



Technical Description and Instruction Manual
for Pneumatic Operation of Flaps
of Wagons: Fals F08-0 and Falns F09-0
Holder: AXBENET

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The **Technical Description and Instruction Manual of Pneumatic Control** is part of the original operation description and functional description charts of the mechanism for manual operation and securing of doors – flaps by the steering wheel.

The pairs of flaps continue to be opened and closed through pendula and connecting rods. Torques carried from the steering wheel to pendula through transmissions are alternatively replaced by two Festo **PV** pneumatic cylinders and **KL** pendula cranks with pivots – see the **POK** drawing. Propulsion through rectangle-equipped lateral shafts is blocked and their yellow paint is cancelled.

The pneumatic system of Falns wagons may only be operated from the safe space on the platform end of the wagon. **When in operation, it is strictly forbidden to be present in the dangerous space between the open flaps and the wagon floor at any time, due to any reason whatsoever.**

The connecting hoses of the **PP** working pipe used to connect to the source of air max. 0.6 MPa with white stopcocks and connectors may only be connected on the trailer designated for discharging the transported substrates! Connect the PP white connectors above the red brake connectors of the chief brake pipe **HP**.

Description of components of pneumatic flap operation

The picture of the wagon's front end (Fig. 1) with components of the pneumatic operation of flaps and the **POK** drawing show the concept of its technical solution. A detailed depiction of components with a description and procedure of their operation is provided in the following pictures. They are the **RR** control switchboard with valves **A** and **B**, and the **TZ** pull bar of independent securing with an **AZ** arresting latch. They are placed on the right side next to the yellow steering wheel for manual flap operation.

Figure 1



- The **PP** working pipe for inflow and distribution of air with the pressure of maximum 0.6 MPa. White cocks with hoses and white connectors of the NP type are used for the mutual interconnection of wagons designated for discharge. The air is led from the working pipe to the **RR** control switchboard through a branch pipe.

- Operate the **RR** control switchboard of the pneumatic operation from the safe space on the platform end of the wagon, to the right of the yellow steering wheel (Fig. 2)! Make sure through local operative-safety directives that all other employees only be present in the safe space of the ramp during the wagons discharge.

Figure 2



When in the open position, the cover of the switchboard is secured with a latch. Close it only when the valves are in the X position as to avoid causing damage to the control levers of the switchboard valves.

- The **A, B** control valves (Fig. 3) of the switchboard operate the **PV** pneumatic cylinders for the propulsion of the respective pair of flaps **KA** and **KB** through the cranks of the pendula. They are located in the middle space of the wagon. The positions of levers **O** – open, **X** – block and **Z** – close, of both the control valves **A, B** of the switchboard are arrested.

Figure 3



- The default – blocked **X** position of the valves is designated to block the inflow of air to the **PV** pneumatic cylinders. After closing the flaps always reset the valves in the **X position – block!** In this position the compressed air 5 bar over the **PV** pistons will secure the flaps in the closed position.
- In the following illustration, the red pull bar of independent mechanical securing of the pendulum is secured with the help of **ZH** securing hooks – see the **POK** drawing. When opening the flaps, during resetting of the valves in the **O** position, hold the red **TO** pull bar – **ŤAHOM ODISTÍŠ!** (UNLOCK BY PULLING!) in the pulled-out position.

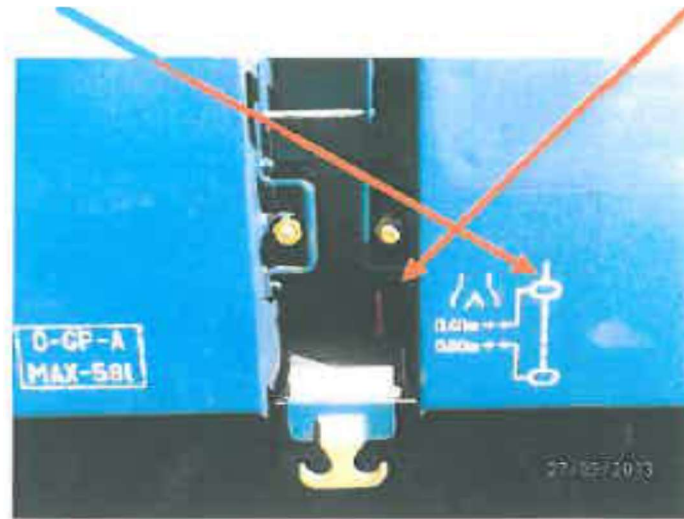
Figure 4



The pair of double-acting pneumatic cylinders **PV**, equipped with pivots through the **KL** cranks, exercise the required torques directly on the pendula of the main shafts which operate on the pairs of flaps through two connecting bars – upper double **TH** and lower **TD** bar. The most efficient operation of the cylinders is in the securing and opening position of the pendula. For opening the flaps, similarly to opening by the steering wheel, the kinetic energy of the discharged substrate is also used. After discharge, the flaps will remain in the open position of about 0.4 m enabling the completion of cleaning of the storage space by air, and, when the gap is set at about 0.2 m, also the sealing edge of the floor with a wooden scraper from the outer side of the flaps. Check the tightness of the flaps on the edges of the floor also after the second closing of the flaps.

The setup of the operation of flap opening to the required level is carried out through the pull bar located in the middle of the wagon by pulling or pushing according to the chart (Fig. 5).

Figure 5



The setup of the flaps operation may be controlled from both sides of the wagon. The pull bar leads through, which means that it is in the open position on one side of the wagon and in the pushed-in position on the other side of the wagon at the same time. If the flaps operation is set up at 40 cm on one side of the wagon, the flaps operation on the other side of the wagon is automatically set up too. The operation on the sides of the wagon is different (pull/push); it is necessary to follow the chart (see Fig.).

When opening by air, the flaps open to 40 cm; if the flap operation is set at 60 cm the flaps will open to 40 cm but may open up to 60 cm with the weight of the transported substrate.

For securing the flaps in the open position, portable security braces are designated for repair shops – see Annex No. 1. The tools and procedure of their placement between flaps and the wagon skeleton have to be approved by the security technician of the repair shop.

- The default securing of the flaps in the closed position depends on the geometry of the control rods and the pendulum – see the original description. The adjusted signal system is operated through the **TH** upper rods and reliably signals the transit of the pendula through the upper dead centre to the secured position.

The correct position of the signal system is shown in Fig. 6.

Figure 6



If, during operation, you discover that the signal system is not in the correct position, this may mean that the prescribed geometry is disrupted – therefore, check the geometry of the wagon after discharging!
The distance of the field line of rods from the axis of the main shaft is reviewed during assembly of the pneumatic system and in the case of disrupted geometry it is adjusted to the prescribed 15 mm!

- Given the occurrence of incorrect geometry of the flap operating mechanism, the securing system has been supplemented with independent mechanical securing with **ZH** hooks against an accidental flap opening (Fig. 7).

Figure 7



The ZH securing hooks are controlled by the pull bar which has to be held in the pulled-out position (Fig. 8) while the switches are being turned into the **O** position. After closing the flaps the independent securing will return into the secured position automatically.

Figure 8



It is possible to arrest the independent securing system in the pulled-out – switched-off position of the pull bar: secure it by lifting the yellow safety lock into the horizontal position. After the next pulling-out of the pull bar the yellow arresting safety lock will tilt into the vertical position and then we release the pull bar into the default position. The independent flap securing system is now functional again. After resetting the valves into the **Z** position, the flaps are secured.

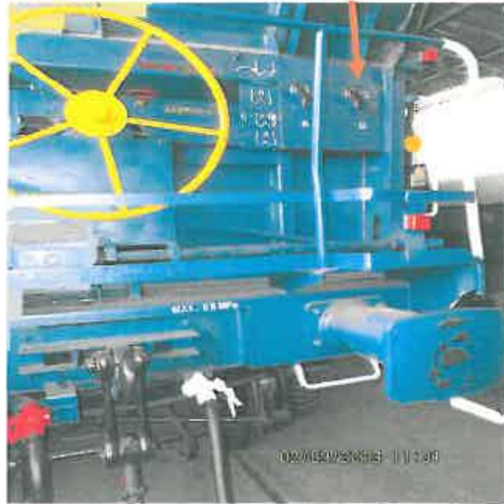
Figure 9



Opening of flaps and discharge of a group of interconnected wagons through PP.

After arresting the TO pull bar of the independent securing system and setting the valves A and B in the O position,

Figure 10



it is possible to carry out the discharge of a group of wagons by leading in the air pressure of max. 0.6 MPa to the PP by opening the white cock on the first wagon of the group designated for simultaneous discharge.

Following the discharge it is necessary to switch off the arrest by a short pull of the pull bar (Fig. 11) and carry out the closing of flaps one by one on each wagon!

Figure 11



The wagons are adapted for air operation only. Opening of flaps mechanically without air is not possible and IS FORBIDDEN.

BAN APPLIES ON MANIPULATION with the large yellow wheel on the wagon's front end (Fig. 10).

After agreement with the owner of the wagons the flap operation may be reset to the default setting – manual operation by activating the securing latches and disassembling the PV pneumatic control. First, it is necessary to uninstall the holders of the switched-off latches and insert the uninstalled latch springs in their original places.

On the client's request, training, briefing and practical testing of the user's persons designated to operate wagons with pneumatic operation shall be carried out by an expertly qualified employee of LTS, s. r. o. at the site of the user of the adapted Falns wagons. Persons not trained or not able to independently operate pneumatic operation are forbidden to operate it!

ANNEX No. 1

**PORTABLE BRACE FOR SECURING THE OPEN FLAPS
DESIGNATED FOR THE LTS, s. r. o. REPAIR SHOP**

Order: VV 2013/0006

As part of the wagons repairs and maintenance it is necessary to carry out the repairs on the floor or the flaps of the Fal(n)s wagons during which the technological procedures of repairs require that the wagon flaps be secured in open positions. Portable safety braces are designated for this purpose which are easily placed in the designated place between the flaps and the wagon framework. The respective flaps are opened with the help of the steering wheel which is secured in the required position with a snap-hook and the security brace is placed between the flap and the wagon framework.

The Technical-Safety Directives for the procedure of placement of the portable safety brace, its construction and scope of its use during wagons maintenance and repairs will be made separately. After its trial run the brace will be approved by the repair shop's safety technician.

In the figure below on the right, the yellow safety brace is placed between the flap and the wagon framework. This brace is not part of the standard wagon equipment.



Annex No. 2

**FOLDING BRACE TO SECURE THE Falsns and Fals FLAPS
IN THE OPEN POSITION**

Order: ŠV 2013/0035

Within the order No. 0035 carried out on the basis of an independent order of Axbenet, s. r. o., based on the AWT company, folding braces designated for securing the flaps in the open position were adjusted, made and installed on the Falsns and Fals wagons.

After the trial run, the owner and user of the wagons will make and submit for approval to the railways safety authority in charge, the Local TBS Technical-Safety Directives for operation, procedure of flaps securing and unlocking, as well as the scope of use of the folding braces in operation or in repair shops.

Before the folding of the brace, the flap opens to 550 mm distance with the help of the wheel – steering wheel; the flap is unlocked by lifting and folds. During the backward motion of the flap the brace leans against the counterpart on the wagon framework.

Two employees with the knowledge of the above TBS are needed for bracing the flap and return to the default position.

The brace cannot be put in the securing position when the flaps operation is set at 40 cm; it is FORBIDDEN to use the brace.

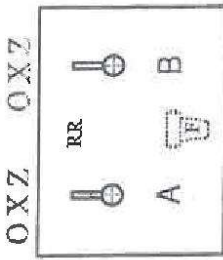
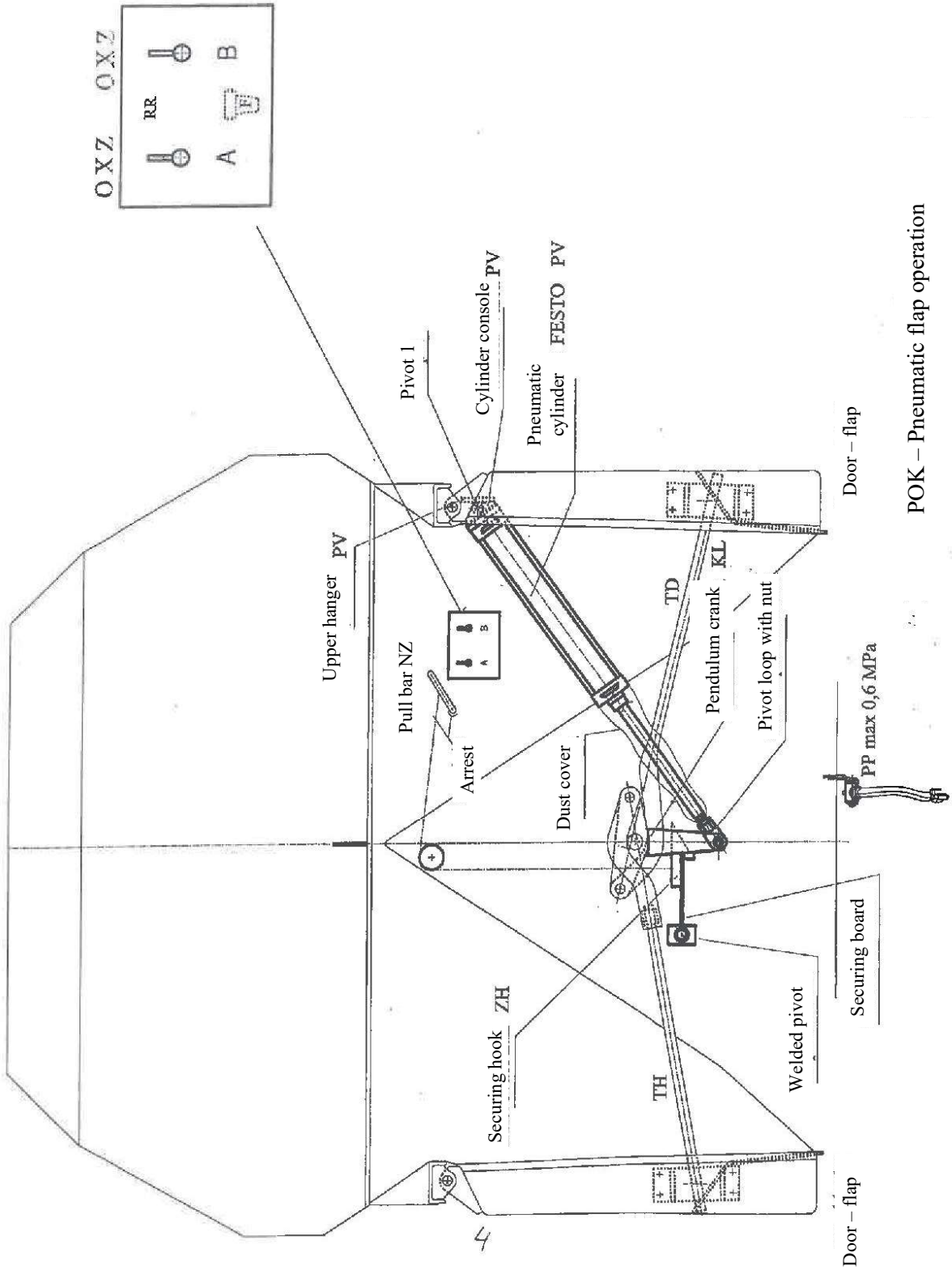
Even if the flap may be set in the securing position when the flaps operation is set at 60 cm, it is FORBIDDEN to use the brace.

The operation of flaps at 40 or 60 cm is set by the pull bar placed in the middle of the wagon (Fig. 5).

The illustration shows the folding brace supporting the open flap.

!!!IT IS FORBIDDEN TO USE THE BRACE IN OPERATION, BECAUSE IT IS AN UNAPPROVED SECURITY ELEMENT!!!





POK – Pneumatic flap operation