

Hydraulic System for Plate Heat Exchangers (PHE) – User Manual

## General Assembling

1. Check the A-dimension and make a note of it on a piece of paper (figs. 01 and 02).
  - a. Most of the gasketed plate heat exchangers (PHE) have the A-dimension (A min and A max) stated on the rating plate that is mounted on the connection side of the PHE.
  - b. If you cannot ascertain this information from the rating plate, please refer to your documents (plate specifications) or contact IS-Service GmbH Customer Service, indicating the serial number of the PHE!
- c. You may reduce the default A-dimension indicated on the rating plate, in the plate specifications document or the user manual by a maximum of 3% from the beginning.
2. Once you have all the information (A dimension, plate specifications) you need, you can get started with your maintenance activity!
3. Open the aluminum box that contains the hydraulic equipment.
4. Remove all parts from the box and spread them on the ground (fig. 03). System with electrical power pump (fig. 03a).

01



02



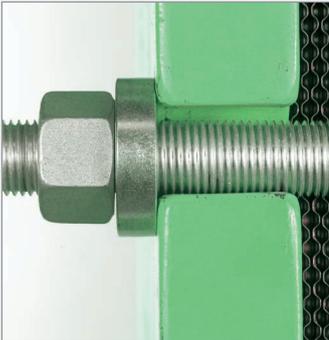
03



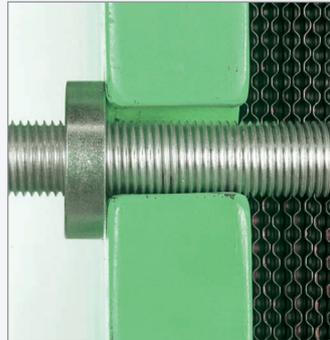
03a

5. Check the parts inventory against the parts list enclosed in the box. It should contain:
  - a. Hydraulic pump, 1 piece.
  - b. Hydraulic cylinder 4 pieces.
  - c. Hydraulic hoses, long, 4 pieces (3.2m).
  - d. Hydraulic hose, short, 1 piece (1.8m).
  - e. 4-way hydraulic distributor valve, 1 piece.
  - f. Centering disk M20, 8 pieces.
  - g. Centering disk M39, 8 pieces.
6. Make sure that there is an air supply connection for the pneumatic system or a power supply outlet for the electrical system accessible and within reach!
7. Remove the 4 nuts and the 4 centering disks from the four longest tightening bolts on the side of the moveable cover plate (figs. 04 and 05!)
  - a. Use the extra disk from out the box (fig. 06) instead!

04



05



06



06 a



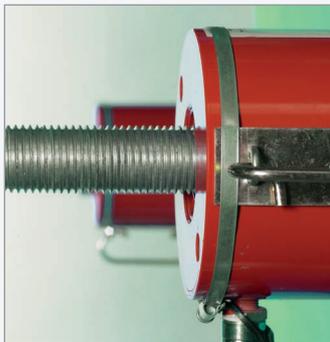
## General Assembling

8. Mounting the hydraulic cylinder:
  - a. Place the first centering disk (from enclosed in the box) on the tightening bolt (fig. 07).
  - b. Mount the hydraulic cylinder (fig. 08).
  - c. Fasten the second centering disk from enclosed in the box (fig. 09).
  - d. Clamp the cylinders in place by tightening the existing nuts (fig. 10).

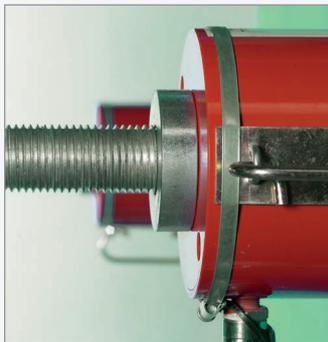
07



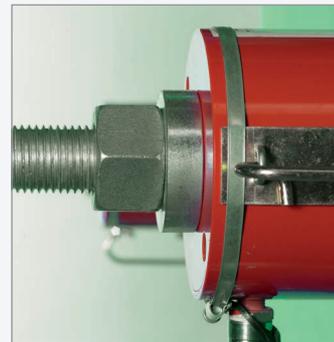
08



09

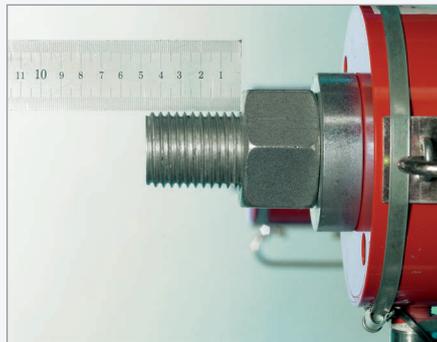


10



**Important Note:** It is essential that the dimension from the end of the tightening bolt to the top of the nut is exactly the same on ALL four cylinders (figs. 11 and 12)!

11

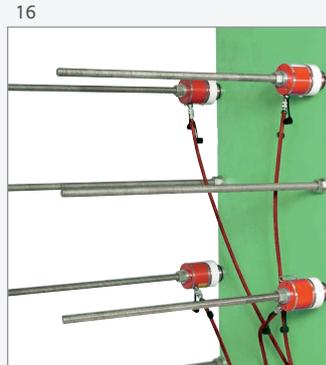
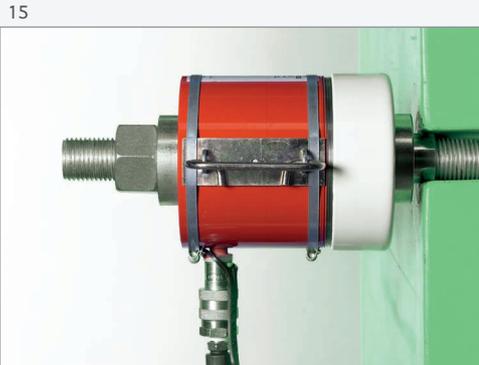


12



## General Assembling

9. Connect the short hose from the 4-way hydraulic distributor valve to the hydraulic or electric pump (figs. 13 and 14).
10. Connect the four long hoses from the 4-way hydraulic distributor valve to the four hydraulic cylinders (figs. 15 - 17).
11. Check the oil level in the reservoir of the hydraulic pump. (New systems come with the reservoir filled to the proper level.)



17



12. Connect the air hose of the hydraulic pump to the plant's existing compressed air supply system (figs. 18 and 18a) or the power cable of the electric pump to a suitable power outlet.

12a. Connect the electric pump on 230V/60Hz net! (fig. 19)

13. Double-check that ALL of the connections are properly seated and tight!!

18



18a

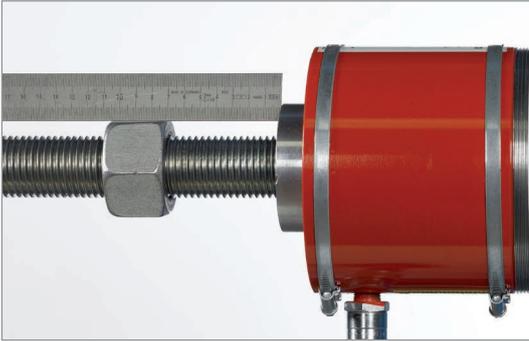


19



## Procedure for opening a PHE

20



14. Unscrew the nuts on all four cylinders so they are spaced 70 mm away from the centering disk (fig. 20).
15. Open the valves on the 4-way hydraulic distributor valve (fig. 21).
16. Switch the valve on the hydraulic pump to position "A or B" (fig. 22), depending on where you have connected the pressure hose in previous steps.
17. Press the Start button to switch on the hydraulic pump (fig. 23).
- 17a. For the electrical pump use the manual control (fig. 24).
18. Once **ALL** hydraulic cylinders have been pressurized and their pistons have extended, stop the pump.

21



22



23



24



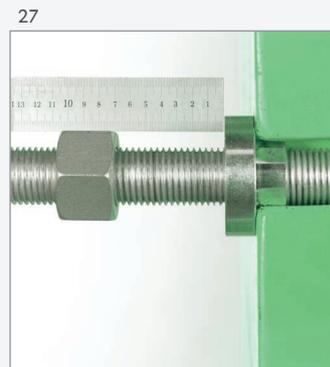
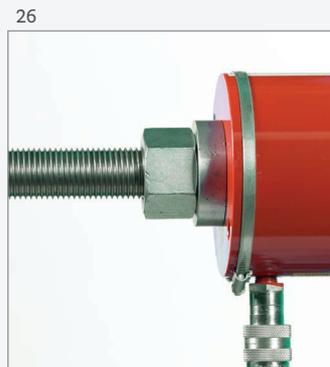
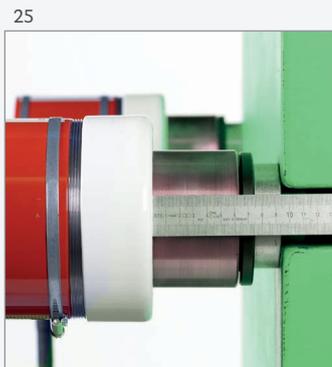
Note: a. Position "A" selects the upper hydraulics port, Position "B" the lower one!

b. If this is the first time you operate the system, allow a couple of minutes for the oil to fill the hoses and cylinders.

## Procedure for opening a PHE

19. Unscrew all nuts on the remaining tightening bolts over a maximum travel of 70 mm (fig. 27).
20. Open the valve on the hydraulic pump by pushing the lever to its "middle" position (fig. 28).
21. The back pressure exerted by the frame will now press the pistons back into the hydraulic cylinders.
22. If you cannot obtain sufficient back pressure from the moveable cover plate, repeat steps 15 to 21.
23. Remove the hydraulic cylinder and the four tightening bolts first.
24. Then remove the remaining tightening bolts.
25. Dismantle the hydraulic system and keep it stored in a safe place while maintenance work is ongoing.

**Note:** Extending the pistons by 74 mm makes it easier to loosen the remaining bolts (figs. 25 and 26)!

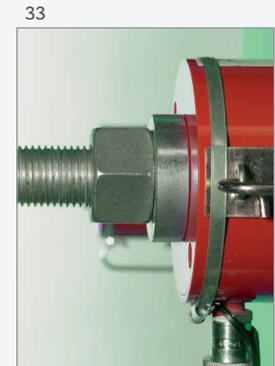
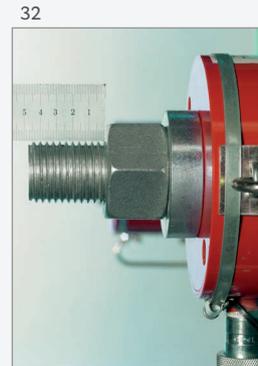
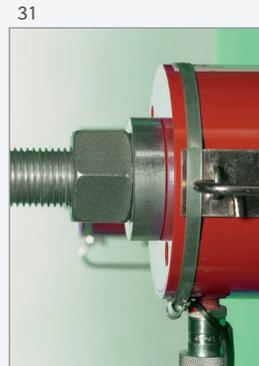
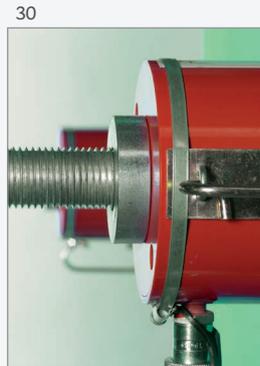


**Important Note:** Do not disconnect any hoses before the piston has completely retracted into the body of the hydraulic cylinder!!!

## Procedure for closing a PHE

26. Place one centering disk on each of the 4 tightening bolts, followed by the hydraulic cylinder, and the second centering disk (figs. 29 and 30).
27. Clamp the hydraulic cylinders in place by tightening the existing nuts (fig. 31)!
28. Double-check that **ALL** of the connections are properly seated and tight (figs. 33 and 34)!
29. Switch the valve on the hydraulic pump to position "A or B" (fig. 35).
30. Press the Start button or the manual control to switch on the hydraulic pump (fig. 36).
31. The hydraulic cylinders will stop extending automatically after a stroke of approximately 74 mm (fig. 25 on page 9)!

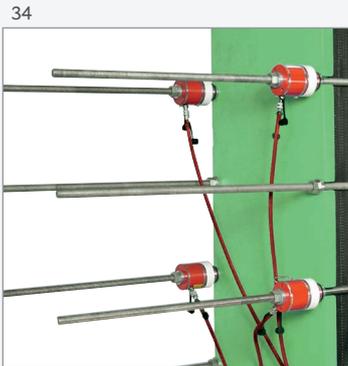
**Note:** Position "A" selects the upper hydraulics port, Position "B" the lower one!



**Important Note:** It is essential that the measure from the end of the tightening bolt to the top of the nut is exactly the same on **ALL** four hydraulic cylinders (fig. 32)!

## Procedure for closing a PHE

32. Stop the hydraulic pump by releasing the Start button (fig. 35).
33. Hand-tighten all other tightening bolts!
34. Open the valve on the hydraulic pump by pushing the lever to its "middle" position (fig. 37).
35. Allow some time for all pistons to retract into their cylinders.
36. Tighten all nuts against the hydraulic cylinders (fig.33) and doublecheck from time to time that the dimension from the end of the tightening bolt to the top of the nut is exactly the same on ALL four hydraulic cylinders (fig. 32)!
37. Repeat steps 28 to 36 until A-dimension is obtained across the plate pack.
38. Loosen the nuts and remove all cylinders from the tightening bolts!
39. Tighten the four bolts without the cylinders.
40. You are done. The heat exchanger can now be subjected to leakage and pressure tests!

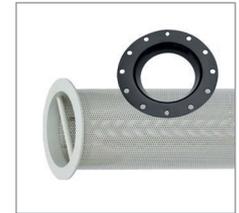
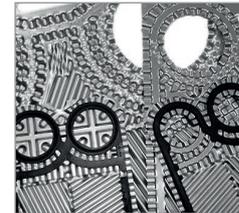


## Important Notes:

- a. While performing maintenance work, ensure that each of the gasket is properly seated.
- b. Before assembling a plate in the frame, double-check its guides to ensure correct seating.
- c. When the plate pack begins to warp (this is also referred to as "snaking"), stop immediately and call AKK Customer Service!!

## Some examples out from our range!

- I. + II. Individual C.I.P.-Solutions
- III. Spare plates and gaskets for ALL PHEs
- IV. Inline-Strainer-Systems



AKK Industrieservice & Handels GmbH

An der Schachtebecke 6

D-31863 Coppenbrügge

Tel. +49 (0) 5156 . 78 00 90

Fax +49 (0) 5156 . 78 00 95

[www.akk-service.de](http://www.akk-service.de) [info@akk-service.de](mailto:info@akk-service.de)

