

DURAPAC
ENGINEERED FOR RELIABILITY

Instruction Manual

2/3 Way Hydraulic Pullers & Accessories
Models – PR & PS Series



Maximum Operating Pressure – 700 bar



This is a safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid injury or death

1.0 Product Information

DURAPAC – Hydraulic Pullers are engineered to meet Industrial Standards for Performance and Safety. The PR and PS Series pullers are a convertible two- or three-way unit for a one-person operation. The pullers are available in remote and self-contained versions from 4-30 ton capacity.

- Two speed pump on PS-20S & PS-30S
- 360° rotating socket handle on PS Series
- 360° rotating on a 90° coupling on PR Series
- Self-contained and remote versions
- Locking collar for fast, easy jaw locking
- Extension rods on 4-12 ton models
- 2/3-way convertible jaw set
- Spring loaded centring point
- Puller legs are drop forged for strength
- Carry case included

The following accessories are also specifically designed for use with the PS & PR Series Pullers:

1.1 Tri-sectional plates – ET Series

The ET Series tri-sectional plates have a unique and patented swing design that creates the maximum spread and provides the most even force. The plates grip behind the inner and outer rings of the bearing together which prevents the pulling force from being transmitted through the rolling parts, minimising the risk of bearing damage.

1.2 Cross Bearing Attachments – BS Series

The BS Series cross bearing attachments provide a knife-like edge to get behind parts for added versatility and secure removal of parts. They are great for parts that do not offer adequate grip with jaw type pullers. All bearing/pulley attachments include the bearing attachment, a pair of sized thread-in legs and a sliding cross head. Simply add the hydraulic cylinder from your PS/PR Series puller set.

Special skill, knowledge and training may be required for a specific task and the product may not be suitable for all jobs. The user must ultimately make the decision regarding suitability of the product for any given task and assume the responsibility of safety for all in the work area. Contact a Durapac representative if you are unsure of your puller's suitability for a particular application.

2.0 Receiving Instructions

It is recommended prior to use that an inspection be done by qualified personnel and that any missing or damaged parts, decals, warning/safety labels or signs are replaced with Durapac authorised replacement parts only. Any puller that appears to be damaged in any way, is worn, leaking or operates abnormally should be removed from service immediately until such time as repairs can be made. Any puller that has been or suspected to have been subject to a shock load should be removed from service immediately until inspected by a Durapac authorised service centre.

Owners and operators of this equipment should be aware that the use and subsequent repair of this equipment may require specialised training and knowledge.

3.0 Safety

Save these instructions. For your safety, read and understand the information contained within. The owner and operator should understand this product and safe operating procedures before attempting to use this product. Instructions and safety information should be conveyed in the operator's native language before use of this product is authorised. Make certain that the operator thoroughly understands the inherent dangers associated with the use and misuse of the product. If any doubt exists as to the safe and proper use of this product as outlined in this factory authorised manual, remove from service immediately.



DANGER:

- To avoid personal injury keep hands and feet away from work area during operation
- **Do NOT** handle pressurised hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately
- Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be supported mechanically



WARNING:

- The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure. It is your window to what is happening in the system
- Always wear appropriate personal protective equipment (PPE) when operating hydraulic equipment. The operator must take precaution against injury due to failure of the tool or work piece(s)
- **Do NOT** hold or stand directly in line with any hydraulic connections while pressurising
- **Do NOT** attempt to disconnect hydraulic connections under pressure. Release all line pressure before disconnecting hoses
- All personnel must be clear before lowering load or depressurising the system
- **Do NOT** attempt to lift a load weighing more than the capacity of the cylinder



IMPORTANT:

- If at any stage, the safety related decals become hard to read, these must be replaced
- Minimum age of the operator must be 18 years. The operator must have read and understood all instructions, safety issues, cautions and warnings before starting to operate the equipment. The operator is responsible for this activity towards other persons
- **Do NOT** lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport
- Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Durapac authorised service centre in your area. To protect

your warranty, use only high quality hydraulic oil



CAUTION:

- **KEEP HYDRAULIC EQUIPMENT AWAY FROM FLAMES AND HEAT.** Hydraulic fluid can ignite and burn. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance do not expose equipment to temperatures of 65°C (150°F) or higher. Protect all equipment from weld spatter
- No alteration should be made to this device

3.1 Hydraulic Pullers / Tri-Sectional Plates / Bearing Attachments

- Align the puller/plates on the same centreline as the part being removed. Failure to align the parts correctly can result in a dangerous operating situation because of the high hydraulic pressure used. Self-centring models can be aligned on the centreline after the pullers fully engaged with the part
- Before applying pressure, wrap the work in the supplied safety blanket/ sheath to protect from injury caused by flying parts should a part ever break
- **Do NOT** heat the part to be removed. When the puller comes in contact with the part, heating can result in damage to components of the puller
- Apply force gradually
- Ensure that the puller jaws/plates are fully engaged with the workpiece being pulled
- **Do NOT** overload equipment. Overloading can cause equipment failure and possible personal injury. **Do** use a gauge or other load measuring instrument to verify load
- This device is not suitable for use as a support device! As the system load is lifted, use blocking and cribbing to guard against a falling load
- **Do NOT** overextend the puller
- Only operate within the limits of the pullers' rated stroke
- **Never** pressurise uncoupled couplers. Only use hydraulic equipment in a coupled system
- Use only Durapac approved accessories and components

3.2 Hydraulic Hoses & Fluid Transmission Lines

- Avoid short runs of straight-line tubing. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes
- Reduce stress in tube lines. Long tubing runs should be supported by brackets or clips. Before operating the pump, connections should be tightened securely and leak-free. Over tightening can cause premature thread failure or high-pressure fittings to burst
- Should a hydraulic hose ever rupture, burst or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking

pressurised hose with your hands. The force of escaping hydraulic fluid can inflict injury

- **Do NOT** subject the hose to potential hazard such as fire, sharp objects, extreme heat or cold or heavy impact
- **Do NOT** allow the hose to kink, twist, curl, crush, cut or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as battery acid, creosote-impregnated objects and wet paint. Never paint a coupler or hose

FAILURE TO HEED THESE WARNINGS MAY RESULT IN PERSONAL INJURY AS WELL AS PROPERTY DAMAGE.

4.0 Installation

⚠ IMPORTANT: Always secure threaded port connections with high grade, non-hardening pipe thread sealant. Teflon tape can be used if only one layer of tape is used and it is applied carefully, two threads back, to prevent the tape from being introduced into hydraulic system, which could cause jamming of precision-fit parts

4.1 Familiarise yourself with the specifications and illustrations in this owner’s manual. Know your puller, tri-sectional plates and bearing attachments (if used) the limitations and how these products operate before attempting to use. Refer to the specification chart below or if in doubt, contact a Durapac representative.

Puller Specification Chart:

Model No.	Puller Type	Capacity (ton)	Max. Reach (mm)	Range of Spread (mm)	Extension Rods 58 mm - Qty	Jaw Tip (mm)			Hydraulic Cylinder (mm)			Stroke (mm)	Weight (Kg)
						A	B	C	E	F	G		
PS-04S	Self Contained	4	190	67.5 - 325	2	13	10	22	42	22	40	60	8
PR-04	Remote												6
PS-08S	Self Contained	8	280	107.0 - 450	3	13	13	27.5	50	25	70	85	12
PR-08	Remote												9
PS-12S	Self Contained	12	305	94.5 - 485	4	15	16.5	29	60	28	70	85	15
PR-12	Remote												12
PS-20S	Self Contained	20	365	128.4 - 570	-	20	27	33	80	40	62	111	26
PR-20	Remote												24
PS-30S	Self Contained	30	465	128.5 - 680	-	20	27	38	98	50	85	111	36
PR-30	Remote												34

Tri-Sectional Plates:

Model No.	Rated Capacity (ton)	Weight (Kg)
ET3-210	8	5.5
ET3-340	20	18
ET3-495	30	45

Bearing Attachments:

Model No	Weight (Kg)
BS-5-60	0.6
BS-15-60	1.4
BS-12-70	2.5
BS-28-150	5.5
BS-20-200	8.5

Thread in Legs/Cross Head:

*Model No.	Capacity (ton)	Weight (kg)	Inc. Bearing Attachment
BS-04250	4	6.5	BS-12-70
BS-08270	8	9.5	BS-28-150
BS-12380	12	13	BS-20-200

*Excludes cylinder pump

4.2 Make hydraulic connections.

⚠ IMPORTANT: Fully hand-tighten all couplers. Loose coupler connections will block the flow of oil between the pump and the puller

4.3 Check all system fittings and connections to be sure they are tight and leak free.

4.4 Check oil level in reservoir before operating pump.

4.5 Remove air from the system – Position the puller so that the piston rod is pointed down and the cylinder is lower than the pump. Advance and retract the cylinder several times, avoiding pressure build-up. Air removal is complete when the cylinder motion is smooth.

5.0 Operation

Note - These pullers have a 2/3-way combination puller head. The 3-way combination is strongly recommended whenever the job space allows as three jaws give a more secure grip and more even pulling force.

5.1 Setting up the Puller

5.1.1 Select the proper size and capacity of the puller needed for the job. This is determined by measuring the 'reach' and the 'spread' of the part to be pulled.

5.1.2 Screw the foldable handle into the handle clevis. See Figure 1.

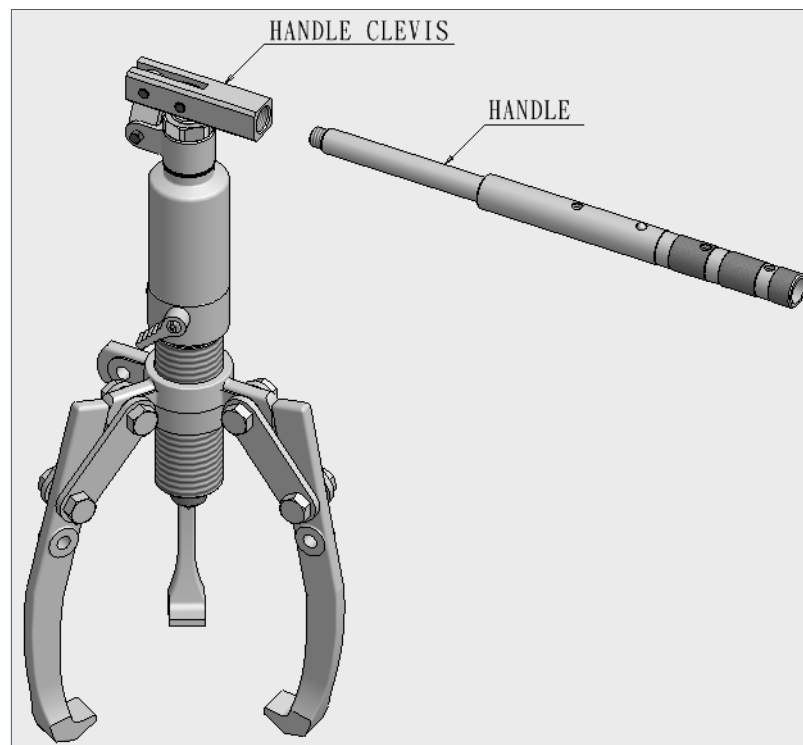


Figure 1 – Handle Attachment

- 5.1.3 Turn the control valve knob fully (clockwise) to advance the piston. See Figure 2.

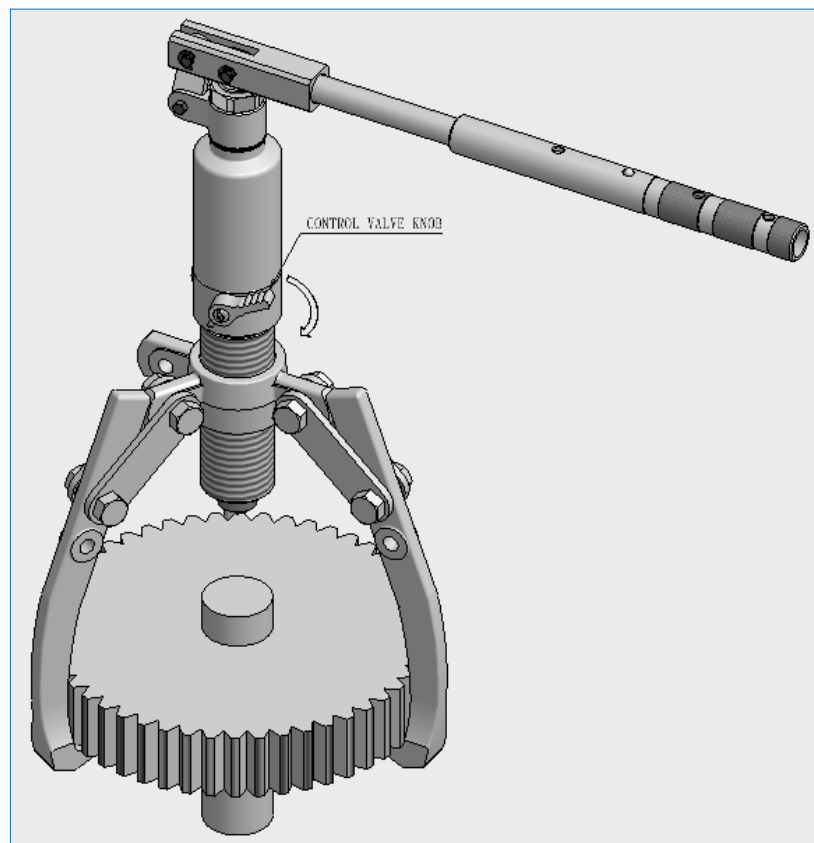


Figure 2 – Advance the Piston

5.2 Setting up the Tri-Sectional Plates (if being used)

- 5.2.1 Ensure the sides marked with the arrow are facing downwards of the two plates. Release the nuts and spread the plates to the fully open position as shown in Figure 3.

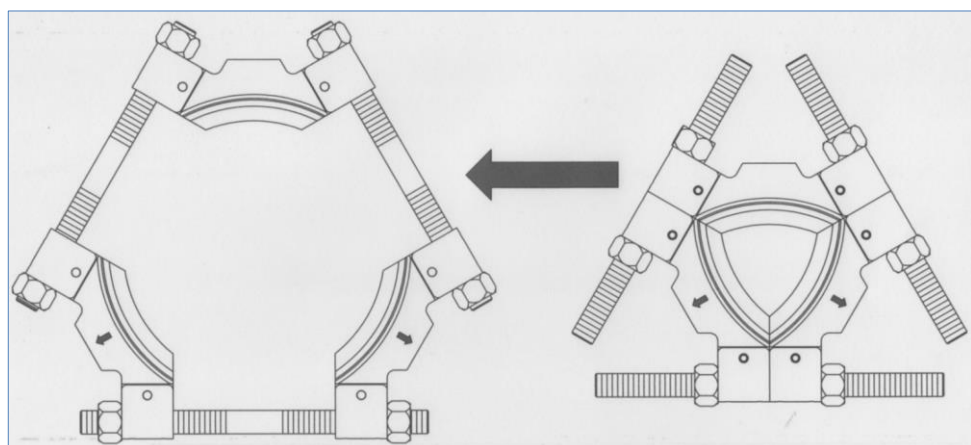


Figure 3 – Opening the Tri-Sectional Plates

- 5.2.2 Working within the available space, ensure that the object (to be pulled) is seated into the grooved section of the plates then tighten the nuts to hold the object with the plates OR ensure that the flat side of the plates fully connects

with the object (to be pulled), then tighten the nuts to fully cover the object with the plates. See Figure 4.

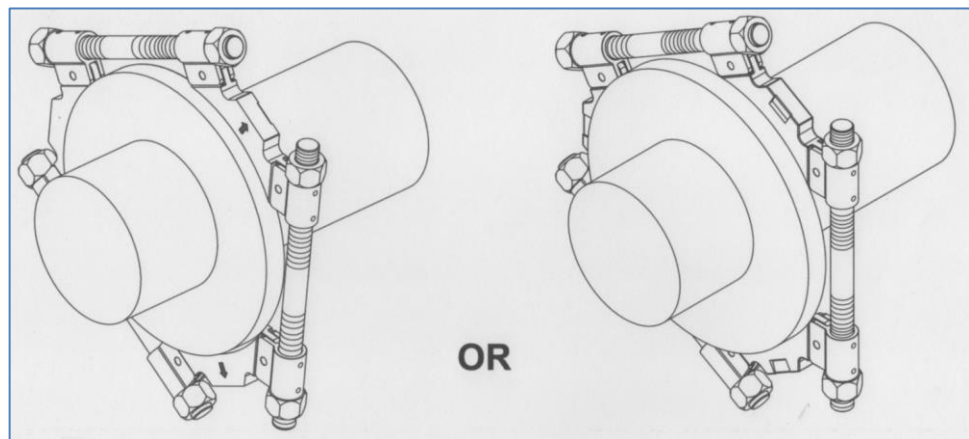


Figure 4 – Positioning the Tri-Sectional Plates

5.2.3 Once satisfied with the plates’ alignment, connect the puller with the plates. Ensure that the puller jaws are fully and tightly engaged with the plates. See Figures 5 & 6.

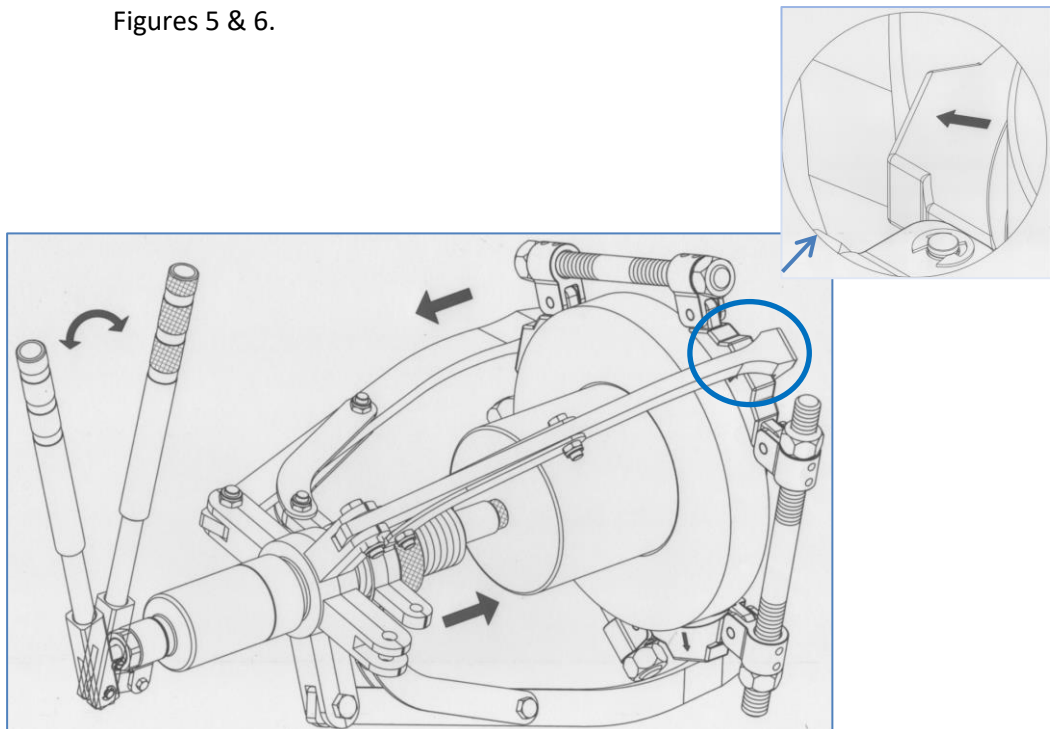


Figure 5 & 6 –Tri-Sectional Plate Alignment

5.3 Positioning the Puller

- 5.3.1 Position the puller by spreading puller jaws around the part to be pulled.
- 5.3.2 Remove the slack by threading the adjusting ring forward on the puller body.
- 5.3.3 Pump the handle to advance the piston. Stop when the removable cone touches the part.
- 5.3.4 Make the final puller positioning adjustments with the piston.

Note - When extra 'reach' is needed, remove the cone from the piston rod, add the extension rod and reassemble the cone onto the piston rod. See Figure 7.

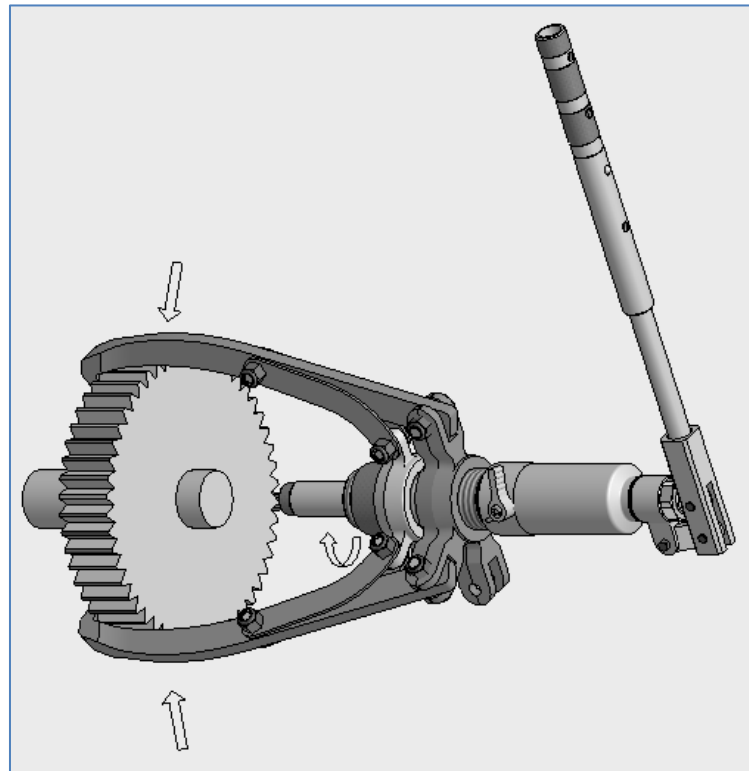


Figure 7 – Extending the Piston Rod's Reach

5.4 Operating the Puller

Note – The handle rotates a full 360° to allow the best location for pumping. See Figure 8.

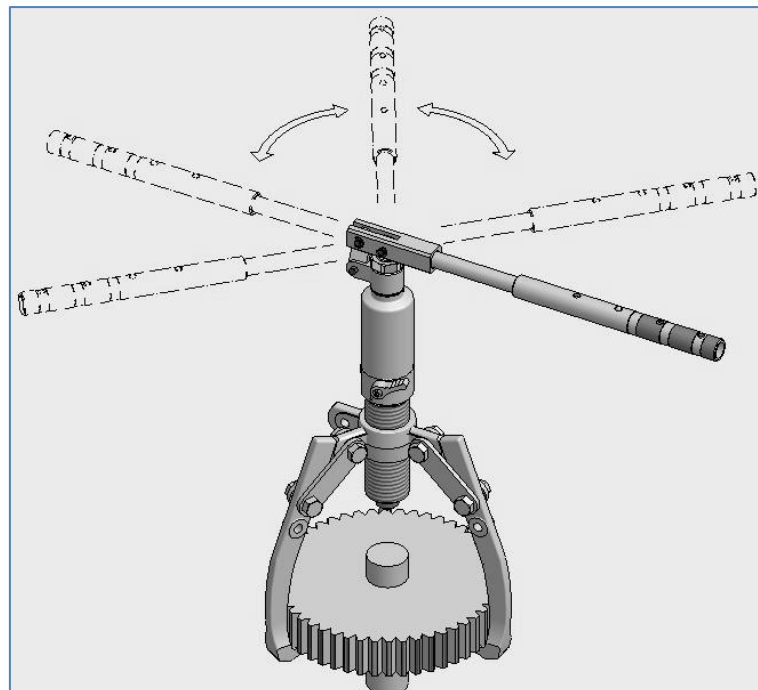


Figure 8 – 360° Handle Rotation

- 5.4.1 Hold the puller with one hand, pump the handle with the other hand and advance the piston until the part is removed. See Figure 9.

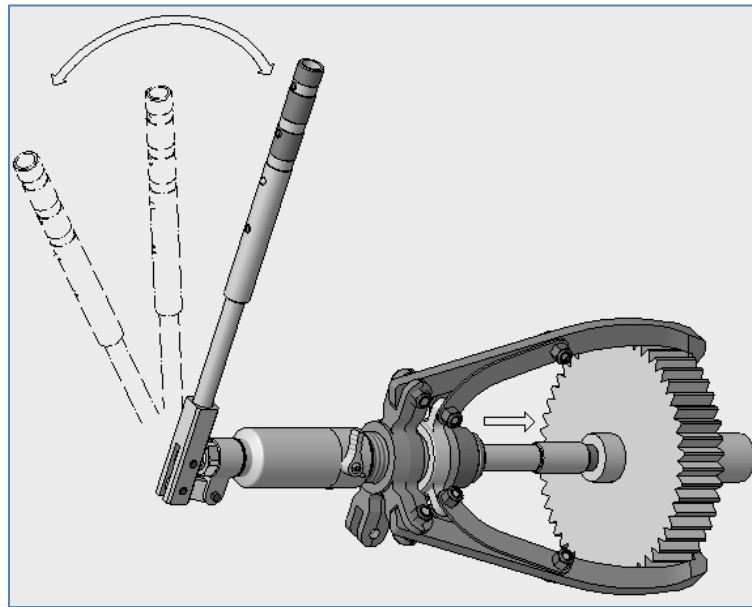


Figure 9 – Advancing the Piston

- 5.4.2 Turn the control valve knob fully (counter clockwise) to retract the piston. See Figure 10.

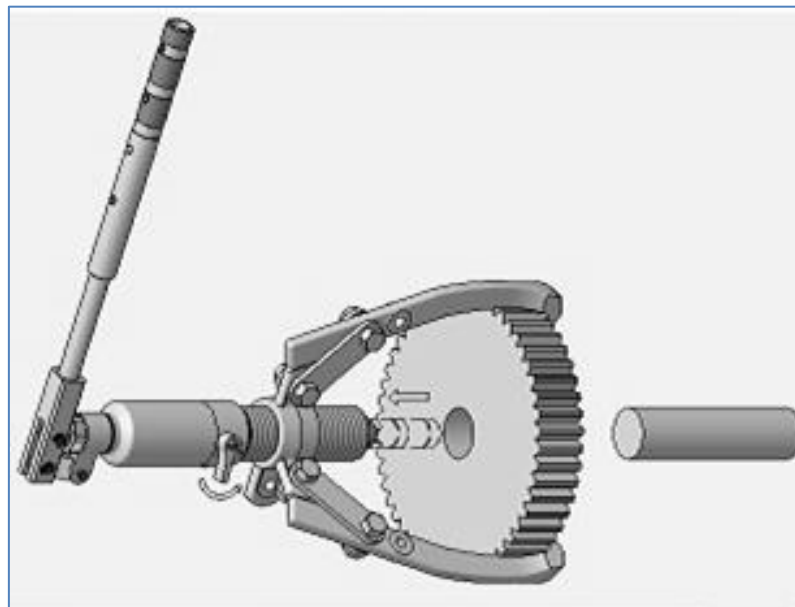


Figure 10 – Retracting the Piston

6.0 Maintenance



IMPORTANT:

- Use only good quality hydraulic fluid. **Do NOT** use brake fluid, transmission fluid, turbine oil, motor oil, alcohol, glycerine etc. Use of anything other than good quality hydraulic oil will void warranty and damage the pump, hose, and application. We recommend Durapac Hydraulic Oil or equivalent
- Equipment must only be serviced by a qualified hydraulic technician. For repair service, contact your local Durapac authorised service centre
- Tighten connections as needed. Use non-hardening pipe thread compound when servicing connections

Dirt, sand, etc. will quickly ruin any hydraulic system. Ensure that couplings are clean and free of foreign matter. After each use, clean couplings and attach dust caps.

Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem that may require service and maintenance.

- 6.1 Check for loose connections and leaks.
- 6.2 Replace damaged parts immediately.
- 6.3 Do not exceed oil temperature above 60°C.
- 6.4 Keep all hydraulic components clean.
- 6.5 Use dust caps when puller is disconnected from the hose. Keep entire puller clean to prolong puller life.
- 6.6 Wipe thoroughly clean and store puller in the carry case (provided). Avoid temperature extremes.
- 6.7 Change hydraulic oil in your system as recommended in the pump instruction sheet.

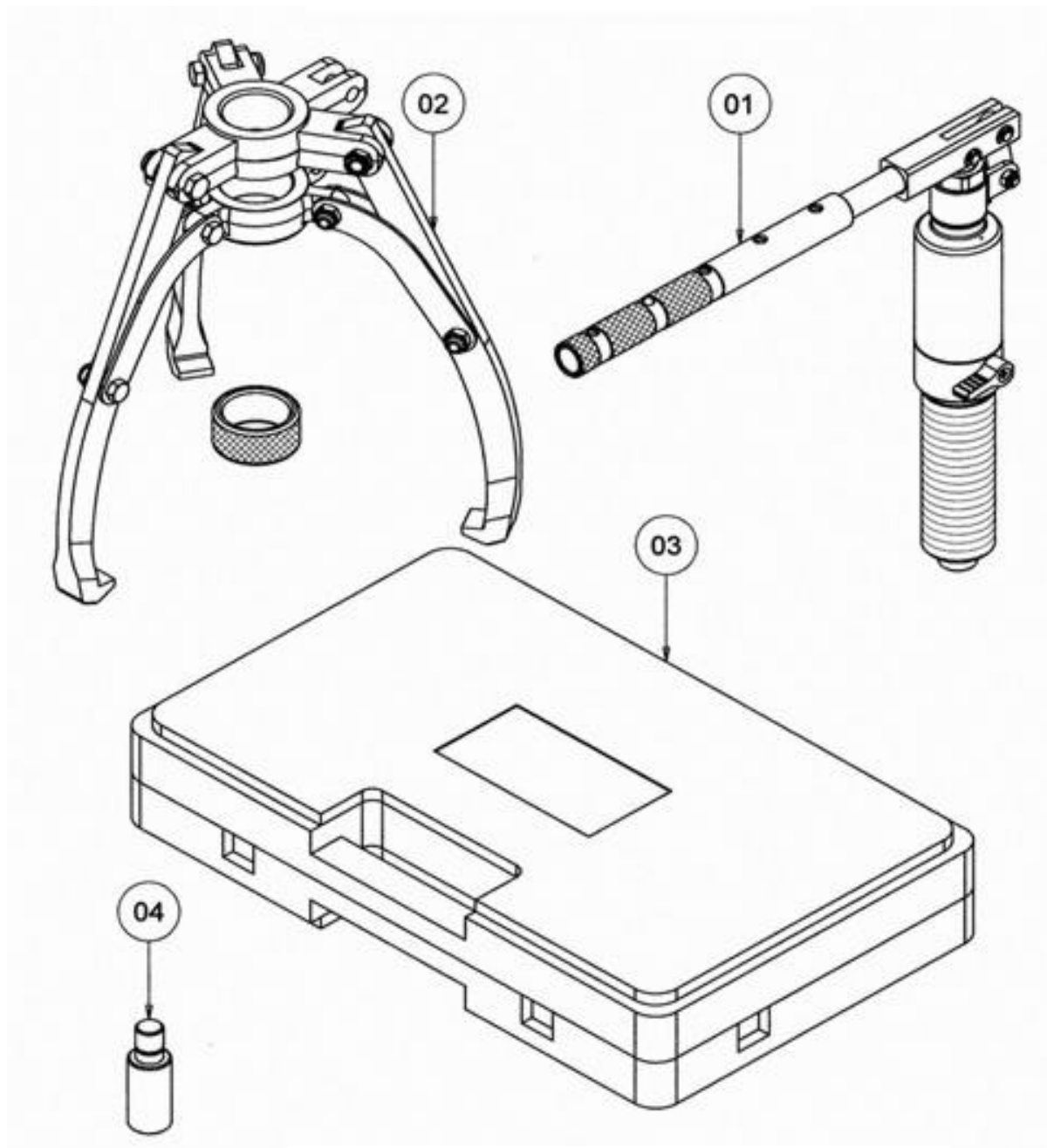
7.0 Troubleshooting

Problem	Cause	Solution
Cylinder moves but does not maintain pressure	Leaking connection	<ul style="list-style-type: none"> • Clean, reseal with thread sealant and tighten connection
	Leaking cylinder seals	<ul style="list-style-type: none"> • Replace worn seals • Check for excessive contamination or wear • Replace contaminated fluid as necessary
	Malfunctioning pump/valve	<ul style="list-style-type: none"> • Repair or replace as necessary
Cylinder leaks hydraulic fluid	Worn or damaged seals	<ul style="list-style-type: none"> • Replace worn seals • Check for excessive contamination or wear • Replace contaminated fluid as necessary
	Loose connections	<ul style="list-style-type: none"> • Clean, reseal with thread sealant and tighten connection
Cylinder will not	Closed pump release valve	<ul style="list-style-type: none"> • Open pump release valve

Problem	Cause	Solution
retract or retracts slower than normal	Loose couplers	<ul style="list-style-type: none"> • Tighten couplers
	Blocked hydraulic lines	<ul style="list-style-type: none"> • Clean and flush lines
	Weak or broken retraction springs	<ul style="list-style-type: none"> • Send to a Durapac authorised service centre for repair
	Internally damaged cylinder	<ul style="list-style-type: none"> • Send to a Durapac authorised service centre for repair
	Pump reservoir too full	<ul style="list-style-type: none"> • Drain hydraulic fluid to correct level
Erratic Action	Air in system or pump cavitation	<ul style="list-style-type: none"> • Add fluid, bleed air and check for leaks
	External leakage	<ul style="list-style-type: none"> • Replace worn packings • Check for excessive contamination fluid as necessary • Replace contaminated fluid as necessary
	Sticking or binding cylinder	<ul style="list-style-type: none"> • Check for dirt or leaks • Check for bent, misaligned, worn parts or defective packings
Cylinder does not move	Loose couplers	<ul style="list-style-type: none"> • Tighten couplers
	Faulty coupler	<ul style="list-style-type: none"> • Verify that female coupler is not locked up (ball wedged into seat) • Replace both male and female couplers
	Improper valve position	<ul style="list-style-type: none"> • Close release valve or shift to new position
	Low or no hydraulic fluid in pump reservoir	<ul style="list-style-type: none"> • Fill and bleed the system
	Air-locked pump	<ul style="list-style-type: none"> • Add fluid, bleed air and check for leaks
	Load is above the capacity of the system	<ul style="list-style-type: none"> • Use the correct equipment
Cylinder extends only partially	Low or no hydraulic fluid in pump reservoir	<ul style="list-style-type: none"> • Fill and bleed the system
	Load is above the capacity of the system	<ul style="list-style-type: none"> • Use the correct equipment
	Sticking or binding cylinder	<ul style="list-style-type: none"> • Check for dirt or leaks • Check for bent, misaligned, worn parts or defective packings
Cylinder moves slower than normal	Loose couplers	<ul style="list-style-type: none"> • Tighten couplers
	Restricted hydraulic line or fitting	<ul style="list-style-type: none"> • Clean • Replace if damaged
	Low fluid level in pump reservoir	<ul style="list-style-type: none"> • Fill and bleed the system
	Leaking cylinder seals	<ul style="list-style-type: none"> • Replace worn seals • Check for excessive contamination or wear • Replace contaminated fluid as necessary

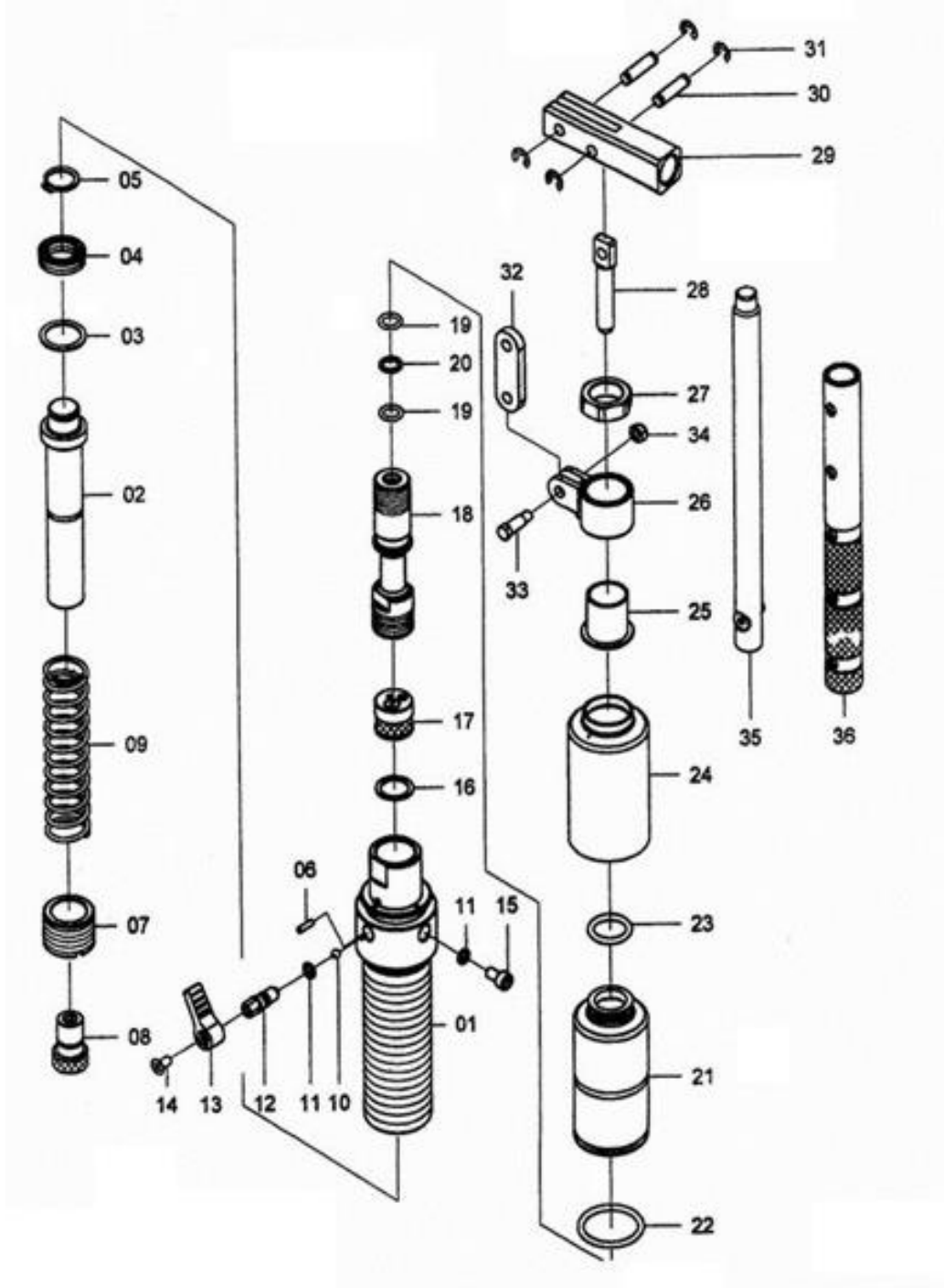
8.0 Parts Breakdown and List

8.1 Model PS-04S



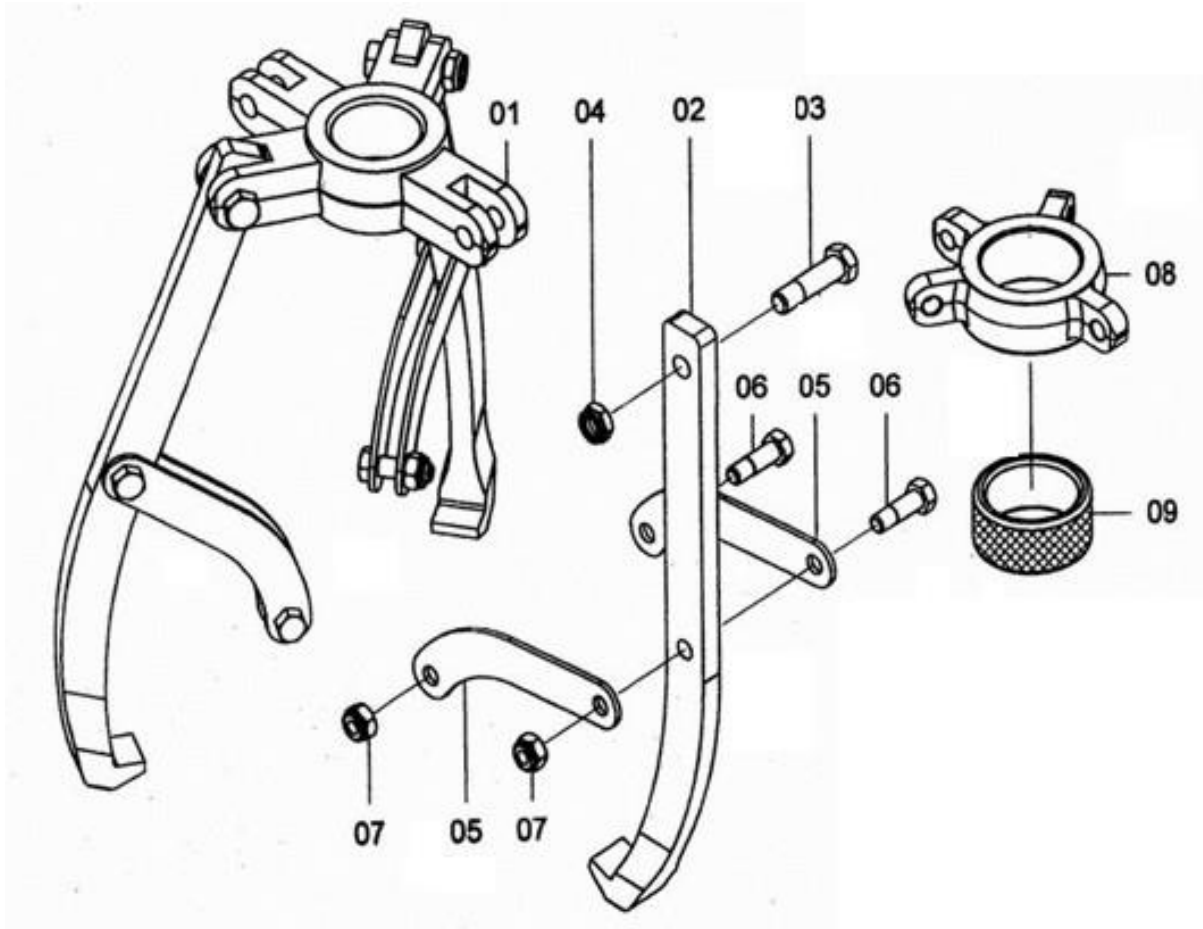
Item	Description	Part No.	Qty
1	Puller body	ZAL1691	1
2	Jaw assembly	ZAL1659	1
3	Blow moulded case	ZAL1660	1
4	Extension bar	ZAL1128	2

8.1.1 PS-04S Puller Body



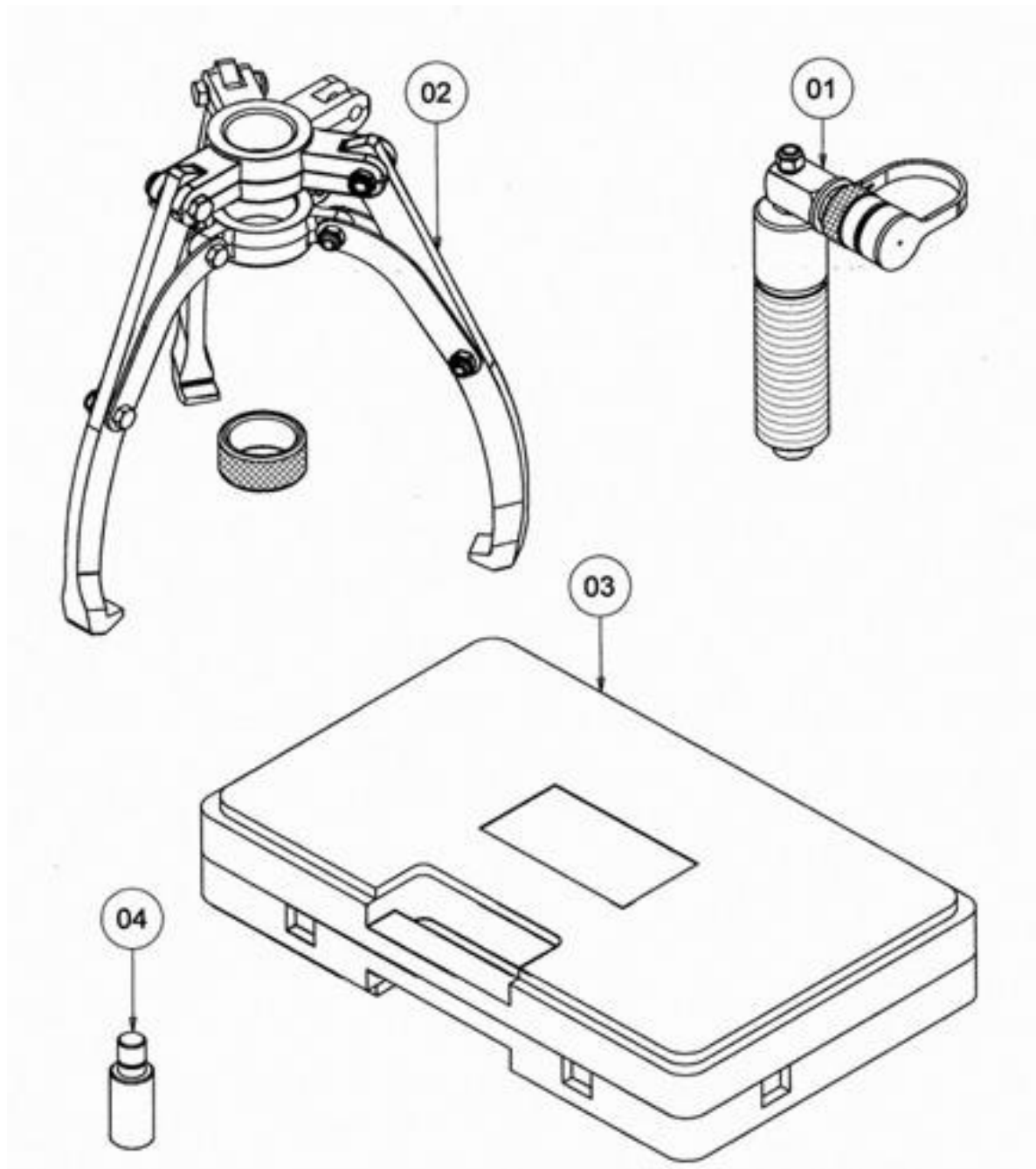
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	Puller body	ZAL1692	1	13	Relief valve knob	ZAL1383	1	25	Piston housing cap	ZAL1134	1
2	Puller piston rod	ZAL1662	1	14	Fixing screw	ZAL1295	1	26	Swivel clevis	ZAL1012	1
3	Back-up ring*	ZAL1635	1	15	Oil fill screw	ZAL1288	1	27	Retaining nut	ZAL1116	1
4	U-cap seal*	ZAL1636	1	16	Copper washer	ZAL1341	1	28	Pump piston rod	ZAL1115	1
5	Retaining ring	ZAL1663	1	17	Safety valve	ZAL1029	1	29	Handle clevis	ZAL1047	1
6	Pin	ZAL1371	1	18	Pump piston housing	ZAL1127	1	30	Clevis pin	ZAL1333	2
7	Rod wiper	ZAL1665	1	19	O-ring*	ZAL1282	2	31	Retaining ring	ZAL1332	4
8	Removable cone assembly	ZAL1014	1	20	Back-up ring*	ZAL1247	1	32	Link connector	ZAL1046	1
9	Compression spring	ZAL1664	1	21	Reservoir bladder*	ZAL1694	1	33	Clevis screw	ZAL1111	1
10	Steel ball	ZAL1369	1	22	O-ring*	ZAL1695	1	34	Anti-loosen nut	ZAL1301	1
11	O-ring*	ZAL1234	2	23	O-ring*	ZAL1241	1	35	Solid handle lever	ZAL1015	1
12	Relief valve screw	ZAL1302	1	24	Bladder housing	ZAL1696	1	36	Handle rod	ZAL1085	1
									Seal kit	ZAL1698	1

8.1.2 PS-04S Jaw Assembly



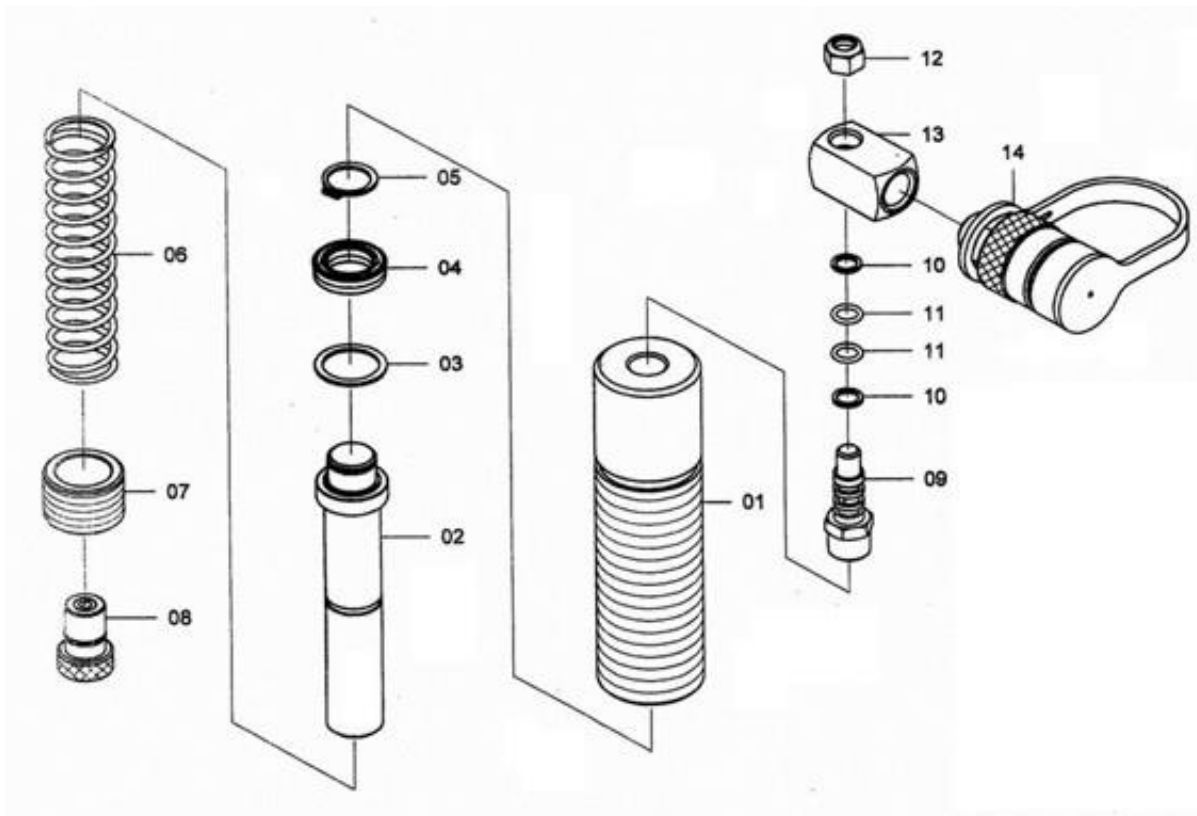
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1667	1	6	Jaw hex screw	ZAL1670	6
2	Puller jaw	ZAL1668	3	7	Anti-loosen nut	ZAL1671	6
3	Jaw hex screw	ZAL1306	3	8	2/3-way sliding socket	ZAL1672	1
4	Anti-loosen nut	ZAL1310	3	9	Fixed ring	ZAL1673	1
5	Puller jaw strap	ZAL1669	6		Safety blanket	ZAL1674	1

8.2 Model PR-04



Item	Description	Part No.	Qty
1	Puller body	ZAL1658	1
2	Jaw assembly	ZAL1659	1
3	Blow moulded case	ZAL1660	1
4	Extension bar	ZAL1128	2

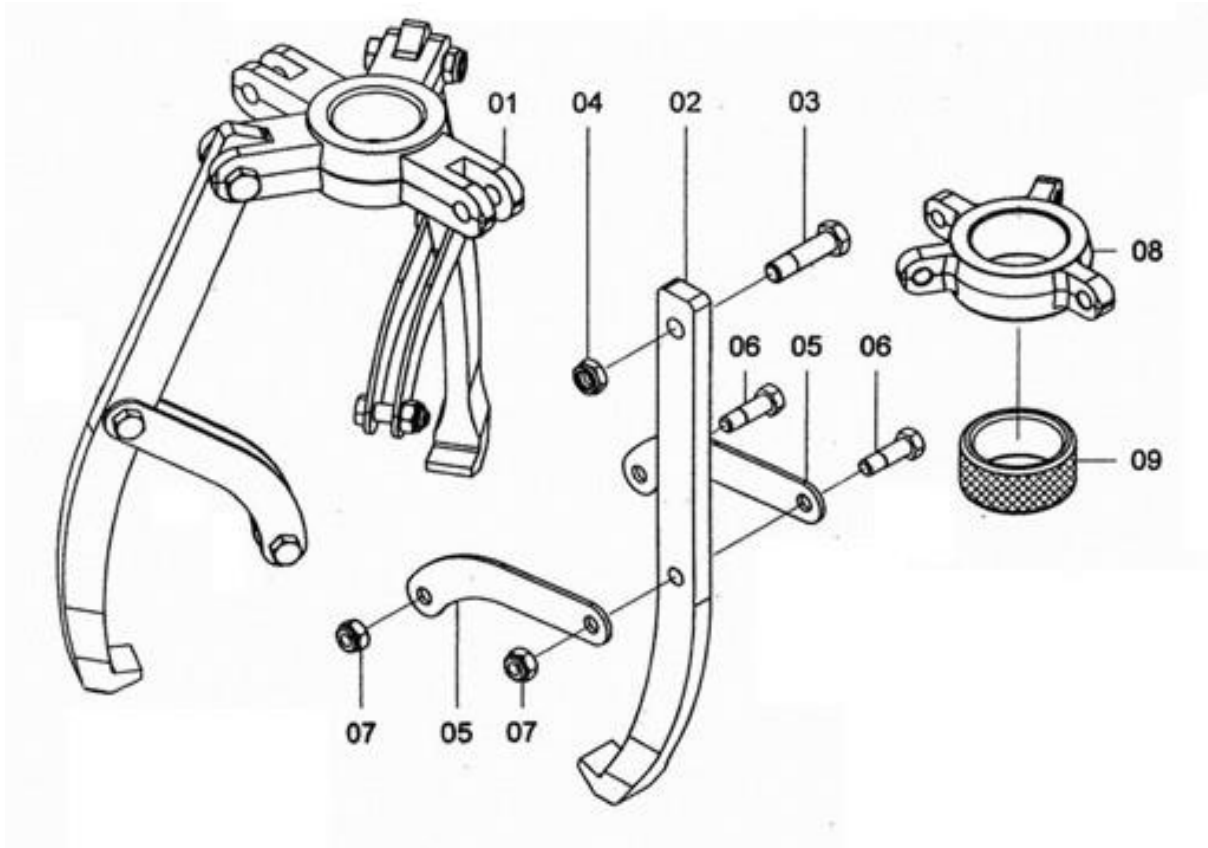
8.2.1 PR-04 Puller Body



Item	Description	Part No.	Qty
1	Puller body	ZAL1661	1
2	Puller piston rod	ZAL1662	1
3	Back-up ring*	ZAL1635	1
4	U-cap seal*	ZAL1636	1
5	Retaining ring	ZAL1663	1
6	Compression spring	ZAL1664	1
7	Rod wiper	ZAL1665	1

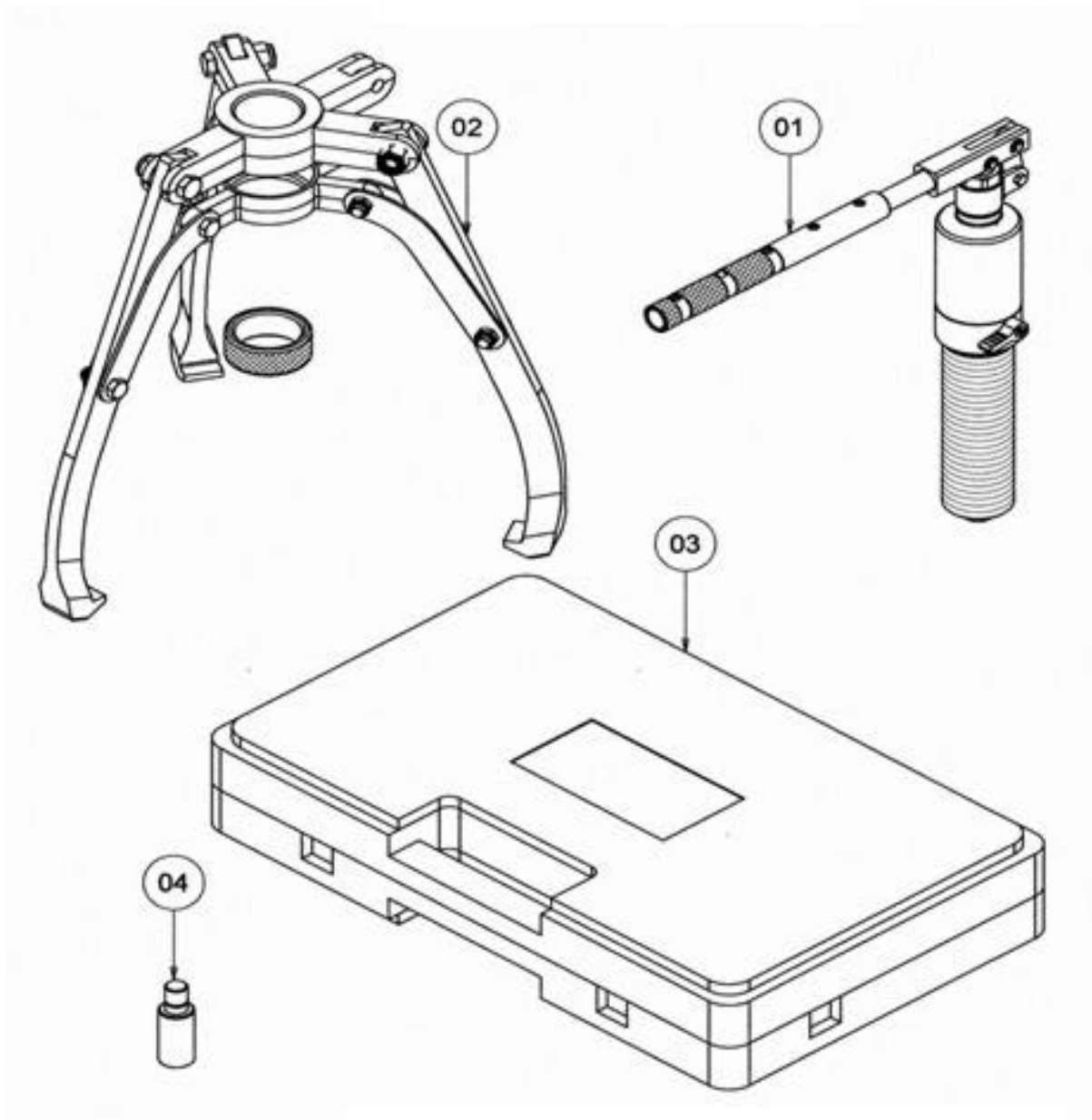
Item	Description	Part No.	Qty
8	Removable cone assembly	ZAL1014	1
9	Oil pressure valve assembly	ZAL1565	1
10	Back-up ring*	ZAL1218	2
11	O-ring*	ZAL1274	2
12	Anti-loosen nut	ZAL1567	1
13	Coupler body	ZAL1566	1
14	Coupler	ZAL1472	1
	Seal kit	ZAL1666	1

8.2.2 PR-04 Jaw Assembly



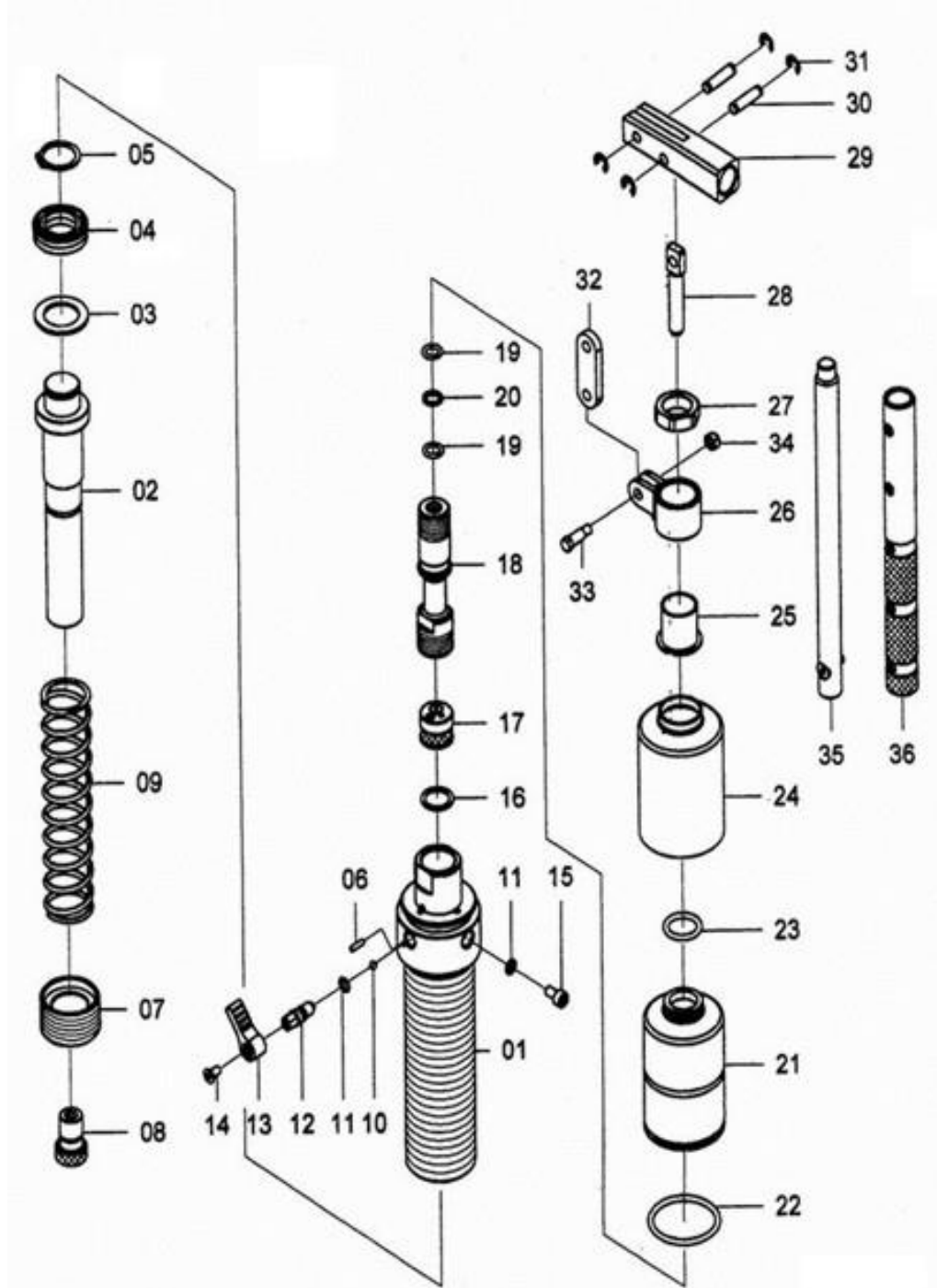
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1667	1	6	Jaw hex screw	ZAL1670	6
2	Puller jaw	ZAL1668	3	7	Anti-loosen nut	ZAL1671	6
3	Jaw hex screw	ZAL1306	3	8	2/3-way sliding socket	ZAL1672	1
4	Anti-loosen nut	ZAL1310	3	9	Fixed ring	ZAL1673	1
5	Puller jaw strap	ZAL1669	6		Safety blanket	ZAL1674	1

8.3 Model PS-08S



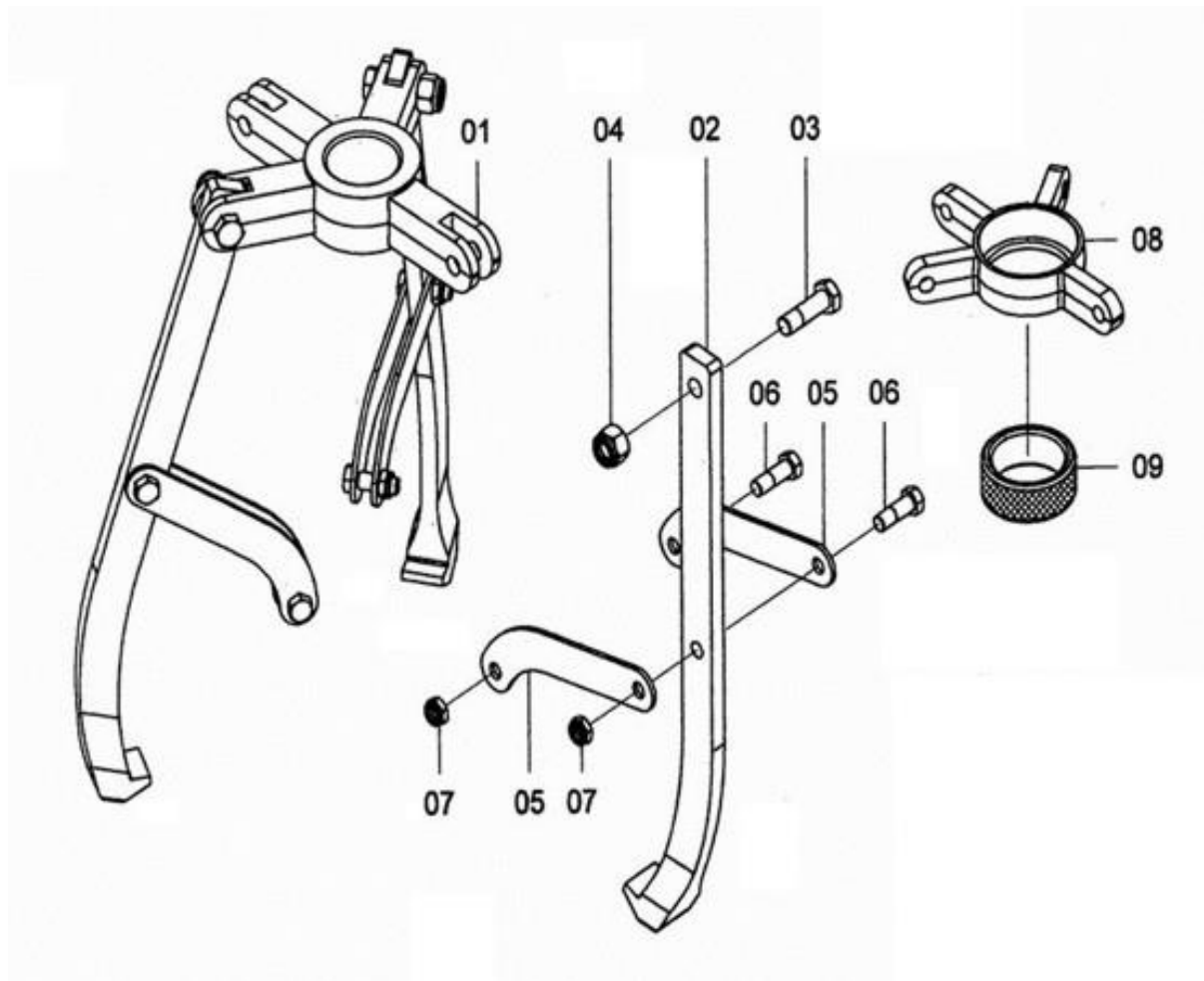
Item	Description	Part No.	Qty
1	Puller body	ZAL1699	1
2	Jaw assembly	ZAL1676	1
3	Blow moulded case	ZAL1252	1
4	Extension bar	ZAL1128	3

8.3.1 PS-08S Puller Body



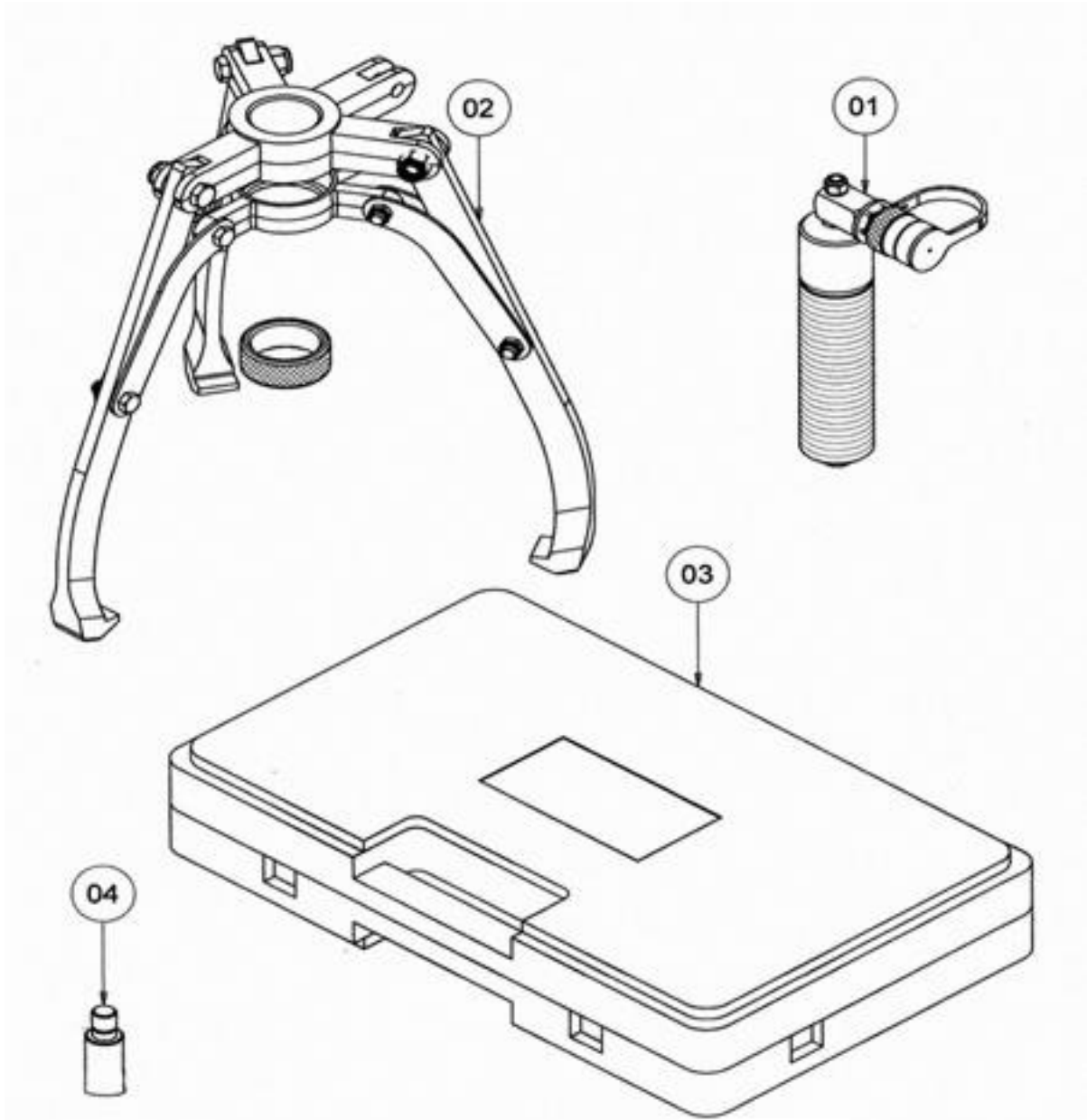
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	Puller body	ZAL1700	1	13	Relief valve knob	ZAL1383	1	25	Piston housing cap	ZAL1134	1
2	Puller piston rod	ZAL1678	1	14	Fixing screw	ZAL1295	1	26	Swivel clevis	ZAL1012	1
3	Back-up ring*	ZAL1679	1	15	Oil fill screw	ZAL1288	1	27	Retaining nut	ZAL1116	1
4	U-cap seal*	ZAL1680	1	16	Copper washer	ZAL1341	1	28	Pump piston rod	ZAL1115	1
5	Retaining ring	ZAL1681	1	17	Safety valve	ZAL1029	1	29	Handle clevis	ZAL1047	1
6	Pin	ZAL1371	1	18	Pump piston housing	ZAL1127	1	30	Clevis pin	ZAL1333	2
7	Rod wiper	ZAL1683	1	19	O-ring*	ZAL1282	2	31	Retaining ring	ZAL1332	4
8	Removable cone assembly	ZAL1014	1	20	Back-up ring*	ZAL1247	1	32	Link connector	ZAL1046	1
9	Compression spring	ZAL1682	1	21	Reservoir bladder*	ZAL1530	1	33	Clevis screw	ZAL1111	1
10	Steel ball	ZAL1369	1	22	O-ring*	ZAL1529	1	34	Anti-loosen nut	ZAL1301	1
11	O-ring*	ZAL1234	2	23	O-ring*	ZAL1241	1	35	Solid handle lever	ZAL1015	1
12	Relief valve screw	ZAL1302	1	24	Bladder housing	ZAL1531	1	36	Handle rod	ZAL1085	1
									Seal kit	ZAL1701	1

8.3.2 PS-08S Jaw Assembly



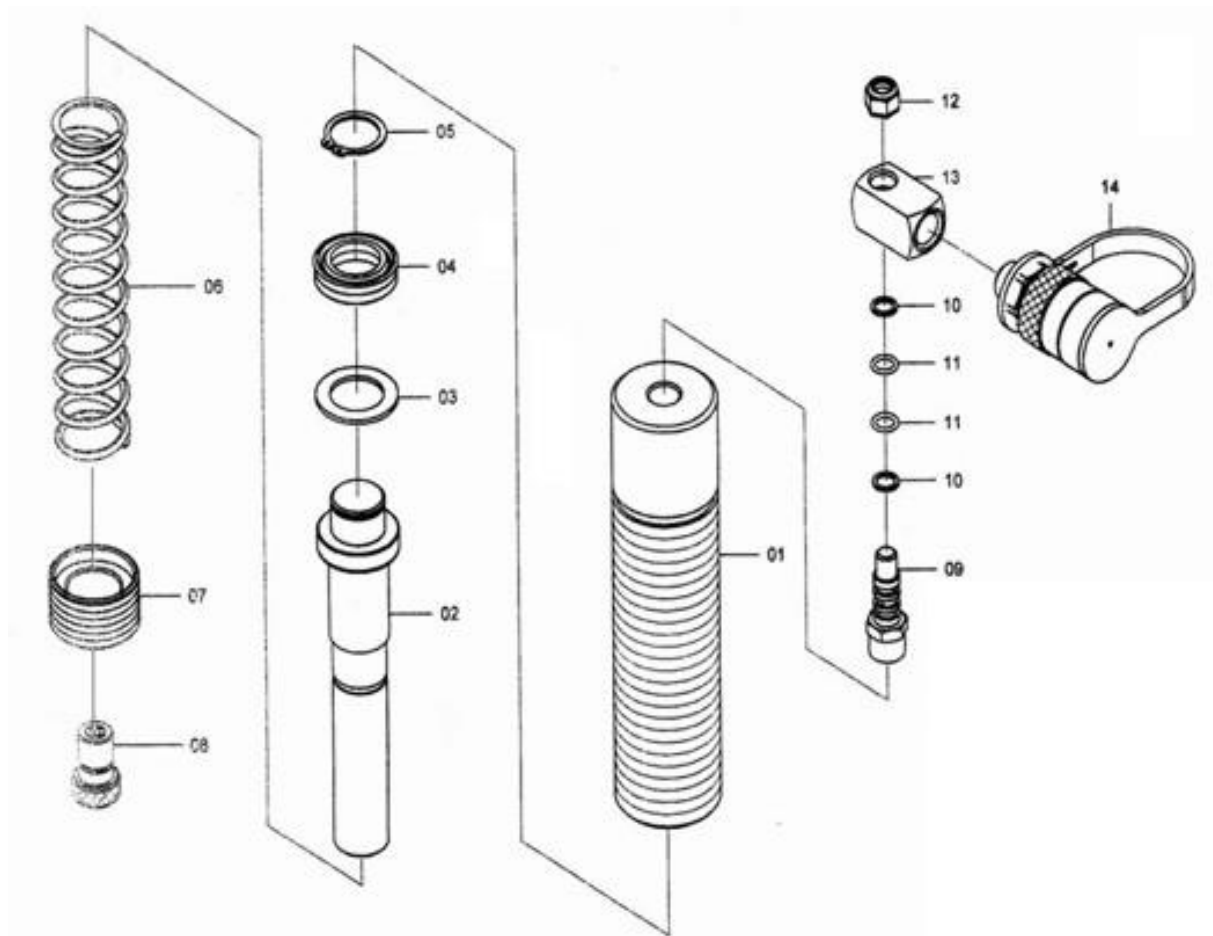
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1685	1	6	Jaw hex screw	ZAL1307	6
2	Puller jaw	ZAL1686	3	7	Anti-loosen nut	ZAL1310	6
3	Jaw hex screw	ZAL1687	3	8	2/3-way sliding socket	ZAL1689	1
4	Anti-loosen nut	ZAL1308	3	9	Fixed ring	ZAL1690	1
5	Puller jaw strap	ZAL1688	6		Safety blanket	ZAL1389	1

8.4 Model PR-08



Item	Description	Part No.	Qty
1	Puller body	ZAL1675	1
2	Jaw assembly	ZAL1676	1
3	Blow moulded case	ZAL1252	1
4	Extension bar	ZAL1128	3

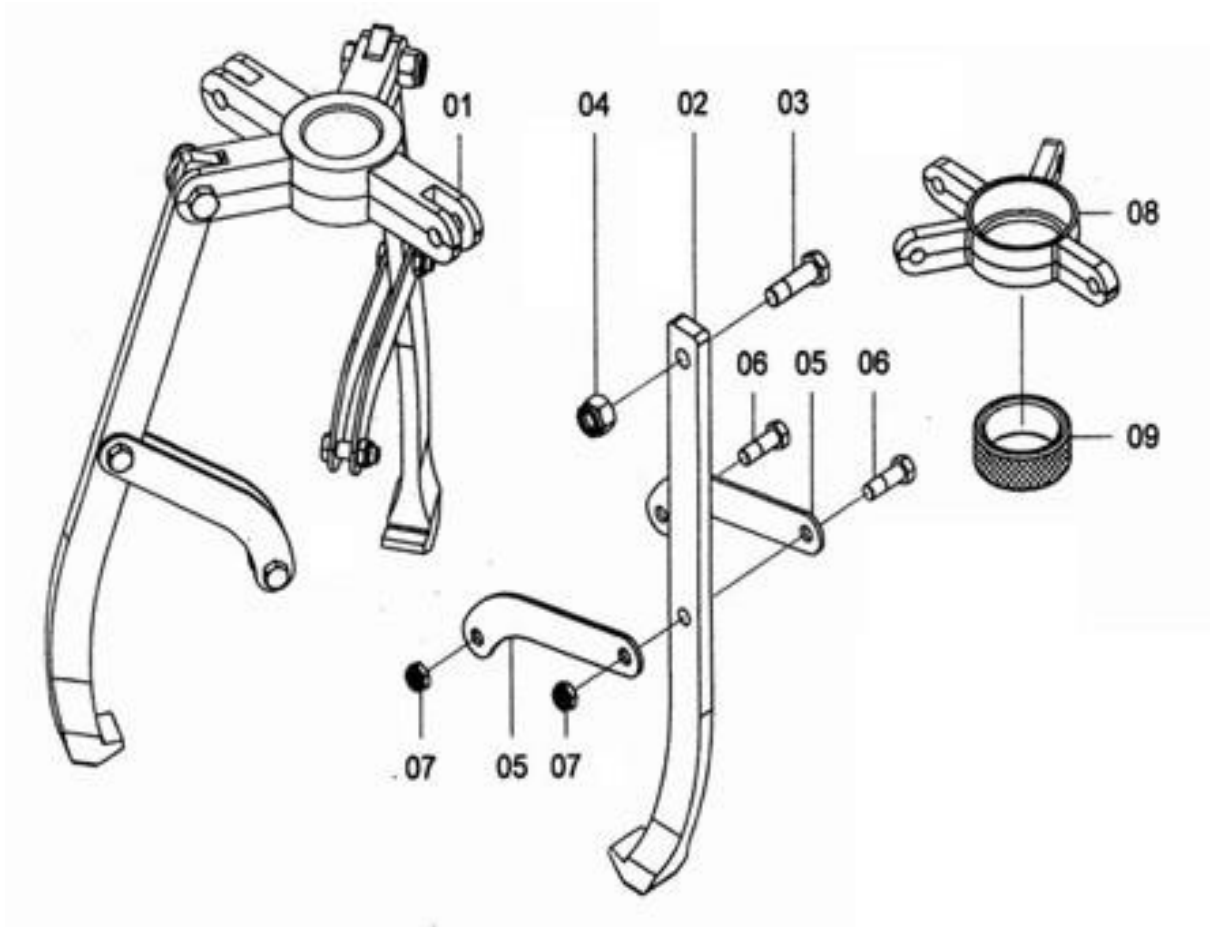
8.4.1 PR-08 Puller Body



Item	Description	Part No.	Qty
1	Puller body	ZAL1677	1
2	Puller piston rod	ZAL1678	1
3	Back-up ring*	ZAL1679	1
4	U-cap seal*	ZAL1680	1
5	Retaining ring	ZAL1681	1
6	Compression spring	ZAL1682	1
7	Rod wiper	ZAL1683	1

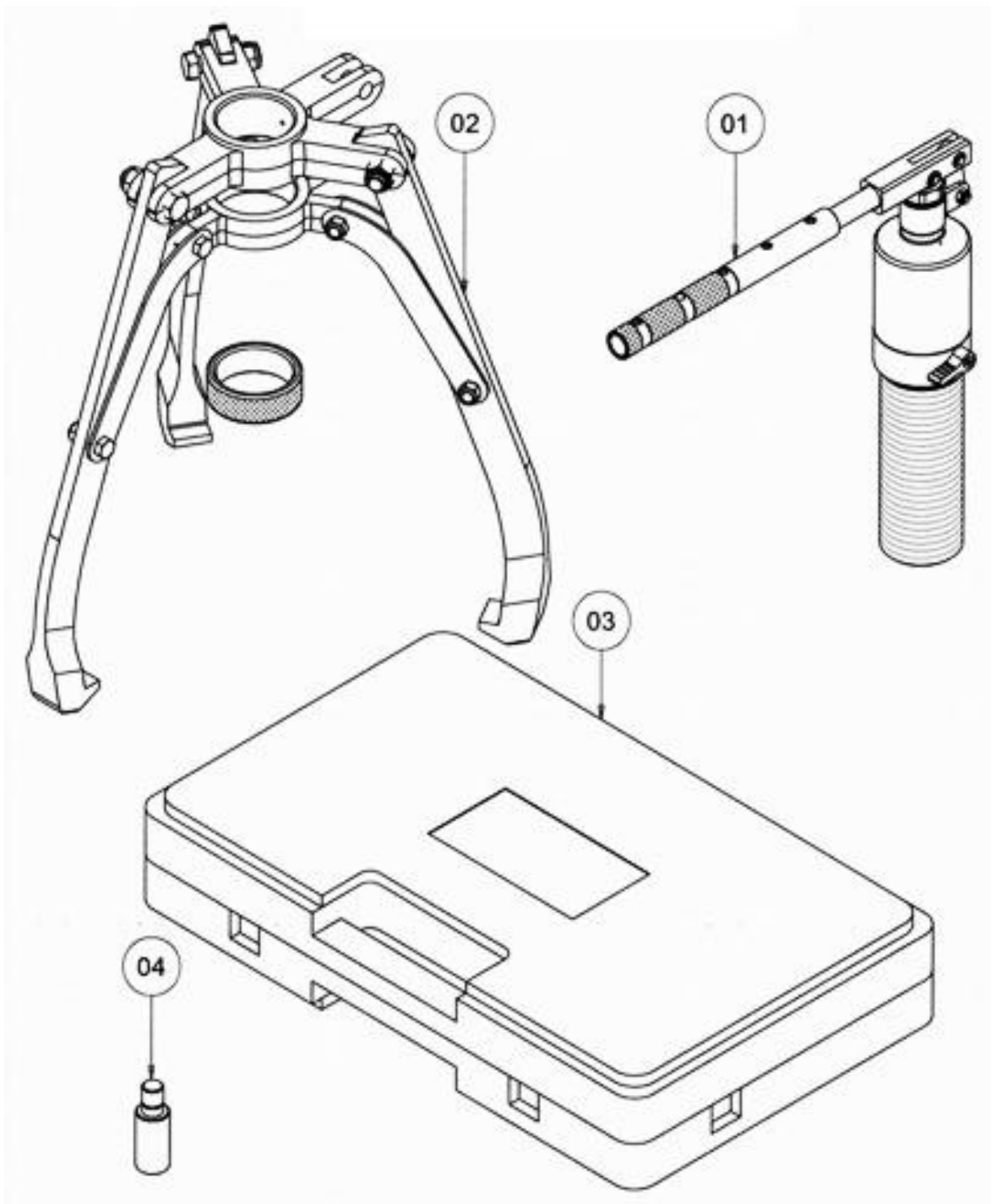
Item	Description	Part No.	Qty
8	Removable cone assembly	ZAL1014	1
9	Oil pressure valve assembly	ZAL1565	1
10	Back-up ring*	ZAL1218	2
11	O-ring*	ZAL1274	2
12	Anti-loosen nut	ZAL1567	1
13	Coupler body	ZAL1566	1
14	Coupler	ZAL1472	1
	Seal kit	ZAL1684	1

8.4.2 PR-08 Jaw Assembly



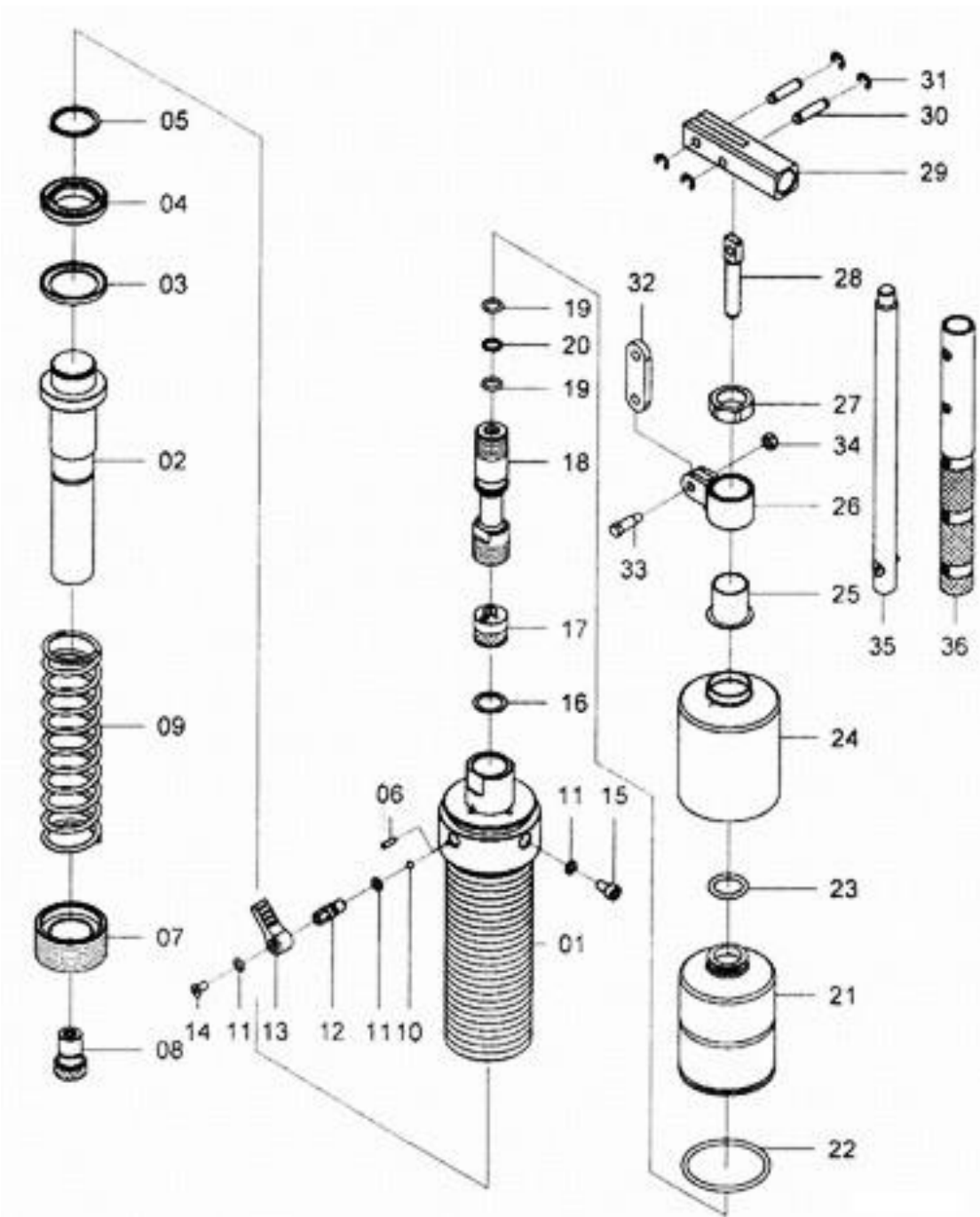
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1685	1	6	Jaw hex screw	ZAL1307	6
2	Puller jaw	ZAL1686	3	7	Anti-loosen nut	ZAL1310	6
3	Jaw hex screw	ZAL1687	3	8	2/3-way sliding socket	ZAL1689	1
4	Anti-loosen nut	ZAL1308	3	9	Fixed ring	ZAL1690	1
5	Puller jaw strap	ZAL1688	6		Safety blanket	ZAL1389	1

8.5 Model PS-12S



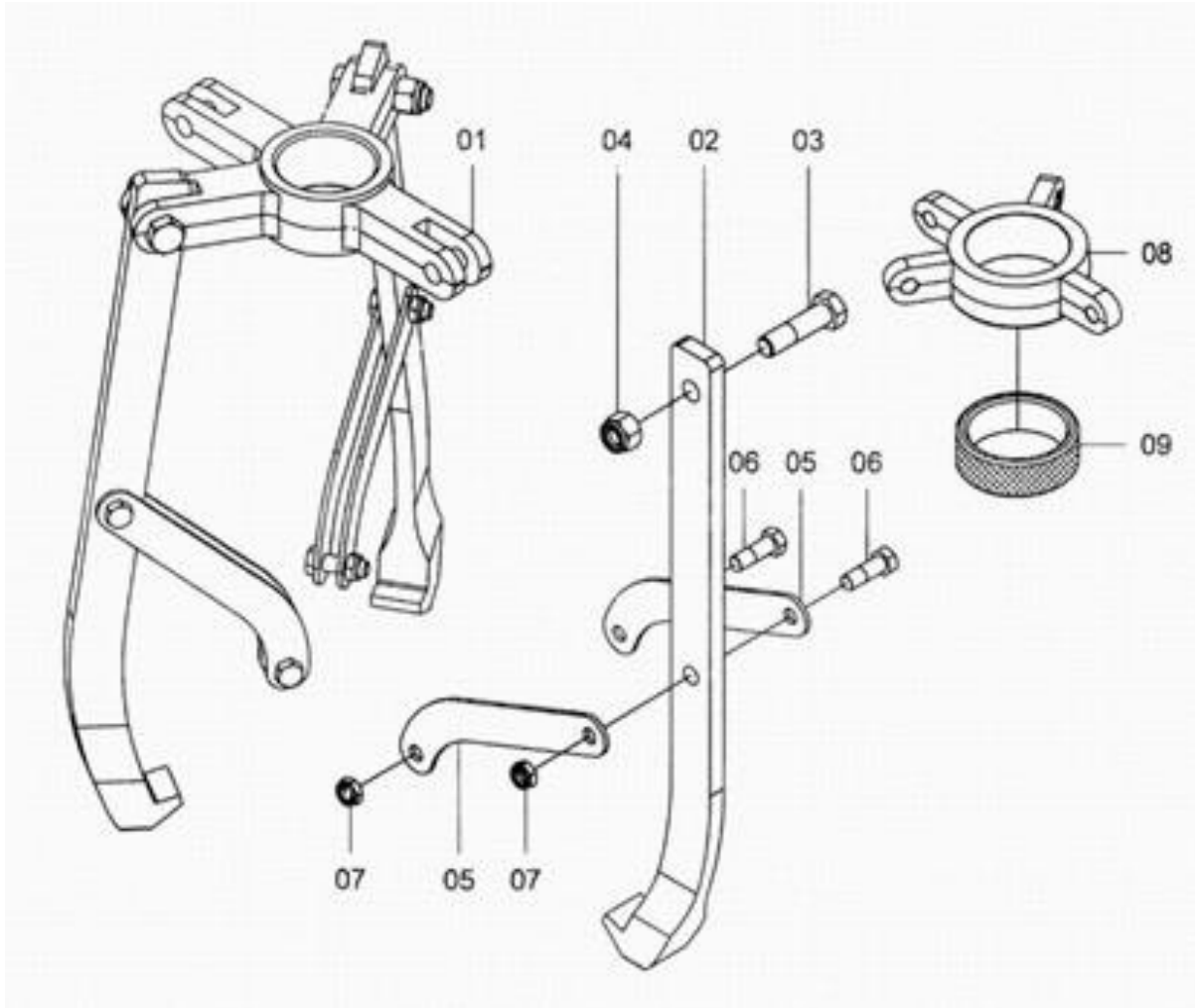
Item	Description	Part No.	Qty
1	Puller body	ZAL1702	1
2	Jaw assembly	ZAL1642	1
3	Blow moulded case	ZAL1252	1
4	Extension bar	ZAL1128	4

8.5.1 PS-12S Puller Body



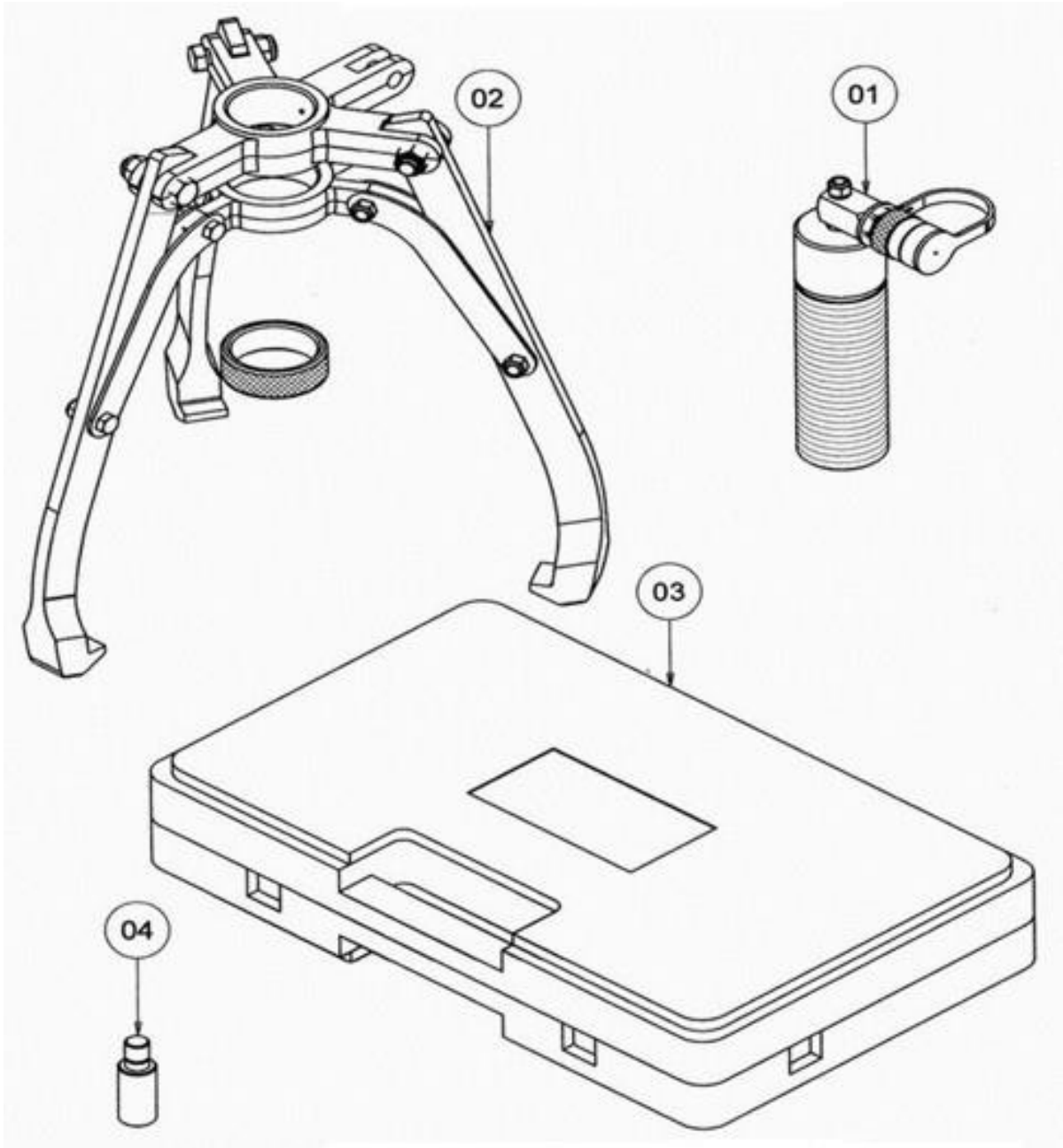
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	Puller body	ZAL1114	1	13	Relief valve knob	ZAL1383	1	25	Piston housing cap	ZAL1134	1
2	Puller piston rod	ZAL1018	1	14	Fixing screw	ZAL1295	1	26	Swivel clevis	ZAL1012	1
3	Back-up ring*	ZAL1213	1	15	Oil fill screw	ZAL1288	1	27	Retaining nut	ZAL1116	1
4	U-cup seal*	ZAL1212	1	16	Copper washer	ZAL1341	1	28	Pump piston rod	ZAL1115	1
5	Retaining ring	ZAL1328	1	17	Safety valve	ZAL1029	1	29	Handle clevis	ZAL1047	1
6	Pin	ZAL1371	1	18	Pump piston housing	ZAL1127	1	30	Clevis pin	ZAL1333	2
7	Removable cone assembly	ZAL1014	1	19	O-ring*	ZAL1282	2	31	Retaining ring	ZAL1332	4
8	Compress spring	ZAL1353	1	20	Back-up ring*	ZAL1247	1	32	Link connector	ZAL1046	1
9	Rod wiper	ZAL1113	1	21	Reservoir bladder*	ZAL1240	1	33	Clevis screw	ZAL1111	1
10	Steel ball	ZAL1369	1	22	O-ring*	ZAL1244	1	34	Anti-loosen nut	ZAL1301	1
11	O-ring*	ZAL1234	3	23	O-ring*	ZAL1241	1	35	Solid handle lever	ZAL1015	1
12	Relief valve screw	ZAL1302	1	24	Bladder housing	ZAL1087	1	36	Handle rod	ZAL1085	1
									Seal kit	ZAL1640	1

8.5.2 PS-12S Jaw Assembly



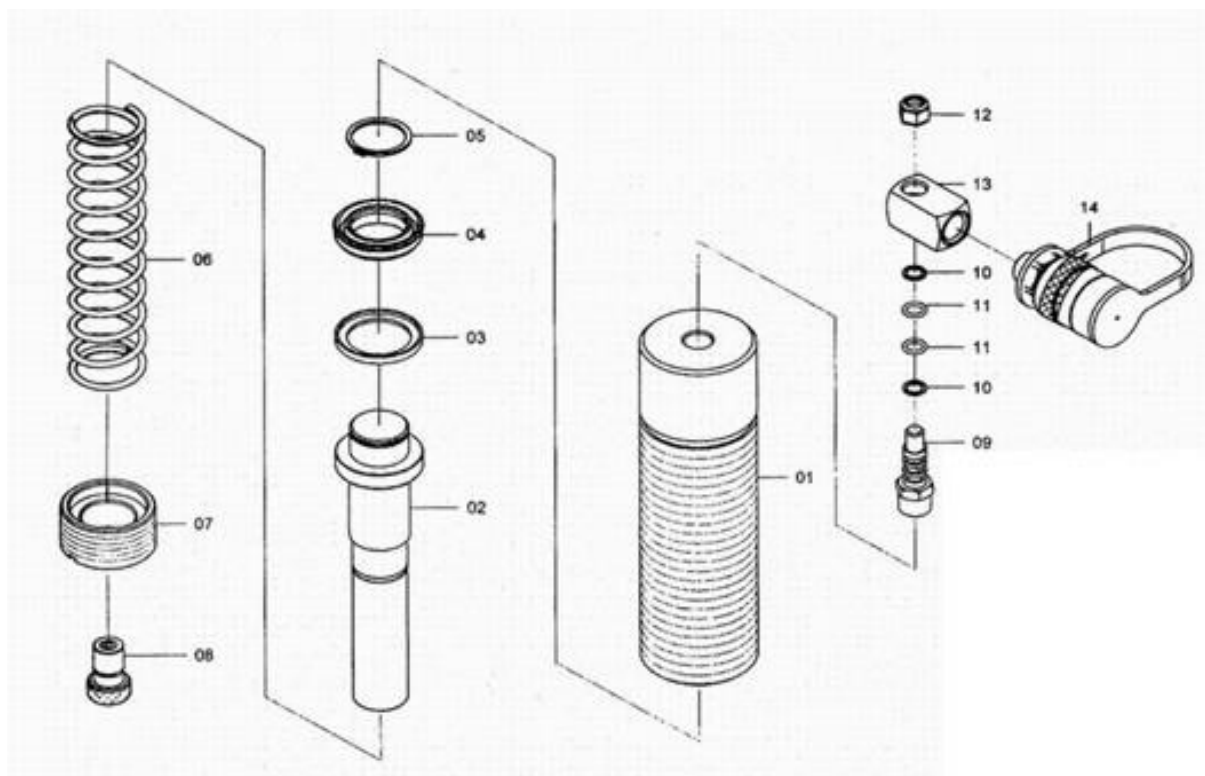
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1191	1	6	Jaw hex screw	ZAL1307	6
2	Puller jaw	ZAL1049	3	7	Anti-loosen nut	ZAL1310	6
3	Jaw hex screw	ZAL1309	3	8	2/3-way sliding socket	ZAL1453	1
4	Anti-loosen nut	ZAL1300	3	9	Fixed ring	ZAL1147	1
5	Puller jaw strap	ZAL1048	6		Safety blanket	ZAL1389	1

8.6 Model PR-12



Item	Description	Part No.	Qty
1	Puller body	ZAL1641	1
2	Jaw assembly	ZAL1642	1
3	Blow moulded case	ZAL1252	1
4	Extension bar	ZAL1128	4

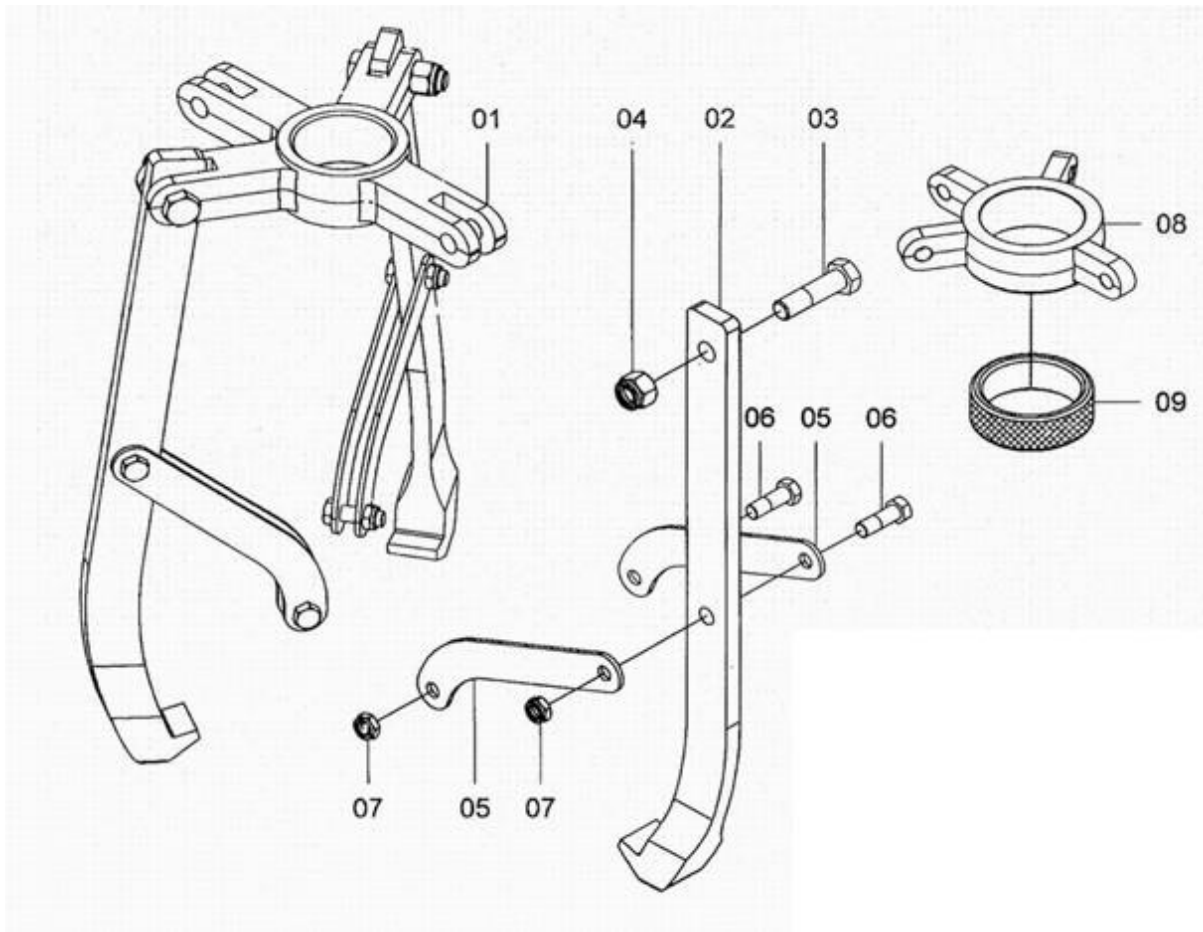
8.6.1 PR-12 Puller Body



Item	Description	Part No.	Qty
1	Puller body	ZAL1643	1
2	Puller piston rod	ZAL1018	1
3	Back-up ring*	ZAL1213	1
4	U-cap seal*	ZAL1212	1
5	Retaining ring	ZAL1328	1
6	Compression spring	ZAL1353	1
7	Rod wiper	ZAL1113	1

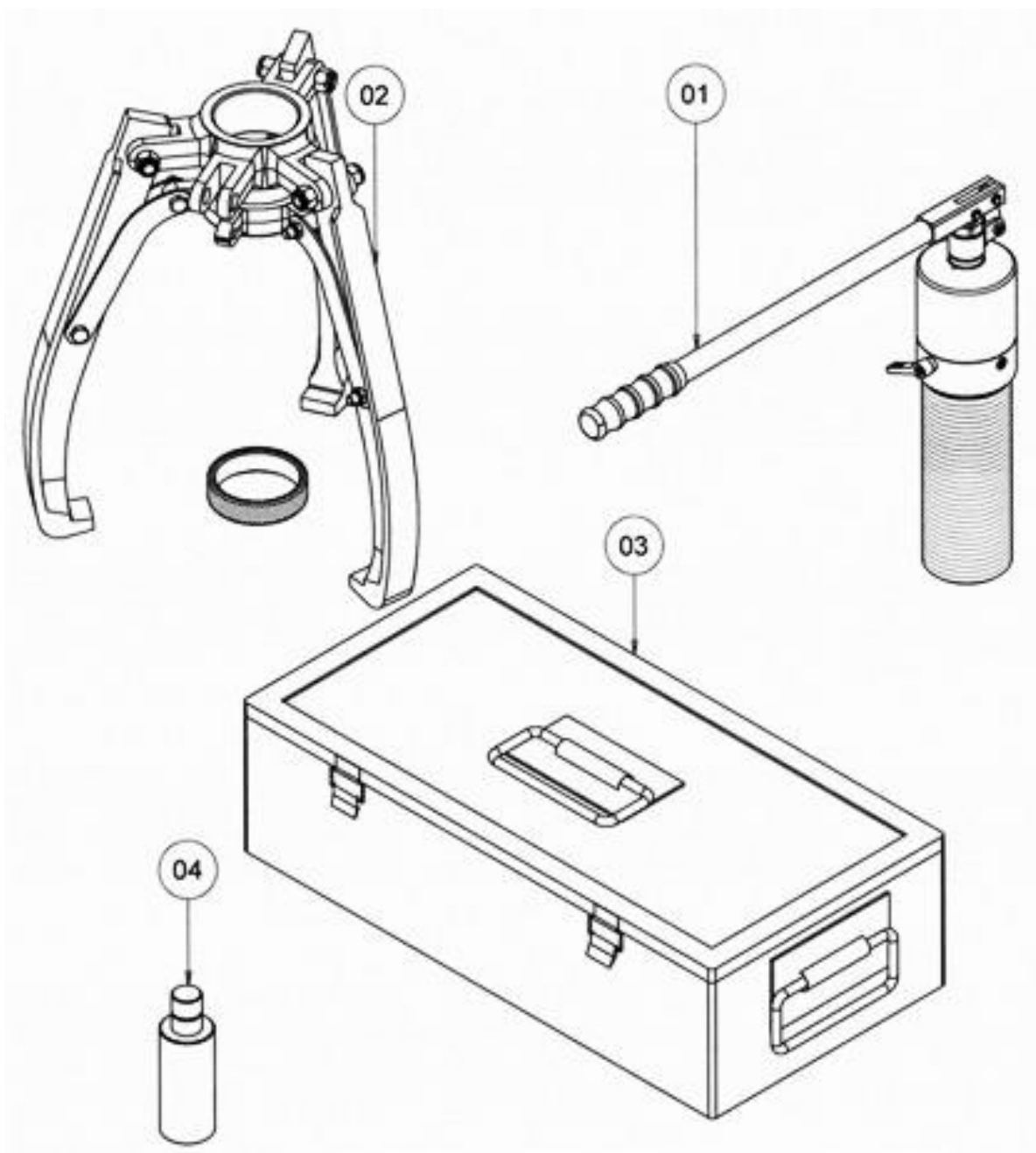
Item	Description	Part No.	Qty
8	Removable cone assembly	ZAL1014	1
9	Oil pressure valve assembly	ZAL1565	1
10	Back-up ring*	ZAL1218	2
11	O-ring*	ZAL1274	2
12	Anti-loosen nut	ZAL1567	1
13	Coupler body	ZAL1566	1
14	Coupler	ZAL1472	1
	Seal kit	ZAL1644	1

8.6.2 PR-12 Jaw Assembly



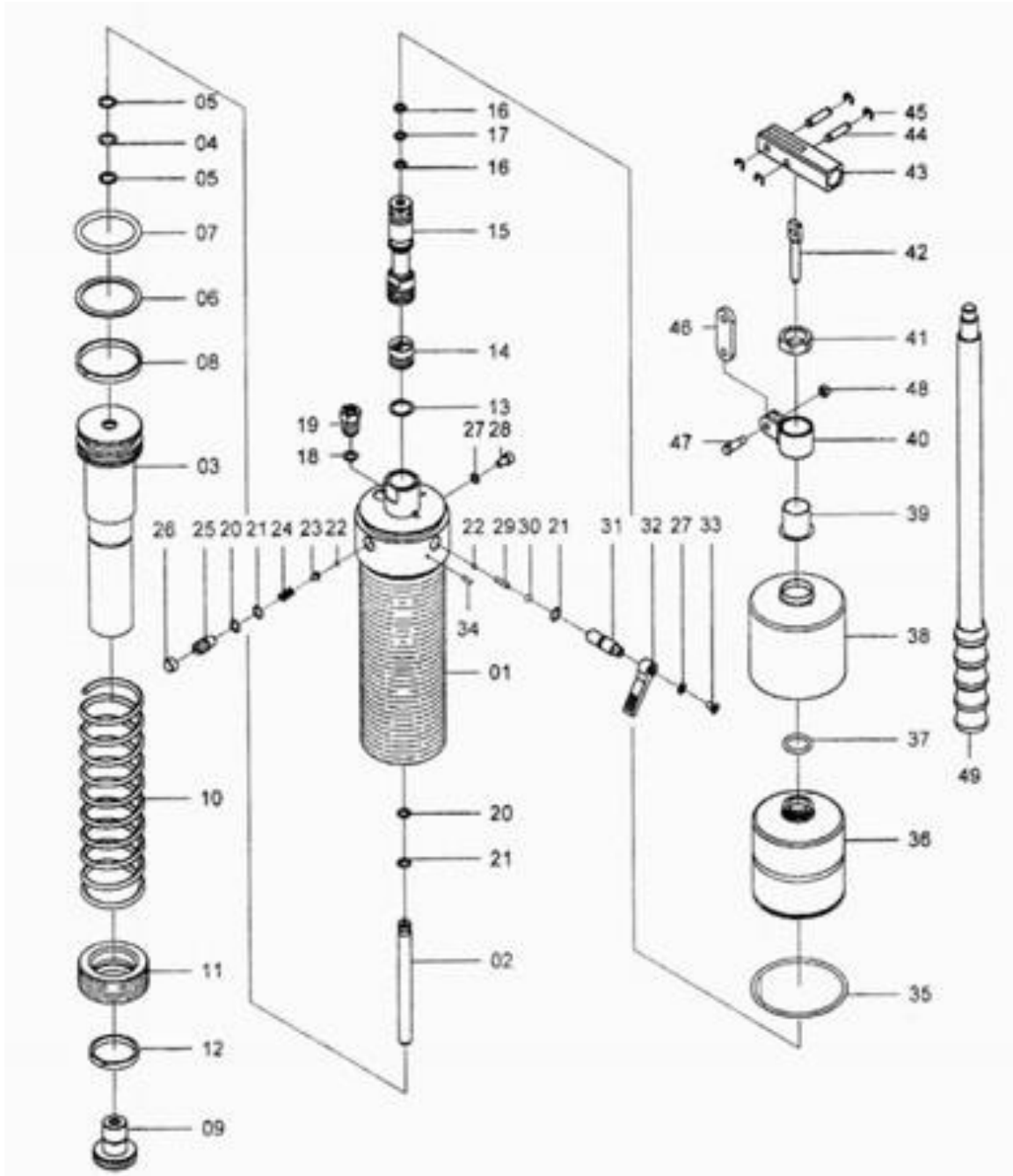
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1191	1	6	Jaw hex screw	ZAL1307	6
2	Puller jaw	ZAL1049	3	7	Anti-loosen nut	ZAL1310	6
3	Jaw hex screw	ZAL1309	3	8	2/3-way sliding socket	ZAL1453	1
4	Anti-loosen nut	ZAL1300	3	9	Fixed ring	ZAL1147	1
5	Puller jaw strap	ZAL1048	6		Safety blanket	ZAL1389	1

8.7 Model PS-20S



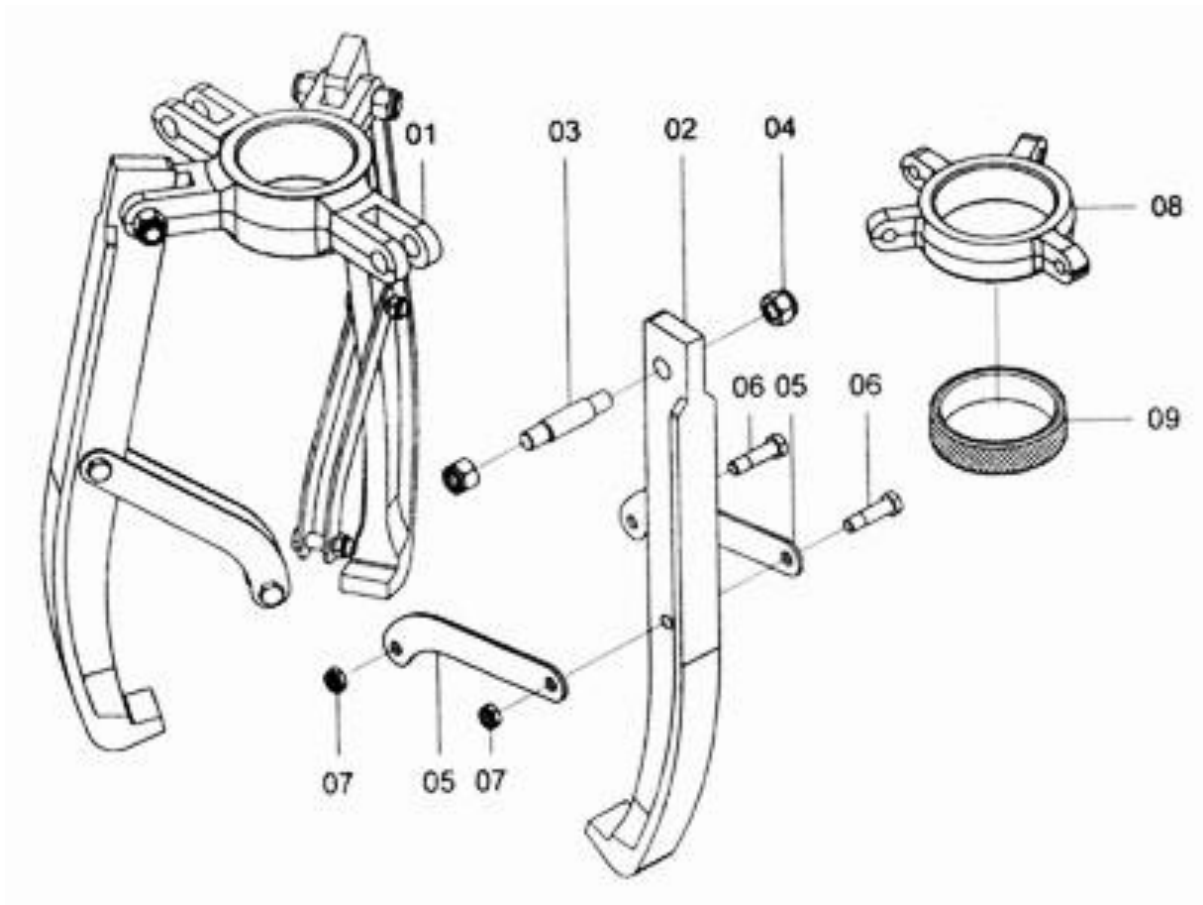
Item	Description	Part No.	Qty
1	Puller body	ZAL1703	1
2	Jaw assembly	ZAL1646	1
3	Metal box	ZAL1022	1
4	Extension bar	ZAL1137	1

8.7.1 PS-20S Puller Body



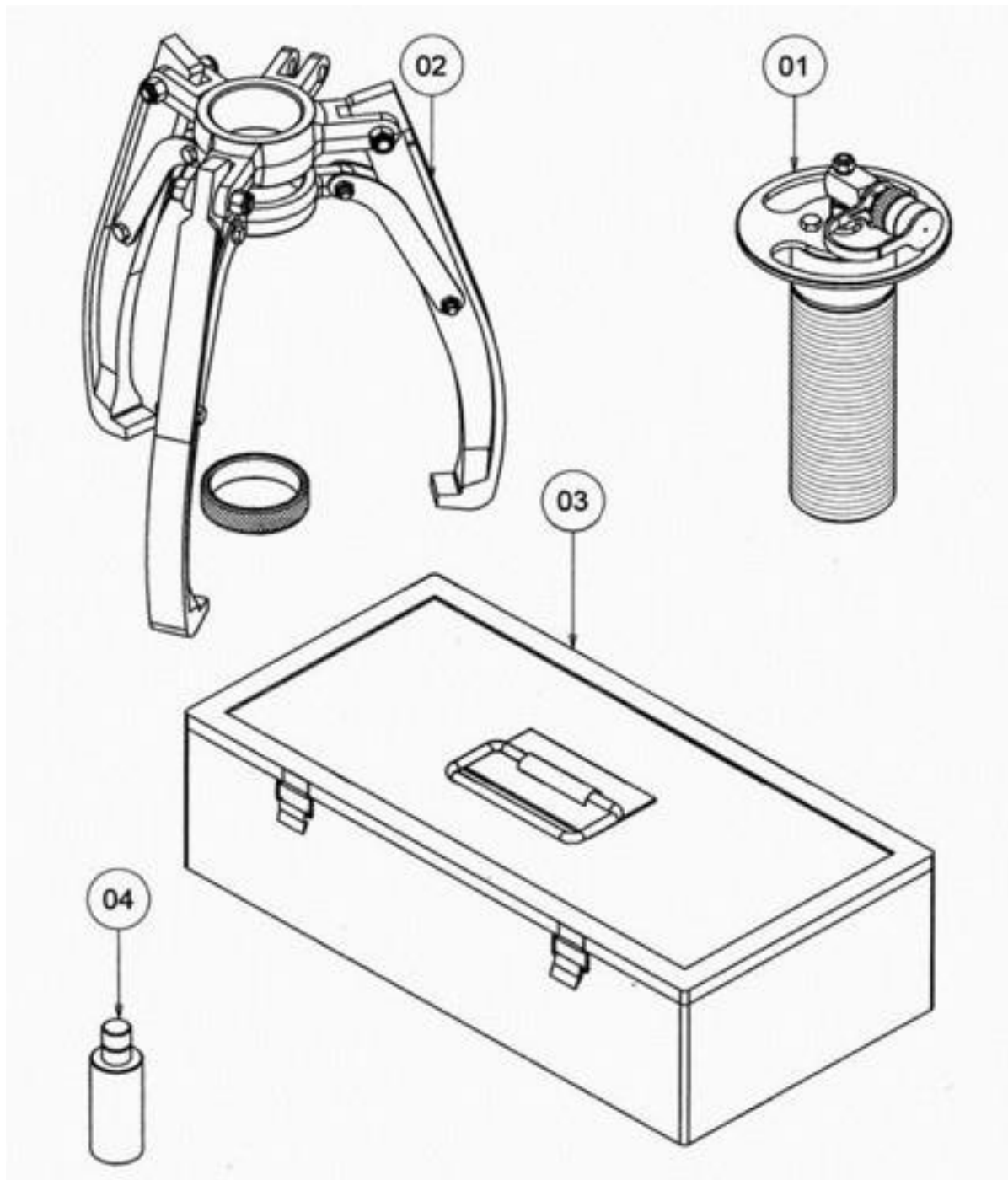
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	Puller body	ZAL1121	1	18	Washer	ZAL1349	1	35	O-ring*	ZAL1243	1
2	Main piston	ZAL1119	1	19	Inlet valve	ZAL1023	1	36	Reservoir bladder*	ZAL1242	1
3	Puller piston rod	ZAL1016	1	20	Back-up ring*	ZAL1218	2	37	O-ring*	ZAL1241	1
4	O-ring*	ZAL1272	1	21	O-ring*	ZAL1274	3	38	Bladder housing	ZAL1086	1
5	Back-up ring*	ZAL1209	2	22	Steel ball	ZAL1370	2	39	Piston housing cap	ZAL1134	1
6	Back-up ring*	ZAL1248	1	23	Spring end cap	ZAL1096	1	40	Swivel clevis	ZAL1012	1
7	O-ring*	ZAL1283	1	24	Spring	ZAL1350	1	41	Retaining nut	ZAL1116	1
8	Split ring	ZAL1267	1	25	Screw	ZAL1304	1	42	Pump piston rod	ZAL1115	1
9	Removable cone assembly	ZAL1017	1	26	Cap	ZAL1041	1	43	Handle clevis	ZAL1047	1
10	Compression spring	ZAL1354	1	27	O-ring*	ZAL1234	2	44	Clevis pin	ZAL1333	2
11	Rod wiper	ZAL1117	1	28	Oil fill screw	ZAL1288	1	45	Retaining ring	ZAL1332	4
12	Split ring	ZAL1253	1	29	Pin	ZAL1373	1	46	Link connector	ZAL1046	1
13	Copper washer	ZAL1341	1	30	Steel ball	ZAL1366	1	47	Clevis screw	ZAL1111	1
14	Safety valve	ZAL1029	1	31	Relief valve screw	ZAL1120	1	48	Anti-loosen nut	ZAL1301	1
15	Pump piston housing	ZAL1127	1	32	Relief valve knob	ZAL1384	1	49	Hand lever	ZAL1019	1
16	O-ring*	ZAL1273	2	33	Fixing screw	ZAL1295	1		Seal kit	ZAL1399	1
17	Back-up ring*	ZAL1227	1	34	Pin	ZAL1376	1				

8.7.2 PS-20S Jaw Assembly



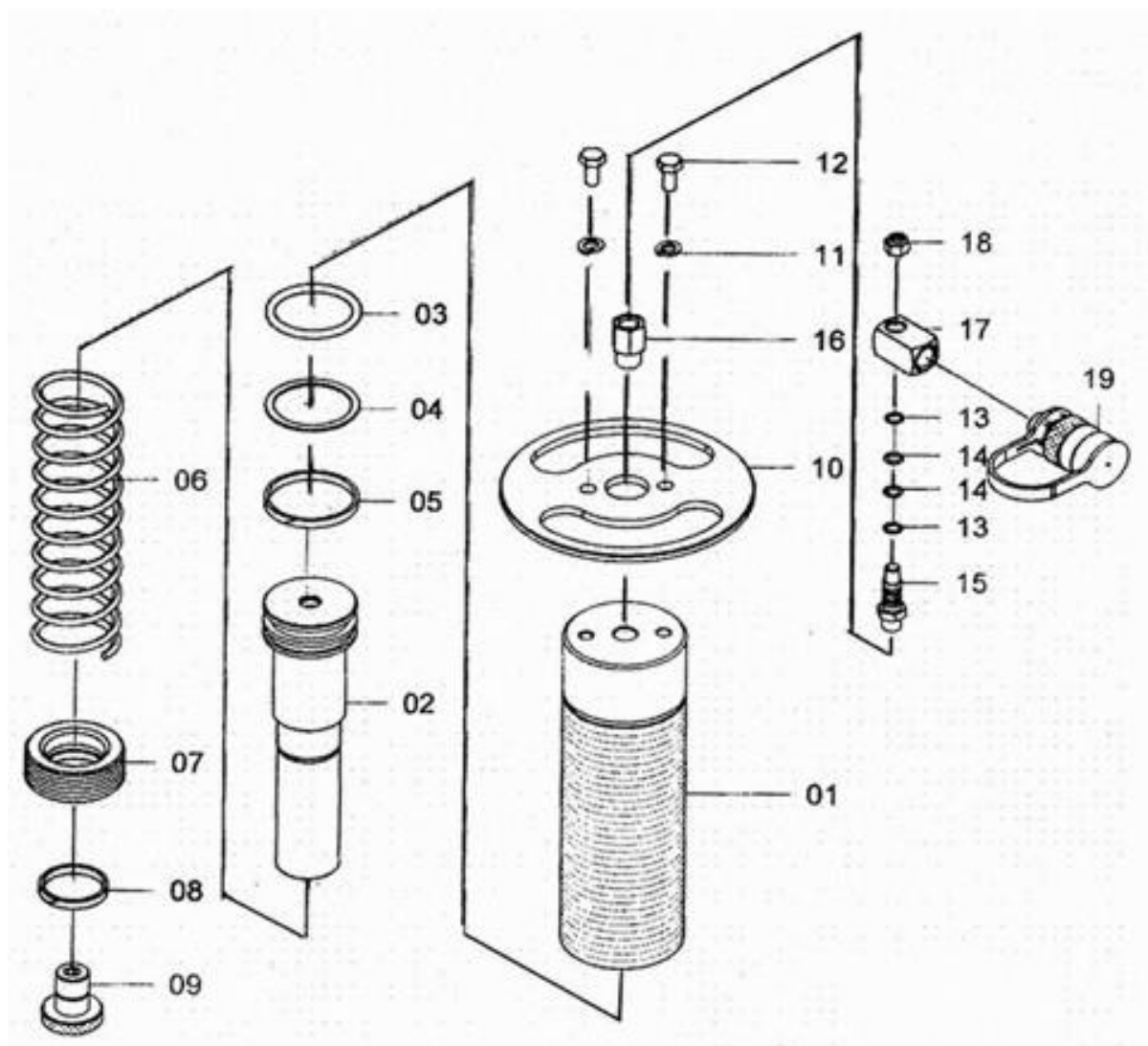
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1454	1	6	Jaw hex screw	ZAL1306	6
2	Puller jaw	ZAL1050	3	7	Anti-loosen nut	ZAL1310	6
3	Jaw screw	ZAL1118	3	8	2/3-way sliding socket	ZAL1192	1
4	Anti-loosen nut	ZAL1300	6	9	Fixed ring	ZAL1148	1
5	Puller jaw strap	ZAL1048	6		Safety blanket	ZAL1390	1

8.8 Model PR-20



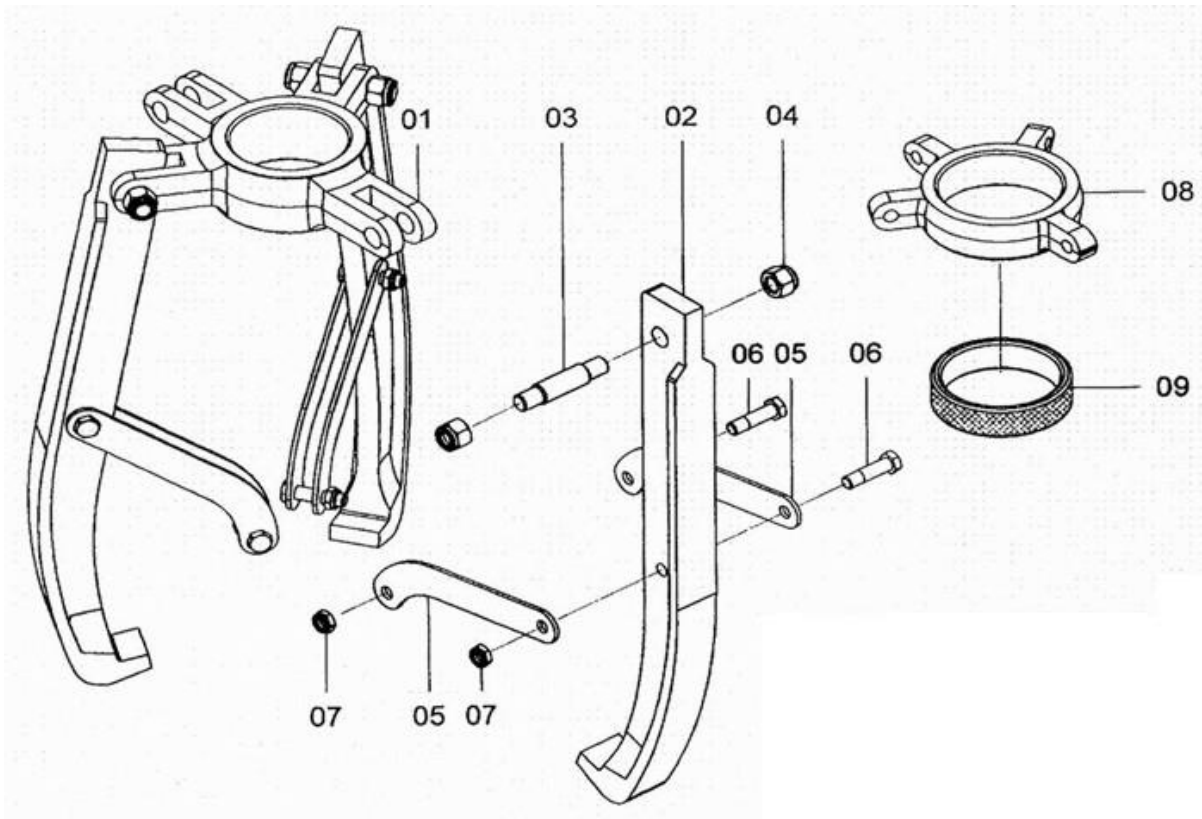
Item	Description	Part No.	Qty
1	Puller body	ZAL1645	1
2	Jaw assembly	ZAL1646	1
3	Metal box	ZAL1022	1
4	Extension bar	ZAL1137	1

8.8.1 PR-20 Puller Body



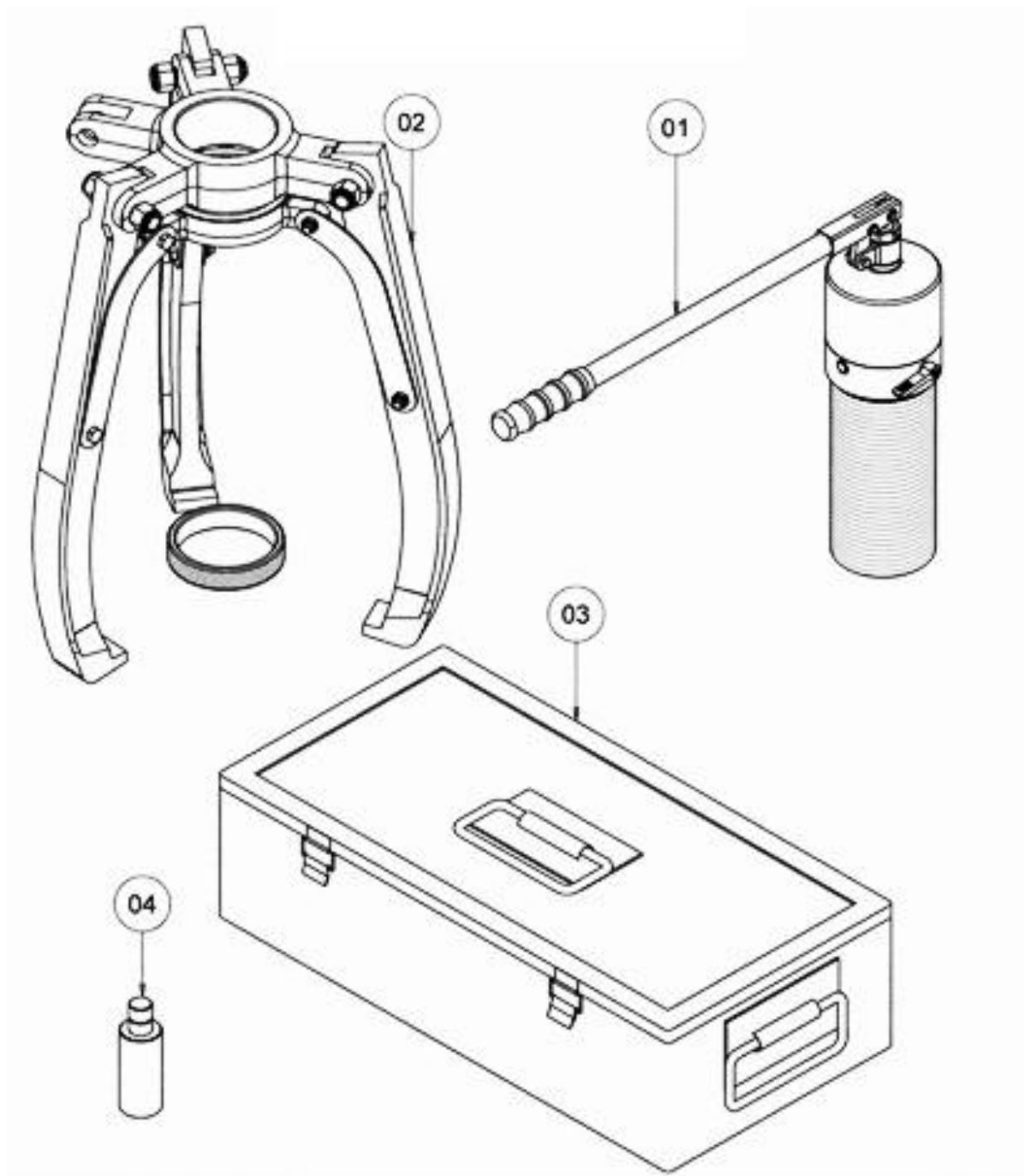
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	Puller body	ZAL1647	1	11	Spring washer	ZAL1483	2
2	Puller piston rod	ZAL1016	1	12	Screw	ZAL1649	2
3	Back-up ring*	ZAL1248	1	13	Back-up ring*	ZAL1218	2
4	O-ring*	ZAL1283	1	14	O-ring*	ZAL1274	2
5	Split ring	ZAL1267	1	15	Oil pressure valve assembly	ZAL1650	1
6	Compression spring	ZAL1354	1	16	Coupler	ZAL1651	1
7	Rod wiper	ZAL1117	1	17	Coupler body	ZAL1566	1
8	Split ring	ZAL1253	1	18	Anti-loosen nut	ZAL1567	1
9	Removable cone assembly	ZAL1017	1	19	Coupler	ZAL1472	1
10	Lift plate	ZAL1648	1		Seal kit	ZAL1652	1

8.8.2 PR-20 Jaw Assembly



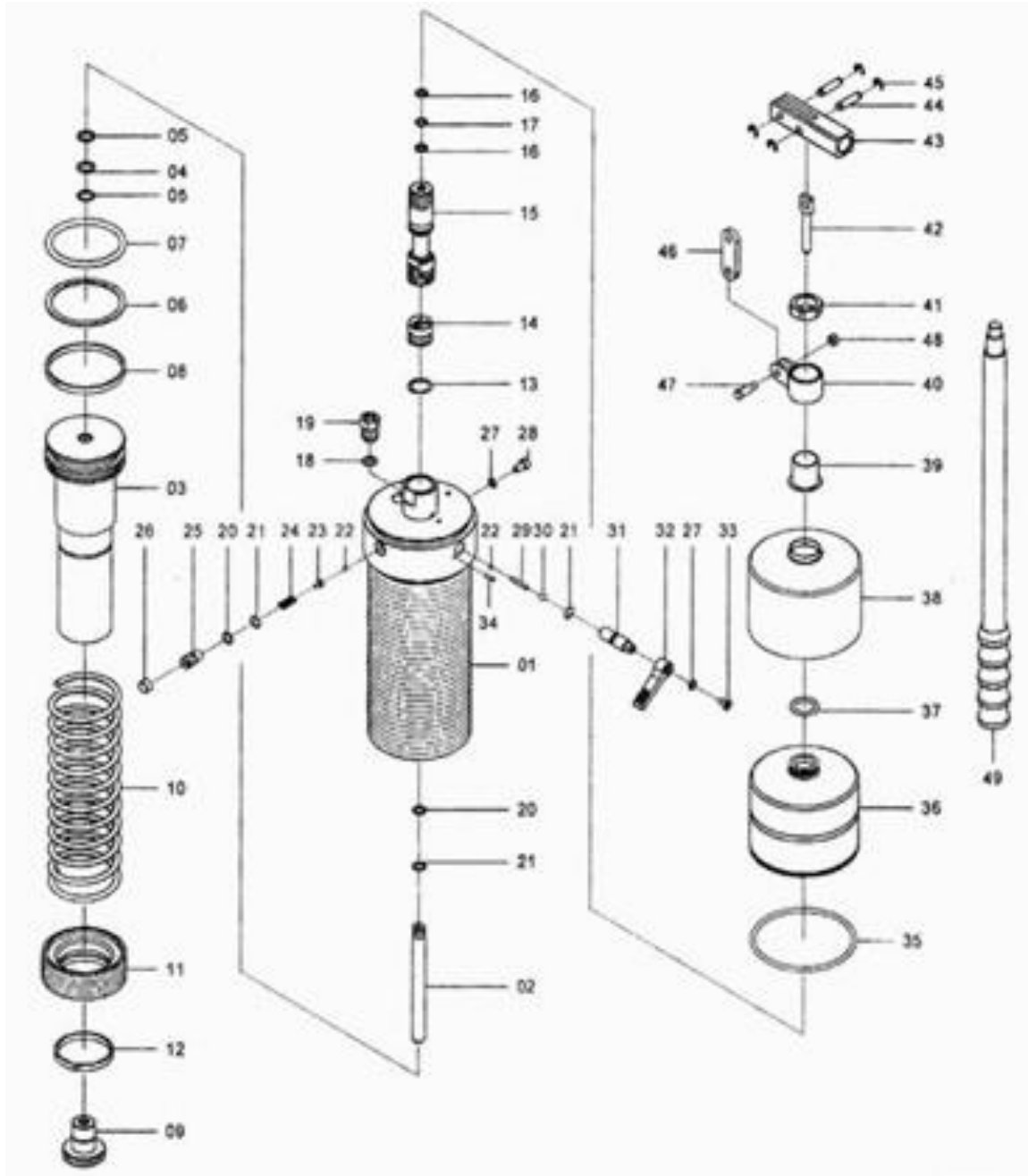
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1454	1	6	Jaw hex screw	ZAL1306	6
2	Puller jaw	ZAL1050	3	7	Anti-loosen nut	ZAL1310	6
3	Jaw screw	ZAL1118	3	8	2/3-way sliding socket	ZAL1192	1
4	Anti-loosen nut	ZAL1300	6	9	Fixed ring	ZAL1148	1
5	Puller jaw strap	ZAL1048	6		Safety blanket	ZAL1390	1

8.9 Model PS-30S



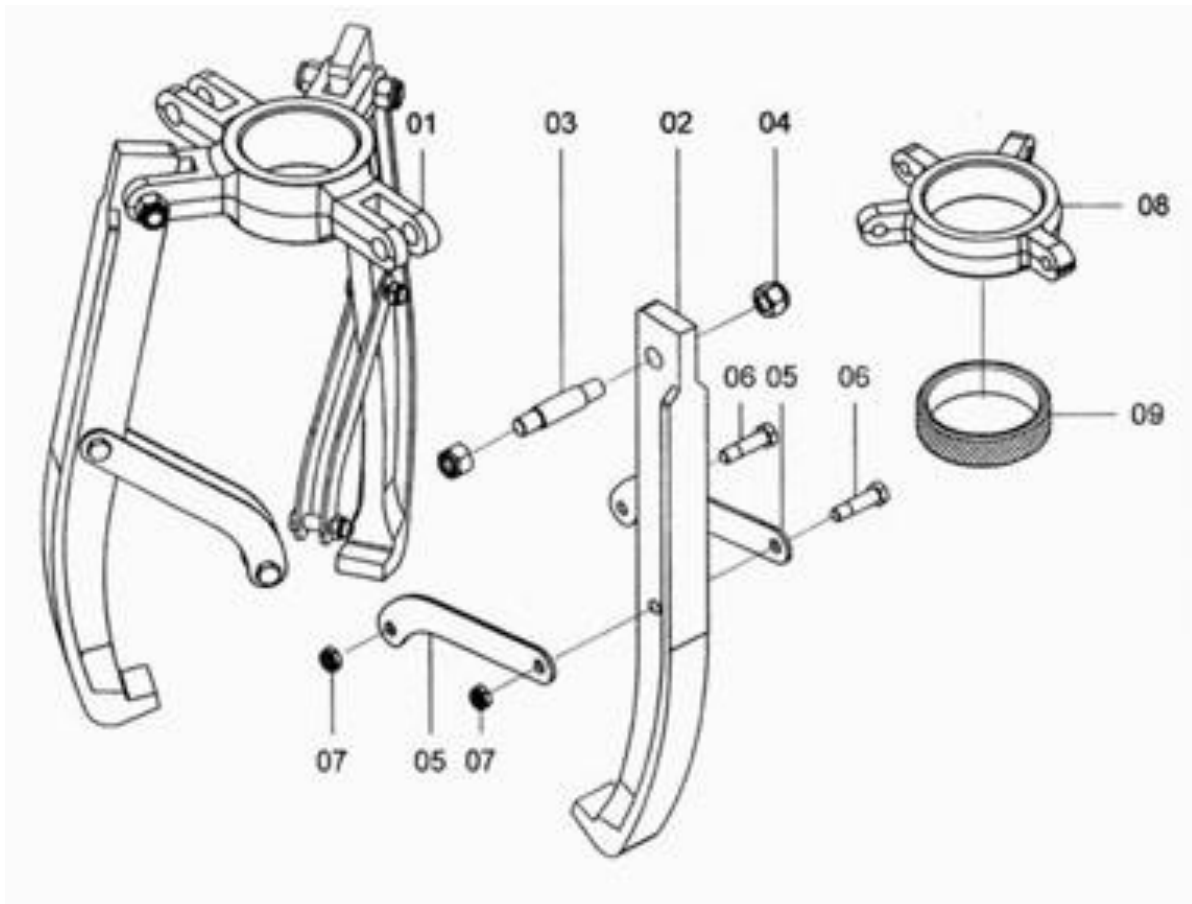
Item	Description	Part No.	Qty
1	Puller body	ZAL1704	1
2	Jaw assembly	ZAL1654	1
3	Metal box	ZAL1024	1
4	Extension bar	ZAL1137	2

8.9.1 PS-30S Puller Body



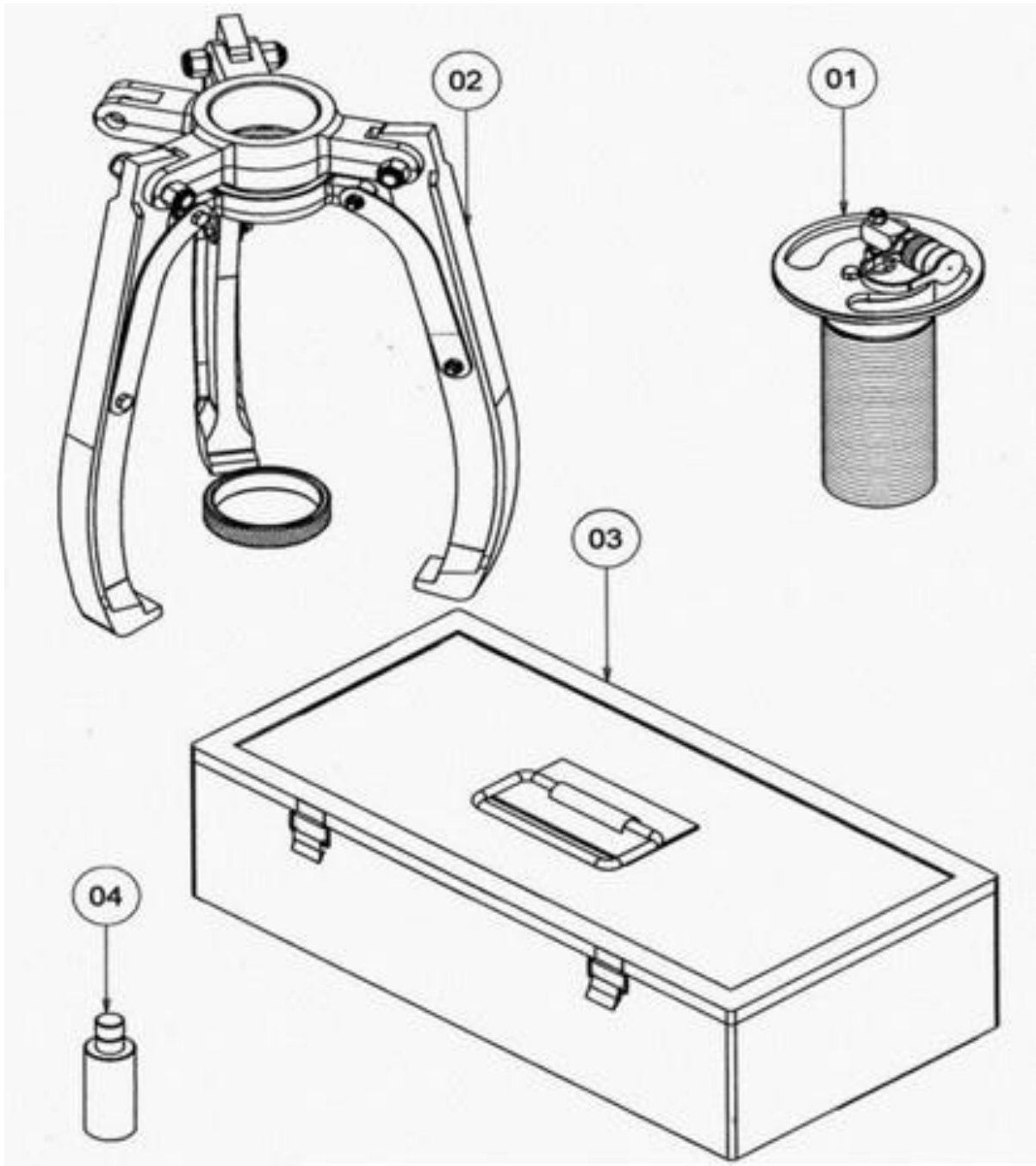
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	Puller body	ZAL1122	1	18	Washer	ZAL1349	1	35	Reservoir bladder*	ZAL1245	1
2	Main piston	ZAL1119	1	19	Inlet valve	ZAL1023	1	36	O-ring*	ZAL1246	1
3	Puller piston rod	ZAL1021	1	20	Back-up ring*	ZAL1218	2	37	O-ring*	ZAL1241	1
4	O-ring*	ZAL1272	1	21	O-ring*	ZAL1274	3	38	Bladder housing	ZAL1088	1
5	Back-up ring*	ZAL1209	1	22	Steel ball	ZAL1370	2	39	Piston housing cap	ZAL1134	1
6	Back-up ring*	ZAL1232	1	23	Spring end cap	ZAL1096	1	40	Swivel clevis	ZAL1012	1
7	O-ring*	ZAL1280	1	24	Spring	ZAL1342	1	41	Retaining nut	ZAL1116	1
8	Split ring	ZAL1268	1	25	Screw	ZAL1304	1	42	Pump piston rod	ZAL1115	1
9	Removable cone assembly	ZAL1017	1	26	Cap	ZAL1041	1	43	Handle clevis	ZAL1047	1
10	Compression spring	ZAL1355	1	27	O-ring*	ZAL1234	1	44	Clevis pin	ZAL1333	2
11	Rod wiper	ZAL1123	1	28	Oil fill screw	ZAL1288	1	45	Retaining ring	ZAL1332	4
12	Split ring	ZAL1266	1	29	Pin	ZAL1375	1	46	Link connector	ZAL1046	1
13	Copper washer	ZAL1341	1	30	Steel ball	ZAL1366	1	47	Clevis screw	ZAL1111	1
14	Safety valve	ZAL1029	1	31	Relief valve screw	ZAL1120	1	48	Anti-loosen nut	ZAL1301	1
15	Pump piston housing	ZAL1127	1	32	Relief valve knob	ZAL1384	1	49	Hand lever	ZAL1019	1
16	O-ring*	ZAL1282	2	33	Fixing screw	ZAL1295	1		Seal kit	ZAL1400	1
17	Back-up ring*	ZAL1247	1	34	Pin	ZAL1376	1				

8.9.2 PS-30S Jaw Assembly



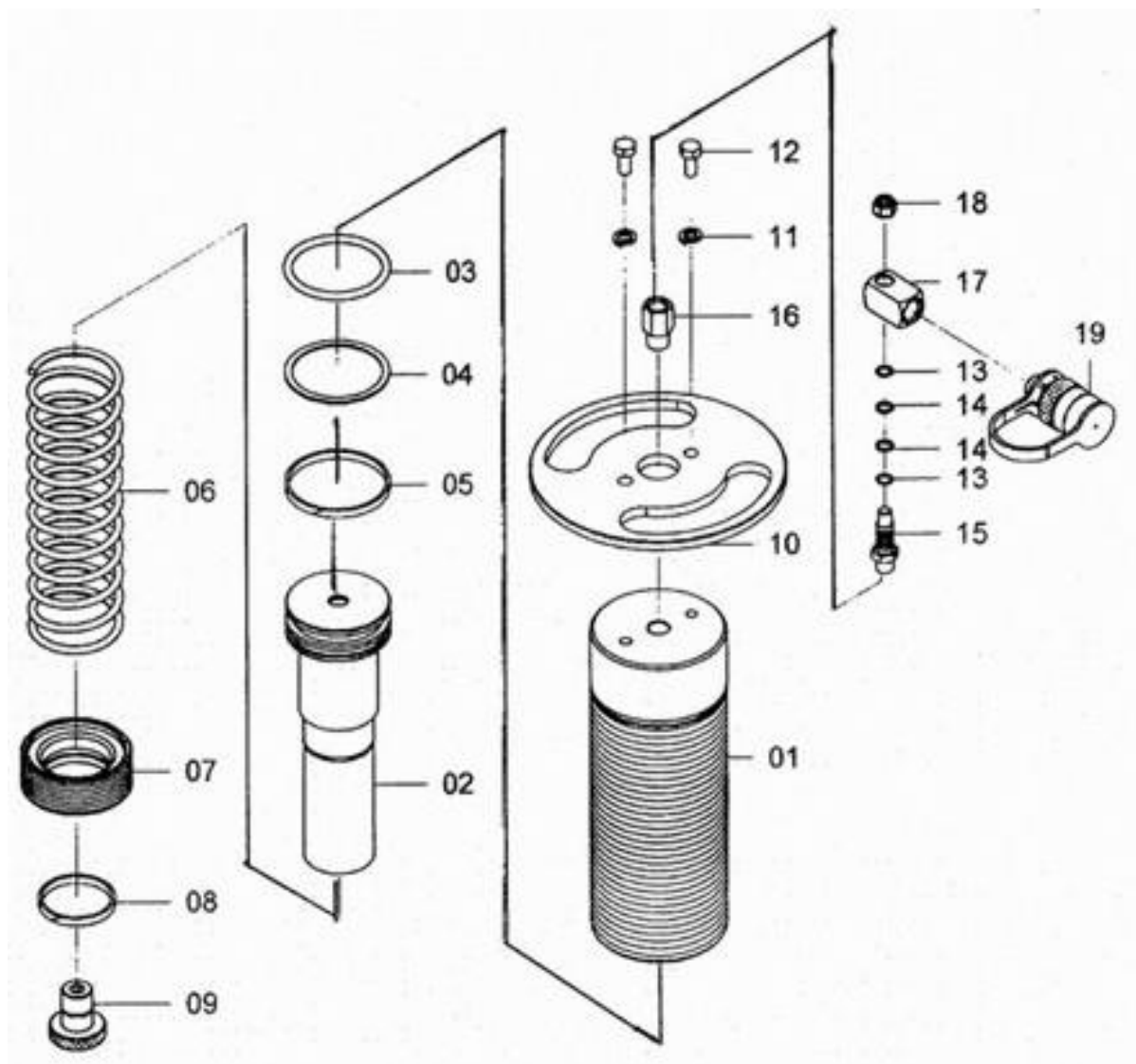
Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1193	1	6	Puller screw	ZAL1306	6
2	Puller jaw	ZAL1051	3	7	Anti-loosen nut	ZAL1310	6
3	Jaw screw	ZAL1126	3	8	2/3-way sliding socket	ZAL1194	1
4	Anti-loosen nut	ZAL1298	6	9	Fixed ring	ZAL1149	1
5	Puller jaw strap	ZAL1052	6		Safety blanket	ZAL1390	1

8.10 Model PR-30



Item	Description	Part No.	Qty
1	Puller body	ZAL1653	1
2	Jaw assembly	ZAL1654	1
3	Metal box	ZAL1024	1
4	Extension bar	ZAL1137	2

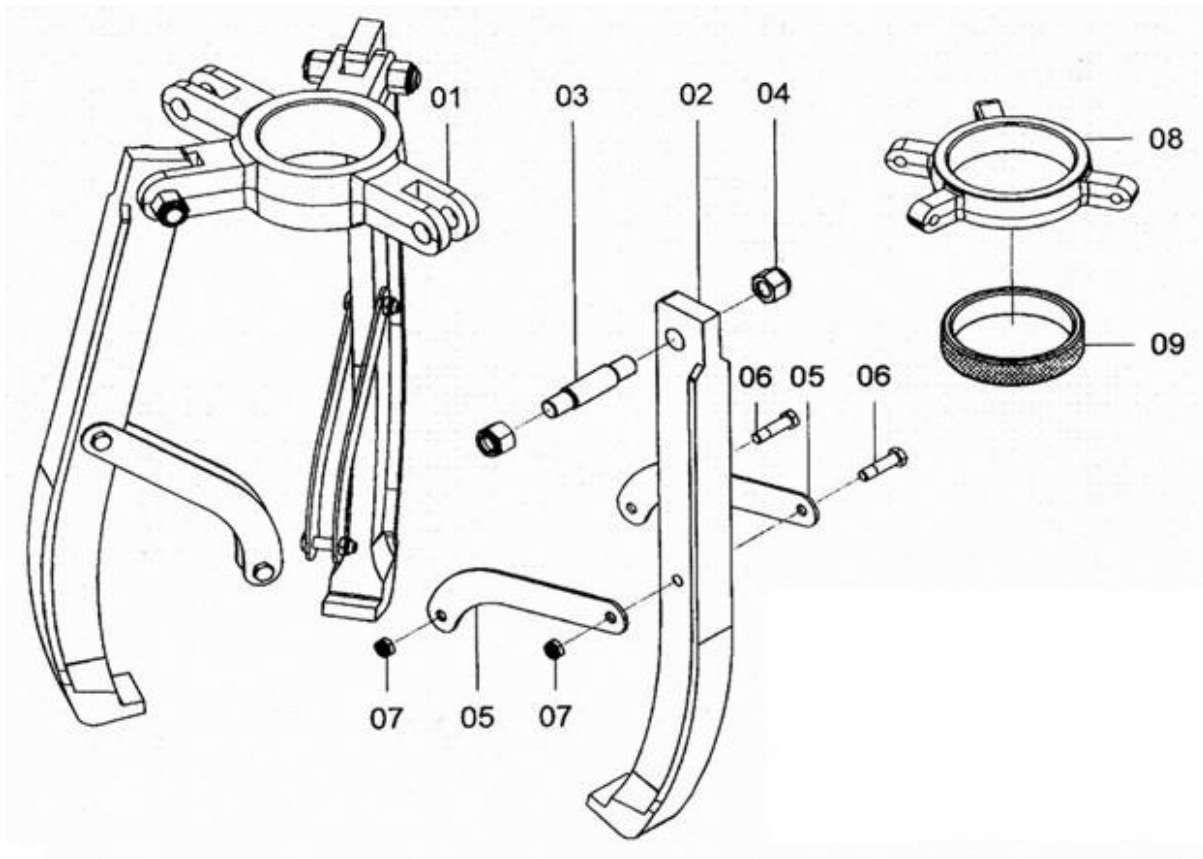
8.10.1 PR-30 Puller Body



Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	Puller body	ZAL1655	1	11	Spring washer	ZAL1483	2
2	Puller piston rod	ZAL1021	1	12	Screw	ZAL1649	2
3	O-ring*	ZAL1280	1	13	Back-up ring*	ZAL1218	2
4	Back-up ring*	ZAL1232	1	14	O-ring*	ZAL1274	2
5	Split ring	ZAL1268	1	15	Oil pressure valve assembly	ZAL1650	1
6	Compression spring	ZAL1355	1	16	Coupler	ZAL1651	1
7	Rod wiper	ZAL1123	1	17	Coupler body	ZAL1566	1
8	Split ring	ZAL1266	1	18	Anti-loosen nut	ZAL1567	1
9	Removable cone assembly	ZAL1017	1	19	Coupler	ZAL1472	1
10	Lift plate	ZAL1656	1		Seal kit	ZAL1657	1

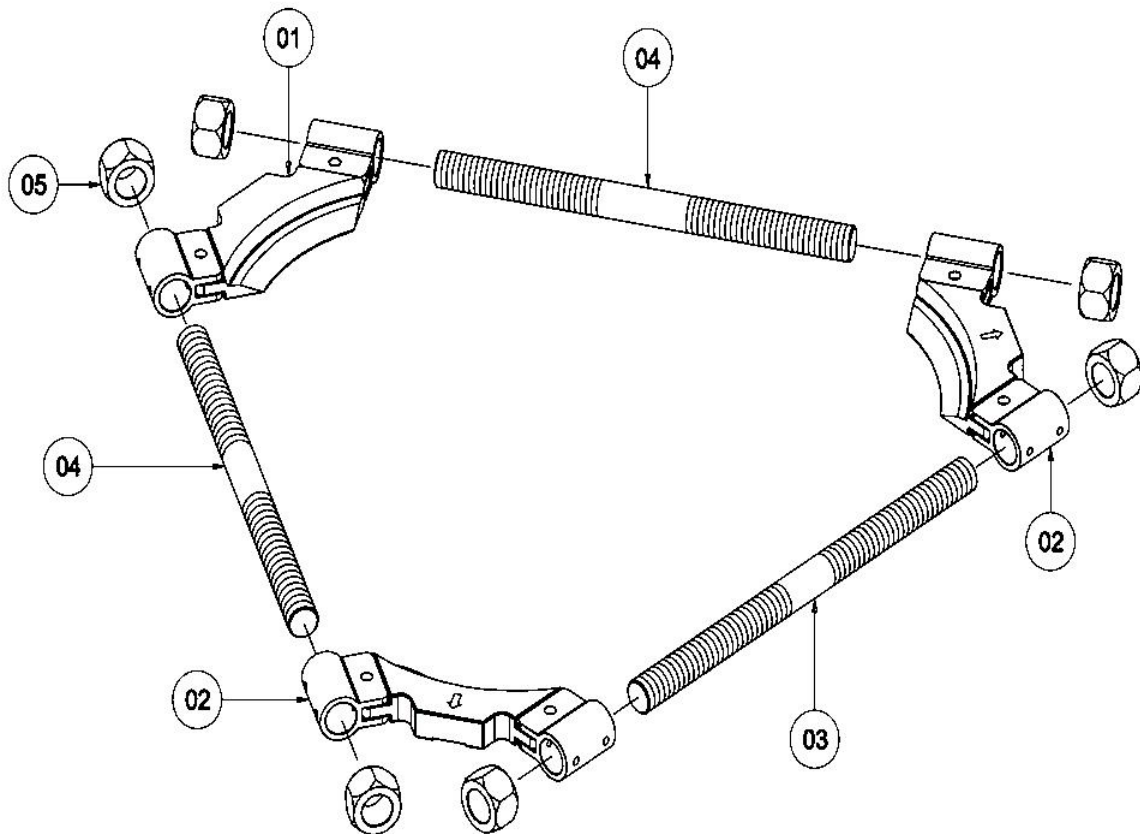
Items marked with a * are contained within a standard seal kit.
Serial, model and part numbers need to be quoted when ordering parts.

8.10.2 PR-30 Jaw Assembly



Item	Description	Part No.	Qty	Item	Description	Part No.	Qty
1	2/3-way puller crosshead	ZAL1193	1	6	Puller screw	ZAL1306	6
2	Puller jaw	ZAL1051	3	7	Anti-loosen nut	ZAL1310	6
3	Jaw screw	ZAL1126	3	8	2/3-way sliding socket	ZAL1194	1
4	Anti-loosen nut	ZAL1298	3	9	Fixed ring	ZAL1149	1
5	Puller jaw strap	ZAL1052	6		Safety blanket	ZAL1390	1

8.11 ET3 Series – Tri-Sectional Plates



ET3-210 Parts List

Item	Description	Part No.	Qty
1	1st plate	ZAL1495	1
2	2nd plate	ZAL1496	2
3	Long bolt	ZAL1497	1
4	Bolt	ZAL1498	2
5	Nut	ZAL1499	6

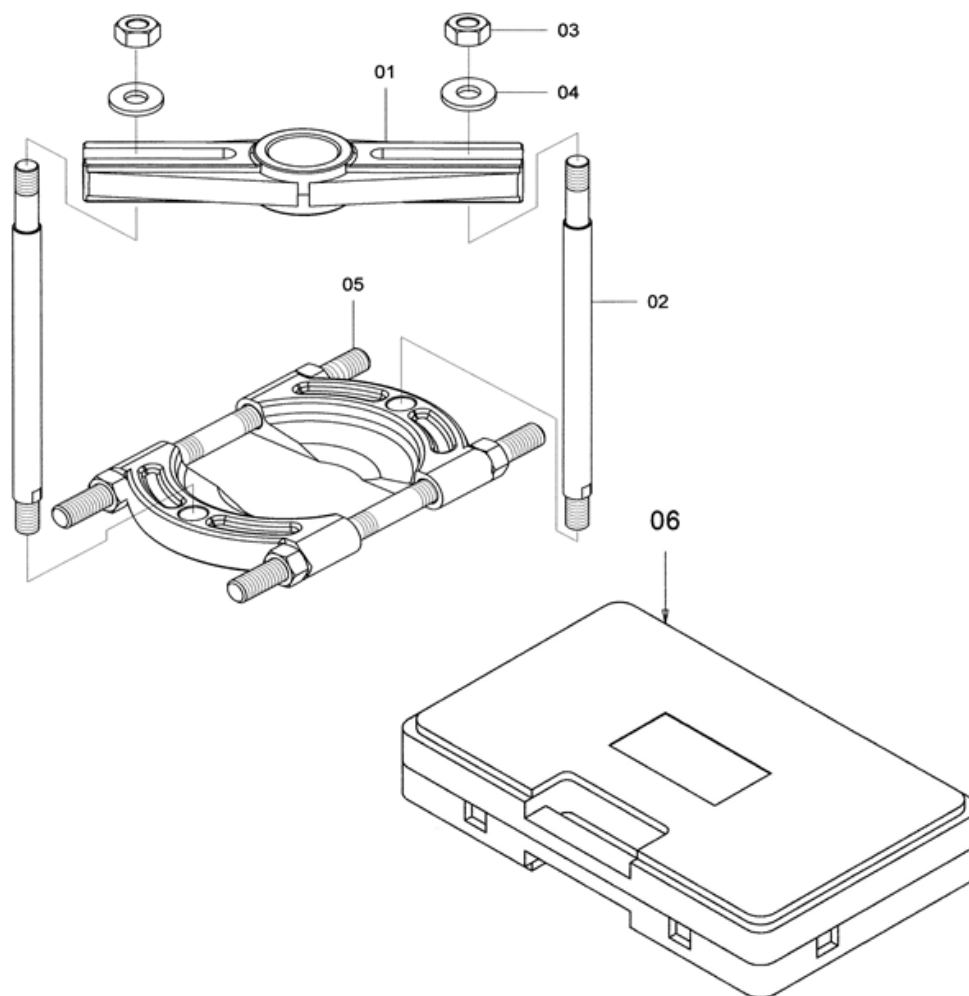
ET3-340 Parts List

Item	Description	Part No.	Qty
1	1st plate	ZAL1500	1
2	2nd plate	ZAL1501	2
3	Long bolt	ZAL1502	1
4	Bolt	ZAL1503	2
5	Nut	ZAL1504	6

ET3-495 Parts List

Item	Description	Part No.	Qty
1	1st plate	ZAL1505	1
2	2nd plate	ZAL1506	2
3	Long bolt	ZAL1507	1
4	Bolt	ZAL1508	2
5	Nut	ZAL1509	6

8.12 BS Series – Bearing/Pulley Attachment Sets



BS-04250 Parts List

Item	Description	Part No.	Qty
1	Puller crosshead	ZAL1571	1
2	Threaded stud	ZAL1574	2
3	Hex nut	ZAL1577	2
4	Washer	ZAL1580	4
5	Bearing attachment	BS-12-70	1
6	Blow moulded case	ZAL1583	1

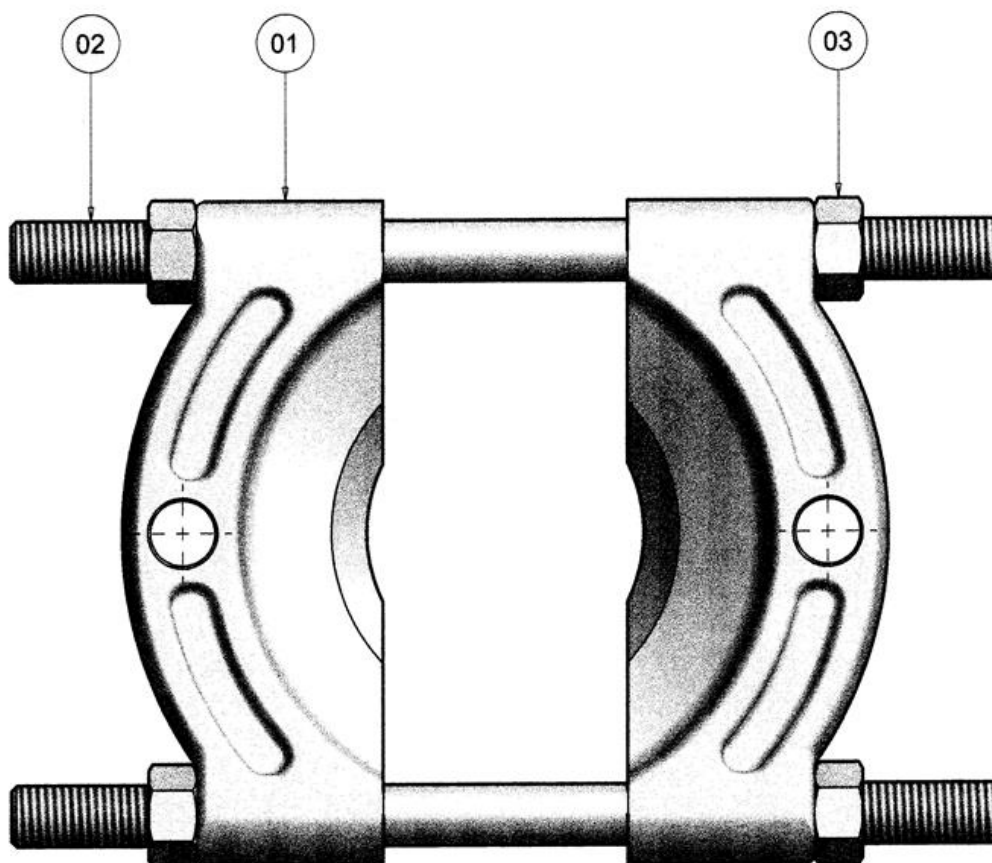
BS-08270 Parts List

Item	Description	Part No.	Qty
1	Puller crosshead	ZAL1572	1
2	Threaded stud	ZAL1575	2
3	Hex nut	ZAL1578	2
4	Washer	ZAL1581	4
5	Bearing attachment	BS-28-150	1
6	Blow moulded case	ZAL1584	1

BS-12380 Parts List

Item	Description	Part No.	Qty
1	Puller crosshead	ZAL1573	1
2	Threaded stud	ZAL1576	2
3	Hex nut	ZAL1579	2
4	Washer	ZAL1582	4
5	Bearing attachment	BS-20-200	1
6	Blow moulded case	ZAL1585	1

8.12.1 BS Series – Bearing Attachment



BS-5-60 Parts List

Item	Description	Part No.	Qty
1	Bearing Plate	ZAL1586	2
2	Threaded Stud	ZAL1587	2
3	Nut	ZAL1588	4

BS-15-60 Parts List

Item	Description	Part No.	Qty
1	Bearing Plate	ZAL1589	2
2	Threaded Stud	ZAL1590	2
3	Nut	ZAL1591	4

BS-12-70 Parts List

Item	Description	Part No.	Qty
1	Bearing Plate	ZAL1538	2
2	Threaded Stud	ZAL1539	2
3	Nut	ZAL1540	4

BS-28-150 Parts List

Item	Description	Part No.	Qty
1	Bearing Plate	ZAL1541	2
2	Threaded Stud	ZAL1542	2
3	Nut	ZAL1543	4

BS-20-200 Parts List

Item	Description	Part No.	Qty
1	Bearing Plate	ZAL1544	2
2	Threaded Stud	ZAL1545	2
3	Nut	ZAL1546	4