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# Safety foot switches – remote control enabling

**Press brakes and other forming machines are often operated using a safety foot switch. For such applications special switching inserts exist. Ergonomic comfort and operational safety can be improved by using remote control enabling foot switches with safety-related wireless technology.**

For press brakes and other forming machines, the foot switch is the central human-machine interface. The operator positions a metal sheet against the back stopper and depresses the right-hand pedal, causing the upper cheek of the press to be lowered.

## 1.8 million times per year

For the observer this looks like a very rapid succession of grabbing (a metal sheet), depressing the foot switch, and a lowering of the upper cheek of the press. Parallel to this, the stoppers move automatically to ensure that the metal sheets are always positioned correctly. If an operator wishes to alter something, for example the angle of bend, the machine can be opened using the other pedal of the foot switch. In such applications the pedals are actuated very frequently: if the presses are operated in three shifts, the foot switches perform up to 1.8 million switching cycles per year.

## Central control

For this application field, steute has developed the GFS safety foot switch series with special three-position switching inserts.



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*In many metal forming plants, the foot switch is the central human-machine interface.*

The basic functions of this foot switch are described in DIN EN 60947-5-8 ("Low-voltage switchgear and controlgear - Part 5-8: Control circuit devices and switching elements - Three-position enabling switches").

Actuation of the foot pedal in its middle position triggers a press stroke, whereas both of the two end positions bring the press brake or a dangerous movement to an immediate stop. The enabling function in the middle is thus only active when the operator consciously selects it.

The contact system used for the switching inserts in the one- or two-pedal foot switches facilitates particularly soft switching procedures and prevents the machine from jerking, for example when unlocking the switch from its fully depressed switching position.

These safety foot switches have been especially designed to provide ergonomically comfortable, non-tiring actuation, as well as a long lifetime, even in adverse ambient conditions. They can be used in applications to performance levels e (EN ISO 13849-1) and SIL 3 (IEC 61508), and in this variant are also suitable for other metal forming applications.

The safety foot switches from steute are also available with an optional emergency stop button.

## The benefits of remote control

The steute foot switch range also includes wireless variants which communicate with a corresponding receiver unit via the safety-related wireless protocol sWave-Safe. Wireless signal transmission gives operators greater freedom of movement: they are always able to place the foot switch in whichever position is most comfortable, without being restricted by a cable which can then also be in the way. This is particularly beneficial in conjunction with larger machines. The development of these switches stems from an experience collected with wireless technology over a period of many years, also in critical and complex areas such as medical equipment or explosive environments.

## A range of 15 metres

The result is a safety-related wireless protocol which features fast connection times coupled with low power consumption. Even with the interference potential in industrial environments, the range is up to 15 metres. The system works on the licence-free 2.4-GHz-ISM waveband.

High transmission reliability is guaranteed, amongst other things, by a special data communication procedure using FHSS ("Frequency Hopping Spread Spectrum"): the transmission channel changes so often that if there is any interference through other transmitters (which can never be avoided completely), the function of the wireless foot switch is still guaranteed.



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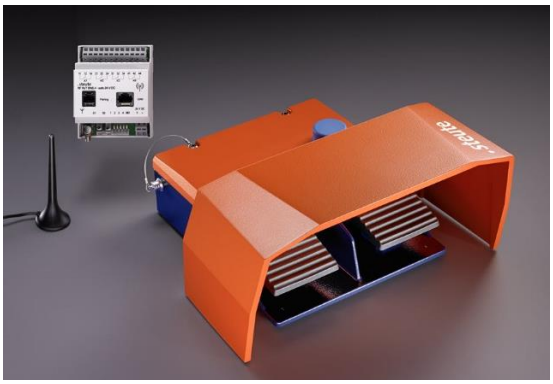

*Ergonomic design, special switching inserts and optionally available without cables: safety foot switches for metal forming.*

*One of the first ever users of wireless enabling foot switches was a Swiss sheet metalworking company.*

## Ergonomically comfortable and durable

Both the cabled and the wireless versions of the GFS foot switch feature high stability and low pedal height, in turn facilitating ergonomically comfortable and non-tiring actuation. This is particularly desirable with an enabling switch because the pedal has to be held in the middle position for longer periods at a time. The entire series has been developed especially for rough industrial use. The aluminium housing is extremely robust, as are the pedal made of glass-fibre reinforced plastic and the durable, high-quality switching inserts.

## Wireless: a sensible option

Several press brake manufacturers now offer a wireless switch as an alternative to the cabled safety foot switch, thus improving the ergonomic comfort of their customers at the human-machine interface.

Other customers have themselves retrofitted their machines with wireless switchgear – for example a Swiss metalworking company, which was one of the first ever users of steute wireless enabling foot switches.

The same choice was made by a foundry which now actuates its tilt pouring machines using wireless foot switches. This move was triggered not only by the wish for improved ergonomic comfort, but also by the fact that hot splashes were damaging the cables and making frequent repairs necessary. For this reason, the wireless foot switches were also able to reduce machine downtimes.

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Images: steute Schaltgeräte GmbH & Co. KG, Bystronic



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