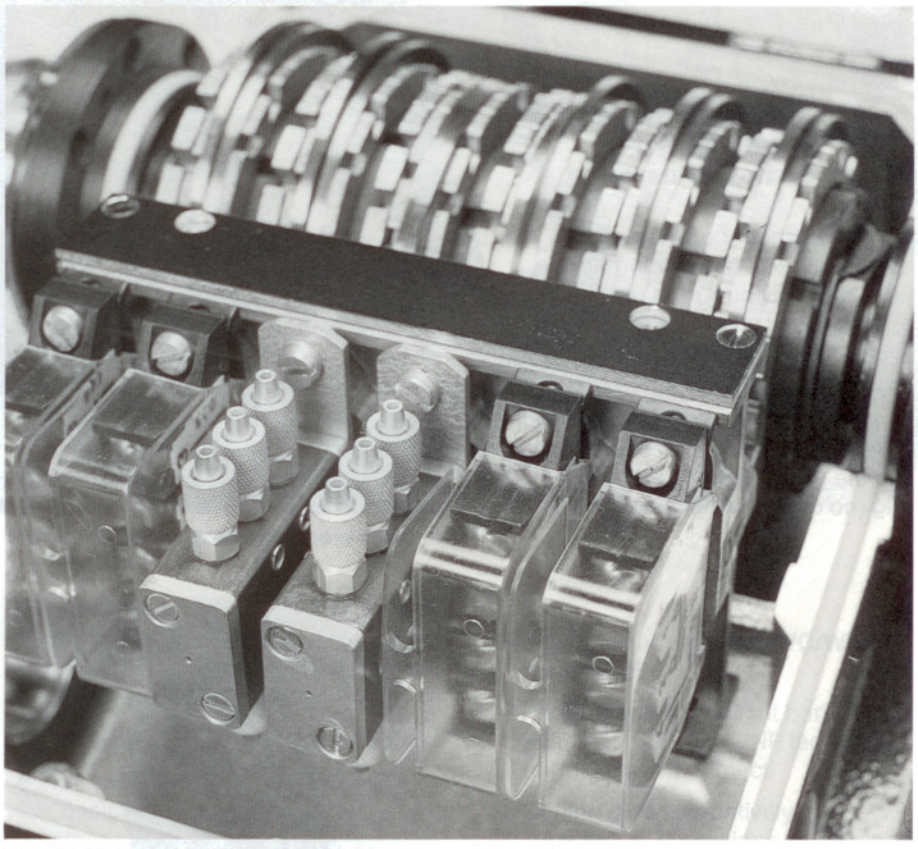
Special Types and Special Constructions of Precision Switchgear

The standard programme is supplemented by BALLUFF switchgear components designed according to specific customer requirements and in special constructions.

Some of these special versions are shown in detail on the following pages:

- Switchgear with internal or external pulse pick-up for monitoring running or speed.
- Switchgear with a special securing device for the preset cam rings.
- Switchgear fitted with creep switches which are force-opening.



Switchgear BSW 493, fitted with snap action switches BSE 44.0 and pneumatic valve.

Numerous further types round off this comprehensive special programme (examples in random order):

- The use of special cam rings with one or more switching stubs.
- The use of open cam rings for fast replacement with the shaft still in position.
- Switchgear housings with securing slots.
- Lockable switchgear casings and sealable safety covers over the switching components.
- Switchgear shaft fitted with sets of different cam rings.
- Switchgear bridge fitted with sets of different switching components (electro-mechanical snap action switches and positive break switches, inductive components, pneumatic valve).

In short: BALLUFF has the right solution for your particular field of application.

The type references are constructed so that all differences from the standard programme can be taken into consideration.

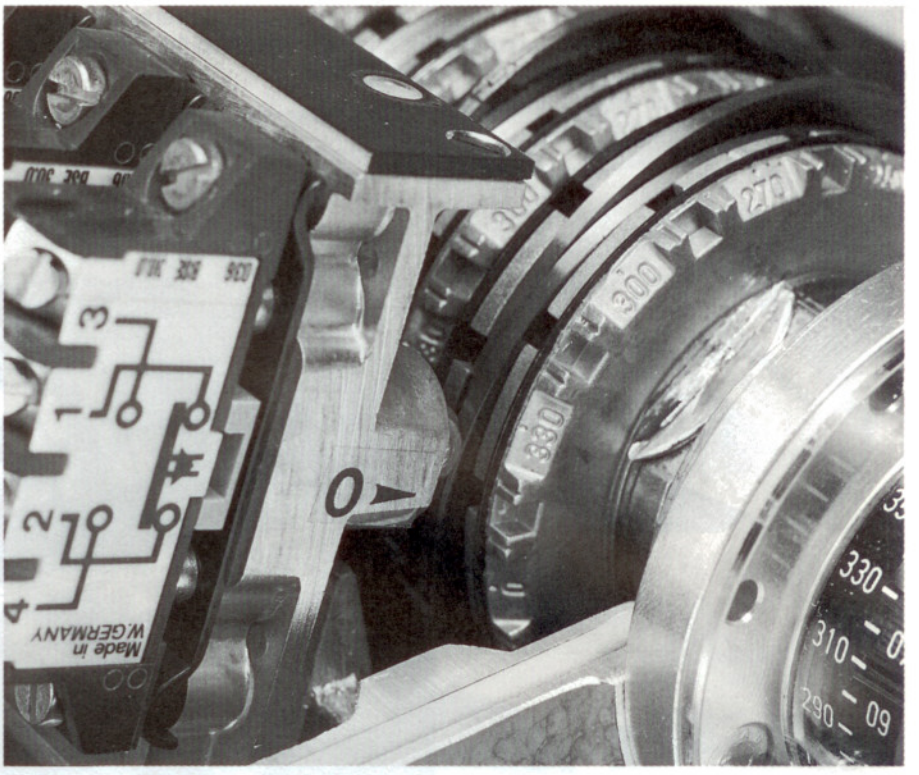
Special Types with Lockable Cam Rings, Speed Monitors and Positive Break Switches

Pages 22 to 25 show precision switchgear which differ from the standard types due to the following characteristics:

1. Lockable Cam Rings to Protect against Accidental Adjustment

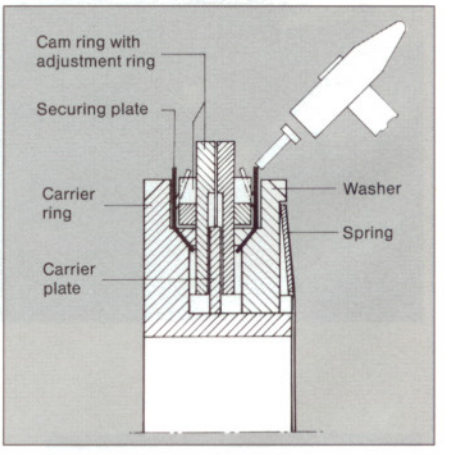
These switchgear units are fitted additionally with a securing device, i. e. each individual cam ring is provided with an adjustment ring and a securing plate.

Each individual cam ring can be securely locked in any angular setting, simply by bending the securing plate into the grooves of the adjustment ring (no drilling is necessary).



Part of a precision switchgear unit BSW 493

Lockable cam ring set



Securing the cam rings

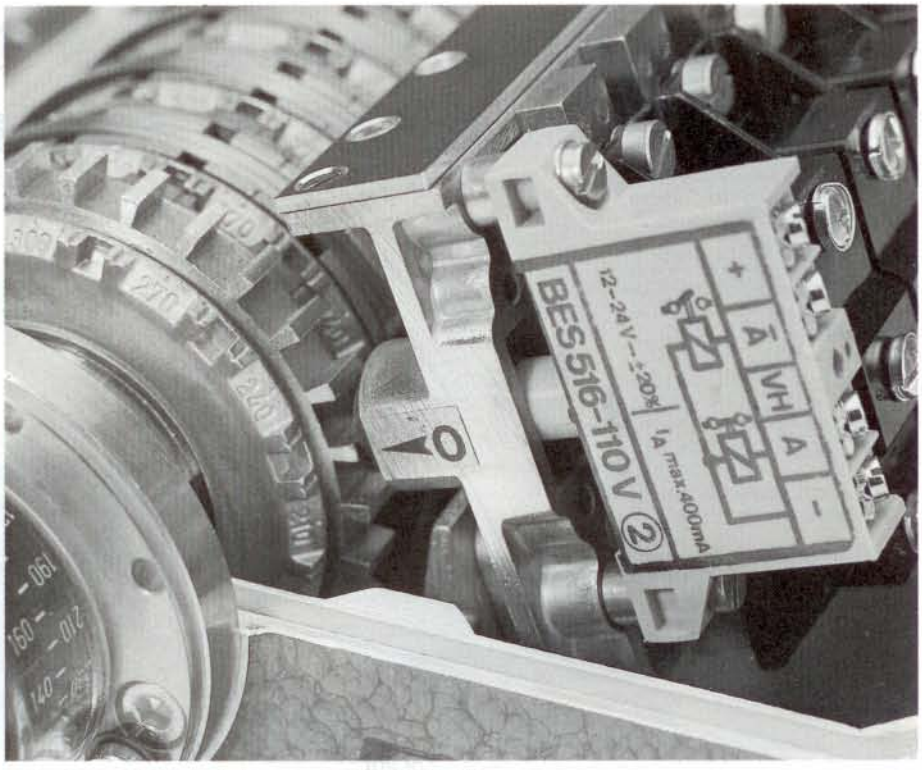
2. With Built-in Pulse Pick-up for Monitoring Speed or Running (Losing one Switching Point)

The switch point furthest from the drive side of the switchgear unit is, instead of the conventional set of cam rings and the corresponding snap action switch, fitted with a pulse pick-up (code WF) consisting of:

- A gear wheel with 30 teeth (= 30 pulses per revolution)
- Inductive electronic component BES 517-110 (Code PA), 10...60 V DC, PNP technique, normally closed and normally open contacts.

The rotational movement of the switchgear shaft is monitored by this pulse pick-up and evaluated by a speed monitor unit.

Particularly in presses the evaluator units used are the BALLUFF speed monitors BES 516–604 AZ ... DZ with force-operated relay contacts (see page 32).



Part of a precision switchgear unit BSW 494 WF...

3. With Additional Pulse Acceptance for Monitoring Speed and Operation Respectively (without Loss of a Switching Point)

In this switchgear unit the pulse acceptance is provided without the loss of a normal switching point.

There are also two versions available:

a) The pulse acceptance **WA/WB** consists of:

- Pulse wheel with 30 pulses per revolution.
- Inductive proximity switch, threaded tube M 8×1, 10...30 V DC, normally open contact

alternatively:

- Type **WA** = BES 516-324 EQ-C (PNP) Type **WB** = BES 516-343 EQ-C (NPN).

One pulse wheel is located to the left and the right of the complete packet of cam rings so that the relevant proximity switch can be fitted as required.

b) The pulse acceptance **WC/WD** consists of:

- Photo-electric fork light barrier BGL, 10 ... 30 V DC, PNP technique, normally open contact.
- Coding disc alternatively: Type **WC** = 3° divisions corresponding to 120 pulses, zero position is however without pulse. Type **WD** = 2° divisions, corresponding to 180 pulses.

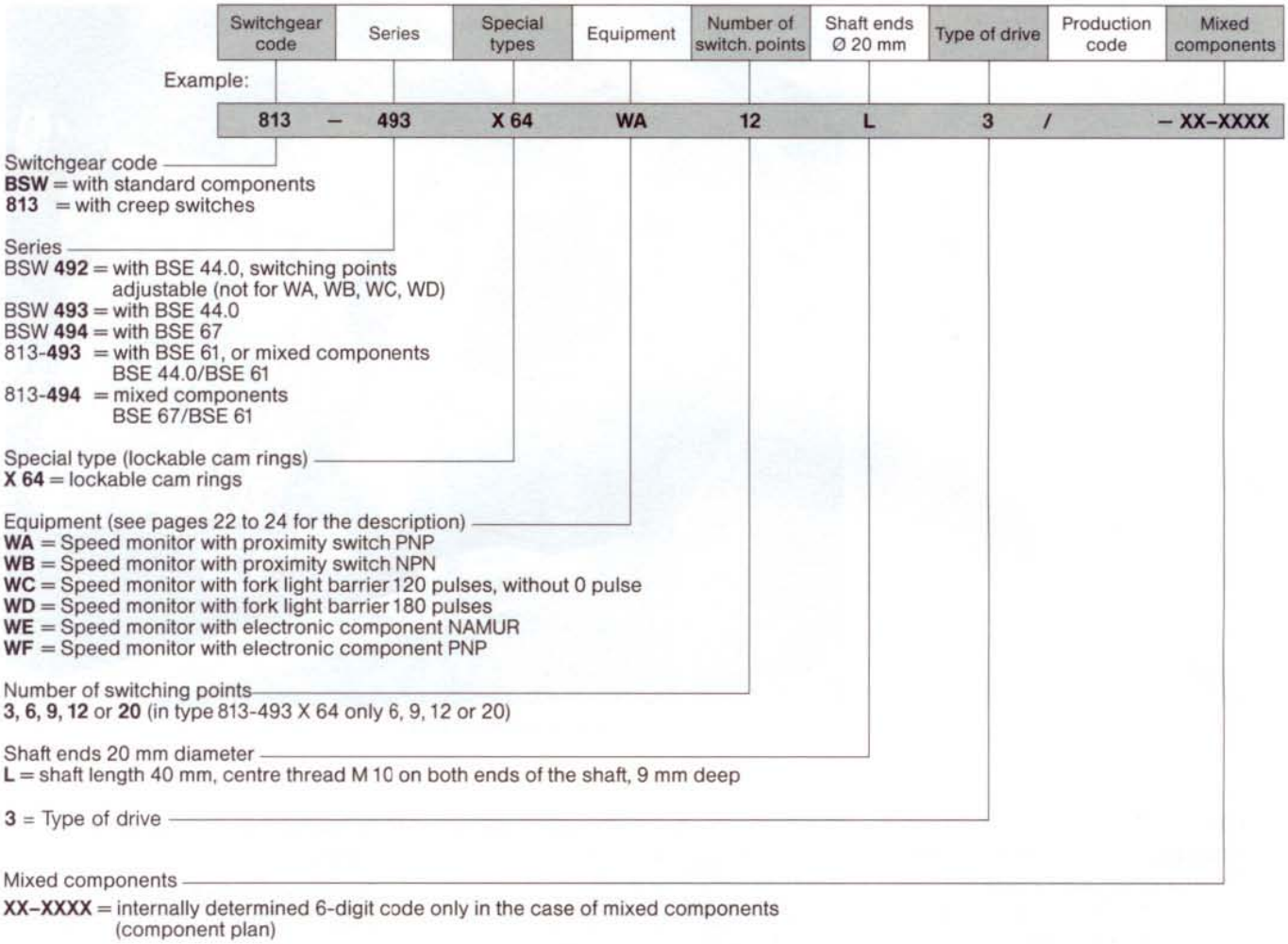
The proximity switches and the fork light barrier respectively are mounted on the side opposite the drive (after the last normal switching point).

The evaluation is carried out by means of BALLUFF speed monitors BES 516–604 AZ ... DZ (see page 32).

4. With Positive Break Switches Type BSE 61 to VDE 0113

In place of snap action switches BSE 44.0 and BSE 67 respectively the switchgear can be partially or completely equipped with positive break switches BSE 61 to VDE 0113. These components consists of normally closed contacts with activation of the switching bridge to force-interrupt the switching contacts according to VDE 0113, Section 7.1.3. In the order reference for the safety switchgear the **code 813** is given in place of BSW.

Ordering Instructions for Special Switchgears



Important:

- The code "Special type" (X 64) is deleted if the standard cam rings are fitted in place of lockable cam rings and the protective cover.
- The code "Equipment" (WA, WB, WC, WD, WF) is deleted if no speed monitor is fitted.
- If **all** switching points are fitted with BSE 61 then the order code is **813-493, without** the supplement "Mixed components".
- **When ordering a switchgear unit with mixed components the relevant details should be given "in plain text", or if ordered at a later date the full order reference is to be given, including the 6-digit code.**

This component plan covers both mixed components on the switchgear shaft as well as on the switchgear bridge.

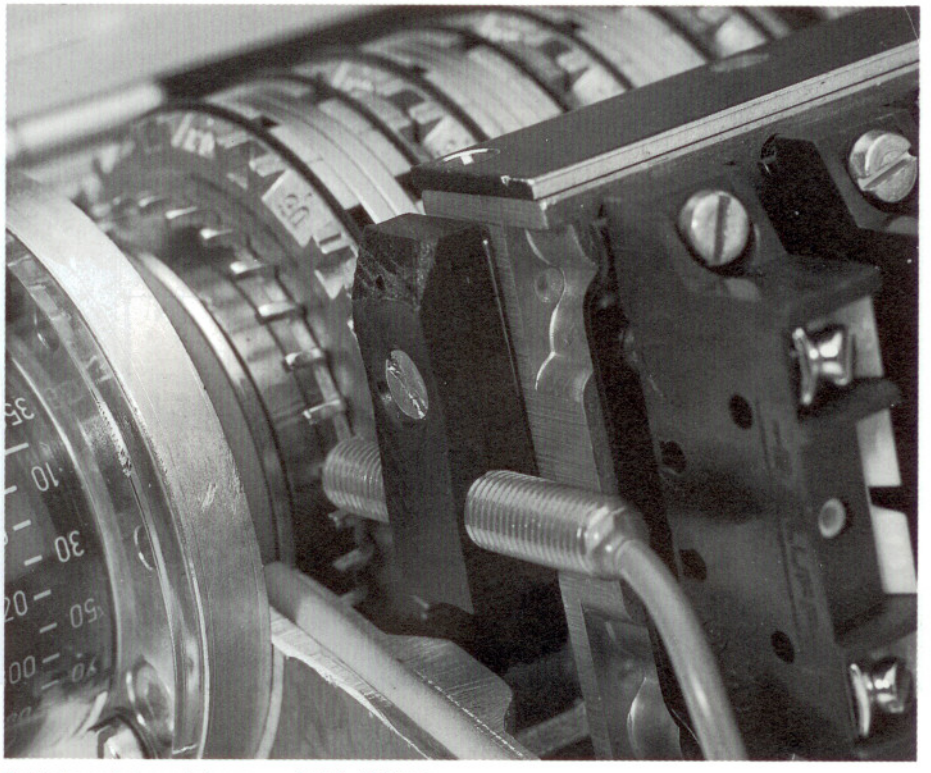
Precision Switchgear 113-493 X 64 ...
(Safety Switchgear)
For Controlling Power Operated Presses with Safety Devices in Accordance with UVV

Construction

Depending upon the requirements of the trade union the switchgear unit is either partially or completely fitted with force-opening creep switches BSE 61 according to VDE 0113 for use as a safety switchgear unit in accordance with the regulations for press safety (ZH 1/457). All switching components are protected by a plastic cover to prevent unauthorized access.

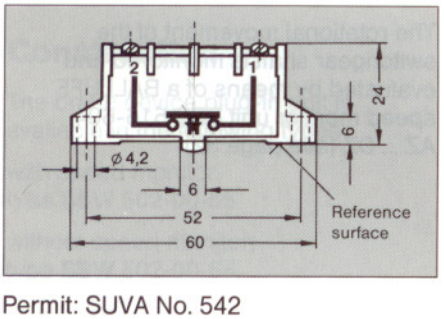
In order to secure a preset switching point against accidental adjustment the cam rings are each fitted with a safety device (see page 22). In addition these safety switchgear units can also be fitted with pulse pickups for speed monitoring (WA, WB, WC, WD, WF) in order to monitor the connection components from the press shaft to the last switching point of the switchgear.

The pulses must be evaluated with a safety control (in the sense of the UVV for presses).



Part of a safety switchgear unit 113-493 WA...

Positive Break Switch BSE 61



Permit: SUVA No. 542

Casing material	Duroplast, Thermoplast (lid)
Contact material	Fine silver
Contact configuration	Normally open 1 + 2 
Cable connection	M 3 screw connections for 2 × 1,5 mm² with self-releasing clip discs
Contact system	Normally closed, double interrupt
Switching system	Contact, forced interruption of the contact according to VDE 0113 by firm operation of the switching bridge
Operating frequency (BSE 61)	Max. 200/min.
Reproduceability of the switching point from circuit to circuit	±0.002 mm ≙ ±0.1°
Mechanical operating life at 1.6 operations per second	Greater than 50 million cycles
Electrical operating life	Depending upon load and switching frequency