xx (see chapter 5.1 "Name plate") | | | | | | | |
| Gearbox size | Number of stages | Code letter (.) [*] | | | | | |
| | | C | E | G | H | K | M |
| Vx ⁺ / NVx / CVx 040 | 1 | M3x16 | M3x16 | - | - | - | - |
| | 2 | M3x50 ** | M4x20 *** | - | - | - | - |
| Vx ⁺ / NVx / CVx 050 | 1 | - | M4x20 | M4x20 | - | - | - |
| | 2 | M3x16 | M4x55 | - | - | - | - |
| Vx ⁺ / NVx / CVx 063 | 1 | - | - | - | M5x20 | - | - |
| | 2 | - | M4x20 | M5x70 | - | - | - |
| Vx ⁺ 080 | 1 | - | - | - | - | M6x25 | - |
| | 2 | - | - | M5x20 | - | M6x100 *** | - |
| Vx ⁺ 100 | 1 | - | - | - | - | - | M8x30 |
| | 2 | - | - | - | - | M6x25 | M8x105 |
| ① Fastening screws may only be mounted together with clamping washers. | | | | | | | |
| * The value for the tightening torque can be found in chapter 5.4 "Tightening torques for common thread sizes in general mechanical engineering". | | | | | | | |
| ** Property class 8.8 | | | | | | | |
| *** Property class 10.9 | | | | | | | |

Tbl-11: Fastening screws (DIN EN ISO 4762) for adapter plate VT⁺, VH⁺, VS⁺ / NVH, NVS / CVH, CVS

5.4 Tightening torques for common thread sizes in general mechanical engineering

The specified tightening torques for headless screws and nuts are calculated values and are based on the following conditions:

- Calculation according to VDI 2230 (edition 11/2015)
- Friction value for thread and contact surfaces $\mu=0.10$
- Utilization of the yield stress 90%
- Torque tools type II classes A and D in accordance with ISO 6789

The settings are values rounded to usual commercial scale gradations or settings.

- Use the **exact** values in this table to set your tools.

| Property class screw / nut | Tightening torque [Nm] with thread | | | | | | | | | | | | |
|----------------------------|------------------------------------|------|-----|------|------|------|------|-----|-----|-----|-----|-----|------|
| | M3 | M4 | M5 | M6 | M8 | M10 | M12 | M14 | M16 | M18 | M20 | M22 | M24 |
| 8.8 / 8 | 1.15 | 2.64 | 5.2 | 9.0 | 21.5 | 42.5 | 73.5 | 118 | 180 | 258 | 362 | 495 | 625 |
| 10.9 / 10 | 1.68 | 3.88 | 7.6 | 13.2 | 32.0 | 62.5 | 108 | 173 | 264 | 368 | 520 | 700 | 890 |
| 12.9 / 12 | 1.97 | 4.55 | 9.0 | 15.4 | 37.5 | 73.5 | 126 | 202 | 310 | 430 | 605 | 820 | 1040 |

Tbl-12: Tightening torques for set screws and nuts

5.5 Disposal

- Dispose any components no longer in use at the disposal centers intended for this purpose.
 - ① Please observe the valid national regulations for waste disposal.

5.6 Supplementary information

- For further information, please visit our website at www.wittenstein-alpha.de. Or contact our Customer Service department at service@wittenstein-alpha.de

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Revision history

| Revision | Date | Comment | Chapter |
|----------|------------|--|---------------|
| 01 | 16.10.2019 | New version draft | All |
| 02 | 26.09.2022 | Motor mounting gearbox VT ⁺ , VH ⁺ , VS ⁺ / NVH, NVS / CVH, CVS | All 5.3 |
| 03 | 17.07.2024 | Motor-mounted | 4.3, 4.4, 4.5 |



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