

PFAFF[®] Industrial

POWERline
3721/3741/3745

Documented Quality -
Stitch by Stitch



Documented quality

The POWERLINE 3721, 3741 and 3745 are quality assurance systems designed for use on safety relevant seams. The PFAFF docu-sewing systems making an important contribution to extra driving safety. They monitor and guarantee perfect execution of the nominal breakage point on the reference seam from where the side airbag unfolds in the event of a serious incident. The seam must meet precisely stipulated parameters: on one hand it should not be too resistant as this will prevent the side airbag from expanding and unfolding; on the other hand the seam must have a minimum strength so that it does not tear open unexpected during normal use.

POWERLINE 3721, 3741 and 3745 machines significantly increase process safety and reliability. An essential benefit of these systems is to guarantee constant seam quality by identifying and sorting out unusable seams in real-time. This is important for product liability to counter and effectively refute any potential claims of recourse. 3721, 3741 and 3745 can be connected to the customer's ERP system - an important precondition especially in the automotive industry.

PFAFF docu-sewing systems are an important tool for quality assurance within the overall automotive production chain, even if it "just" deals with one simple element - an approx. 40 cm long seam section. Other possible fields of operation for the POWERLINE 3721, 3741 and 3745 are the production of parachutes, seatbelts, sails, awnings, tarpaulins - everything involving the production of safety relevant seams.

POWERline 3721/3741/3745



Mode of operation

The necessary — for the thread tension, stitch length and number of stitches are specified in the quality assurance system using test seams.

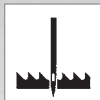
During the sewing process a sensor is monitoring in real-time the dynamic thread force 'stitch by stitch'. On commissioning the system, an actuator automatically sets the thread tension (thread force) to the specified setpoint. If deviations are caused by external influences, the thread tension is automatically corrected (closed control circuit).

The configured stitch length and number of stitches are also monitored. The docu-system compares the measured values (stitch by stitch) with the previously entered thresholds and evaluates the seam quality. If the results are not within the specified tolerance area, a message is displayed (NOK = not ok).

In the event of the above, the data is still stored but no label is printed.



PFAFF POWERLINE 3721



PFAFF POWERLINE 3741



PFAFF POWERLINE 3745

PFAFF

3745

Versions

3721 Premium



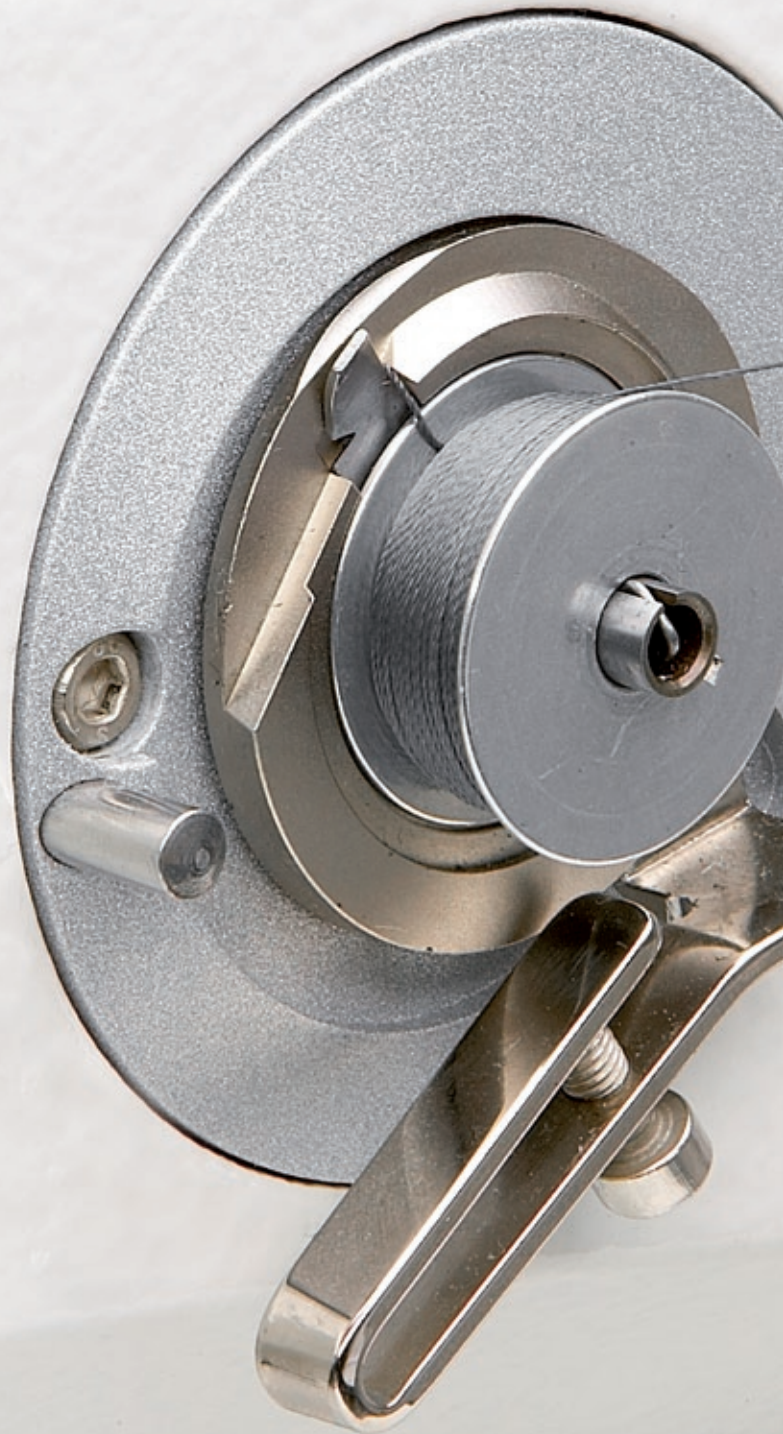
3741 Plus



3745 Premium



POWERline 3721/3741/3745



Configuration possibilities

Sewing head

	3721 Premium	3741 Plus	3745 Premium
Vertical hook, large (for threads up to size 10/3 syn.)	●	●	☒
Vertical hook, XXL extra large (for threads up to size 10/3 syn.)		○	☒
Large hook, left (prepared for edge trimming)	○	○	○
Thread trimmer, < 13 mm thread ends (-900/81)	☒	●	☒
Thread trimmer, < 5 mm thread ends (-900/82)	☒		☒
Automatic presser foot lift, electro-pneumatic	●	●	●
Bartacking functionality by step motor	●	●	●
Integrated bobbin winder (mechanic)		●	
Integrated bobbin winder (electronic)	●		●
Bobbin monitoring with coded bobbins for thread barcode assignment	●	○	●
Lower thread monitoring	●	●	●
Hook slide plate monitoring with sew start blocking	●		●
Stitch length adjustment (electronically controlled by step motor)	●	●	●
Intergrated switch bar with multi-function switches and one programmable soft switch	●	●	●
Oil-level indicator on the display, with warning light on the sewing head	●	●	●
LED sewing light, dimmable	●	●	●
Sensor for measuring of thread tension, thread breakage and skip-stitch detection (in real-time)	●	●	●
Electronic thread tension adjustment and regulation by step motor	●		●
Mechanic thread tension adjustment (with look-out feature)		●	
Controlled upper thread nipper for a clean start on the top side of the material		●	●
Sewing parts kit (based on customer requirement)	☒	☒	☒
Edge trimmer 2 mm	○		○

Hardware / Software

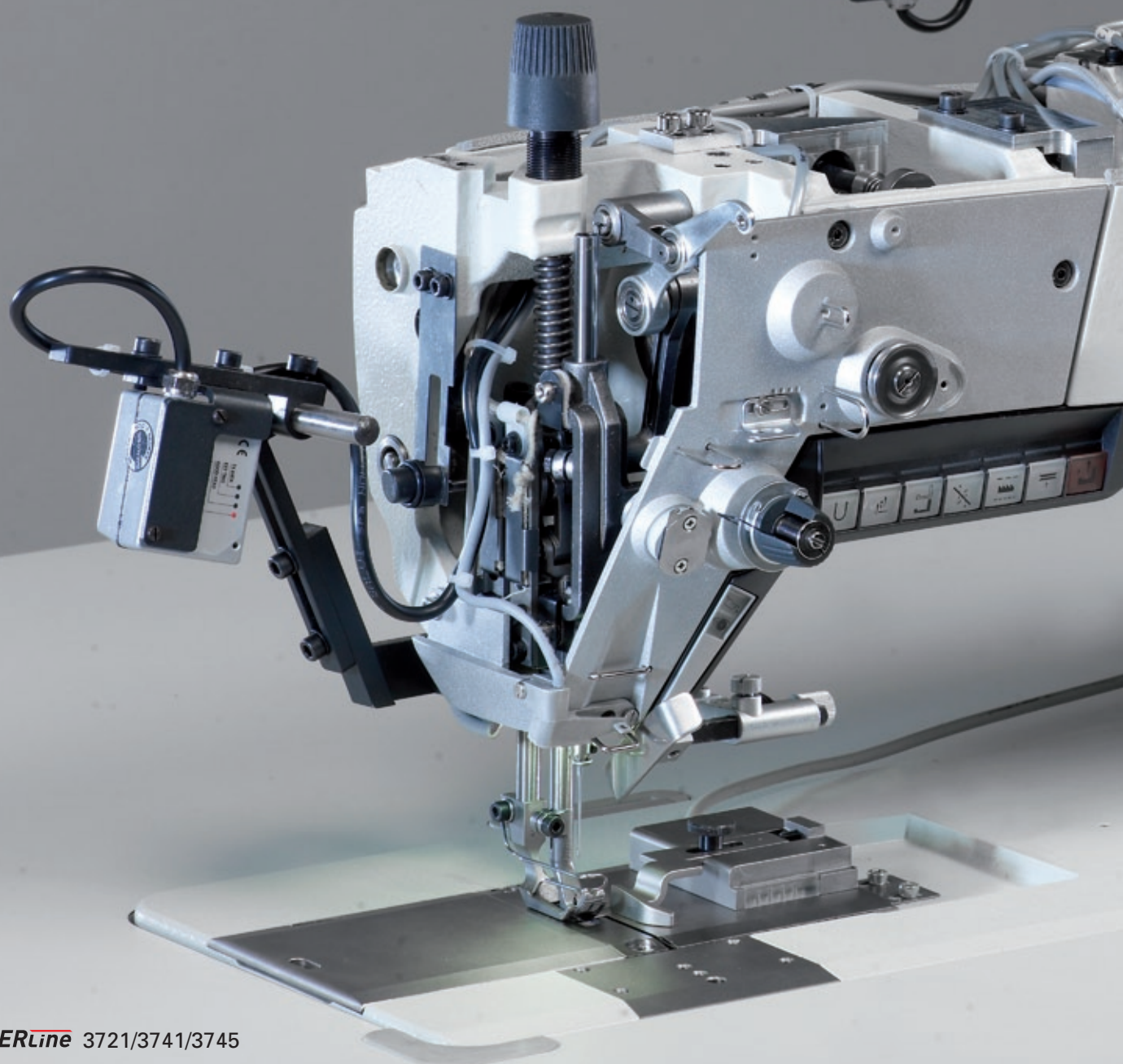
17" Touch screen monitor	●	●	●
Standard industrial PC	●	●	●
Operating software Windows XP or Windows 7, multilingual	●	●	●
Network connection (based on customer requirement)	●	○	●
Hand scanner for identification and user input, for material scan + thread scan	○	○	○
2-D hand scanner (data-matrix-code)	○		○
Edge guide with integrated sensor system for seam margin monitoring recognition of docu seam start and docu seam end (tabs)	○		○
Mechanical edge guide	○	○	○
Flip-up edge guide for recognition of the docu seam area (tabs)	○	○	○
Electric height adjustable stand	●	○	●
Ergonomic pedal	○	○	○
Label printer	○	○	○
Label scanner on sewing head	○	○	○
2D label scanner on sewing head	○	○	○
Stationary barcode scanner for upper and lower thread cones	○	○	○
2D barcode scanner for upper and lower thread cones	○		○
Data base analysis tool	●	○	●
Calibration device	○	○	○
Knee switch	○	○	○

● standard ○ option ☒ selectable

Unique service concept

Easy and quick access to all adjustments:

The top arm cover and the face cover can be removed by loosening just a few screws.



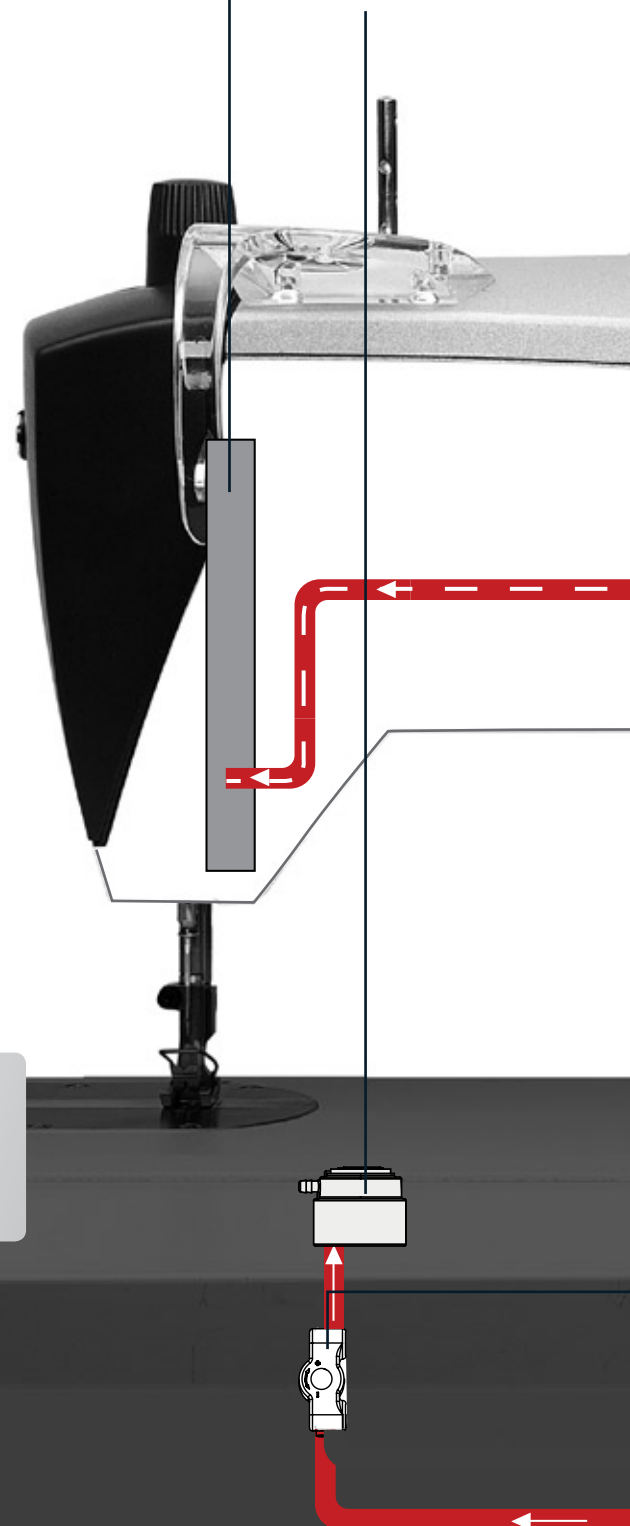
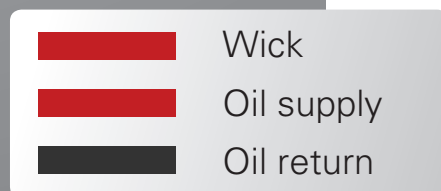
POWERline 3721/3741/3745



Innovative lubrication system

New lubrication system for accurate adjustment of the fresh oil supply to the hook. Prevents oil leakage (soiling of workpiece).

Machine head parts
Oil distribution ring for the sewing hook



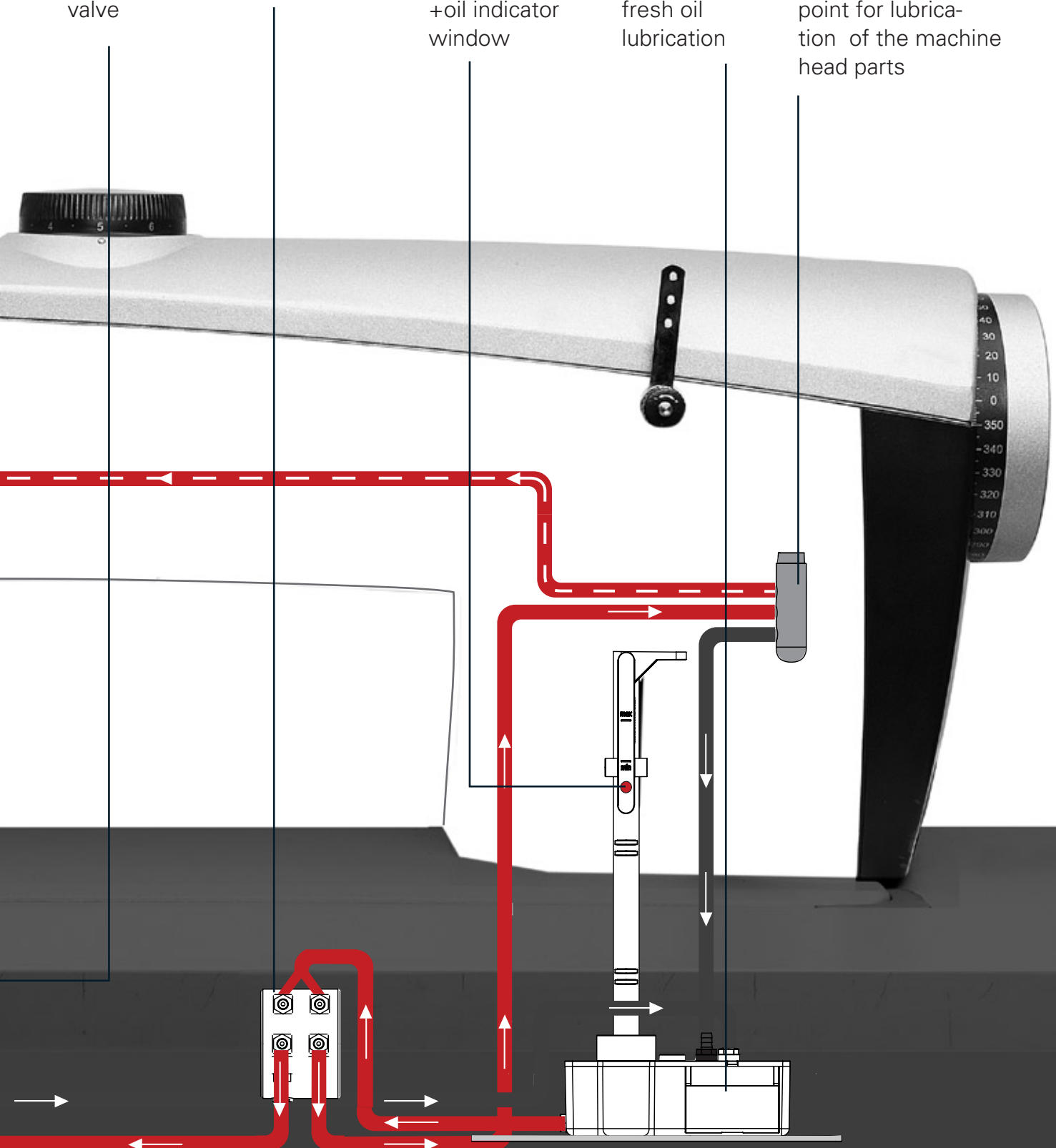
Oil regulation valve

Oil pump

Filling port + oil indicator window

Reservoir for fresh oil lubrication

Reservoir / transfer point for lubrication of the machine head parts



Features



Real-time control of thread tension (stich by stich) ①

Skip stitch detection in- and outside of docu-seams ①

On- and off switching of documented seam area via photocell, knee switch, hand switch or stitch counting



The system is equipped with our award winning POWERLINE sewing head (... equipped with all new advantages of the POWERLINE series)

Automatic stitch length regulation for every sewing area separately programmable

Sewing head identification

17" TFT Monitor (Touch-Screen) + standard PC with Win XP or Win 7

ONE panel for all functions

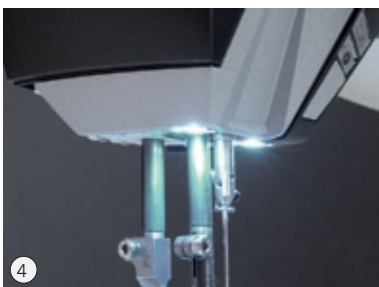
Integrated sewing unit – ergonomic

Thread force calibration device

Thread nipper guarantees a proper beginning of the seam (on top of the material) ②



Stationary scanner for upper- and lower thread and also for the printed label ③



LED light (dimmable), integrated in sewing head ④



Large workspace under the machine arm of 345 x 120 mm (5)

Option: extra big hook with 70 % more (6a) bobbin capacity

Bobbin monitoring via sensor (6b)

Monitoring of hook cover (6c)

Option: Edge trimmer (driven separately)

Electronic thread tension regulator (7) (only 3721 + 3745)

New edge guide with integr. sensor system for exact recognition of the seam distance and docu seam start and end

Bobbin winder in sight of the operator (separately driven) – knife and device to secure winding (bobbin winding assistant) (8)

PFAFF 3721:

Wheel feed roller presser (stepping motor controlled, differentiable) for small radii at applications in the auto interior

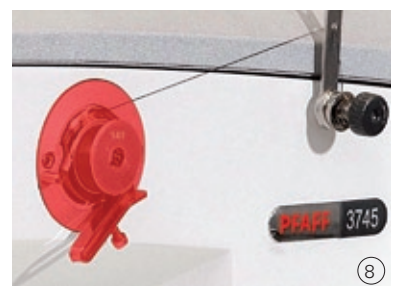
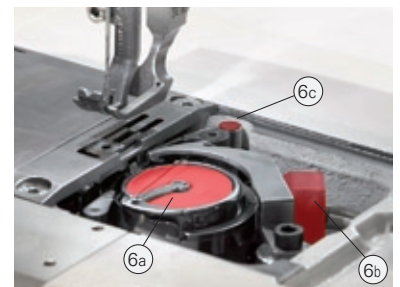
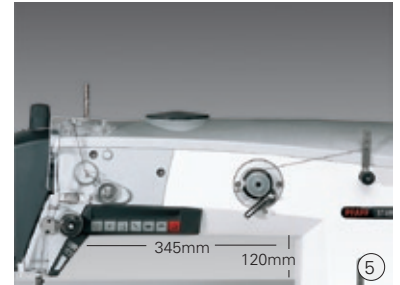
PFAFF 3741:

Manual thread tension regulator with sitch-in-stich monitoring

PFAFF 3745:

Programmable upper feed lift up to 9 mm

Clearance under the sewing foot up to 20 mm



Features: control buttons

From left to right:

Reverse sewing / intermediate backtack

Needle positioning (w/o trimming) or area relay

Recall preset top feed lift

Backtack on/off

Recall preset stitch length

Switch-on second thread tension / threading position (sewing is blocked)

Safety switch:

Brings the machine in threading position and blocks all pedal functions. This prevents the operator from accidentally starting the machine and adds an additional safety feature.

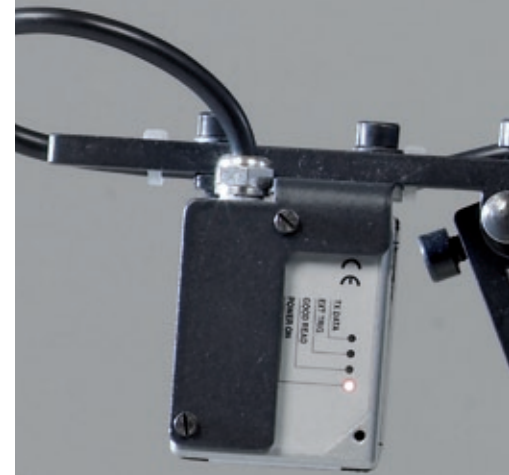
From top to bottom:

Oil level warning

Bobbin thread control indicator

Programmable **multi-switch**

Important functions for the current sewing application can be transferred to the multi-switch which is placed in the reaching area of the operator (quick tripping of functions by pushing button)





Edge Guides
(Option)

Touch screen + Scanner + Programming

- Easy handling of programs through touch screen
- Installation of multiple docu-seams in one program possible
- Hand scanner is reading and comparing process data, components and also user codes
- Counting function for good and bad docu seams
- Thread force chart of single stitches
- Monitoring function for signal analyzing and display of min./max thread force data
- Static thread force rating for upper- and lower thread
- Activate and/or locking of customer specific functions
- On NOK seams – release through password possible
- Easy reading, printing and saving of process parameters (SQL o. MS Access database)
- 4 user levels (password protected)
- Central database for multiple docu-seam machines
- Easy communication between Docu Seam System and database
- User login through scanner
- Later printing of label copies only possible through password
- Bobbin thread monitor
- Stationary scanner for upper- and lower thread
- Stationary scanner for printed label

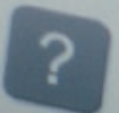


PFAFF 3745

Admin



ēlo



Label Editor + Barcode printer

Free label configuration: label editor for customised labels

Labels can be created using all fonts and bitmaps. Also possible bar codes and 2D codes (i.e. data-matrix)

Industrial label printer to print textile bar code labels (customized design)



A close-up photograph of a sewing machine needle stitching a white label onto a piece of grey fabric. The label is partially visible and contains the text 'Pfaff KL2' in a large, bold font. Below this, it says 'Naht: 0001 OK' and features a barcode. The background shows the intricate stitching of a red and yellow fabric.



3741

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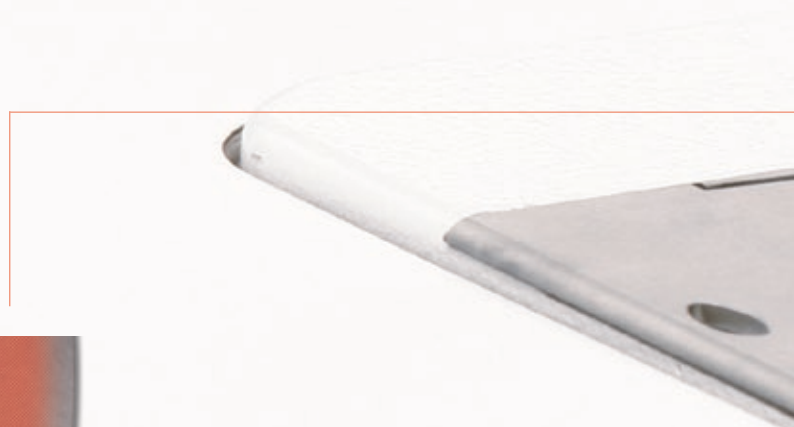





Label: 0911240001

KG867

Electronic edge guide (option)

Detection of seam distance with integrated sensor system to detect seam distance plus beginning and end of the docu-seam. The distance between seam and material edge is variable - the tolerances inside and outside of the documented seam are programmable. On excess of tolerances a warning signal respectively an alarm will be displayed - operation will stop!



-  **no signal**
- sewing inside the docu-seam area
-  **yellow:**
- warning signal
-  **red:**
- docu seam not OK (no label)
- machine stops sewing



PFAFF Industriesysteme und Maschinen AG

Hans-Geiger-Str. 12 – IG Nord
D – 67661 Kaiserslautern
www.pfaff-industrial.com

Telefon: +49-6301/3205-0
Telefax: +49-6301/3205-3171
E-mail: info@pfaff-industrial.com



Hotline:

Technical service: +49-175/2243-101

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