

phd[®] REPAIR PROCEDURES: SERIES GRS DESIGN 2 [6] GRIPPERS

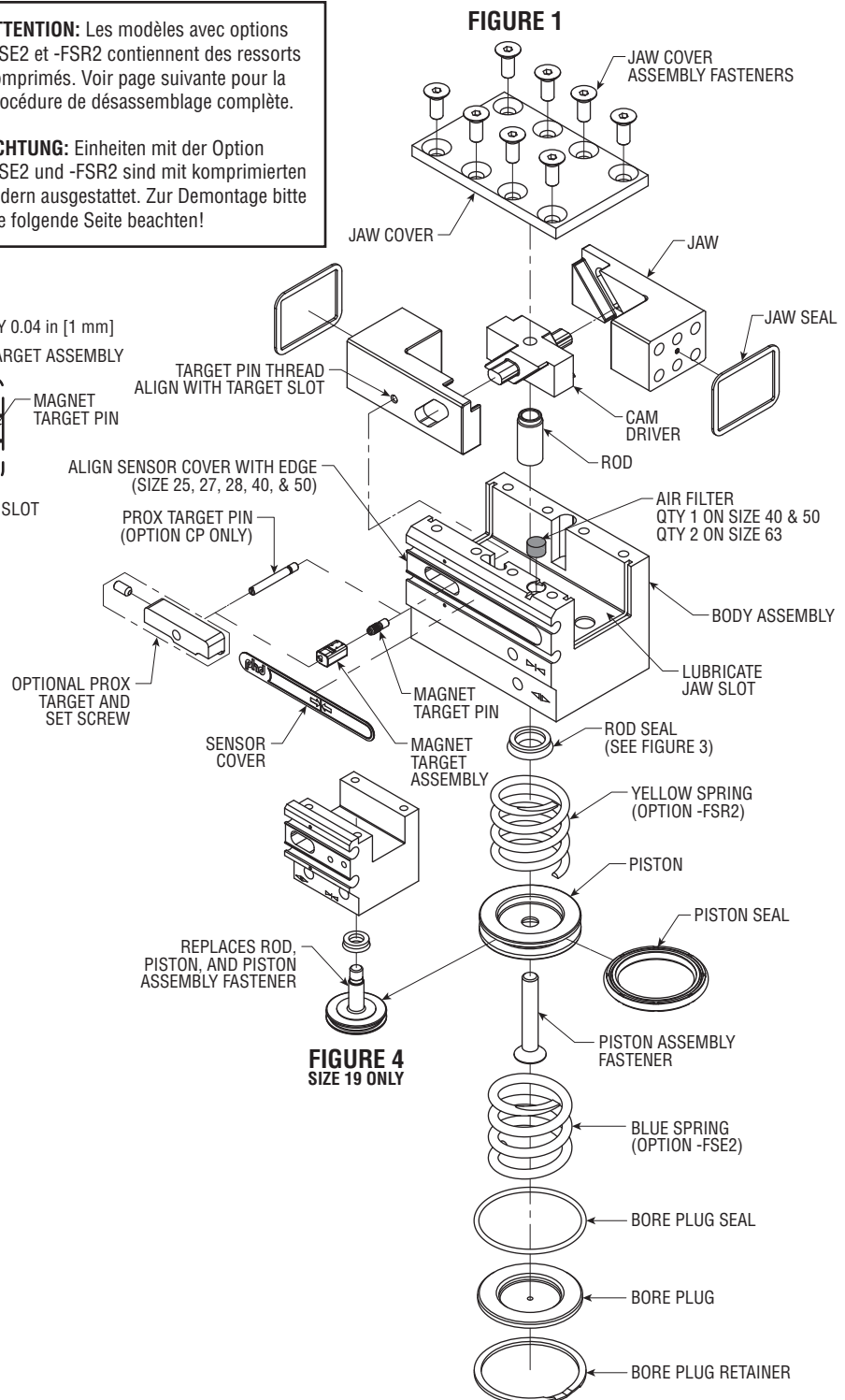
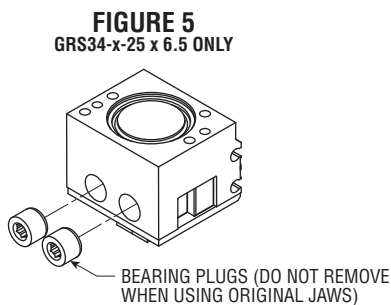
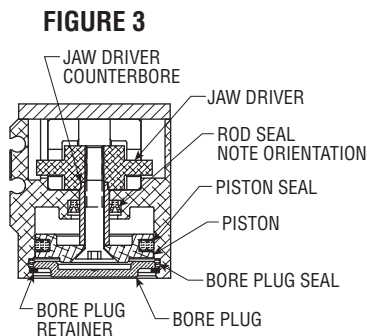
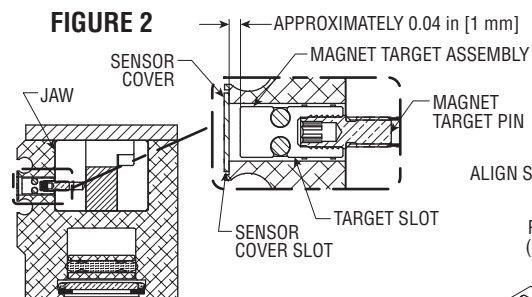
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WARNING: Units with -FSE2 and -FSR2 options contain compressed springs. For complete disassembly procedures, see the following page.

AVISO: Las unidades con opciones -FSE2 y -FSR2 contienen muelles comprimidos. Véase procedimiento de desmontaje en la página siguiente.

ATTENTION: Les modèles avec options -FSE2 et -FSR2 contiennent des ressorts comprimés. Voir page suivante pour la procédure de désassemblage complète.

ACHTUNG: Einheiten mit der Option -FSE2 und -FSR2 sind mit komprimierten Federn ausgestattet. Zur Demontage bitte die folgende Seite beachten!

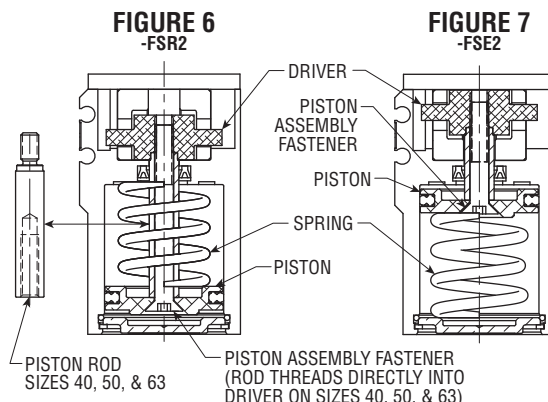


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DISASSEMBLY PROCEDURE

- WARNING:** All air pressure in the unit must be relieved prior to disassembly of gripper. **-FSR2** and **-FSE2** units contain springs under compression. A means of retaining the plug (**-FSE2** units) or piston (**-FSR2** units) must be provided during disassembly to prevent ejection of these components from the gripper.
- During disassembly, be careful to avoid scratching bearing or sealing areas. Refer to **Figures 1 and 3** unless otherwise noted.
- CP units:** Remove proximity target (if attached) and prox target pin from jaw (**CP** proximity sensor ready option only).
- Remove sensor cover (cannot be reused). Pulling straight out from gripper to prevent bending or breaking magnet target pin, use pliers to remove magnet target assembly (cannot be reused), see **Figure 2**. Remove magnet target pin using 0.0605 in [1.5 mm] hex wrench.
- Standard units:** Remove bore plug retainer, bore plug, plug seal, and piston assembly fastener. Size 19 only, remove one-piece piston and rod. (See **Figure 4**)
-FSR2 units: Remove bore plug retainer, bore plug, and plug seal. Restrain piston and slowly remove piston assembly fastener. Relieve spring force by slowly releasing piston. Remove piston and spring from bore. (See **Figure 6**)
-FSE2 units: Restrain bore plug and carefully remove retaining ring. Relieve spring force by slowly releasing plug. Remove spring and bore plug seal. Remove piston assembly fastener. (See **Figure 7**)
- Remove jaw cover assembly fasteners retaining jaw cover. Remove air filter or filters from size 40, 50, and 63 units.
- Move jaws to closed position and lift jaws, jaw seals and jaw driver from body of gripper. Note location of jaw seals, if included.
- Push rod through body to gain access to piston and piston seal (standard and **-FSE2** units). Remove piston seal, taking care to avoid scratching sealing surface of seal groove in piston. Remove rod seal, **note orientation of seal**.
- Clean and inspect all components. **WARNING:** Worn or damaged components should be replaced.

REASSEMBLY PROCEDURE

- Be careful to avoid damaging seals during reassembly.
- Lubrication guidelines (only use lubricants which are compatible with pneumatic devices)
 - Standard Units: all components use petroleum-based high-pressure grease, oil wicks: petroleum-based heavy weight oil with Teflon
 - Y4 and -V6 Units: all components use cleanroom designated grease, oil wicks: cleanroom designated heavy weight oil
 - V1 Units: all components use PTFE based lubricant, oil wicks: PTFE based heavy weight oil
- Use removable threadlocker on all threaded fasteners.
- Lubricate bore, rod seal groove, and jaw slots in body. Apply lubricant on outside surfaces of cam driver and jaws, avoiding threaded holes. Lubricate jaw seals, if included. Lubricate jaw contact area on jaw cover. Lubricate and install rod seal, see **Figure 3** for orientation.
- Size 19 piston and rod (Figure 4):** Replace and lubricate piston seal on one-piece piston and rod. Install in body, threaded end should be visible in jaw slot. Apply threadlocker to threaded end.
- Size 25-63 pistons and rods, except sizes 40, 50, and 63 with -FSR2 (see below):** Lubricate rod and install in body with narrowed section visible in jaw slot. (See **Figure 3**)
- Size 19 jaws and cover:** Lubricate jaw contact area on cover. Install cam driver into one jaw. Place jaw and cam driver into slot in jaw cover. Install remaining jaw into other slot in cover. **NOTE:** Jaws may need to be angled when inserting in cover slot. Verify that counterbore in cam driver (see **Figure 3**) is oriented to accept rod when assembled into body. Install jaws, cam driver, and cover assembly into jaw slot while threading one-piece piston and rod into cam driver (see **Figure 4**). Torque piston per **TABLE 1**.

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- 8) **Size 25-63 jaws:** Assemble both jaws to jaw driver and move jaws to closed position. Verify that counterbore in jaw driver (see **Figure 3**) is oriented to accept rod when assembled. Assemble jaw seals to jaws, when included. Note jaw orientation per **Figure 1**. Align jaw and driver assembly with jaw slot. Slide jaw seals, when included, in line with jaw seal slots. Slide assembly down into jaw slot. Verify that jaw seals are properly located in slot by checking that no gap exists between jaw and jaw slot.
- 9) **Size 40, 50, and 63 with -FSR2 jaws (Figure 6):** Apply threadlocker to male thread at end of piston rod and assemble into cam driver. Assemble both jaws to jaw driver and move jaws to closed position. Assemble jaw seals to jaws. Note jaw orientation per **Figure 1**. Align jaw, piston rod, and driver assembly with jaw slot. Align jaw seal slots with slots in body. Slide assembly down into jaw slot. Verify that jaw seals are properly located in slot by checking that no gap exists between jaw and jaw slot.
- 10) Install air filters on size 40, 50, and 63 units.
- 11) **Size 25-63 jaw cover:** Care must be taken to align cover with jaw seals, when included. Verify that jaw seals are properly located in cover by checking that no gap exists between jaw and jaw cover (prior to applying torque to cover fasteners). Apply removable threadlocker sparingly to jaw cover assembly fasteners and install in body. Torque jaw cover assembly fasteners per **TABLE 1**.
- 12) Replace and lubricate piston seal.
- 13) **Size 25-63 piston standard and -FSE2:** Insert piston with seal into body of gripper, see **Figures 3 and 7** for orientation. Apply removable threadlocker to piston assembly fastener and assemble through piston and rod into jaw driver. Torque piston assembly fastener per **TABLE 1**.
- 14) **Size 25-63 piston with -FSR2:** Lubricate and insert spring as shown in **Figure 6**. Apply removable threadlocker to piston assembly fastener and assemble through piston and rod into jaw driver or piston rod (sizes 40, 50, and 63). Pressure may need to be applied to piston to compress spring in units with -FSR2 option. Torque piston assembly fastener per **TABLE 1**.
- 15) **-FSE2 spring:** Lubricate and insert spring as shown in **Figure 7**.
- 16) **Bore plug, seal, and retainer standard and -FSR2:** Lubricate and install bore plug seal, see **Figure 3** for orientation. **NOTE:** Plug seal may require stretching prior to installation to allow proper assembly of bore plug. Size 19 plug seal installs into groove in piston. Install bore plug retainer into body (sharp edges of retaining ring outward from body). Verify proper seating of retaining ring.
- 17) **Bore plug, seal, retainer, and spring with -FSE2:** Lubricate and install bore plug seal, see **Figure 3** for orientation. **NOTE:** Plug seal may require stretching prior to installation to allow proper assembly of bore plug. Center bore plug on spring. Compress spring by applying pressure to center of bore plug. When compressing, verify proper seating of bore plug into body. While maintaining pressure, install bore plug retainer into body (sharp edges of retaining ring outward from body). Verify proper seating of retaining ring.
- 18) **Standard unit without -CP option:** Apply removable threadlocker sparingly to thread on magnet target pin and install through target slot in body into jaw (see **Figure 2**). Torque magnet target pin in jaw per **TABLE 1**.
- 19) Press magnet target assembly onto magnet target pin as shown in **Figure 2** until target is approximately 0.040 in [1 mm] below sensor slot surface.
- 20) Clean sensor slot surface (see **Figure 2**) to remove any grease or dirt. Carefully remove backing from aluminum sensor cover. **(WARNING: if cover becomes bent it will not adhere or seal properly.)** Install sensor cover onto sensor slot surface with cover aligned with edge as shown (size 19, 25, 27, 28, 40, and 50 per **Figure 1**). Center sensor cover over magnet target slot on size 32 and 63 and install onto sensor slot cover surface. Press firmly along length of cover to remove air.
- 21) **CP option:** Apply removable threadlocker sparingly to prox target pin and install through body into jaw. Torque the prox target pin in jaw per **TABLE 1**. For prox target mounting instructions see 6441-725.
- 22) **GRF34-x-25 x 6.5 only:** When installing replacement jaws, apply removable threadlocker to bearing plugs on size 25. Install bearing plugs in body. See **Figure 5** for orientation. Apply air to unit and cycle at 30 psi [2.1 bar] while tightening bearing plugs. Tighten plugs until unit stops cycling, back-off screw until unit cycles freely. Allow threadlocker to cure before use of unit.

TABLE 1 - GRIPPER ASSEMBLY TORQUES

PART DESCRIPTION	SIZE 19		SIZE 25		SIZE 27		SIZE 28		SIZE 32		SIZE 40		SIZE 50		SIZE 63	
	in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm	in-lb	Nm
JAW COVER ASSEMBLY FASTENER	7	0.8	9	1.0	17	1.9	17	1.9	25	2.8	40	4.5	85	9.6	210	24
PISTON ASSEMBLY FASTENER	7	0.8	17	1.9	17	1.9	17	1.9	25	2.8	75	8.5	85	9.6	210	24
MAGNET TARGET PIN (STD UNIT)	20 in-oz	0.14	20 in-oz	0.14	20 in-oz	0.14	20 in-oz	0.14	20 in-oz	0.14	20 in-oz	0.14	20 in-oz	0.14	20 in-oz	0.14
PROX TARGET PIN (CP OPTION ONLY)	40 in-oz	0.28	40 in-oz	0.28	40 in-oz	0.28	40 in-oz	0.28	40 in-oz	0.28	40 in-oz	0.28	9	1.0	9	1.0

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