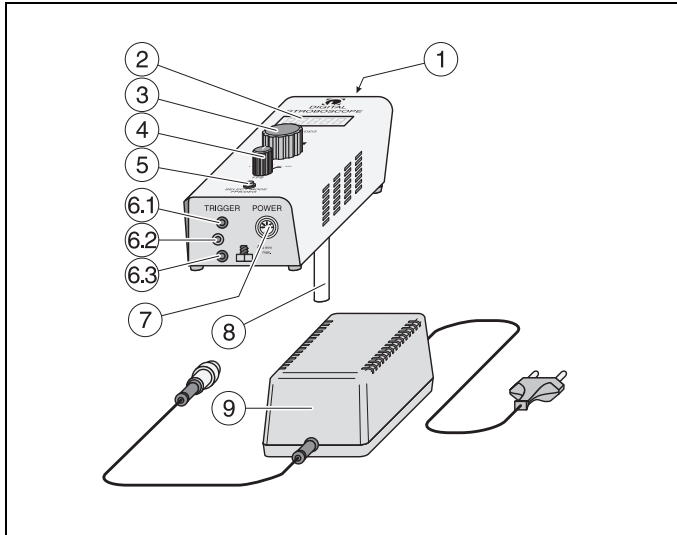


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Instruction sheet

451 281

451 292

**Stroboscope, 1...330 Hz
Spare Flash Tube**

Fig. 1

The stroboscope with microprocessor-controlled xenon flash tube can be used

- to observe rapid periodic motions, e.g. oscillations of a string, as a stationary image
- to measure the frequency of periodic mechanical phenomena (1 ... 330 Hz) and for speed measurements (60 ... 19,800 rpm)
- to observe a rapid motion process at different points in time, e.g. during projection.

The stroboscope is designed to permit shifting of the flash phase. This allows you to vary the observation point during a periodic motion. The frequency and phase angle can be read off in a display.

1 Safety notes

- During operation, interference may occur in transmitting and receiving devices or components. In this case, discontinue using the stroboscope immediately. Never leave the stroboscope on longer than is required to carry out the measurement, and keep this period as short as possible.
- Do not touch the spare flash tube with your bare fingers.

2 Description, scope of supply, technical data

- ① - ⑦ Stroboscope
- ① Xenon flash tube, XSU 40, mounted in reflector; behind removable plastic window, Replacement: spare flash tube (451 292)
- ② Digital display, 5-digit, for frequency and phase angle

- ③ Adjusting knob for continuous adjustment of frequency and phase angle, ranges selectable
- Select the quantity with key ⑤
 - Select the measuring range with rotary switch ④
- ④ Rotary switch FPS (flashes per second):
- | | |
|----------------------|-------------------|
| 1 - 10 ⁰ | 1...100 Hz |
| 30 - 33 ⁰ | 30...330 Hz |
| OFF: | switch off device |
- ⑤ Pushbutton for toggling display between frequency and phase angle
- ⑥ 4-mm sockets for external control
- (6.1) Output: 12 V DC (with respect to ground (6.3)) for connection to (6.2) via external switch (e.g. light barrier 337 46)
- (6.2) Signal input for external triggering of light flashes connection voltage with respect to ground (6.3): 3...20 V
- (6.3) Ground (0 V)
- ⑦ Connection socket for supply voltage from power supply ⑨
- ⑧ Stand rod, threaded
length: 125 mm, diameter: 10 mm, thread M6
- ⑨ Power supply with mains cable and connecting lead with DIN plug for ⑦
Mains voltage: 85...250 V, 50/60 Hz, 30 W
Output voltage: 24 V DC, 1 A

Not shown: carrier bag

Dimensions:

Stroboscope: 81 mm x 56 mm x 194 mm

Power supply: 14 mm x 7 mm x 8 mm

Total weight: 0.6 kg

3 Operation

Set the stroboscope to the desired range using the rotary switch ④. Following a brief self-test (approx. 2 s), the display ② shows the last frequency selected with knob ③ and the stroboscope begins to flash at this frequency.

To change the flash frequency, turn knob ③:
to change the flash rate in small steps (0.01 Hz)
– turn slowly

to change the flash rate in large steps
– turn rapidly.

To measure frequencies of periodic motions, begin with a low frequency and increase this until you can observe a recognizable or marked position in the moving system as stationary with respect to two (opposing) points. Then reduce the frequency by one half and carefully adjust it until you once again obtain a stationary image.

For rotational motions, the rotational speed can be calculated as: $1 \text{ Hz} \hat{=} 1 \text{ rps} = 60 \text{ rpm}$.

Flash phase:

To shift the flashing point while observing a stationary image, you can vary the blitz phase. To do this, press pushbutton ⑤. The message "PH.A" briefly appears in the display ②, followed by the last phase angle selected. Turn knob ③ to select the phase angle:

to change the phase angle in small steps (0.1°)
– turn slowly

to change the phase angle in large steps
– turn rapidly

To toggle to the frequency, press pushbutton ⑤ again. The message "Fr.E" briefly appears in the display ②, followed by the frequency.

External triggering:

To externally trigger flashes, connect signal input socket (6.2). You can do this by connecting a voltage source, ideally a function generator, to sockets (6.2) and (6.3) or by connecting socket (6.1) to (6.2) using a switch or a forked light barrier (Fig. 2).

The external frequency appears in display ②. Flashing of display ② indicates that the applied frequency is out of the range set using rotary switch ④.

The device automatically switches to the external timing as soon as a timing signal (voltage) is present. To reset the device to internal timing (when no external signal is present), manipulate knob ③; after a brief interval the last set flash frequency is restored.

4 Replacing the flash tube

Remove the plastic window and take out the defective flash tube. Carefully insert the spare flash tube; do not touch the flash tube directly with your fingers, to prevent contamination of the tube. Then remount the plastic window.

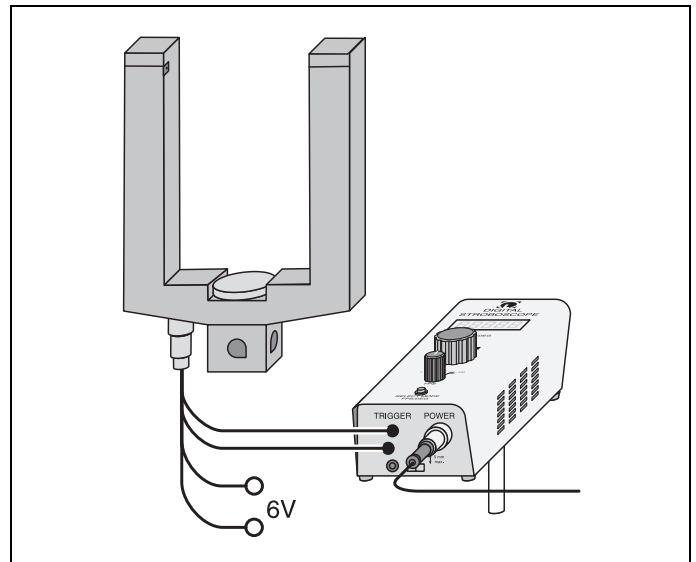


Fig. 2