



**MANUAL DE INSTRUCCIONES Y MANTENIMIENTO
INSTRUCTION & MAINTENANCE SHEET**

**BOMBAS MANUALES DE SIMPLE Y DOBLE EFECTO
SINGLE & DOUBLE ACTING HAND PUMPS**

ESPAÑOL-ENGLISH



W00307, W10707, W20707, W11207, W21207, W22307, W24307

X22307, X24307

DECLARACION DE CONFORMIDAD

DECLARACION DE CONFORMIDAD

LARZEP, S.A.

E

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: 2006/42/CE

DECLARATION OF CONFORMITY

Nous, LARZEP, S.A.

F

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: 2006/42/EC

DECLARAÇÃO DE CONFORMIDADE

Nós, LARZEP, S.A.

P

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: 2006/42/EC

ÖVERENSSTEMMELSEERKLÆRING

Vi, LARZEP, S.A.

DK

Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Erklærer på eget ansvar, at følgende produkter som er omfattet af denne erklæringen, er i overensstemmelse med bestemmelse i Direktiv: 2006/42/EC

ERKLÆRINGOM OVERENSSTEMMELSE

Vi, LARZEP, S.A.

N

Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Erklærer på eget ansvar, at følgende produkter som dekkes av denne erklæringen, er i overensstemmelse med bestemmelse i Direktiv: 2006/42/EC

ÜBEREINSTIMMUNGSERKLÄRUNG

Wir, LARZEP, S.A.

D

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, 2006/42/EC Übereinstimmen.

Tipo, Type, Typ, Tyyppi.

SM / SH / SP / SMP / SPR / SX / SMX / ST / STR / STX / SL / SAM / SAH / SAT / SATM / SSR / T / TE / TD / D / DH / DDR / DAH / DDA / DM / DI / JM / JH / JP / Z / ZR / W / WP / X / HAM / HAE / HAZ / HAG / HAS / HFM / HFE / HAP / HAT / WI / CK / CC / CN / FU / FV / FZ / FA / CY / AA / AU / CT / C / KC / LAS / LAX
A / AB / AC / B / AF / F / HN / HL / DLG / VA / VB / VC / VZ / ECE / ECM / ECZ / EE / EM / EZ / CA / CS
AZ / AP / AR / AV / AS / AT / AX / AY / AM

Mallabia, ESPAÑA 2009 / 12 / 29

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.

GB

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: 2006/42/EC

DICHIARAZIONE DI CONFORMITÀ

Noi, LARZEP, S.A.

I

Indirizzo: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Dichiaro sotto la nostra esclusiva responsabilità che i prodotti ai quali questa dichiarazione si riferisce sono conformi quanto previsto dalle Direttive: 2006/42/EC

VAATIMUSTEMUKAISUUSVAKUUTUS.

Me, LARZEP, S.A.

FIN

Osoite: Avda. Urtiaga, 6
48269 Mallabia SPAIN

Vakuutamme yksinomaan omalla vastuullamme, että seuraavat tuotteet, joihin tämä vakuutus liittyy, ovat seuraavien Direktiivien vaatimusten mukaisia: 2006/42/EC

VERKLARINGVAN OVEREENKOMST.

Wij, LARZEP, S.A.

NL

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: 2006/42/EC

FÖRSÄKRAN OM ÖVERESSTÄMMELSE

Vi, LARZEP, S.A.

S

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: 2006/42/EC

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.

REQUISITOS ESENCIALES DE SEGURIDAD



La correcta unión de una bomba con un cilindro a través de una manguera hidráulica, constituye una máquina concebida para levantar, tirar, doblar, retener etc...que por su gran capacidad de empuje requiere una utilización segura que anule la posibilidad de accidentes.

Lea detenidamente el manual de instrucciones y ejercite con el equipo antes de la aplicación.

Utilice material de protección, tales como gafas, botas y guantes de seguridad.



Gafas



Botas



Guantes



Elija un equipo que no sobrepase el 80% de su capacidad nominal durante su utilización y dentro de la amplia gama el más adecuado para la aplicación.

Buscar zonas estables para los puntos de aplicación de la carga y zonas seguras para los operadores, separándolos mediante el uso de mangueras suficientemente largas.

Bloquear las cargas mecánicamente una vez realizado el movimiento evitando operar debajo de estas.

Utilice toda la superficie de apoyo útil del cilindro tanto en la cabeza como en la base. Prever el uso de cabezas basculantes si existe la posibilidad de aplicar cargas laterales.



No exponer los equipos a fuentes intensas de calor (soldadura).

Realizar las operaciones de mantenimiento con los equipos libres de carga y en lugares limpios e iluminados.

Prever en la instalación elementos de control (manómetros) que nos informen de la presión de la instalación, con el fin de no superar en ningún caso la capacidad nominal del equipo. Si los criterios de seguridad así lo exigen prever la utilización de válvula y accesorios de seguridad.

Los mandos de la bomba deben de actuarse manualmente, así como las conexiones entre elementos que dispongan de enchufes rápidos.

Una vez utilizado el equipo, compruebe que no ha sufrido daños, límpielo y protéjalo para su almacenamiento.

Limpie los enchufes rápidos antes de conectarlos y asegúrese que dicha conexión es perfecta (primeramente introducir a tope y seguidamente roscar a mano). Una mala conexión puede provocar el mal funcionamiento del equipo e incluso puede crear situaciones de peligro.

Instalar el equipo de manera que las mangueras no sufran curvaturas agudas o forzadas o la acción de cargas que puedan provocar su rotura.

No modificar los equipos (piezas soldadas, alargar palancas de accionamiento), sin consultar al fabricante

No utilizar las mangueras para transportar los equipos. Utilizar las asas de los cilindros si las hubiera y la palanca de la bomba en posición de transporte.

Al rellenar la bomba con aceite, utilizar aceite hidráulico Larzep o de semejantes características. Rellenar solamente hasta el nivel señalado y tener en cuenta que el émbolo del cilindro debe de estar recogido.

Antes de efectuar cualquier tipo de aplicación asegurarse de la buena instalación, de la seguridad del puesto del operador y imposibilidad de que persona alguna pueda acceder a la zona expuesta.

En cualquier caso el operador debe de estar perfectamente instruido en el manejo del equipo y actuar con los criterios lógicos de seguridad, que el movimiento de grandes cargas conlleva.

GARANTIA

LARZEP, S.A. garantiza este producto sobre todos los defectos de diseño y fabricación durante dos años desde la fecha de compra. Esta garantía no incluye el uso indebido, el desgaste habitual tanto de piezas metálicas como no metálicas, el abuso, los daños por el uso del equipo por encima de su capacidad, y cualquier desgaste o uso derivado del empleo de fluidos hidráulicos, materiales y componentes no recomendados por **LARZEP, S.A.**

Si el equipo ha sido vendido por un distribuidor no autorizado, o por partes incompletas, esta garantía queda anulada, sin ningún tipo de responsabilidad por parte de **LARZEP, S.A.**

En el caso de reclamación, para el correcto uso de esta garantía, devuelva el equipo a **LARZEP, S.A.** o al distribuidor autorizado que le vendió el equipo, **LARZEP, S.A.** reparará o reemplazará el equipo defectuoso según se juzgue oportuno.

LARZEP, S.A., no será responsable de ninguna pérdida o daño que pueda ocurrir como resultado de un equipo defectuoso.

INSTRUCCIONES CILINDRO-BOMBA MANUAL

Desembale y verifique visualmente todo el equipo, asegurándose que no haya fugas de aceite, enchufes flojos o deteriorados, roscas dañadas, etc... Nunca utilice equipos dañados o presumiblemente en mal estado.

Monte la instalación según las indicaciones del dibujo comprobando que dispone de todo el material requerido.

Compruebe la perfecta instalación y el buen funcionamiento del equipo sin carga, según el siguiente procedimiento.

INSTALACION SIMPLE EFECTO

1. Desbloquear la palanca de accionamiento de bomba, sacando el gancho del alojamiento del portapalanca.
2. Bombear varias veces con el tornillo de accionamiento abierto (aflojar un par de vueltas del tope) para llenar el circuito interno de la bomba de aceite.
3. Cerrar el tornillo de accionamiento, girando a derechas con la mano. No es necesario apretar con fuerza.
4. Bombear con la palanca de accionamiento. Primeramente se debe de llenar la manguera de aceite. El número de emboladas dependerá de la longitud de la manguera y del caudal que suministre el pistón de la bomba. En caso de bomba de una velocidad el caudal se mantendrá en todo el movimiento, ya sea avance sin carga o en presión. En bombas de dos velocidades, en el movimiento de avance sin carga actuará el pistón grande y en el momento de contactar la carga actuará automáticamente una válvula interna de alivio del pistón grande y solamente dispondremos del aceite suministrado por el pistón pequeño, hasta los 700 kg/cm² que es la presión máxima del equipo.
5. Una vez la manguera está llena de aceite, el émbolo del cilindro comenzará a avanzar.
6. Si el cilindro dispone de fin de carrera mecánico con capacidad de aguantar la presión máxima de la instalación continúe bombeando hasta alcanzar el final de carrera.
7. Si dispone de elementos de control (manómetro) notará que la presión aumenta, así mismo el esfuerzo en la palanca.
8. Continúe bombeando hasta alcanzar la presión máxima (700 kg/cm²). De esta forma comprobará el buen funcionamiento de la válvula interna de seguridad y la ausencia de fugas de aceite en la instalación.
9. Mantenga la presión en la instalación durante un tiempo, sin bombear para comprobar que funcionan perfectamente la válvula de retención de la bomba.
10. Abra suavemente el tornillo de accionamiento de la bomba (giro a izquierda) con el fin de proteger la caída de la aguja del manómetro. No forzar el tornillo de accionamiento al soltar, no por más aflojar, el cilindro recoge más rápidamente. Un par de vueltas es suficiente.
11. Si el cilindro dispone de muelle de retorno (SM, SMP, SMX, SH, TE, T, SAM, SAH, SATM, CY, KC) el émbolo se recogerá automáticamente. La velocidad de recogida puede ser lenta en algunas aplicaciones. En este caso recomendamos la utilización de cilindros de doble efecto. En caso de cilindros de retorno por carga (SP, SPR, SX, SL, SSR, ST, STR, STX, SAT) para recogerlos será necesario empujar el émbolo con más o menos fuerza dependiendo del tamaño y posición del cilindro.
12. En cilindros que no disponga de fin de carrera mecánico (SSR, ST, STR, STX) no se puede realizar este tipo de prueba. En caso de no disponer de un banco de pruebas, será sobre la propia carga en la aplicación cuando comprobaremos la instalación, por lo que en este caso, esta debe de realizarse con la máxima atención, por personal con experiencia y las medidas de seguridad deben de ser ampliadas.
13. Repetir el proceso las veces que sea necesario para habituarse al manejo del equipo.
14. En caso de utilizar válvulas de cierre o antirretorno, o se trabaje con varios cilindros a través de distribuidores de caudal, tener en cuenta el efecto que tales accesorios pueden tener en el funcionamiento del equipo y marcar un proceso de actuación para no originar efectos no deseados.

INSTALACION DOBLE EFECTO

1. La conexión de los enchufes rápidos tiene una importancia mayor si cabe, ya que una mala conexión no solo hace que el equipo no funcione, sino que además puede originar sobrepresiones que pueden provocar la rotura del cilindro. Tener en cuenta que manguera se conecta a la cámara de empuje y cual a la cámara de retorno.
2. Todos los cilindros Larzep de doble efecto disponen de fin de carrera mecánico que soporte la presión nominal del equipo y por tanto se podrá realizar la prueba previa descrita en los puntos anteriores. En caso de trabajar con otro tipo de cilindro, si no se tiene seguridad absoluta no se realizará esta prueba.
3. Desbloquear la palanca de accionamiento de bomba, sacando el gancho del alojamiento del portapalanca.
4. Colocar el mando de la válvula distribuidora en posición central y bombear varias veces para llenar de aceite los conductos internos.
5. Girar la palanca a un lado y bombear. El aceite fluye a través de la manguera conectada al lado opuesto de la posición de la palanca de la válvula. Si dicha manguera esta conectada a la cámara de empuje del cilindro, el émbolo avanzará. El aceite de la cámara de retorno fluye libremente a través de la otra manguera al depósito de la bomba. Mientras el cilindro no alcance la carga el caudal es suministrado por el pistón grande y el pistón pequeño.
6. Continuar bombeando hasta alcanzar el fin de carrera. En este momento la válvula interna de alivio del pistón grande actuará y solo obtendremos el aceite suministrado por el pistón pequeño. Someter a presión la instalación para comprobar que no existen fugas.
7. Dejar de bombear y comprobar (preferentemente mediante un manómetro) que la instalación mantiene la presión.
8. Girar la palanca de la válvula al lado contrario y bombear. El aceite fluye a la cámara de recogida, retrocediendo el émbolo. El aceite de la cámara de empuje retorna libremente al tanque.
9. Repetir el proceso las veces que sea necesario para habituarse al manejo del equipo.
10. En caso de utilizar válvulas de cierre o antirretorno, o se trabaje con varios cilindros a través de distribuidores de caudal, tener en cuenta el efecto que tales accesorios pueden tener en el funcionamiento del equipo y marcar un proceso de actuación para no originar efectos no deseados.

ESSENTIAL SAFETY INSTRUCTIONS



The correct union of a pump to a cylinder via a hydraulic hose constitutes a machine designed for lifting, pulling, folding and retaining operations, etc., that, due to its high thrust capacity requires safe use in order to eliminate the risk of accidents.

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



Choose the most suitable model for the application from the wide range available, and make sure that it will not exceed 80% of its nominal capacity during normal operation.

Define stable zones for applying the load and safety zones for operators, separating them through the use of hoses of enough length.

Block loads mechanically once the movement has been completed and avoids operating underneath them.

Use the entire cylinder's useful support surface, both on the head and the base. Be prepared to use tilting saddles if applying side loads.



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

Remove loads before carrying out maintenance operations and always work in clean, well-lit areas.

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. Be prepared to use safety valves and accessories if safety criteria demand it.

The pump controls should be activated manually, as should the connections between elements equipped with couplers.

Once you have finished using the device, check that it has not been damaged, clean it and protect it ready for storage.

Clean the couplers before connecting and make sure the connections are perfect (first insert as far as the coupler will go and then screw in by hand). A bad connection may result in improper functioning and may even generate a safety hazard.

Install the device in such a way as to ensure that the hoses are not subjected to sharp or forced bends or thrust actions that may cause them to break.

Do not modify the device (welded parts, lengthening drive levers, etc.) without consulting the manufacturer.

Do not use the hoses for transporting the device. Use the handles on the cylinders (when appropriate) and set the pump lever to the transportation position.

When filling the pump with oil, always use Larzep hydraulic oil or another oil of similar characteristics. Fill only to the indicated level and remember that the cylinder piston should be back.

Before starting operation, check that the installation is correct, the operator position is safe and the working zone is out of bounds to all personnel.

In all cases, the operator should have received adequate training regarding the handling of the device and logical safety criteria associated with the movement of heavy loads.

WARRANTY

LARZEP, S.A. guarantees its products against all design and manufacturing defects during 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

CYLINDER-HAND PUMP INSTRUCTIONS

Unpack and visually check all the components, making sure that there are no oil leaks, loose or damaged couplers, damaged threads, etc. Never use components that are damaged or appear to be in poor condition.

Assemble the device in accordance with the instructions given in the diagram, first checking that you have all the necessary material.

Check the correct installation and perfect functioning of the device with a load, in accordance with the procedure outlined below:

SINGLE ACTING INSTALLATION

1. Release the pump drive lever by removing the hook from the lever-holder housing.
2. Pump manually with the drive screw open (rotate a few times to loosen) in order to fill the pump's internal circuit with oil.
3. Close the drive screw by turning clockwise manually. You do not need to close too tightly.
4. Now pump using the drive lever. First, fill the hose with oil. The number of strokes required will depend on the length of the hose and the flow supplied by the pump piston. With single-speed pumps, the flow will remain the same at all times, regardless of the load or pressure. With two-speed pumps, the large piston will be activated during the load-free feed movement, and when the device comes into contact with the load, an internal large piston relief valve will be automatically triggered and only the oil supplied by the small piston will be available up to 700 kg/cm², which is the maximum pressure for the device.
5. Once the hose is full of oil, the cylinder piston will start to advance.
6. If the cylinder has a mechanical limit switch capable of withstanding the maximum device pressure, continue pumping until the limit switch is reached.
7. If any control elements (pressure gauges) are available, you will be able to see how the pressure increases along with the effort required to move the lever.
8. Keep pumping until you obtain the maximum pressure (700 kg/cm²). In this way you will be able to check the correct functioning of the internal safety valve and the absence of oil leaks in the installation.
9. Maintain pressure in the installation for a short period of time (1 minute) without pumping, in order to check the correct functioning of the pump's check valve.
10. Gently open the pump's drive screw (by turning anticlockwise) in order to protect the fall of the pressure gauge needle. Do not force the drive screw open. The cylinder will not move back more quickly because the screw is looser. A couple of turns will be enough.
11. If the cylinder has a return spring (SM, SMP, SMX, SH, TE, T, SAM, SAH, SATM, CY, KC) the piston will move back automatically. The return speed may be slow in some applications. In this case, we recommend the use of double effect cylinders. In the case of load return cylinders (SP, SPR, SX, SL, SSR, ST, STR, STX, SAT), you will need to push the piston back using more or less force, depending on the size and position of the cylinder.
12. In cylinders without a mechanical end of stroke (SSR, ST, STR, STX) this type of test cannot be carried out. If you do not have a test bench, you will have to test the installation using the actual load in the application. This operation should be carried out with extreme care by experienced personnel and maximum safety measures should be applied.
13. Repeat the processes as many times as necessary until you are comfortable handling the device.
14. If using close or check valves, or working with various cylinders via flow distributors, remember to take into consideration the effect these accessories may have on the functioning of the device, and establish an operating procedure in order to avoid unwanted effects.

DOUBLE ACTING INSTALLATION

1. The connection of the couplers is even more important here, since a bad connection will not only prevent the device from functioning, it may also generate excessive pressure build-up that may cause the break of the cylinder. Take note of which hose connects to the advance chamber and which to the return chamber.
2. All double action Larzep cylinders are equipped with a mechanical end of stroke capable of withstanding the nominal pressure. You can therefore carry out the test described in the previous section. If you are working with another type of cylinder and are not 100% sure, do not carry out this test.
3. Release the pump drive lever by removing the hook from the lever-holder housing.
4. Turn the control of the distributing valve to the central position and pump a few times to fill the internal channels with oil.
5. Turn the lever to one side and pump. Oil will flow through the hose connected to the opposite side to which the valve lever is rotated. If this hose is connected to the cylinder's thrust chamber, the piston will move forward. The oil in the return chamber will flow freely through the other hose to the pump tank. Flow is supplied by both the large and small pistons until the cylinder reaches the load.
6. Continue pumping until you reach the mechanical end of stroke. At this moment an internal large piston relief valve will be triggered, and only the oil supplied by the small piston will be available. Subject the installation to pressure to check for leaks.
7. Stop pumping and check (preferably using a pressure gauge) that the installation maintains the pressure level.
8. Turn the valve lever to the other side and pump. Oil will flow to the return chamber and the piston will move back. The oil in the advance chamber will flow freely back to the tank.
9. Repeat the processes as many times as necessary until you are comfortable handling the device.
10. If using close or check valves, or working with various cylinders via flow distributors, remember to take into consideration the effect these accessories may have on the functioning of the device, and establish an operating procedure in order to avoid unwanted effects.

MANTENIMIENTO

- Comprobación del nivel de aceite.
 - Con la bomba en posición vertical (base (1) abajo), soltar el tapón (16). En el modelo W00307 el nivel se consigue por desbordamiento del aceite por el agujero. En los otros modelos comprobar el nivel en la varilla del tapón.
 - Esta verificación se realizara con el cilindro recogido. Un exceso de aceite en el depósito origina presiones internas que provocan un mal funcionamiento de la bomba.
 - Filtrar el aceite antes de introducirlo en el depósito.
- Una vez utilizado el equipo, limpiarlo y engrasar las zonas expuestas a desgaste u oxidación. La articulación en la palanca de accionamiento de la bomba y las roscas del cilindro.

AVERIAS Y REPARACIONES

- EL CILINDRO NO AVANZA AL BOMBEAR.
 - Falta de aceite en el depósito ____ *Revisar el nivel.*
 - Incorrecta conexión de enchufes ____ *Revisar las conexiones.*
 - Cierre defectuoso de la bola de admisión (19) ____ *Corregir el asiento y cambiar la bola.*
 - Cierre defectuoso de la bola de cierre (22) ____ *Corregir el asiento y cambiar la bola.*
- EL CILINDRO NO ALCANZA O NO RETIENE LA PRESIÓN.
 - Válvula limitadora (12) destarada ____ *Retarar la válvula.*
 - Cierre defectuoso de la bola de retención (20) ____ *Corregir el asiento y cambiar la bola.*
 - Cierre defectuoso de la bola de cierre (22) ____ *Corregir el asiento y cambiar la bola.*
 - Retén de presión dañado (26) ____ *Cambiar el retén.*
 - Retén del cilindro dañado ____ *Cambiar el retén.*
- EL CILINDRO NO RETORNA.
 - Demasiado aceite en el depósito ____ *Revisar el nivel.*

MAINTENANCE

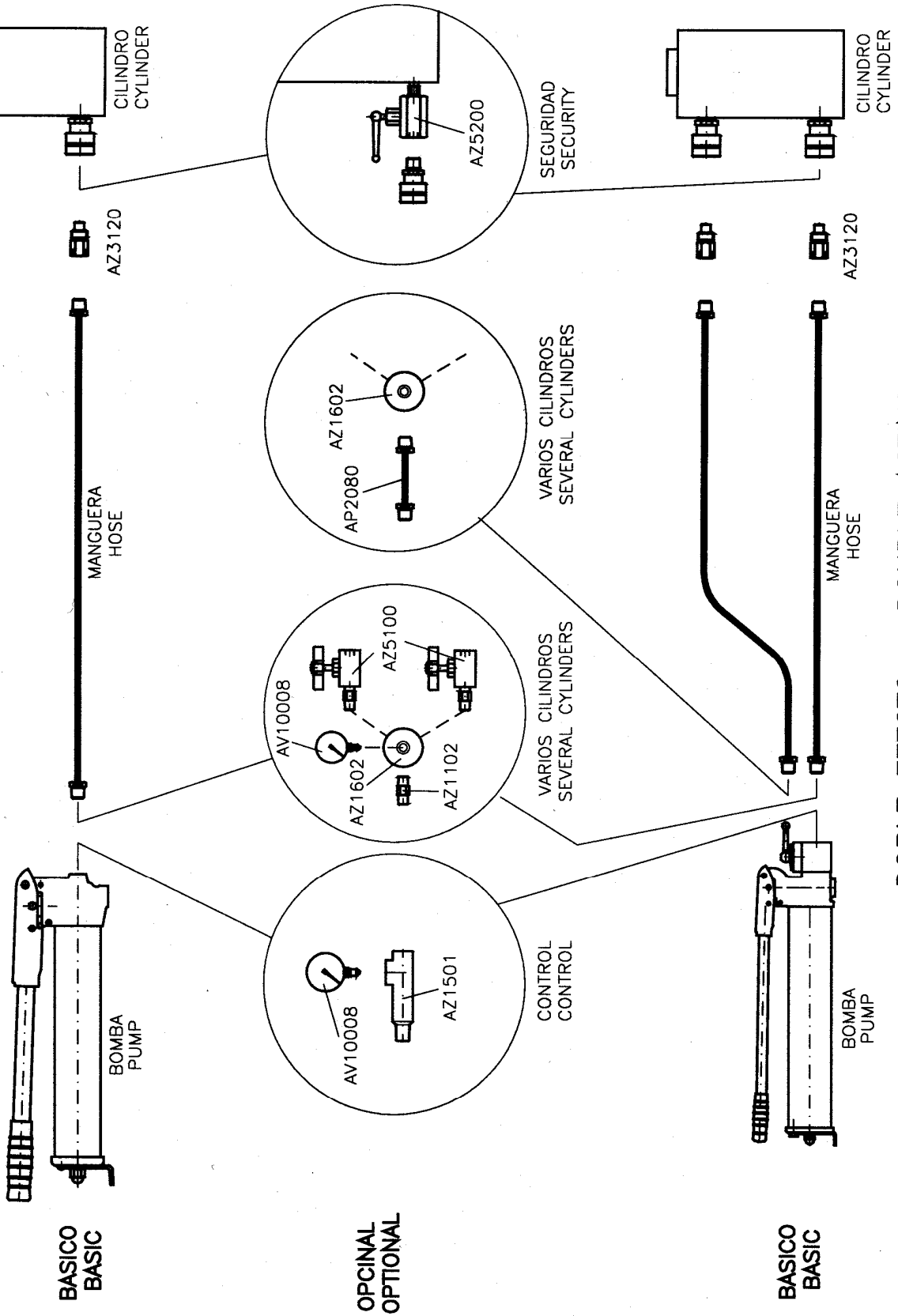
- Oil level check.
 - With the pump in vertical position (base (1) downwards), unscrew or pry off the plug (16). On the W00307 model the level is obtained by overflow through the filling hole. On the other models check the level on the dip stick.
 - This check must be carried out with the cylinder fully retracted. Excessive amount of oil in the tank will lead to internal pressures which will hamper the function of the pump.
 - Filter the oil before filling up the pump.
- Once the equipment is being used the areas exposed to wear and oxidation must be cleaned and greased.

BREAK DOWNS AND REPARATIONS

- THE CYLINDER DOESN'T AVANCE
 - Lack of oil in the tank ____ *Check the oil.*
 - Couplers not fully inserted ____ *Check couplers.*
 - Admission ball valve failure (19) ____ *Clean the seat and replace the ball.*
 - Closing ball valve failure (22) ____ *Clean the seat and replace the ball.*
- THE CYLINDER DOESN'T REACH WORKING PRESSURE.
 - Relief valve no calibrated (12) ____ *Calibrate the valve.*
 - Retention ball valve failure (20) ____ *Clean the seat and replace the ball.*
 - Closing ball valve failure (22) ____ *Clean the seat and replace the ball.*
 - Pressure seal damaged (26) ____ *Replace the seal.*
 - Cylinder pressure seal damaged (see cylinder) ____ *Replace the seal.*
- THE CYLINDER DOESN'T RETRACT
 - Too much oil in the tank ____ *Check the level.*

INSTALACION – INSTALATION

SIMPLE EFECTO – SINGLE ACTING



DOBLE EFECTO – DOUBLE ACTING

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

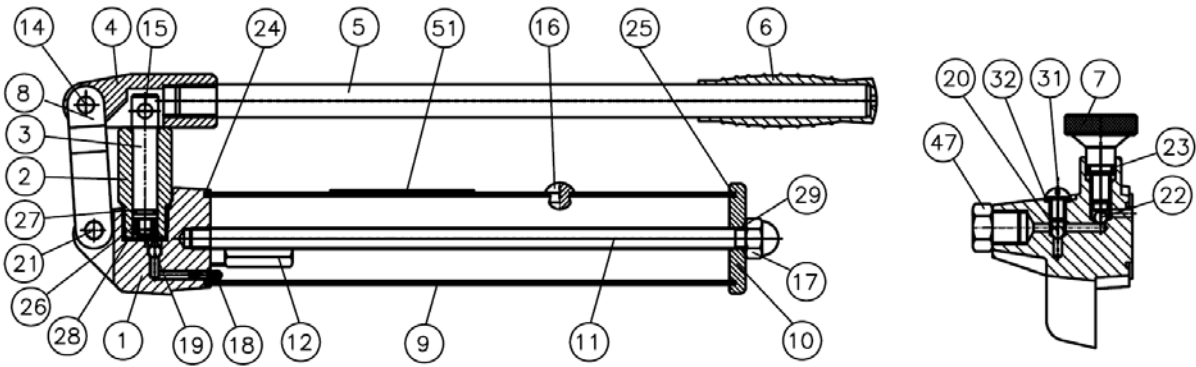
Referencias / Models: W00307, W10707, W20707, W11207, W21207, W22307, W24307

Nº	Denominación/description	W00307	W10707	W20707	W11207	W21207	W22307	W24307	**
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	24B0037	24B0037	24B0037	24B0037	24B0037	24B0037	
5	Palanca / handle	24A0005	24A0070	24A0070	24A0070	24A0070	24A0070	24A0070	
6	Empuñadura / handle grip	24C0004	24C0006	24C0006	24C0006	24C0006	24C0006	24C0006	
7	Tornillo accionamiento / release screw	15H0017	15H0017	15H0017	15H0017	15H0017	15H0017	15H0017	
8	Tirante inyector / Inyector	24F0006							
9	Depósito / tank	51B0017	51B0042	51B0042	51B0065	51B0065	51B0022	51B0068	
10	Tapa depósito / end cap	15L0095	32A0013	32A0013	32A0014	32A0014	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	15I0348	15I0348	15I0348	15I0348	15I0348	15I0348	
15	Eje pistón / piston pin	15A0012	15I0347	15I0347	15I0347	15I0347	15I0347	15I0347	
16	Tapón-Tapón nivel / plug-plug label	12C0026	15L0117	15L0117	15L0042	15L0117	15L0044	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 Ø6	31A0002 Ø4	31A0001* Ø6	31A0001 Ø6	31A0001* Ø6	31A0001* Ø6	31A0001* Ø6	**
20	Bola de retención / ball	31A0001 Ø6	31A0001 Ø6	31A0005* Ø8.5	31A0002 Ø4	31A0005* Ø8.5	31A0005* Ø8.5	31A0005* Ø8.5	**
21	Eje tirante inyector / pin	15A0014							
22	Bola cierre / ball	31A0001 Ø6	31A0001 Ø6	31A0001 Ø6	31A0001 Ø6	31A0001 Ø6	31A0001 Ø6	31A0001 Ø6	
23	Tórica tornillo accionamiento / O-ring	12A0047	12A0047	12A0047	12A0047	12A0047	12A0047	12A0047	**
24	Junta base-depósito / joint	57F0015	57F0016	57F0016	57F0016	57F0016	57F0019	57F0018	**
25	Junta depósito-tapa / joint	57F0015	57F0016	57F0016	57F0017	57F0017	57F0019	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	27A0004	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		14A0400	14A0400	14A0400	14A0400			
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		12A0051	12A0051	12A0056	12A0056	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	15O0002	
49	Tórica tornillo cierre / O-ring						12A0020	12A0020	**
50	Estuche cartón / box	21D0017	21D0019	21D0019	21D0019	21D0019	21D0019	21D0020	
51	Etiqueta / label	30A0017	30A0023	30A0023	30A0023	30A0023	30A0023	30A0023	

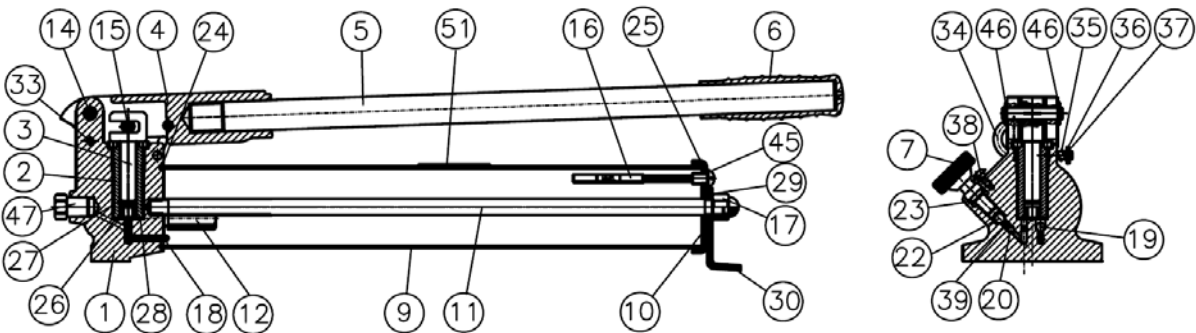
** Juego de recambios/Spare parts

* Dos piezas/Two pieces

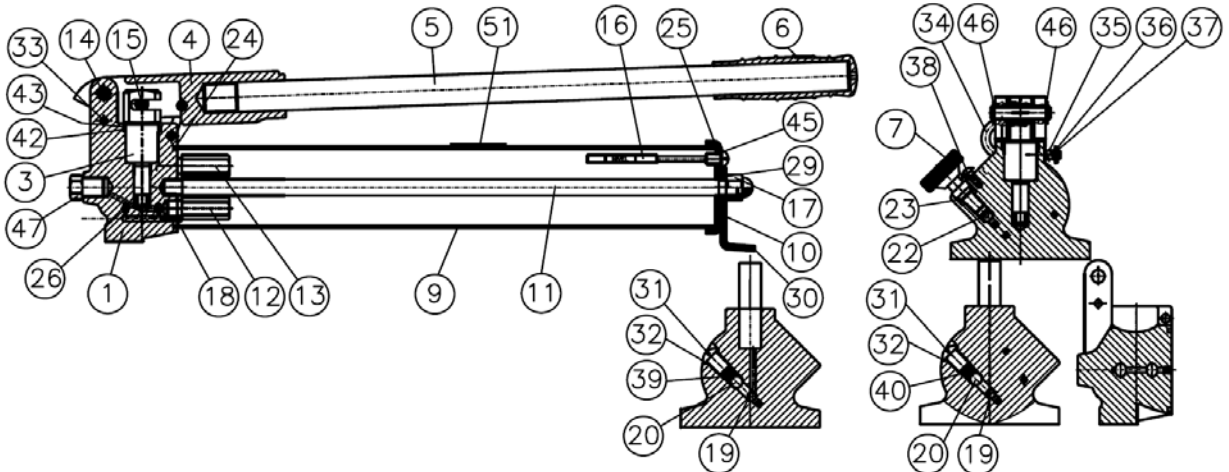
W00307



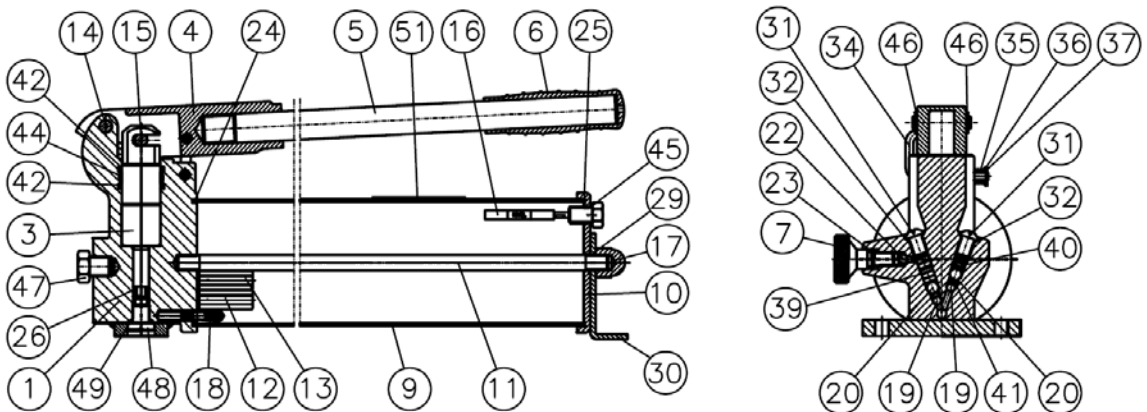
W10707/W11207



W20707/W21207



W22307/W24307





LARZEP, S.A.

Avenida Urtiaga, 6
48269 MALLABIA, SPAIN
Tel. +34 943 171200
Fax. +34 943 174166
e-mail: sales@larzep.com
www.larzep.com



INSTRUCTIONS AND MANUAL

W07807 X07807

2 SPEED HAND PUMP 7500 cc



LARZEP, S.A.
Avenida Urtiaga, 6
48269 MALLABIA, SPAIN
Tel. +34 943 171200
Fax. +34 943 174166
e-mail: sales@larzep.com
www.larzep.com

LARZEP AUSTRALIA PTY. LTD.
139 Wedgewood Road,
HALLAM, VIC. 3803 AUSTRALIA
Tel. +61 (3) 9796 3744
Fax. +61 (3) 9796 5964
e-mail: sales@larzep.com.au
www.larzep.com.au

LARZEP AUSTRALIA PTY. LTD.
49A Sustainable Avenue
BIBRA LAKE, WA 6163 AUSTRALIA
Tel. +61 (8) 9418 4988
Fax. +61 (8) 9418 2644
e-mail: sales@larzep.com.au
www.larzep.com.au

INDEX

1. BEFORE USING THE EQUIPMENT AND SECURITY -----	2
2. WARRANTY -----	2
3. TECHNICAL FEATURES -----	3
4. START UP -----	3
5. MAINTENANCE -----	4
6. DIMENSIONS -----	5
7. DECLARATION OF CONFORMITY -----	6

1. BEFORE USING THE EQUIPMENT AND SECURITY



The correct union of a pump to a cylinder via a hydraulic hose constitutes a machine designed for lifting, pulling, folding and retaining operations, etc., that, due to its high thrust capacity requires safe use in order to eliminate the risk of accidents.

- ❖ 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



Choose the most suitable model for the application from the wide range available, and make sure that it will not exceed 80% of its nominal capacity during normal operation.

- ❖ Define stable zones for applying the load and safety zones for operators, separating them through the use of hoses of sufficient length.
- ❖ Block loads mechanically once the movement has been completed and avoid operating underneath them.
- ❖ Use all the cylinder's useful support surface, both on the head and the base. Be prepared to use tilting heads if applying lateral loads.



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

- ❖ Remove loads before carrying out maintenance operations and always work in clean, well-lit areas.
- ❖ 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. Be prepared to use safety valves and accessories if the safety criteria demand it.
- ❖ The pump controls should be activated manually, as should the connections between elements equipped with couplers.
- ❖ Once you have finished using the device, check that it has not been damaged, clean it and protect it ready for storage.
- ❖ Clean the couplers before connecting and make sure the connections are perfect (first insert as far as the plug will go and then screw in by hand). A bad connection may result in improper functioning and may even generate a safety hazard.
- ❖ Install the device in such a way as to ensure that the hoses are not subjected to sharp or forced bends or thrust actions that may cause them to break.
- ❖ Do not modify the device (welded parts, lengthening drive levers, etc.) without consulting the manufacturer.
- ❖ Do not use the hoses for transporting the device. Use the handles on the cylinders (when appropriate) and set the pump lever to the transportation position.
- ❖ When filling the pump with oil, always use LARZEP hydraulic oil or another oil of similar characteristics. Fill only to the indicated level and remember that the cylinder piston should be back.
- ❖ Before starting operation, check that the installation is correct, the operator position is safe and the working zone is out of bounds to all personnel.
- ❖ In all cases, the operator should have received adequate training regarding the handling of the device and logical safety criteria associated with the movement of heavy loads.

2. WARRANTY

LARZEP, S.A. guarantees its products against all design and manufacturing defects during 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

3. TECHNICAL FEATURES

The "W" Hand Pumps are compact, light and portable used to power single acting-cylinders, they operate horizontally or vertically, with pump head downwards.

All models with pressure relief valve.

The two speeds pumps are recommended for applications where the cylinder plunger must move rapidly, also for larger cylinder hook-ups where greater oil capacity is required.

All pumps have 3/8"-18 NPT female ports.

The "X" models are automatic two-speed pumps with a 4-way control valve for operation of double acting- cylinders. Internal pressure relief valves for overload protection.

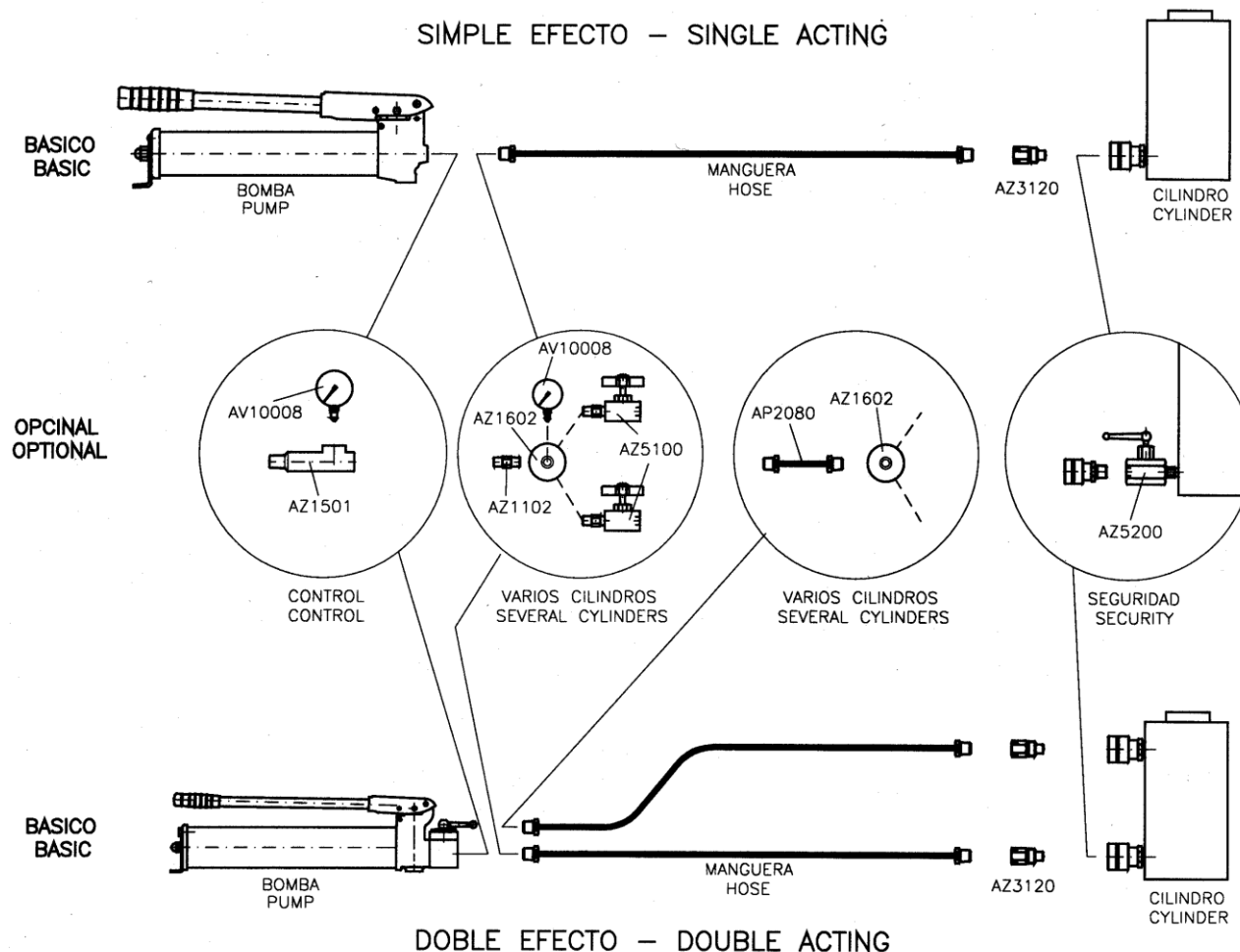
Two-speed operation for high tonnage cylinders where oil capacity and fast economical cycle time is needed.

REFERENCE	SPEEDS	USABLE OIL	OIL DISPLACEMENT PER STROKE	PRESSURE RATING	WEIGHT
			1º STAGE/ 2º STAGE	1º STAGE/ 2º STAGE	
W07807	2	7500 CC	120,5 / 4,6	20 / 700	24,9 Kg
X07807	2	7500 CC	120,5 / 4,6	20 / 700	26,3 Kg

4. START UP

INSTALACION – INSTALATION

SIMPLE EFECTO – SINGLE ACTING



DOBLE EFECTO – DOUBLE ACTING

- Unpack and visually check all the components, making sure that there are no oil leaks, loose or damaged plugs, damaged threads, etc. Never use components that are damaged or appear to be in poor condition. If the tank is empty, fill it with oil supplied.
- Assemble the device in accordance with the instructions given in the diagram, first checking that you have all the necessary material.
- Check the correct installation and perfect functioning of the device with a load, in accordance with the procedure outlined below:

SINGLE ACTING INSTALLATION

1. Place the distributor valve in central position.
2. Pump manually; with the oil filling plug opened, several times to allow the entry of air in the pump and make easier the suction
3. Close the plug by turning clockwise manually. You do not need to close too tightly.
4. Place the distributor valve in advance position and pump using the drive lever. First, fill the hose with oil. The number of strokes required will depend on the length of the hose and the flow supplied by the pump piston. With two-speed pumps, the large piston will be activated during the load-free feed movement, and when the device comes into contact with the load, an internal large piston relief valve will be automatically triggered and only the oil supplied by the small piston will be available up to 700 kg/cm², which is the maximum pressure for the device.
5. Once the hose is full of oil, the cylinder piston will start to advance.
6. If the cylinder has a mechanical limit switch capable of withstanding the maximum device pressure, continue pumping until the limit switch is reached.
7. If any control elements (pressure gauges) are available, you will be able to see how the pressure increases along with the effort required moving the lever.
8. Keep pumping until you obtain the maximum pressure (700 kg/cm²). In this way you will be able to check the correct functioning of the internal safety valve and the absence of oil leaks in the installation.
9. Maintain pressure in the installation for a short period of time (1 minute) without pumping (central position), in order to check the correct functioning of the pump's check valve.
10. To retract the cylinder, place the distributor valve in return movement. If the cylinder has a return spring (SM, SMP, SMX, SH, TE, T, SAM, SAH, SATM, CY, KC) the piston will move back automatically. The return speed may be slow in some applications. In this case, we recommend the use of double effect cylinders. In the case of load return cylinders (SP, SPR, SX,SL, SSR, ST, STR,STX, SAT), you will need to push the piston back using more or less force, depending on the size and position of the cylinder.
11. In cylinders without a mechanical limit switch (SSR, ST, STR, STX) this type of test cannot be carried out. If you do not have a test bench, you will have to test the installation using the actual load in the application. This operation should be carried out with extreme care by experienced personnel and maximum safety measures should be applied.
12. Repeat the process as many times as necessary until you is comfortable handling the device.
13. If using close or check valves, or working with various cylinders via flow distributors, remember to take into consideration the effect these accessories may have on the functioning of the device, and establish an operating procedure in order to avoid unwanted effects.

DOUBLE ACTING INSTALLATION

1. The connection of the couplers is, if possible, even more important here, since a bad connection will not only prevent the device from functioning, it may also generate excessive pressure build-up that may cause the break of the cylinder. Take note of which hose connects to the advance chamber and which to the return chamber.
2. All double action LARZEP cylinders are equipped with a mechanical end of stroke capable of withstanding the nominal pressure. You can therefore carry out the test described in the previous section. If you are working with another type of cylinder and are not 100% sure, do not carry out this test.
3. Turn the control of the distributing valve to the central position and pump a few times to fill the internal channels with oil.
4. Turn the lever to one side and pump. Oil will flow through the hose connected to the side to which the valve lever is rotated. If this hose is connected to the cylinder's thrust chamber, the piston will move forward. The oil in the return chamber will flow freely through the other hose to the pump tank. Flow is supplied by both the large and small pistons until the cylinder reaches the load.
5. Continue pumping until you reach the mechanical end of stroke. At this moment an internal large piston relief valve will be triggered, and only the oil supplied by the small piston will be available. Subject the installation to pressure to check for leaks.
6. Stop pumping and check (preferably using a pressure gauge) that the installation maintains the pressure level.
7. Turn the valve lever to the other side and pump. Oil will flow to the return chamber and the piston will move back. The oil in the advance chamber will flow freely back to the tank.
8. Repeat the processes as many times as necessary until you are comfortable handling the device.
9. If using close or check valves, or working with various cylinders via flow distributors, remember to take into consideration the effect these accessories may have on the functioning of the device, and establish an operating procedure in order to avoid unwanted effects.

5. MAINTENANCE

Checking the oil level.

- ❖ With the pump in vertical position, unscrew or pry off the plug. Check the level on the dip stick.
- ❖ This check must be carried out with the cylinder fully retracted. Excessive amount of oil in the tank will lead to internal pressures which will hamper the function of the pump.
- ❖ Filter the oil before filling up the pump.
- ❖ Once the equipment is being used the areas exposed to wear and oxidation must be cleaned and greased.

BREAK DOWNS AND REPARATIONS

THE CYLINDER DOESN'T REACH WORKING PRESSURE.

- ❖ Relief valve decalibrated (12) ____ *Calibrate the valve.*
- ❖ Retention ball valve failure (20) ____ *Clean the seat and replace the ball.*
- ❖ Closing ball valve failure (22) ____ *Clean the seat and replace the ball.*
- ❖ Pressure seal damaged (26) ____ *Replace the seal.*
- ❖ Cylinder pressure seal damaged (see cylinder) ____ *Replace the seal.*

THE CYLINDER DOESN'T RETRACT

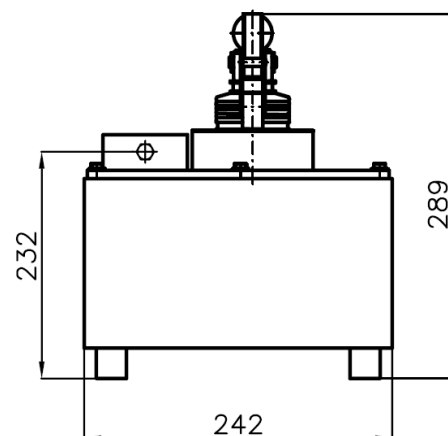
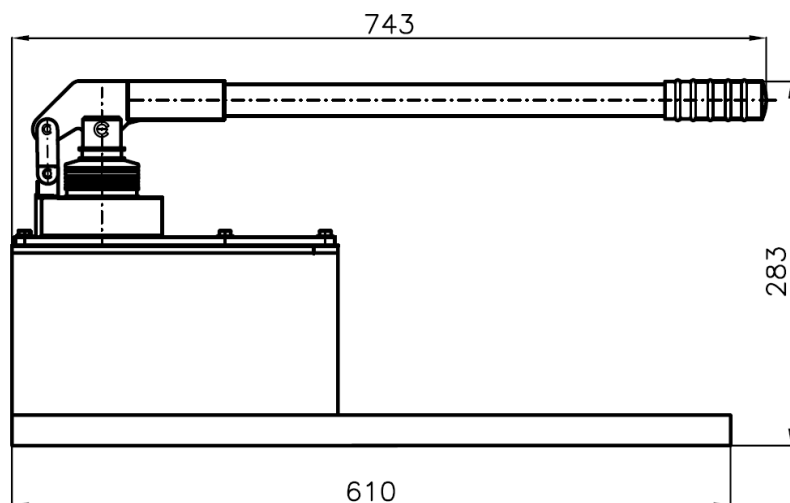
- ❖ Too much oil in the tank ____ *Check the level.*

THE CYLINDER DOESN'T AVANCE

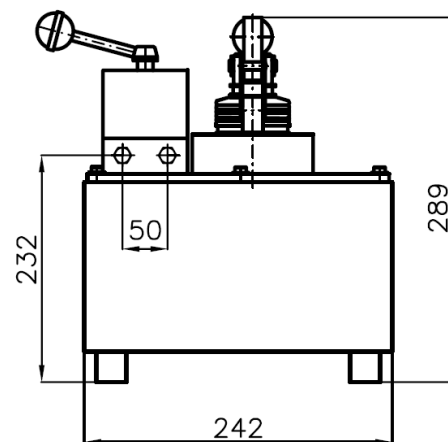
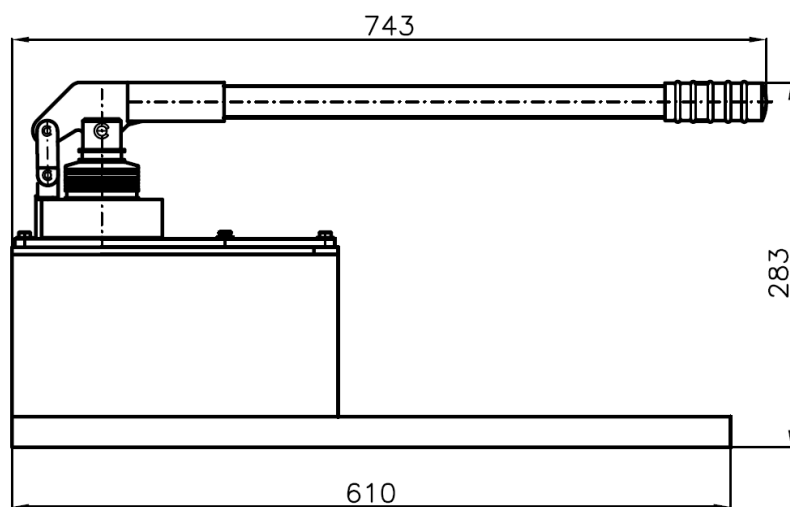
- ❖ Lack of oil in the tank ____ *Check the oil.*
- ❖ Couplers not fully inserted ____ *Check couplers.*
- ❖ Admission ball valve failure (19) ____ *Clean the seat and replace the ball.*
- ❖ Closing ball valve failure (22) ____ *Clean the seat and replace the ball.*

6. DIMENSIONS

W07807



X07807



7. DECLARATION OF CONFORMITY**DECLARACION DE CONFORMIDAD****E**LARZEP, S.A.
Dirección: Avda. Urtiaga, 6
48269 Mallabia ESPAÑADeclaramos bajo nuestra exclusiva responsabilidad la conformidad de los productos a los que refiere esta declaración, con las disposiciones de la directiva:
2006/42/CE**DECLARATION OF CONFORMITE****F**Nous, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAINDéclarons sous notre seule responsabilité que les produits auxquels se réfère cette déclaration sont conformes aux dispositions des Directives:
2006/42/EC**DECLARAÇÃO DE CONFORMIDADE****P**Nós, LARZEP, S.A.
Endereço: Avda. Urtiaga, 6
48269 Mallabia SPAINDeclaramos, sob nossa única responsabilidade, que os seguintes produtos, incluídos nesta declaração estão em conformidade com o disposto na Directiva:
2006/42/EC**ÖVERENSSTEMMELSEERKLÄRING****DK**Vi, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAINErklærer på eget ansvar, at følgende produkter som er omfattet af denne erklæring, er i overensstemmelse med bestemmelserne i Direktiv:
2006/42/EC**ERKLÆRINGOM OVERENSSTEMMELSE****N**Vi, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAINErklærer på eget ansvar, at følgende produkter som dekkes av denne erklæringen, er i overensstemmelse med bestemmelserne i Direktiv:
2006/42/EC**ÜBEREINSTIMMUNGSERKLÄRUNG****D**Wir, LARZEP, S.A.
Anschrift: Avda. Urtiaga, 6
48269 Mallabia SPAINErklären auf eigene Verantwortung, daß folgende Produkte, auf die sich diese Erklärung bezieht, mit den Bedingungen der Direktiven, 2006/42/EC
Cübereinstimmen.

Tipo, Type, Typ, Tyypit.

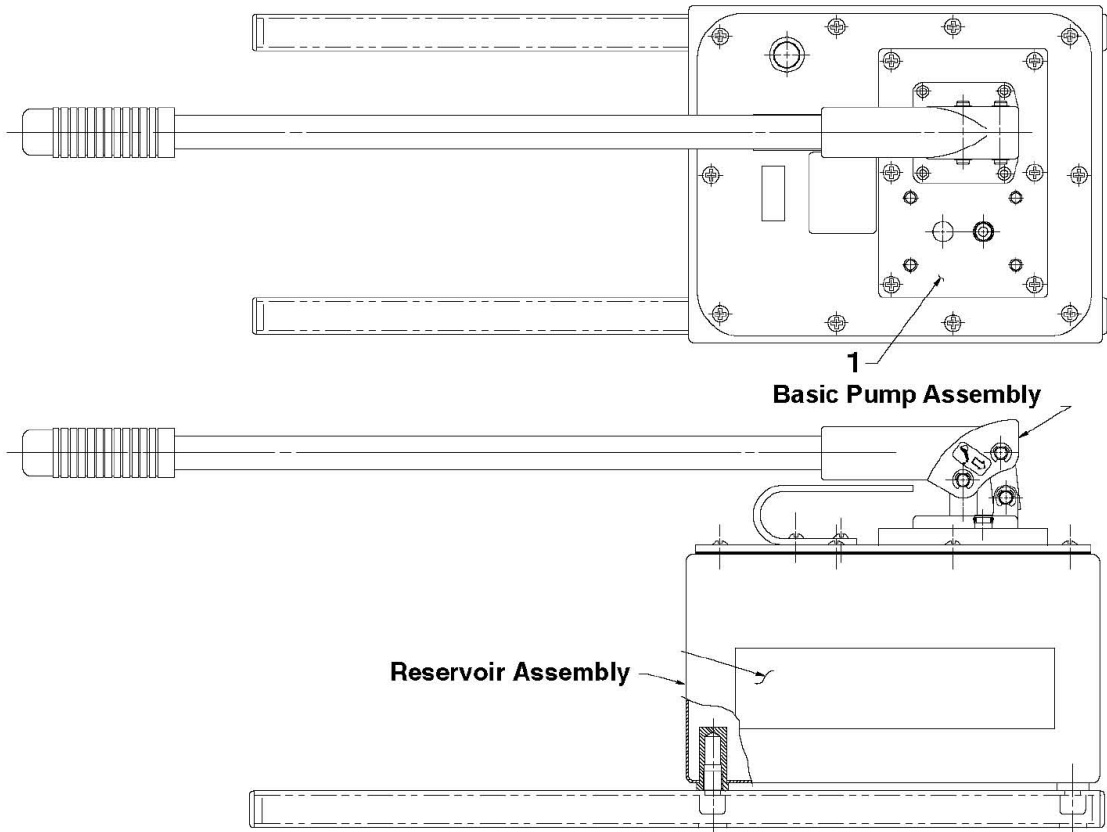
SM / SH / SP / SMP / SPR / SX / SMX / ST / STR / STX / SL / SAM / SAH / SAT / SATM / SSR / T / TE / TD / D / DH / DDR / DAH / DDA / DM / DI / JM / JH / JP / Z / ZR / W / WP / X / HAM / HAE / HAZ / HAG / HAS / HFM / HFE / HAP / HAT / HAB / WI / CK / CC / CN / FU / FV / FZ / FA / FX / FT / CY / AA / AU / CT / C / KC / LAS / LAX / CB / CH / CM / PH**A / AB / AC / B / AF / F / HN / HL / DLG / VA / VB / VC / VZ / ECE / ECM / ECZ / EE / EM / EZ / CA / CS****AZ / AP / AR / AV / AT / AX / AY / AM**Mallabia, ESPAÑA 2009 / 12 / 29

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**GB**We, LARZEP, S.A.
Address: Avda. Urtiaga, 6
48269 Mallabia SPAINDeclare under our sole responsibility that the following products to which this declaration relates conform with the provisions of Directives:
2006/42/EC**DICHIARAZIONE DI CONFORMITÀ****I**Noi, LARZEP, S.A.
Indirizzo: Avda. Urtiaga, 6
48269 Mallabia SPAINDichiariamo sotto la nostra esclusiva responsabilità che i prodotti ai quali questa dichiarazione si riferisce sono conformi quanto previsto dalle Direttive:
2006/42/EC**VAATIMUSTEMUKAISUUSVAKUUTUS.****FIN**Me, LARZEP, S.A.
Osoite: Avda. Urtiaga, 6
48269 Mallabia SPAINVakuutamme yksinomaan omalla vastuullamme, että seuraavat tuotteet, joihin tämä vakuutus liittyy, ovat seuraavien Direktiivien vaatimusten mukaisia:
2006/42/EC**VERKLARINGVAN OVEREENKOMST.****NL**Wij, LARZEP, S.A.
Adres: Avda. Urtiaga, 6
48269 Mallabia SPAINVerklaren geheel onder eigen verantwoordelijkheid dat de volgende producten, waarop deze verklaring heeft in overeenstemming zijn met de bepalingen van Richtlijn:
2006/42/EC**FÖRSÄKRAN OM ÖVERESSTÄMMELSE****S**Vi, LARZEP, S.A.
Adress: Avda. Urtiaga, 6
48269 Mallabia SPAINFörsäkrar under eget ansvar att följande produkter som omfattas av denna försäkran är i överensstämmelse med villkoren i Direktiv:
2006/42/EC**LARZEP, S.A.**

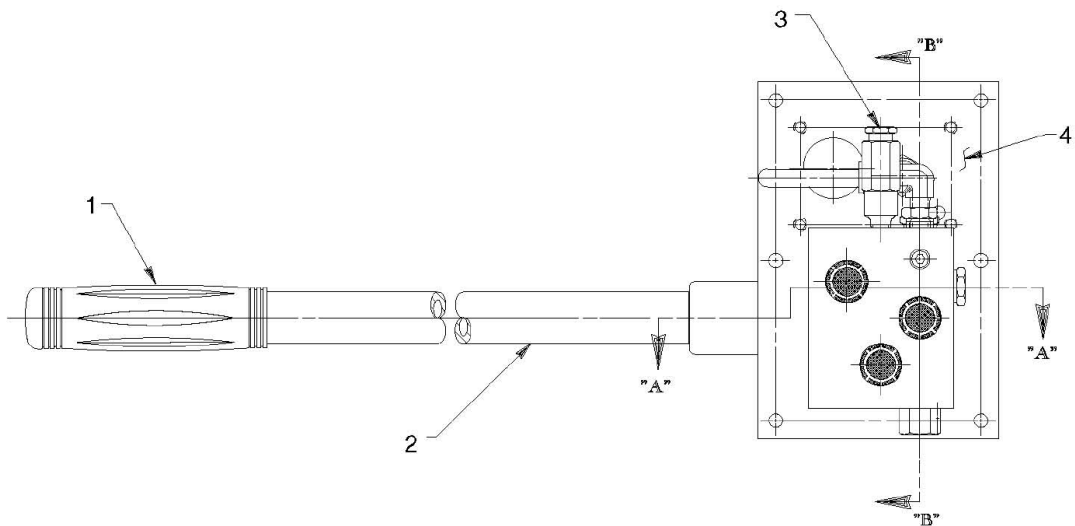
Nombre y firma, name and signature, nom et signature, namn och underskrift, nimi ja nimikirjoitus, navn og underskrift, name und underskrift, naam en handtekening, nome e assinatura, nome e firma.

GENERAL ASSEMBLY



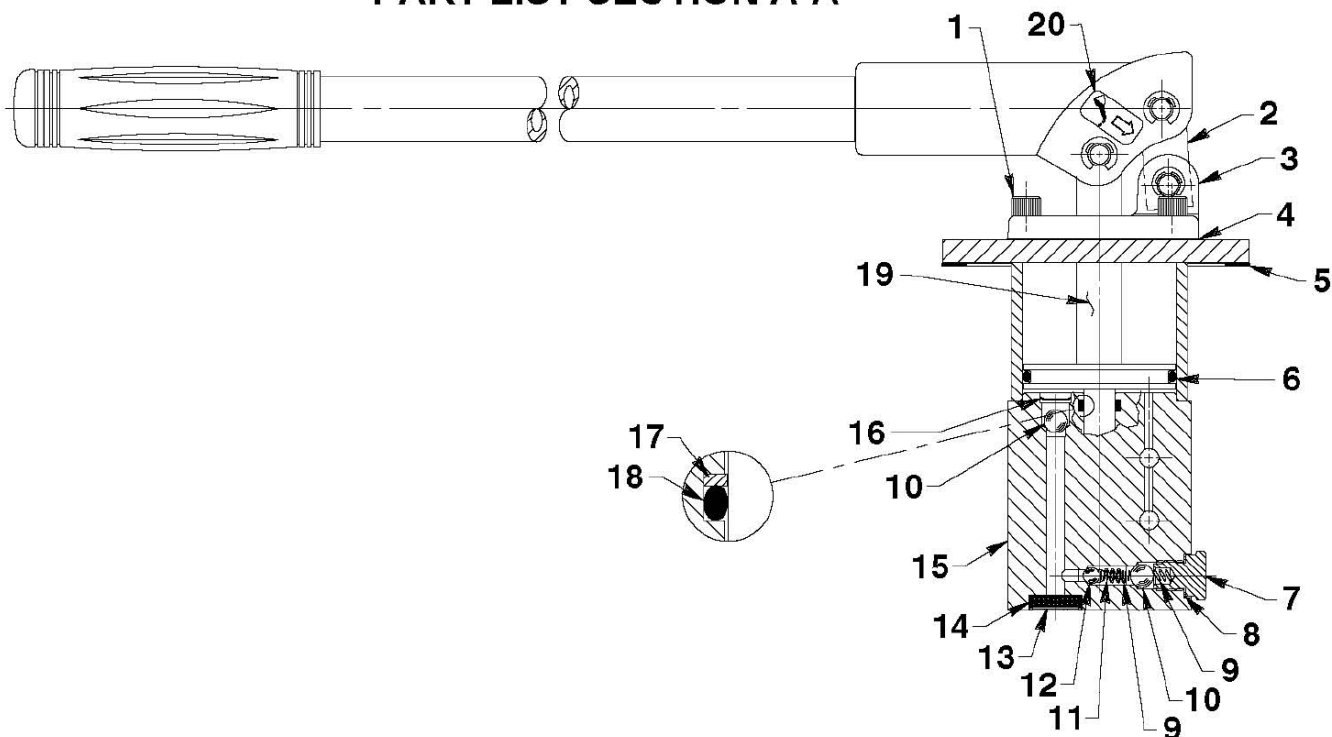
Item No.	Part No.	No. Req'd	Description
1		1	Valve (3-way - For W07807)
		1	Valve (4-way - For X07807)

BASIC PUMP ASSEMBLY



Item No.	Part No.	No. Req'd	Description
1		1	Flex Grip Handle
2		1	Handle
3		1	Relief Valve Assembly
4		1	Cover Plate

PART LIST SECTION A-A

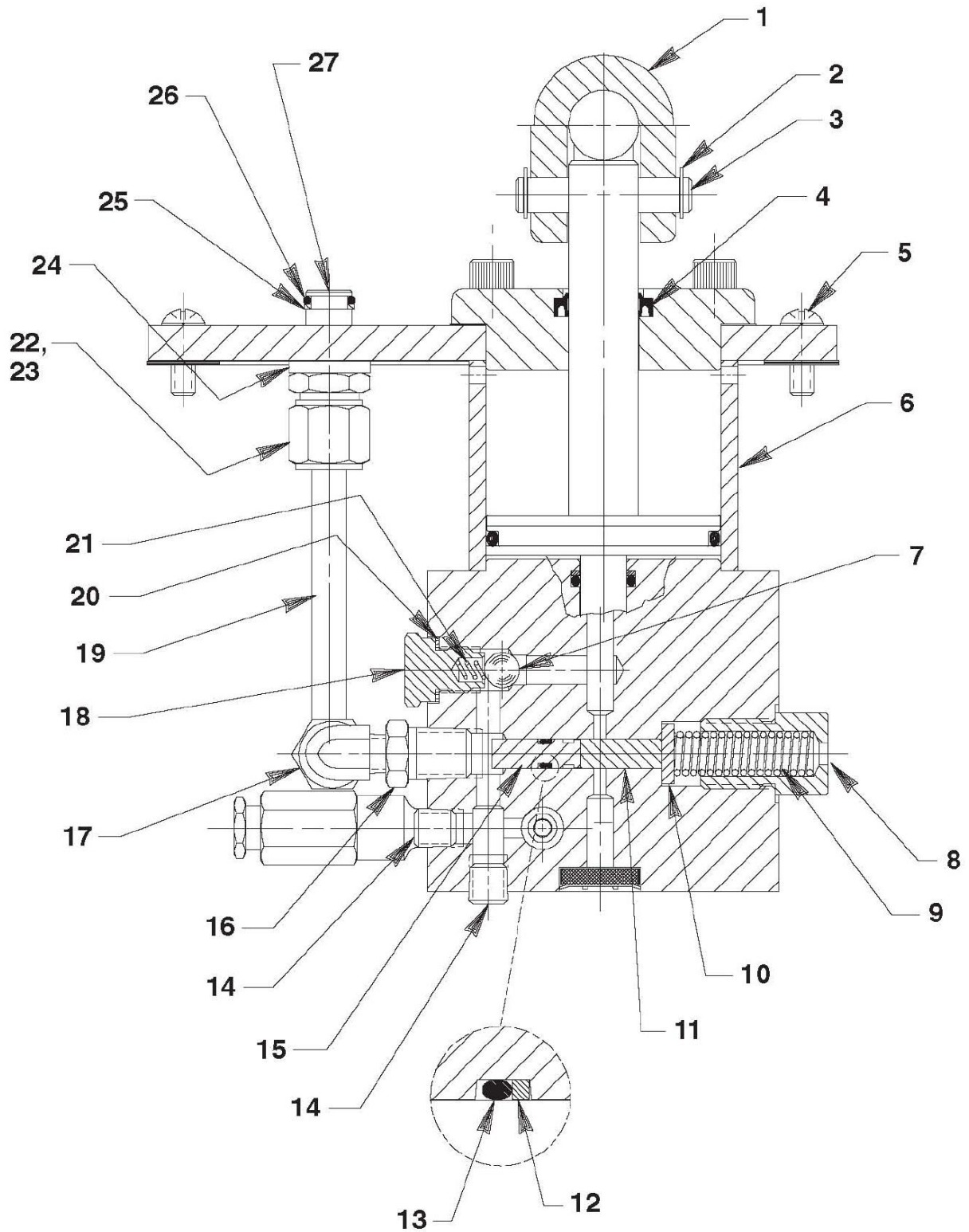


Item No.	Part No.	No. Req'd	Description
1		4	Screw (5/16-24 UNF x 3-1/2 Lg.; Torque to 240/250 in. lbs.) Note: Torque in increments of 100 in. lbs.
2		1	Pivot Block
3		1	End Cap
* 4		1	End Cap Gasket
* 5		1	Reservoir Gasket
* 6		1	O-ring (2-1/2 x 2-1/4 x 1/8; Nitrile)
7		1	Valve Screw (Torque to 480/500 in. lbs.)
* 8		1	Soft Copper Washer (.700 X 1/2 X 1/32)
* 9		1	Compression Spring (3/16 I.D. X 13/32 Lg.)

Item No.	Part No.	No. Req'd	Description
* 10		3	Steel Ball (3/8 dia.)
* 11		1	Spring (5/32 O.D. X 5/8 Lg.)
* 12		1	Steel Ball (1/4 dia.)
* 13		3	Retaining Ring (Internal)
* 14		3	Filter (Insert screen with cupped side in.)
15		1	Pump Body
* 16		2	Retaining Ring
* 17		1	Backup Washer
* 18		1	O-ring (11/16 X 1/2 X 3/32; Urethane)
19		1	Piston Assembly
20		1	Oil Pivot Pins Decal

* Repair Kit

SECTION B-B

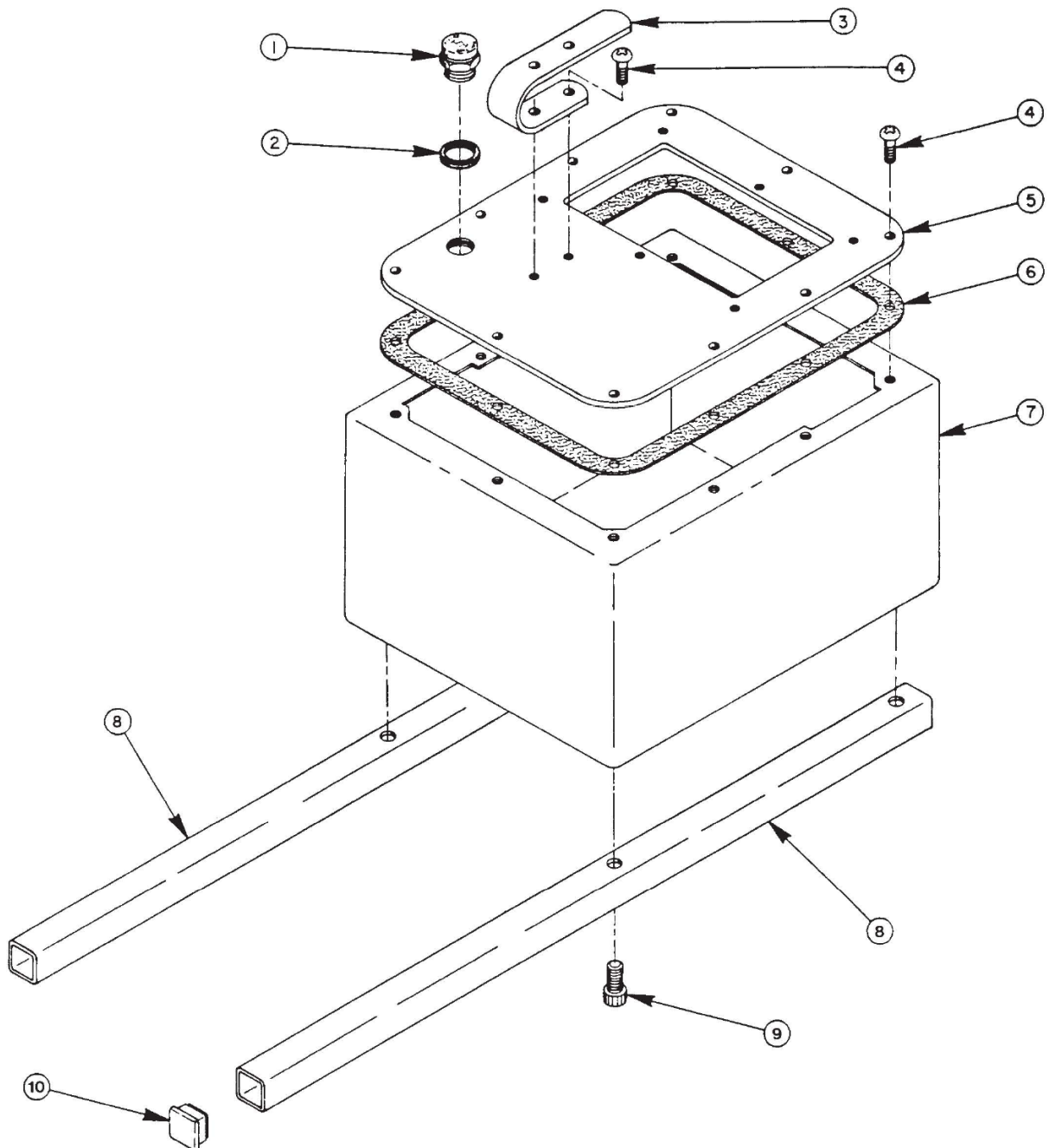


PART LIST SECTION B-B

Item No.	Part No.	No. Req'd	Description
1		1	Lever
2		6	Retaining Ring
3		3	Clevis Pin
*4		1	Rod Wiper (Nitrile)
5		6	Machine Screw (1/4-20 UNC X 3/4 Lg.)
6		1	Spacer (Position of holes is to be at the top.)
*7		1	Steel Ball (3/8 dia.)
8		1	Unloading Valve Fitting
*9		1	Compression Spring (1/2 O.D. x 2" Lg.)
10		1	Disc
11		1	Dowel Pin
*12		1	Backup Ring (5/16 X 3/16 X 3/64)
*13		1	O-ring (5/16 X 3/16 X 1/16; Nitrile)
14		2	Pressure Plug
15		1	Unloading Valve Piston
16		1	Reducer Bushing
17		1	Tube Elbow
18		1	Valve Screw (Torque to 480/500 in. lbs.)
19		1	Oil Line
20		1	Soft Copper Washer (.700 X 1/2 X 1/32)
*21		1	Compression Spring (3/16 I.D. X 13/32 Lg.)
22		1	Tube Sleeve (3/8)
23		1	Tube Nut (Torque to 40/50 ft. lbs.)
24		1	Spacer
*25		1	Backup Washer (1/2 X 3/8 X 1/16)
*26		1	O-ring (1/2 X 3/8 X 1/16; Nitrile)
27		1	Valve Connector (Torque to 20/30 ft. lbs.)

* Repair Kit

RESERVOIR ASSEMBLY



Item No.	Part No.	No. Req'd	Description
1		1	Filler/Vent Cap
* 2		1	O-ring (.81 x .62 Nitrile)
3		1	Handle (Apply Permatex [or equiv.] between handle and cover plate.)
4		12	Machine Screw (1/4-20 UNC x 3/4 Lg.)
5		1	Cover Plate

Item No.	Part No.	No. Req'd	Description
6		1	Cover Gasket (Assemble gasket [with adhesive in contact with reservoir]. Apply Permatex [or equiv.] between gasket and cover plate.)
7		1	Reservoir
8		2	Support Tube
9		4	Soc. Hd. Cap Screw
10		4	Plastic Tube Insert

* Repair Kit