Technical information for PERFECTA PREMIUM Line

PERFECTA Cutting Systems

Make finishing more industrial

Content

This newsletter is a pre - information about a technical revision of the hydraulics used in the PERFECTA PREMIUM Line machine, which will soon be available in all cutting sizes. The document describes the background of the redesign and informs about the technical changes and further improvements. The service manual will be revised shortly, until the document is available, you will need to use this technical information to get an impression of the technical changes you will expect.

Background

Our goal is to provide a cutting system that reaches the highest safety standards to the customer. These standards are defined in EN ISO 13849. According to EN ISO 13849 PERFECTA improved the safety standards of the PREMIUM Line series. These improvements implement some changes in design and function. The most obvious difference to the known PERFECTA PREMIUM Line is the new hydraulic System. PERFECTA Cutting Systems had always redundant hydraulic valves but to fulfill the latest safety standards we added an automatic error detection on the hydraulic system. This System fulfills the latest CE standards and is approved with the “GS” sign by the “Berufsgenossenschaft”, an independent institution for industrial safety standards in Germany.

PERFECTA renewed the “GS” approval and certification in 2018 and therefore we integrated this new requirement. Beside this obvious change we implement some other functions which are listed in this document too.

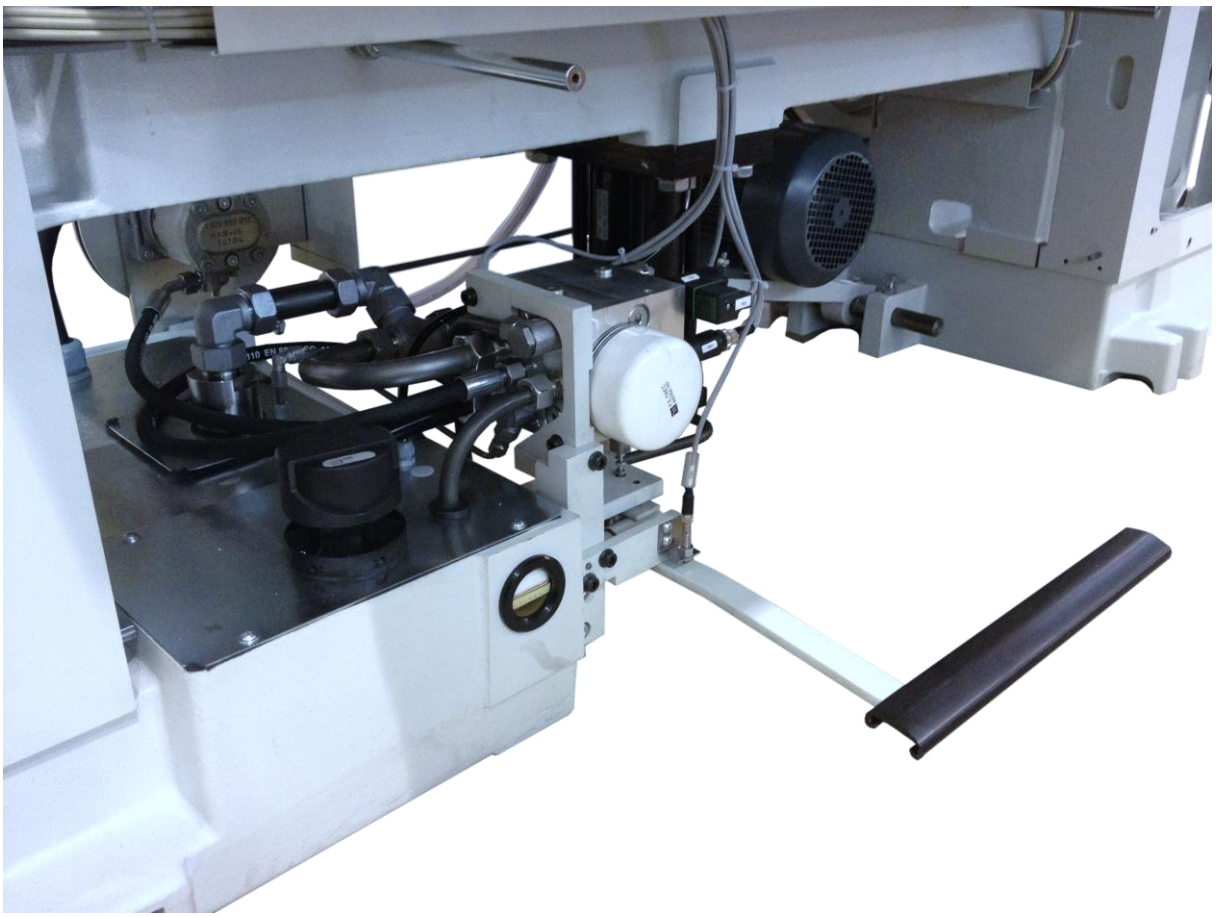
Explanation

The existing hydraulic system has a two-channel safety. For one of these channels PERFECTA uses a proportional valve, which allows the function of automatic clamping pressure adjustment. This is no longer permitted, so the hydraulic system now has two standard valves of the same type for two-channel safety and, in addition, the proportional valve for automatic adjustment of the clamping pressure. In addition, the hydraulic has to detect a malfunction of the two channels themselves, which means that the safety controller must check the condition of the valves. In the past, one channel was allowed to malfunction because the second channel still provided a safe machine. The new standard, however, requires that a defective valve be detected immediately.

Technical changes

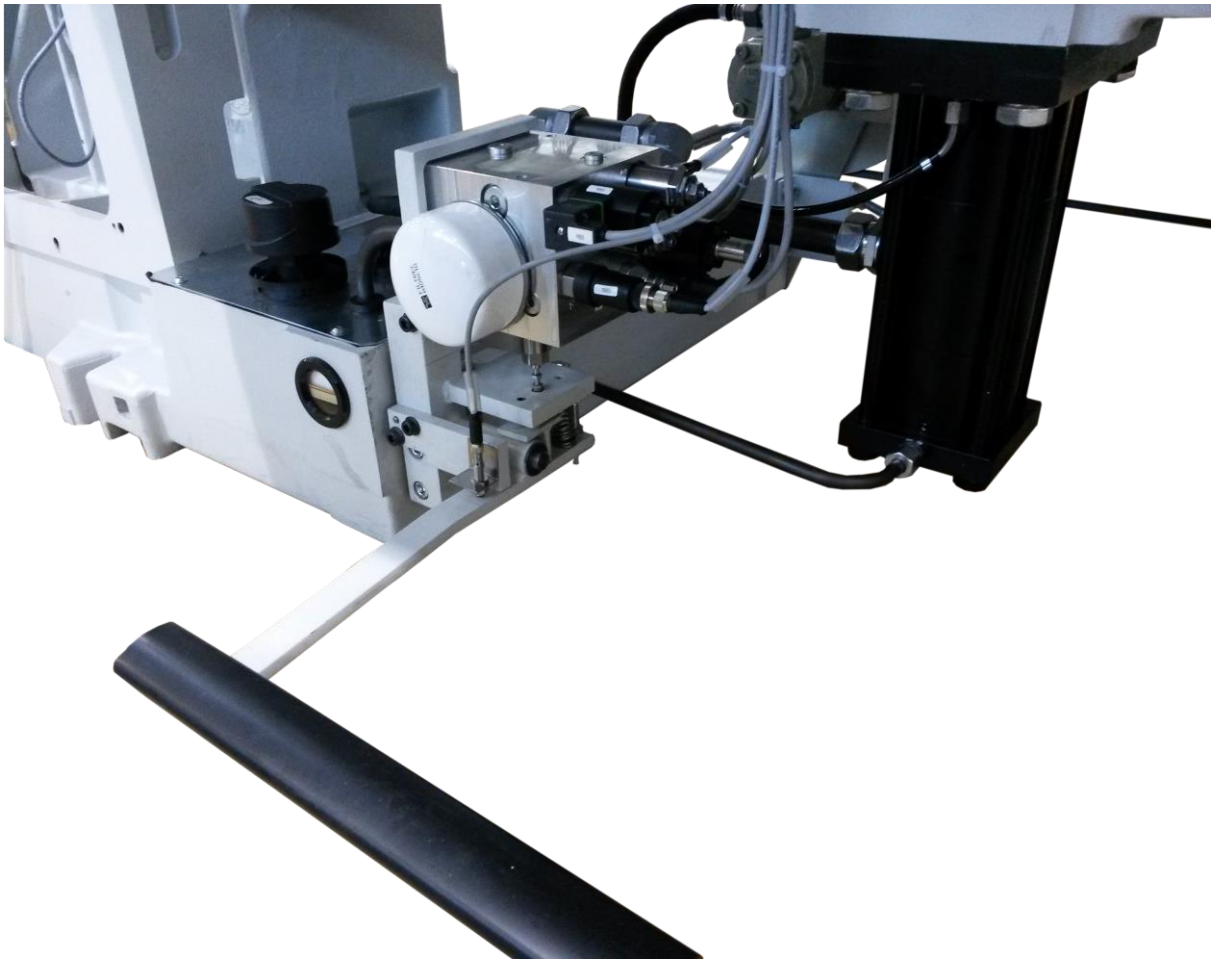
Hydraulic Block

New hydraulic block with more compact design, integrated filter and additional valve position detection.

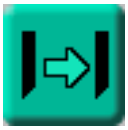


Foot Pedal

The locking lever of the foot pedal is no longer required. The clamping lock needed for replacement of the knife is now implemented with a button on the display. The operator pushes the foot pedal and presses the button in the setting menu to lock the clamp. A sensor detects the status of the foot pedal. The same button on the display unlocks the clamp again.

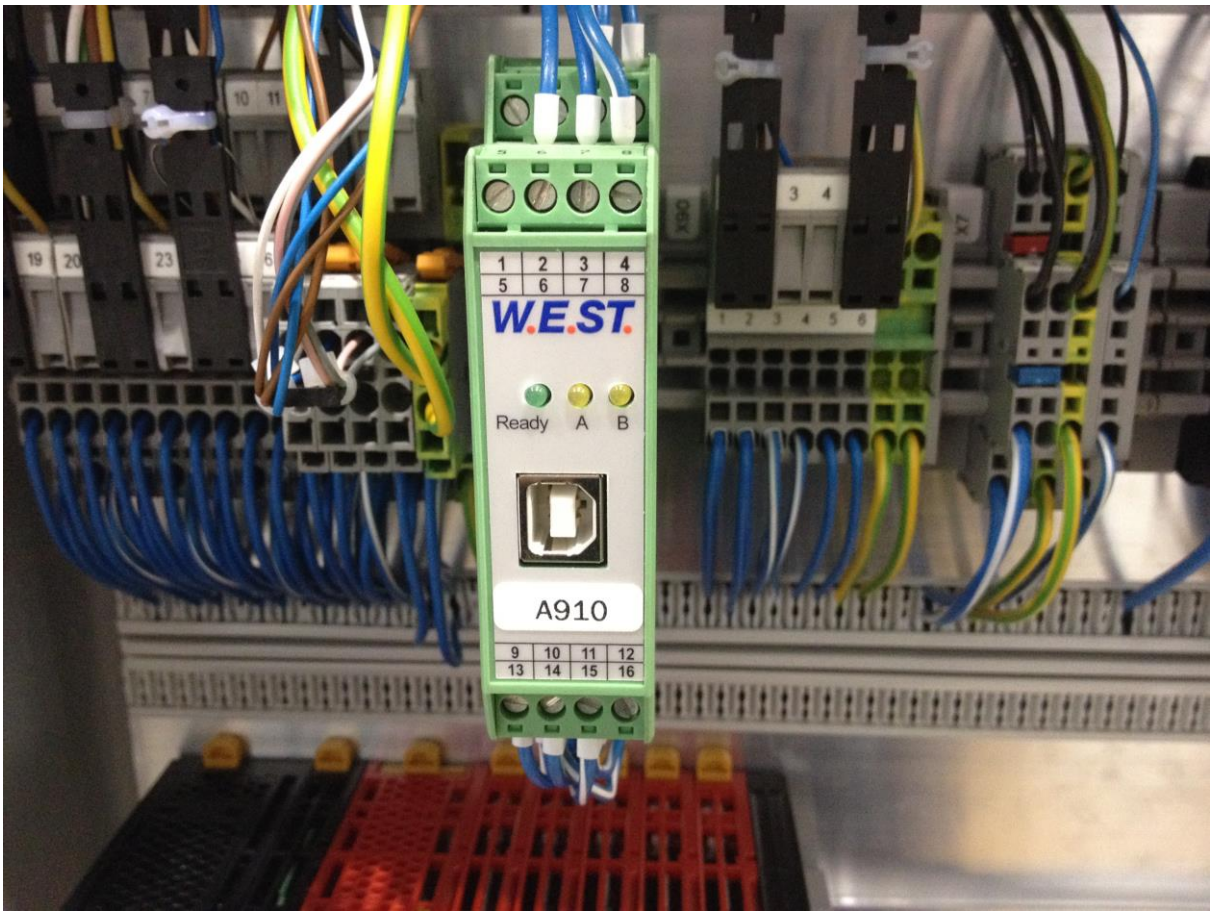


New Symbol for clamp locking while knife changing:



Power amplifier for proportional valve

The former control board for the setting of the proportional valve was located in the left-hand machine frame and is replaced by a smaller control box integrated in the electrical cabinet.



Safety PLC

The requirements on the safety controller are increasing more and more.
More complex software and extended diagnostic functions have pushed us to the performance limits of the previous control system. Therefore the old safety PLC OMRON G9SP is replaced by the newer version OMRON1330. This offers significantly more capacity and detected faults can now be displayed in plain text on the operating screen of the cutting machine.

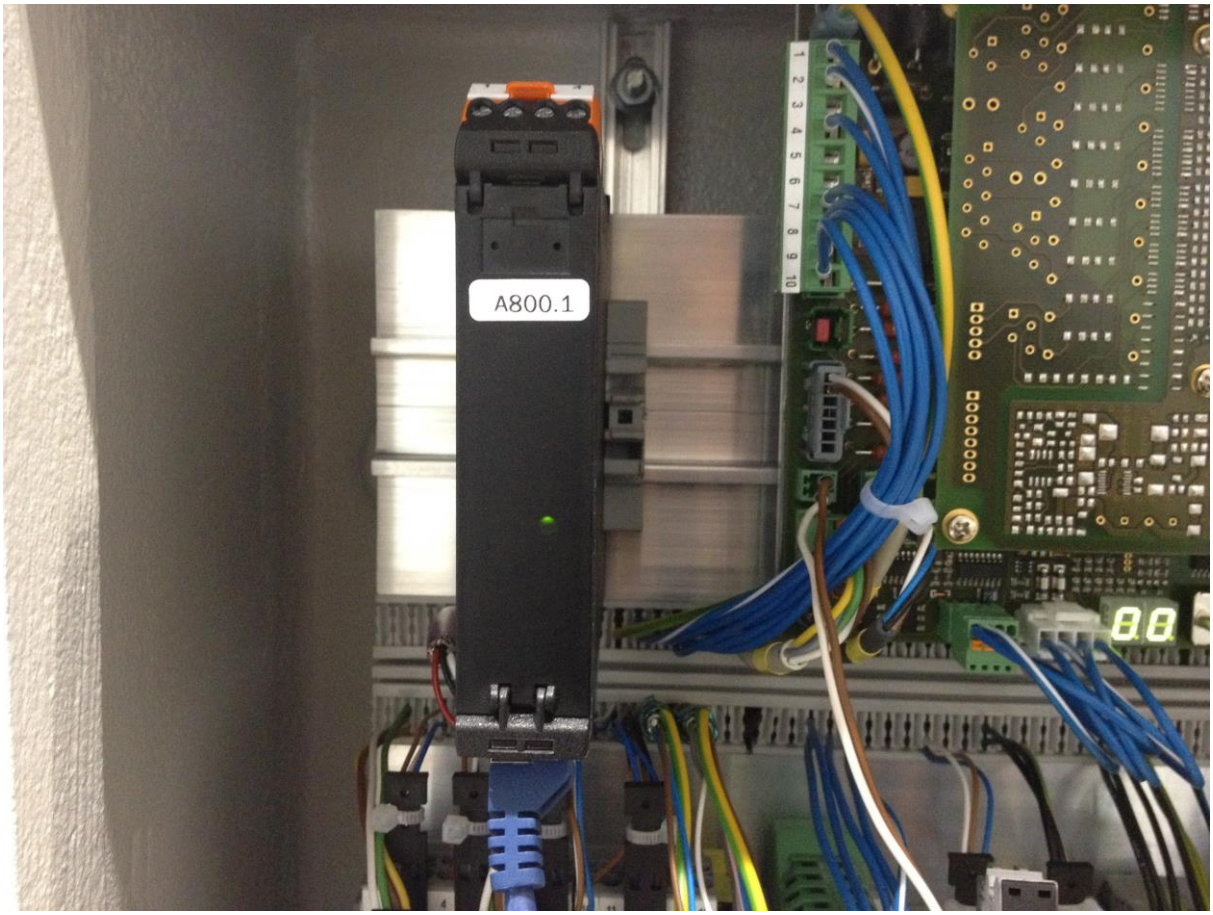
Valve position monitoring:

The hydraulic valves must be individually monitored and the machine must be checked by a technician according to the permissible number of faults over a period of time.
If a defective valve is detected, the fault is stored by the safety controller. 3 malfunctions of one valve per week are permissible. After 3 malfunctions, the machine locks itself and can be reset with an unlock code after a technical check.



EtherCAT interface

The new OMRON safety controller requires an EtherCAT interface for communication with the control computer. The new interface module converts the EtherCAT into a CAN-BUS signal that is connected to the control computer. This element is later omitted as the control computer is equipped with an integrated EtherCAT port for a direct connection.



Flywheel guarding lock

The flywheel cover is secured by a guard locking switch. The long screw with fine thread is omitted. The switch works electromechanically and only releases the mechanism to open the cover when the flywheel comes to a standstill. It is therefore only possible to open this cover when the machine is switched on but the motor switched off.

In the factory setting, the guard locking switch is set to permanent open. This setting is required for the installation of the machine. After installation, the setting must be changed to close. Otherwise the safety circuit is not closed and the safety control does not start the main motor.





Manual cranking

To crank the knife beam manually it is now only needed to wait until the guard locking switch release the flywheel cover. To engage the clutch there is now only the S56 rotary switch. The push button is omitted.

