

**PFAFF**<sup>®</sup> Industrial

***POWERLine***  
**3721/3745/3791**

Documented Quality -  
Stitch by Stitch



# Documented quality

The POWERLINE 3721, 3745 and 3791 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, 3745 and 3791 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. The machines 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, 3745 and 3791 are the production of parachutes, seatbelts, sails, awnings, tarpaulins - everything involving the production of safety relevant seams.



**POWERline** 3721/3745/3791

# Mode of operation

The necessary critical values 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 3745



PFAFF POWERLINE 3791

# Versions

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## 3745 Premium

Safety-relevant seams on heavy leather fabrics (e.g. side airbag / car seat)



## 3721 Premium

Safety-relevant seams at sewing operations with small radii and fine leather fabrics (e.g. dashboard)



## 3791 Premium

Safety-relevant seams on three-dimensional leather parts (e.g. collapsible collar / steering wheel)



# Configuration possibilities

	3721 Premium	3745 Premium	3791 Premium	
Sewing head	Vertical hook, large	●	☒	●
	Vertical hook, XXL extra large		☒	
	Large hook, left (prepared for edge trimming)	○	○	
	Thread trimmer, < 13 mm thread ends (-900/81)	●	●	●
	Automatic presser foot lift, electro-pneumatic	●	●	●
	Bartacking functionality by step motor	●	●	●
	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 meassuring of thread tension and breakage and skip-stitch detection (in real-time)	●	●	●
	Electronic thread tension adjustment and regulation by step motor	●	●	●
	Controlled upper thread nipper for a clean start on the top side of the material	●	●	
	Sewing parts kit (based on customer requirement)	☒	☒	☒
	Edge trimmer 1,2 mm	○	○	○

Hardware / Software	17" Touch screen monitor	●	●	●
	Standard industrial PC	●	●	●
	Windows 10, multilingual	●	●	●
	Network connection (based on customer requirement)	●	●	●
	Hand scanner for identification and user input, for material scan + thread scan	●	●	●
	Mechanic edge guide (swiveling) for recognition of docu seam start and docu seam end (tabs)	○	○	
	Height adjustable stand - motor driven (3 versions)	○	○	
	Ergonomic Pedal	○	○	○
	Label printer	○	○	○
	Stationary camera for printed label	○	○	○
	Stationary cameras for upper and lower thread cones	○	○	
	Stationary camera for monitoring the bobbin (Data Matrix Code)	○	○	
	Data base analysis tool	○	○	○
	Calibration device	○	○	○
	Knee switch	●	○	●

● Standard    ○ Option    ☒ to be selected/configured

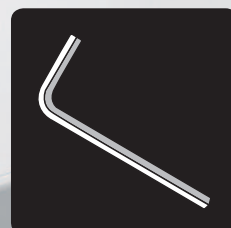
# Unique service concept

Easy and quick access to all adjustments:

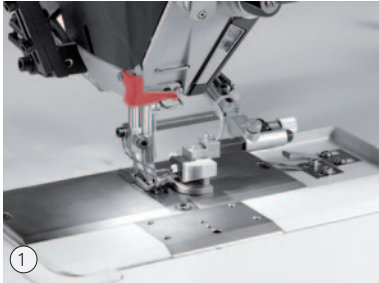
The top arm cover and the face cover can be removed by loosening just a few screws.



**POWERline** 3721/3745/3791



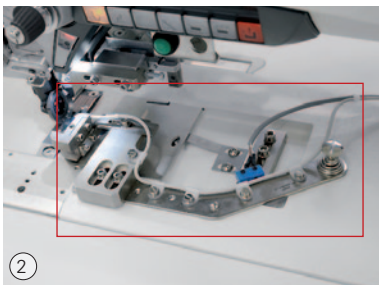
# Features



Real-time control of thread tension (stitch by stitch) 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 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 10

ONE panel for all functions

Integrated sewing unit – ergonomic

Thread force calibration device

Optional edge guide, retractable ②



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



LED light (dimnable), integrated in sewing head ④





Large workspace under the machine arm of 345 mm ⑤

Option: extra big hook with 70 % more bobbin capacity (3745) ⑥a

Bobbin monitoring via sensor ⑥b

Monitoring of hook cover ⑥c

Option: Edge trimmer (driven separately)

Electronic thread tension ⑦

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 ⑧  
(separately driven) – knife and device to secure winding (bobbin winding assistant)

PFAFF 3721:

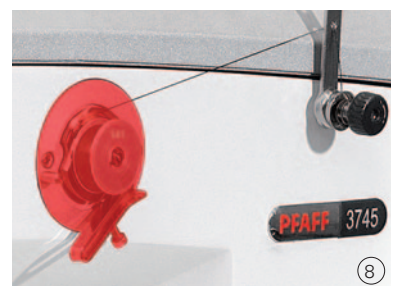
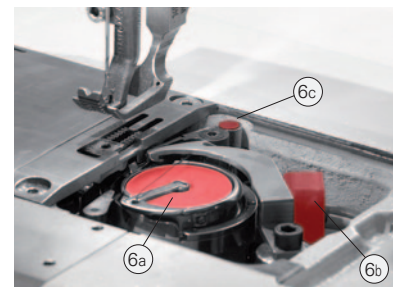
Wheel feed roller presser (stepping motor controlled, differentiable). For applications with small radii

PFAFF 3791:

Wheel feed roller presser (stepping motor controlled, differentiable). For applications on three-dimensional parts

PFAFF 3745:

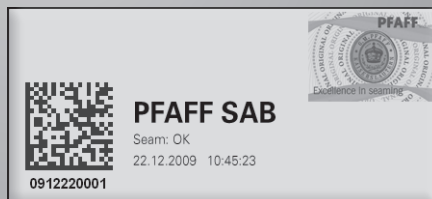
Programmable upper feed lift up to 9 mm  
Clearance under the sewing foot up to 20 mm





## 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)





## Touchscreen + Scanner + Camera + 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
- 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 cameras for upper- and lower thread
- Stationary camera for monitoring the bobbin (Data Matrix Code)
- Stationary camera for printed label



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