



HYDRAULIC PULLERS

MODEL:

FA1000 - FA2000 - FA3000 - FA5000



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ANNEX

❖ GENERAL DRAWINGS

1. ESSENTIAL SAFETY INSTRUCTIONS.

The LARZEP hydraulic pullers has been designed and manufactured in compliance of our quality standards and under the control that the ISO 9001 standard forces. The machine has been designed only for the applications described in the present manual, other kind of uses are not foreseen and so, LARZEP, S.A. will not be responsible of the damages caused for an inadequate use.



An unauthorized use could cause a risk of hard physical damages for the operator as well as the machine or the treated material.

The use of the machine must be done in perfect technical conditions and in accordance to the considerations described in this manual. The operator must know the inherent risk of the use of high pressure equipments and the machine working.



Read the instructions manual carefully and practise using the equipment before application.

Use protective equipment such as safety goggles, boots and gloves.



Goggles



Boots



Gloves

In every new uses of the equipment, follow the START UP chapter of this manual.

Never do changes in the equipment or add elements that may affect in the security of the machine without the manufacturer authorization.

The repairs, maintenance operations, etc must be done by specialist personnel and with original **LARZEP** spare parts.

Do the maintenance operations periodically as we described in this manual. Replace periodically the hydraulic hoses if they are part of the installation although they do not appear damaged. If you work with hoses check that they do not work twisted or crushed.

All this maintenance operations must be done with depressurized equipments and if it possible turned off. Once these operations are done, turn off the equipment, clean and store it in a clean and safety place.



In case of see a bad function of the equipment or any other component of the installation, stop immediately the operation; block the system and correct the mistake.

Check that the machine and the accessories have not suffered any damage during the transport or installation. Use the equipments in well-lit areas.

Define stable and solid zones for the material and the installation, and foresee the movements that the application could cause.



Do not exceed the 80% of the nominal capacity of the machine during normal operation.



Do not exposure the equipment to intense heat sources (welding).

Include control elements (pressure gauges) in the installation in order to enable the operator to monitor the pressure in the system and ensure that the equipment's nominal capacity is never exceeded.

The commands must be operated manually, do not use additional tools, levers to act them.

Assure the perfect clean of the quick couplers and accessories in general. Dirty couplers are so difficult to connect and may introduce dirt in the hydraulic circuit.

Before start the operation assure that there is not anybody exposed in the dangerous zone and before the application, check that the commands of the installation are in neutral position not to do unwanted movements that could surprise to the operator and only act over the commands when the installation is under control.



Never store or place the puller within children's reach.

2. TECHNICAL FEATURES.

Complete Puller	FA1000	FA2000	FA3000	FA5000
Hydraulic Part	JH01204/1	JH02205/1	JH03005/1	JH06008/1
Mechanic Part	FA1000/M	FA2000/M	FA3000/M	FA5000/M

	Part	FA1000	FA2000	FA3000	FA5000
Hydraulic Part	Cylinder	SH01204	SH02205	SH03005	SH06008
	Pump	W00307	W10707	W22307	W22307
	Hose	AP2015	AP2015	AP2015	AP2020
	Gauge adapter	AZ1501	AZ1501	AZ1501	AZ1501
	Gauge	AV10008	AV10008	AV10008	AV10008
	Male quick coupler	AZ3120	AZ3120	AZ3120	AZ3120
Mechanic Part		FA1000/M	FA2000/M	FA3000/M	FA5000/M
	Hollow threaded saddle	AZ0551	AZ0552	AZ0553	AZ0556



Capacity (Tn)	A max. (mm)	B max. (mm)	Weight (Kg)
10	296	350	25
20	320	480	34
30	407	580	53
50	727	920	122

3. START UP.

The whole set delivered in a strong wooden box which is protecting it from damages. Once the tool is used, clean and store it in the box supplied until the next use.



Unpack the equipment making sure that all the pieces described in the spare parts sheets of this present manual are contents and that the material has not suffered damages.

The equipment is supplied with the necessary hydraulic components: cylinder, pump, hose, gauge, and quick coupler.

Assemble the pump to the cylinder by means of the hose assuring a perfect connection.

Pump it several times by means of the lever and with the screw slightly open (turn left), to purge the circuit.

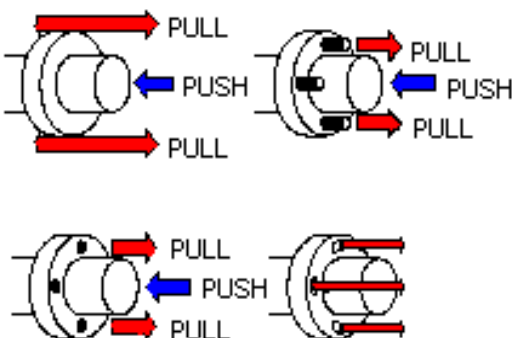
Close the screw with the hand (turn right). In the pumping time the piston of the cylinder will advance. To return it, thanks to the act of the spring, we must open the screw again.

The movable jaws self-centre the puller. We supplied the equipment with an only 3 self-centring body.

1. Assure that the spindle is fully cleaned and greased.
2. Check that the axe has a safety hole. If you have not it, place the supplied shaft protector.
3. Jaws should work with a slope smaller than 10°.
4. Place puller properly, adjusting better the previous alignment.
5. Tight spindle lightly turning it.
6. Assure that the jaws are completely based on.
6. Apply pulling power with the pump to extract the piece.

OPERATION:

- ❖ **To grip and pull a gear, bearing, wheel, pulley, etc. from a shaft:**



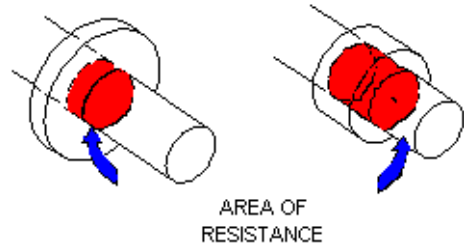
In order to perform a proper pull, make sure you firmly grip the gear, bearing, wheel, etc. and apply force to shaft.

Depending on the job we offer a complete range of hydraulic pullers.

❖ **How to choose the capacity of the puller:**

For hydraulic pullers, in general, the **maximum force exerted in tons should be 7 times the diameter of the shaft in inches.**

Shaft diam. in inches	Shaft diam. in mm	Cap. Puller in Tons
0" - 2"	0 - 50	20
2" - 3 1/2"	50 - 87	30
3 1/2" - 5 1/2"	87 - 136	50



REMEMBER:

Pullers can break due to:

1. Changed parts (emery stone...)
2. Blowlamp used whilst pulling.
3. Strikes.
4. Overload.

4. MAINTENANCE.

All the maintenance operations must be done with depressurized equipment and disconnected hydraulic and electrically.

Always use original LARZEP spare parts.

In every use of the equipment make a visual inspection checking the oil level, damages in hydraulic elements (scratched piston, threads, lossless...), the situation of the accessories (quick couplers, hoses...).

Clean the equipment after each use and keep grease the critical areas: threads, shafts, internal roller, piston, etc. before store it in the box.

In case of continuous use of the equipment, replace periodically the couplers and the hoses, although they do not seem damaged.

Periodically (once a year unless) replace the hydraulic oil of the tank instead of clean oil. **Always use LARZEP hydraulic oil.**

The maintenance operation or repairs, which supposed the disassembling of the mechanical parts of the equipment (jack, cylinder or pump), will be made by specialist personnel.

The oil filling of the pump is made by means of the plug of the pump. Check the level with the rod, placing the pump head down in vertical position. Use LARZEP hydraulic oil Ref.: AZ8901.

The standard spare part is the one labelled with * in the following sheets.

Problems, damages and solutions:

	PROBLEM		DIAGNOSIS		SOLUTION
1	The piston of the cylinder does not advance.	1.1	Excess or lack of oil in the tank of the pump.	1.1	Check the level and refill.
		1.2	Obstructed filter (22)	1.2	Release the pump and clean it.
		1.3	The oil leaks by the admission ball of the pump (20)	1.3	Repair the ball seat and replace the ball
		1.4	Pressure collar (9) damaged	1.4	Replace the detent.
		1.5	Cup of pump (19) damaged	1.5	Replace the collar
		1.6	Unrated limiter valve (23) of the pump	1.6	Rate the valve.
		1.7	A bad hose connection	1.7	Check the connection
2	The cylinder does not pressurized	2.1	Pressure collar (9) damaged	2.1	Replace the detent.
		2.2	Leak by the ball (38) of the action screw (35) of the pump	2.2	Repair the ball seat and replace it.
		2.3	Leak by the retention ball (33) of the pump	2.3	Repair the ball seat and replace it.
3	The piston does not return	3.1	Action screw(35) ball (38) pasted	3.1	Release the screw and move the ball.
		3.2	Jamming or twisted piston (3) on the cylinder	3.2	Repair or replace the piston
		3.3	Damaged spring (6) on the cylinder	3.3	Replace the spring
		3.4	Excess of oil	3.4	Check the level

5. WARRANTY.

LARZEP, S.A. guarantees its products against all design and manufacturing defects for the durations of two years from the date of purchase. This guarantee does not include the ordinary wear of both metal and non-metal parts, abuse, using the equipment beyond its rated capacity and any wear or damage incurred as a result of using a hydraulic fluid which is not recommended by **LARZEP, S.A.**

Please note that if the equipment is disassembled or serviced by anyone other than an authorized service dealer or by **LARZEP, S.A.**, this guarantee is rendered null and void.

In the event of a warranty claim, return the equipment, to **LARZEP, S.A.** or the authorized dealer which sold you the hydraulic equipment, **LARZEP, S.A.** will repair or replace the faulty equipment, whichever is deemed most appropriate. **LARZEP, S.A.** shall not be held liable for any consequential damages or losses, which may occur as a result of faulty equipment

6. DECLARATION OF CONFORMITY.**DECLARACION DE CONFORMIDAD**

LARZEP, S.A.
Dirección: Avda. Urtiaga, 6
48269 Mallabia ESPAÑA

Declaramos bajo nuestra exclusiva responsabilidad la conformidad de los productos a los que refiere esta declaración, con las disposiciones de la directiva:
89/392/CEE, 91/368/CEE, 93/44/CEE, 93/68/CEE, 98/37/CEE

E**DECLARATION OF CONFORMITE**

Nous, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Déclarons sous notre seule responsabilité que les produits auxquels se réfère cette déclaration sont conformes aux dispositions des Directives:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

F**DECLARAÇÃO DE CONFORMIDADE**

Nós, LARZEP, S.A.
Endereço: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Declaramos, sob nossa única responsabilidade, que os seguintes produtos, incluídos nesta declaração estão em conformidade com o disposto na Directiva:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

P**ÖVERENSSTEMMELSEERKLÄRING**

Vi, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Erklærer på eget ansvar, at følgende produkter som er omfattet af denne erklæringen, er i overensstemmelse med bestemmelsene i Direktiv:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

DK**ERKLÄRINGOM ÖVERENSSTEMMELSE**

Vi, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Erklærer på eget ansvar, at følgende produkter som dækkes af denne erklæringen, er i overensstemmelse med bestemmelsene i Direktiv:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

N**ÜBEREINSTIMMUNGSERKLÄRUNG**

Wir, LARZEP, S.A.
Anschrift: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Erklären auf eigene Verantwortung, daß folgende Produkte, auf die sich diese Erklärung bezieht, mit den Bedingungen der Direktiven 89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC übereinstimmen.

D

Tipo, Type, Typ, Tyyppi.

SM / SH / SP / SMP / SX / SMX / ST / STX / SL / SMA / SHA / SSR / T / TE / TD / D / DH /
DDR / Z / ZR / W / X / YA / YG / YZ / HM / HE / HG / HZ / HS / WI / CK / CC / CN / FU / FV /
FZ / FA / CY / AA / AU / CT / C / KC

A / AB / AC / BL / B / AF / F / HN / DLG / DL / DP / VA / VB / VC / VZ / EC / EE / EG / EM /
EZ / CA / CS

Mallabia, ESPAÑA 2005 / 04 / 27

Lugar y fecha, place and date, lieu et date, plats och datum, paikka ja päivämäärä, udstedelsessted og-dato, ort und datum, plaats en datum, local e data, luogo e data.

DECLARATION OF CONFORMITY

We, LARZEP, S.A.
Address: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Declare under our sole responsibility that the following products to which this declaration relates conform with the provisions of Directives:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

GB**DICHIARAZIONE DI CONFORMITÀ**

Noi, LARZEP, S.A.
Indirizzo: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Dichiariamo sotto la nostra esclusiva responsabilità che i prodotti ai quali questa dichiarazione si riferisce sono conformi quanto previsto dalle Direttive:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

I**VAATIMUSTEMUKAISUUSVAKUUTUS.**

Me, LARZEP, S.A.
Osoite: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Vakuutamme yksinomaan omalla vastuullamme, että seuraavat tuotteet, joihin tämä vakuutus liittyy, ovat seuraavien Direktiivien vaatimusten mukaisia:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

FIN**VERKLARINGVAN OVEREENKOMST.**

Wij, LARZEP, S.A.
Adres: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Verklaren geheel onder eigen verantwoordelijkheid dat de volgende producten, waarop deze verklaring heeft in overeenstemming zijn met de bepalingen van Richtlijn:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

NL**FÖRSÄKRAN OM ÖVERESSTÄMMELSE**

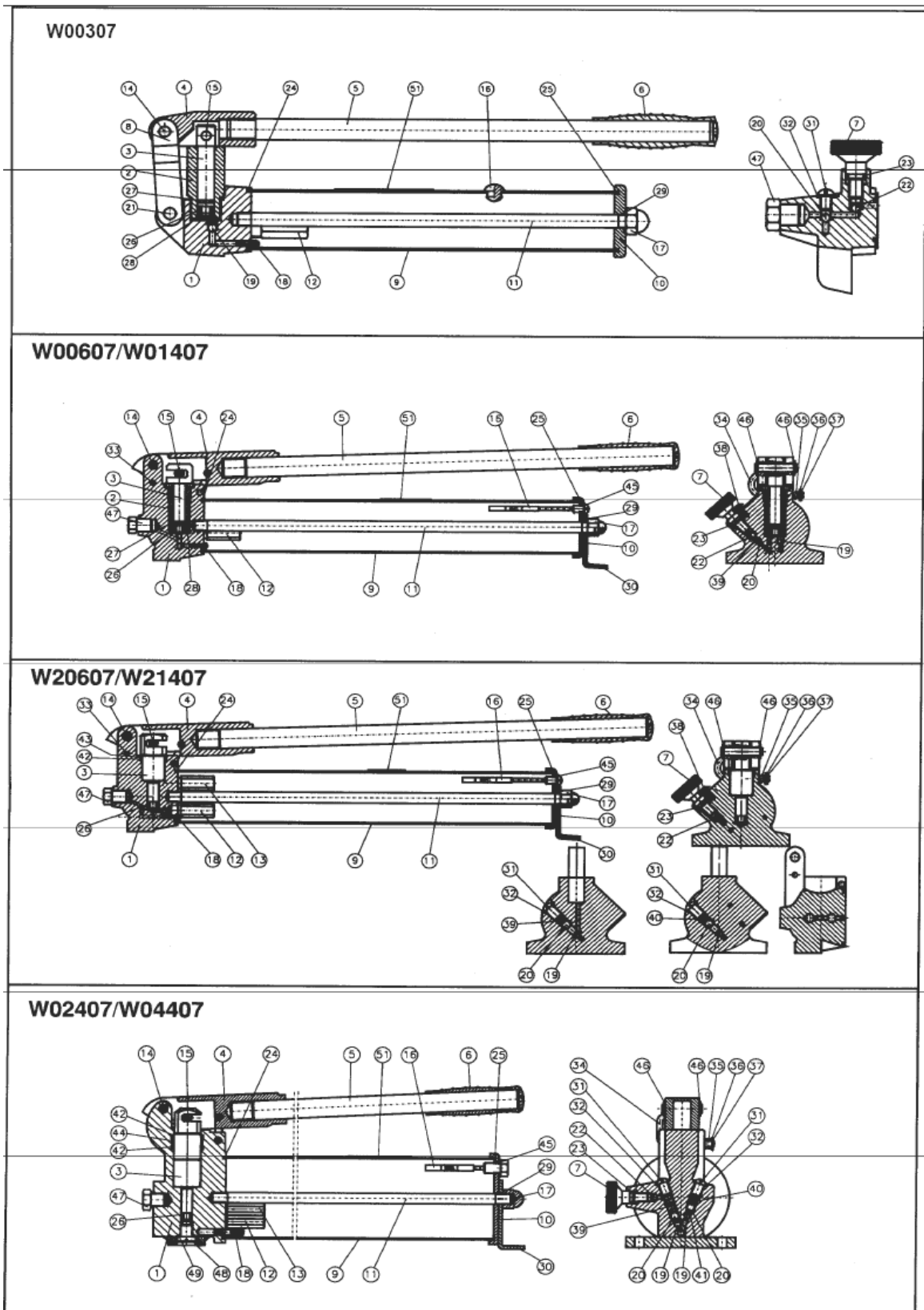
Vi, LARZEP, S.A.
Adress: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Försäkrar under eget ansvar att följande produkter som omfattas av denna försäkran är i överensstämmelse med villkoren i Direktiv:
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

S**LARZEP, S.A.**

Nombre y firma, name and signature, nom et signature, namn och underskrift, nimi ja nimikirjoitus, navn og underskrift, name und underskrift, naam en handtekening, nome e assinatura, nome e firma.

GENERAL DRAWING
PUMPS FOR FA1000, FA2000, FA3000, FA5000



DESPIEZO BOMBAS MANUALES SIMPLE EFECTO
HAND PUMP SINGLE-ACTING PARTS LIST

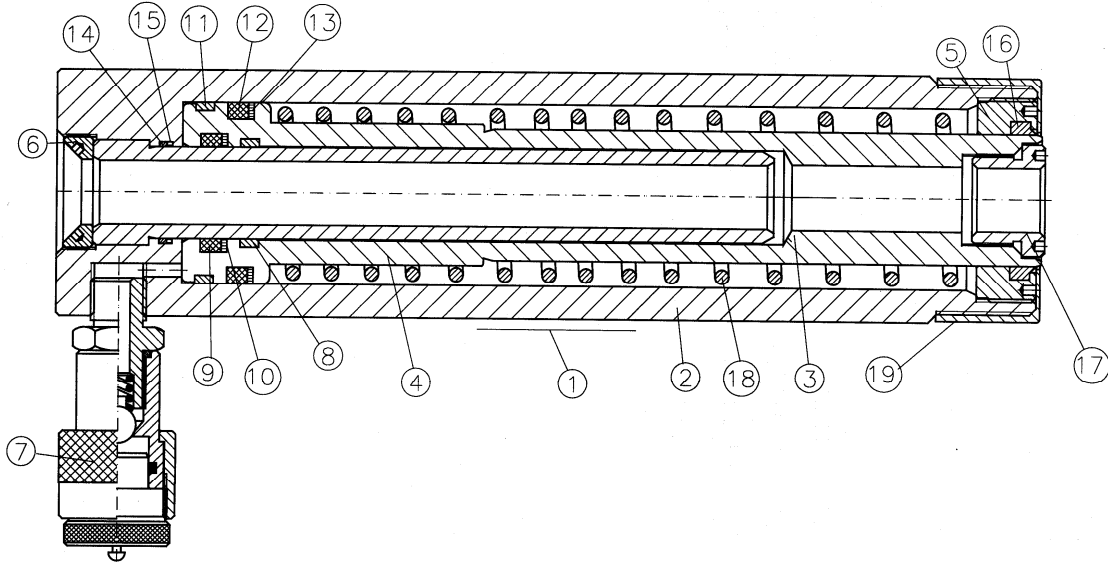
Referencias / Models: W00307, W00607, W20607, W01407, W21407, W02407, W04407

Nº	Denominación/description	W00307	W00607	W20607	W01407	W21407	W02407	W04407	**
1	Base/ base	50K0050	50K0032	50K0034	50K0032	50K0034	50K0006	50K0007	**
2	Camisa/ body	15D0002	15D0023		15D0023				
3	Pistón/ piston	54A0031	54C0004	54B0003	54C0004	54B0003	54B0001	54B0002	
4	Portapalanca/ handle socket	24B0005	24B0026	24B0026	24B0026	24B0026	24B0026	24B0026	
5	Palanca/ handle	24A0005	24A0007	24A0007	24A0007	24A0007	24A0007	24A0007	
6	Empuñadura/ handle grip	24C0004	24C0006	24C0006	24C0006	24C0006	24C0006	24C0006	
7	Tornillo accionamiento/ release screw	15H0002	15H0008	15H0008	15H0008	15H0008	15H0002	15H0002	
8	Tirante inyector/ Injector	24F0006							
9	Depósito/ tank	51B0017	51B0042	51B0042	51B0065	51B0065	51B0022	51B0068	
10	Tapa depósito/ end cap	15L0095	32A0005	32A0005	32A0007	32A0007	32A0006	15L0043	
11	Eje depósito/ tie rod	15I0273	15I0003	15I0003	15I0160	15I0160	15I0005	15I0006	
12	Válvula limitadora/ relief valve (700)	17C0002	17C0006	17C0028	17C0006	17C0028	17C0003	17C0003	
13	Válvula limitadora/ relief valve (20)			17C0028		17C0028	17C0004	17C0004	
14	Eje portapalanca/ hand socket pin	15A0008	15I0008	15I0008	15I0008	15I0008	15I0008	15I0008	
15	Eje pistón/ piston pin	15A0012	15I0007	15I0007	15I0007	15I0007	15I0007	15I0007	
16	Tapón-Tapón nivel/ plug-plug label	12C0026	15L0041	15L0041	15L0042	15L0042	15L0035	15L0044	
17	Tuerca cierre depósito/ acorn nut	14B0004	14B0004	14B0004	14B0004	14B0004	14B0004	14B0005	
18	Filtro/ filter	13F0001	13F0001	13F0001	13F0001	13F0001	13F0003	13F0003	**
19	Bola de admisión/ admission ball	31A0001	31A0001	31A0001*	31A0001	31A0001*	31A0001*	31A0001*	**
20	Bola de retención/ ball	31A0001	31A0002	31A0005*	31A0002	31A0005*	31A0005*	31A0005*	**
21	Eje tirante inyector/ pin	15A0014							
22	Bola cierre/ ball	31A0001	31A0001	31A0001	31A0001	31A0001	31A0001	31A0001	
23	Tórica tornillo accionamiento/ O-ring	12A0047	12A0047	12A0047	12A0047	12A0047	12A0047	12A0047	**
24	Junta base-depósito/ joint	57F0015	57F0016	57F0016	57F0016	57F0016	12C0016	57F0018	**
25	Junta depósito-tapa/ joint	57F0015	57F0016	57F0016	57F0017	57F0017	12C0016	57F0018	**
26	Taza pistón/ Seal U-cup	12J0001	12J0004	12J0004	12J0004	12J0004	12J0004	12J0004	**
27	Tórica de apoyo/ O-ring	12A0272	12A0051		12A0051				**
28	Arandela cierre camisa/ washer	27A0008	57B0011		57B0038				
29	Tórica cierre tuerca depósito/ O-ring	12A0048	12A0048	12A0048	12A0048	12A0048	12A0048	12A0049	**
30	Pata trasera/ foot	24L0037	24L0015	24L0015	24L0003	24L0003	24L0004	24L0005	
31	Tornillo cierre/ screws	14A0001		15O0004*		15O0004*	15O0004*	15O0004*	
32	Tórica tornillo cierre/ O-ring	12A0022		12A0056*		12A0056*	12A0056*	12A0056*	
33	Pasador tope portapalanca/ elastic pin		14E0002	14E0002	14E0002	14E0002			
34	Horquilla portapalanca/ transport pin		15I0159	15I0159	15I0159	15I0159	15I0165	15I0165	
35	Muelle horquilla/ spring		13D0003	13D0003	13D0003	13D0003	13D0004	13D0004	
36	Arandela horquilla/ washer		14C0004	14C0004	14C0004	14C0004	14C0004	14C0004	
37	Arandela presión / elastic washer		14D0042	14D0042	14D0042	14D0042	14D0042	14D0042	
38	Tope tornillo accionamiento/ screw		15L0022	15L0022	15L0022	15L0022			
39	Muelle bola antiretorno 1º/ spring		13D0136	13C0008	13D0136	13C0008	13D0003	13D0047	
40	Muelle bola antiretorno 2º/ spring			13C0008		13C0008	13D0004	13D0004	
41	Muelle bola admisión/ spring						13C0018	13C0018	
42	Tórica cierre pistón baja/ O-ring			12A0108		12A0108	12A0055*	12A0055*	**
43	Segmento tórica pistón baja/ segment			57A0222		57A0222			**
44	Guía pistón baja/ guide						58F0210	58F0210	**
45	Cierre tapón nivel/arandela/ plug seal		12A0022	12A0022	12A0022	12A0022	14C0013	14C0013	**
46	Clip eje portapalanca/ clip		14D0001*	14D0001*	14D0001*	14D0001*	14D0001*	14D0001*	
47	Tapón/ plug	AZ1182	AZ1182	AZ1182	AZ1182	AZ1182	AZ1182	AZ1182	
48	Tornillo cierre cámara alta/ screw						15O0002	15O0003	
49	Tórica tornillo cierre/ O-ring						12A0020	12A0020	**
50	Estuche cartón/ box	21D0017	21D0019	31D0018	21D0019	21D0018	21D0019	21D0020	
51	Etiqueta/ label	30A0017	30A0023	30A0023	30A0023	30A0023	30A0023	30A0023	

** Juego de recambios/Spare parts

* Dos piezas/Two pieces

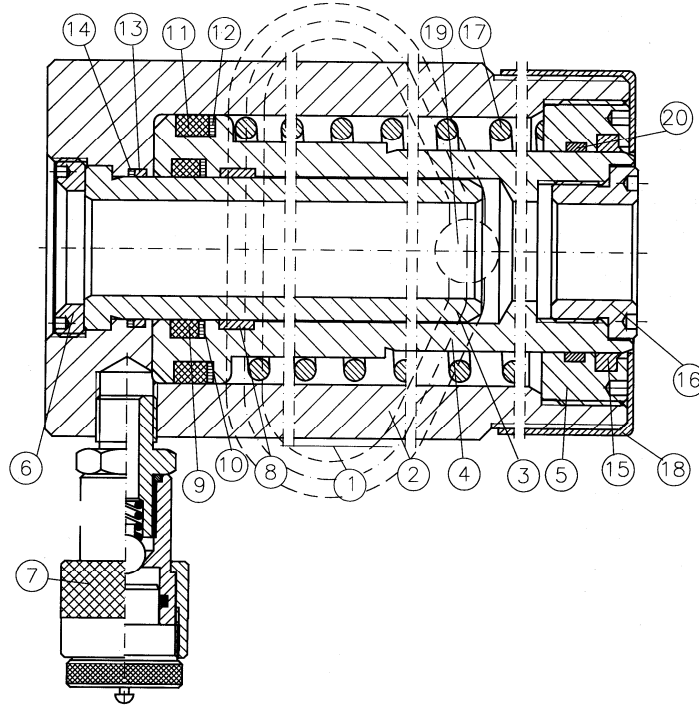
• **FA1000: CYLINDER SH01204**



	SH01204
	JR.SH012A*
1	30A0017
2	52N0093
3	51C0081
4	53O0054
5	55M0023
6	15O0059
7	AZ3140
*8	58F0154
*9	12B0182
*10	57A0286
*11	---
*12	12B0101
*13	57A0062
*14	12A0232
*15	57A0287
*16	12H0070
17	AZ0531
18	13D0094
19	12L0007

CAUTION: Trying to disassemble this cylinder without proper material is dangerous because of the strong spring.

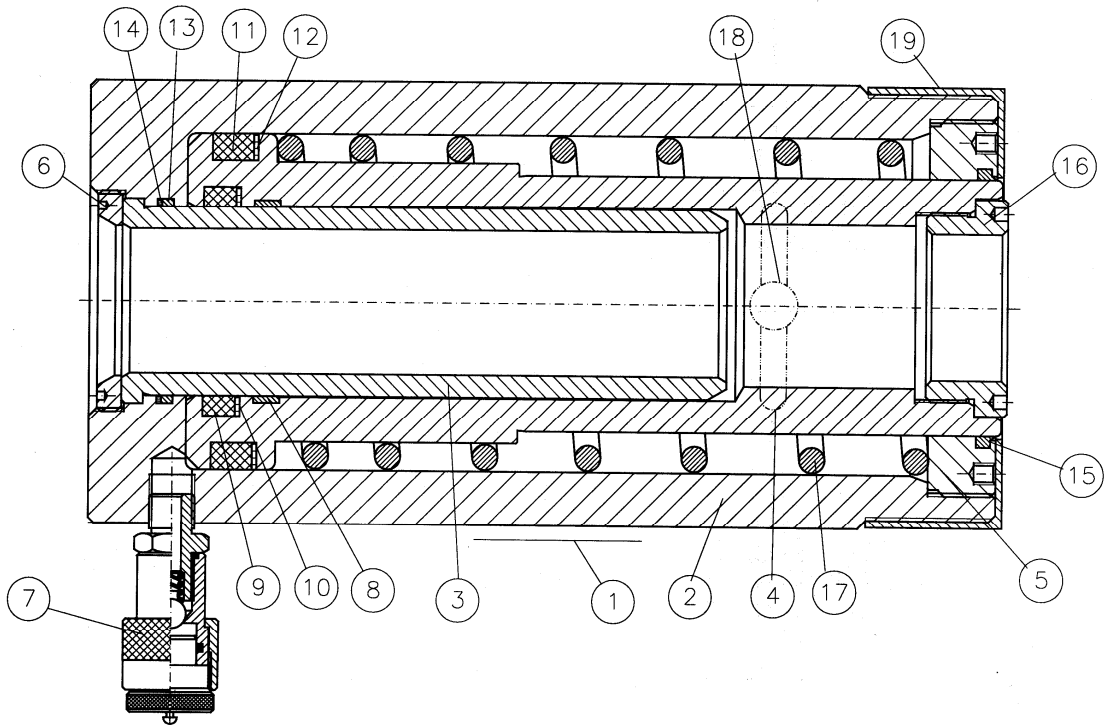
• **FA2000: CYLINDER SH02205**



	SH02205
	JR.SH02205*
1	30A0017
2	52N0091
3	51C0079
4	53O0052
5	55M0021
6	15O0061
7	AZ3140
*8	58F0155
*9	12B0190
*10	57A0294
*11	12B0175
*12	57A0083
*13	12A0085
*14	57A0295
*15	12H0071
16	AZ0532
17	13D0092
18	12L0008
19	---
*20	---

CAUTION: Trying to disassemble this cylinder without proper material is dangerous because of the strong spring.

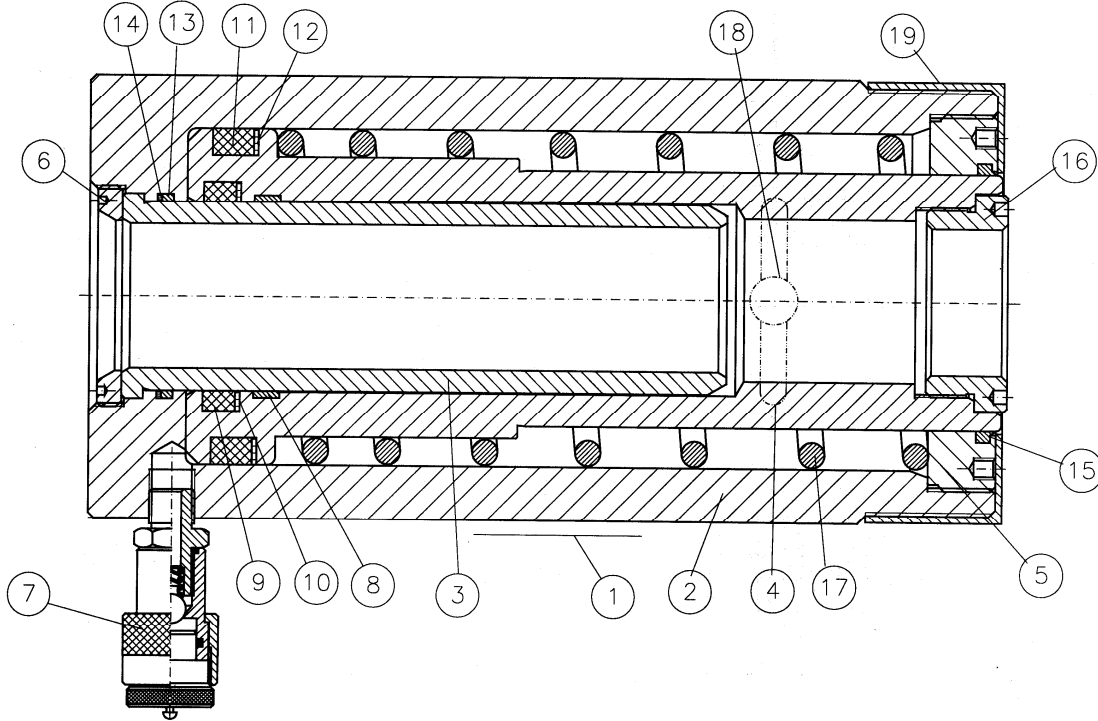
• **FA3000: CYLINDER SH03005**



	SH03005
	JR.SH030*
1	30A0023
2	52N0097
3	51C0085
4	53O0058
5	55M0022
6	15O0064
7	AZ3140
*8	58F0131
*9	12B0090
*10	57A0093
*11	12B0085
*12	57A0207
*13	12A0236
*14	57A0302
*15	12H0073
16	AZ0533
17	13D0098
18	33C0004
19	12L0009

CAUTION: Trying to disassemble this cylinder without proper material is dangerous because of the strong spring.

• **FA5000: CYLINDER SH06008**



	SH06008
	JR.SH060*
1	30A0023
2	52N0098
3	51C0086
4	53O0059
5	55M0025
6	15O0056
7	AZ3140
*8	58F0117
*9	12B0202
*10	57A0309
*11	12B0201
*12	57A0308
*13	12A0054
*14	57A0146
*15	12H0066
16	AZ0536
17	13D0099
18	(2) 24D0019
19	12L0011

CAUTION: Trying to disassemble this cylinder without proper material is dangerous because of the strong spring.