

Invertoscope ID 03 and ID 03 MT

Operating Instructions

G 41 - 127 / i-e

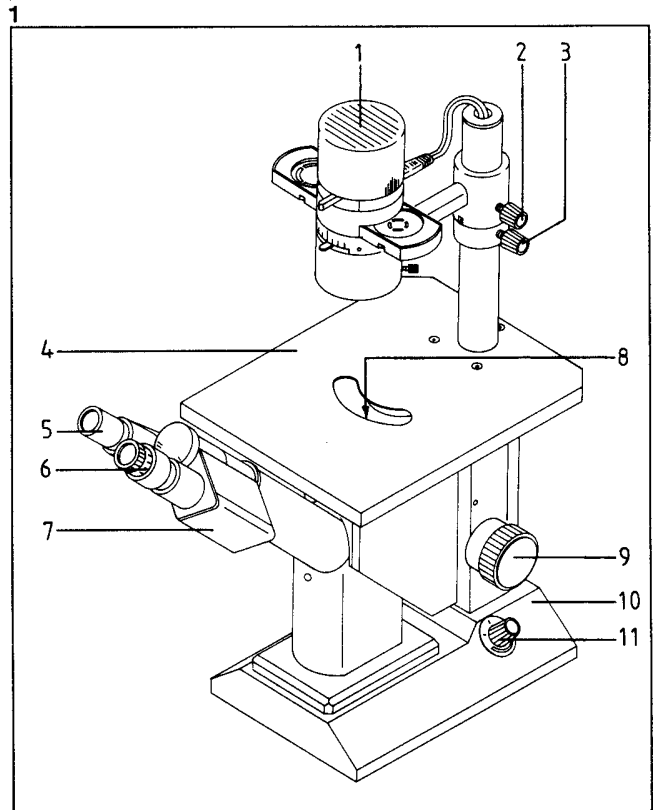
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Notes:

- * The 6- or 10-digit numbers, e.g. 47 17 45, are ordering numbers for instruments or components.
- * Changes or repairs to these instruments may only be performed by the manufacturer or by a person expressly authorized by him to do so.
- * Specifications subject to change.

Fig.1: Invertoscope ID 03

- 1 Lamp housing 6V 20W with LD condenser 0.3, Br, Ph 1, Ph 2 and lamp carrier, connected to in-base power supply
- 2 Clamping screw to secure the lamp carrier
- 3 Fixture with clamping screw and pin to align the lamp carrier. The illumination system can be rotated about the stand column.
- 4 Fixed specimen stage 211x270 mm
- 5 Kpl wide-angle eyepiece 10x/18 Br. (46 40 42-9903)
- 6 Kpl wide-angle eyepiece 10x/18 Br. foc., with focusing eyelens (46 40 43-9902)
- 7 Binocular tube, permanently fixed in position
- 8 Quadruple revolving nosepiece with screw-in objectives (see fig. 3).
- 9 Focusing control acting on the nosepiece. Vertical adjusting range: 10 mm.
- 10 Base with built-in power supply for 220..240 V (47 12 02-9903) or for 100...127 V (47 12 03-9903). Frequency: 50...60Hz. Power consumption: max. 40 VA. The instrument is interference-free and complies with the VDE, IEC and CSA regulations.
- 11 Power switch with brightness control of 6 V 20 W halogen lamp. The output voltage is stabilized and electronically adjustable up to 6 V.

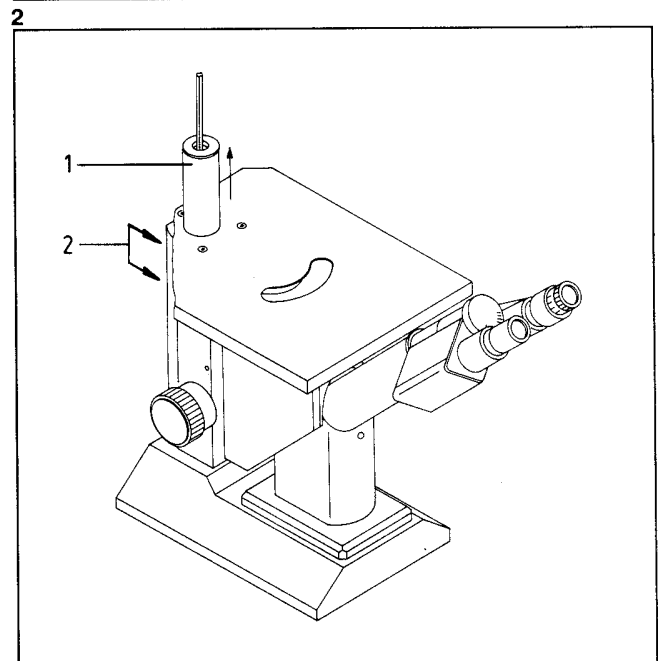


The **Invertoscope ID 03 MT** (fig.3) is particularly suitable for accommodation of application-oriented supporting frames for different specimen holders, like microtiter and microtest plates etc. (see page 5). The mechanical stage MT (3.10, i.e. fig. 3, item 10) is available for screening. It is attached to the fixed stage from the left-hand side and fixed from below with three knurled screws.

Assembly

Take stand out of transport case and put it on worktable. Loosen two socket-head screws 2.5 mm (2.2) of stand with supplied screwdriver, pull out stand column (2.1) until it is about 15 cm above the stage plate and tighten socket-head screws again.

The coarse and fine control (47 12 09) is preferably used for the focusing of objectives with magnifications of greater than 20. In case this control is packed separately from the microscope, it can be mounted by the user himself: put the coarse and fine control to the prepared drive axle so that its pin engages into the groove of the drive axle. Tighten clamping screw with supplied screwdriver (width of opening: 2.5). For subsequent installation please notify our nearest agency.



Connect microscope to line supply; knob (1.11) must be switched off. Then switch on halogen lamp with this knob. Swing an objective into light path.

Place specimen on the specimen stage

When using an Invertoscope ID 03 with mechanical stage MT (3.10), slide supporting frame (3.13) (e.g. for microtiter or micro test plates) beneath spring clips (3.11) from the front until it snaps into position. Unless not yet done, stick scales to the recesses of the mechanical stage, i.e. the scale with numbers (3.9) in the direction left-right and the scale with letters (3.12) in the direction to-fro.

Focus on the specimen

Adjust tubes (3.16) until you see a circular, sharply defined field of view with both eyes. Look through eyepiece (3.17) and focus on the specimen with control (3.14). Then focus for the other eye by turning the eyelens (3.18) of the eyepiece.

Illuminate the specimen

Adjust height of illuminator 20 (3.4) with lamp carrier (3.1) and holding ring (3.2) until the distance between specimen and underside of illuminator is approx. 56 mm.

Insert diaphragm slide (3.3)

Remove safety screw (3.8) from slide. Insert slide into opening of the illuminator from the right until stop in the middle position. Fasten safety screw.

Illuminate objective pupil uniformly and brightly

Remove eyepiece from tube. Observe objective pupil either with the naked eye or with a centering telescope, adjust the eyelens until the objective pupil is in focus. Swivel illuminator 20 slightly around column and clamp it when illumination is at its brightest and uniform. Fix safety ring (3.2) on lamp carrier.

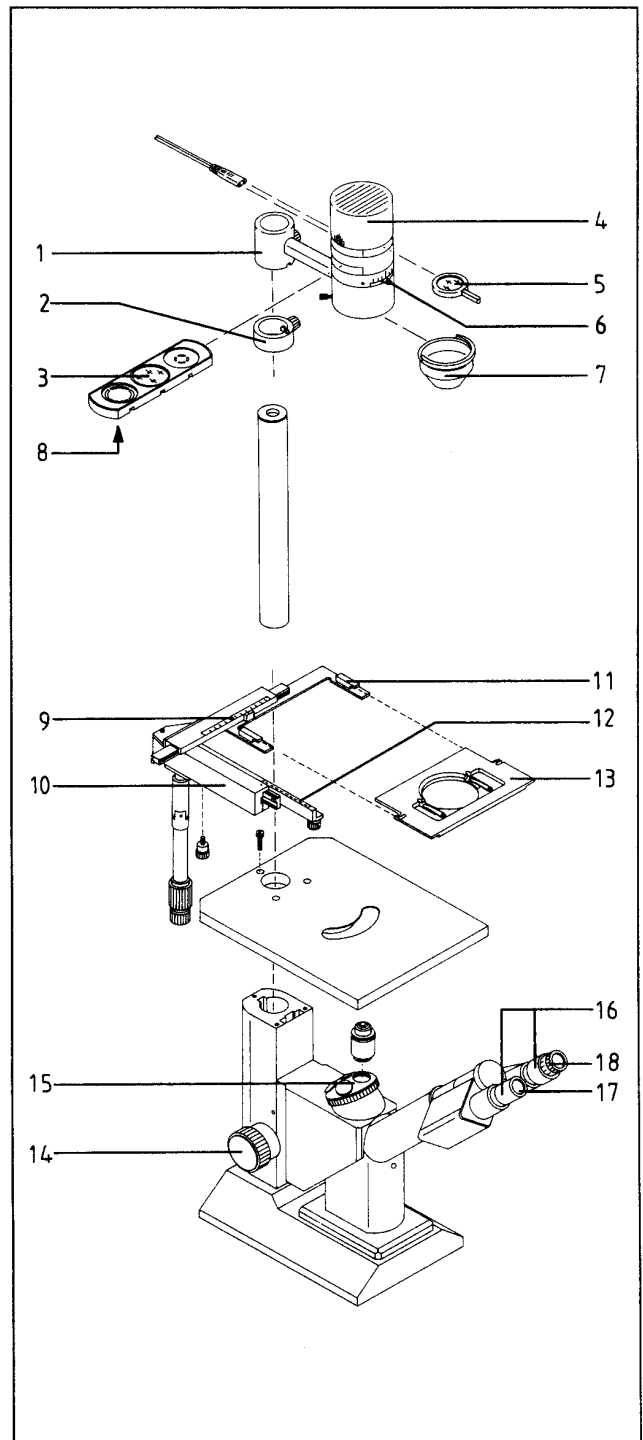
The condenser front lens (47 12 08) (3.7) that can be attached to the illuminator increases the aperture of the LD condenser of the illuminator to 0.6. The distance to the specimen is then approx. 15 mm.

Adjust brightness with control (1.11)

Set optimum image contrast with lever (3.6)

Where necessary, insert filter, dia. 32 mm, into filter opening of illuminator 20 with holding ring (3.5).

3



Screw Ph objectives into nosepiece.
 Slide phase stop Ph 1 (4.1) into light path for objectives Ph 1 and phase stop Ph 2 (4.2) for objectives Ph 2.

Adjust specimen as described for brightfield.

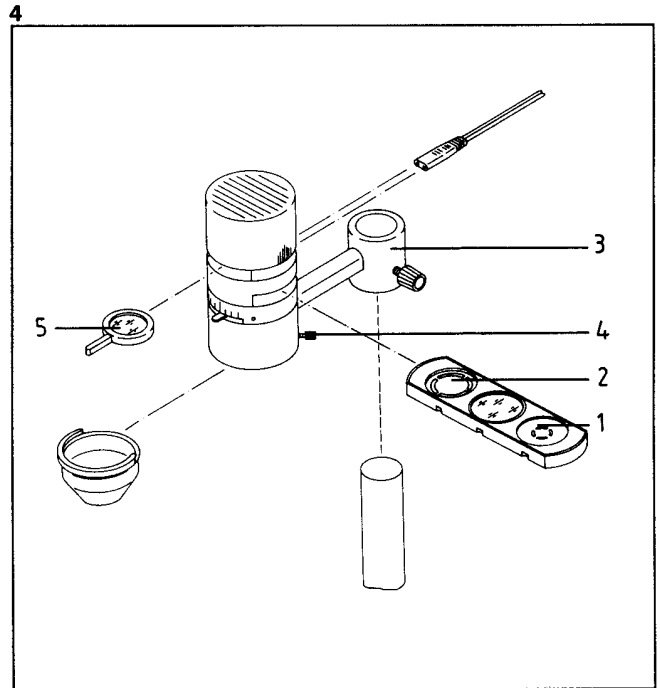
Insert centering telescope in binocular tube instead of an eyepiece and adjust its eyelens until the dark ring is in focus. Use centering screws (4.4) to cover black Ph ring with bright Ph ring (fig. 5).

If the bright Ph ring is not uniformly illuminated, then:

1. check exact center position of illuminator 20 and readjust, where necessary;
2. center halogen lamp after loosening screws (6.2) (set optimum illumination);

After setting phase rings, remove the centering telescope from the tube and insert the eyepiece.

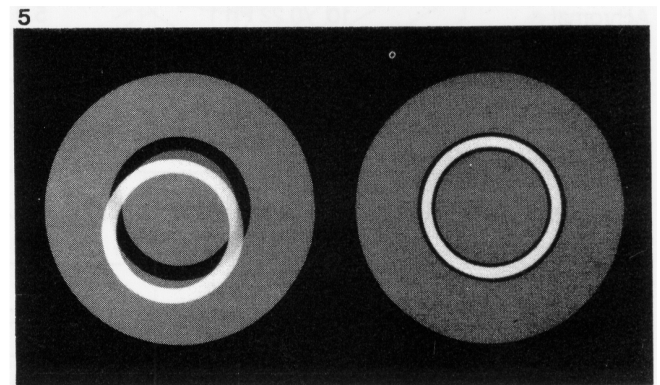
If necessary, insert interference wide-band filter, green (46 78 03) in filter opening with holding ring for light filters (46 72 52) (3.5).



Supporting frames for mechanical stage MT

The following supporting frames can be inserted into the mechanical stage MT (3.10):

- for 96 position microtiter plates 47 17 46
- for microtest plates, 60, 72 120 positions 47 17 47
 (e.g. for for HLA tests)
- for multidishes (e.g. 24 position Costar plate) 47 17 44
- for 76 x 26 mm specimen slide 47 17 19
- for Petri dishes, dia. 36 mm 47 17 42
- for Petri dishes, dia. 54 mm 47 17 43
- for Petri dishes, dia. 65 mm 47 17 58
- for Petri dishes, dia. 88 mm 47 17 59



The following objectives are available in addition to Achromat objectives:

- F-Achromat flatfield objectives
- F-Achromat LD flatfield objectives with particularly long working distance
- Planachromat perfect flatfield objectives, also for phase contrast
- Achroplan LD perfect flatfield objectives with particularly long working distance
- Neofluar top-of-the-line fluorite objectives for high-contrast images

The parfocal length of the objectives on the nosepiece is 1.3 mm above the stage plane in air, i.e. this plane will always be in focus when objectives are changed.

Objective	Magnification/Aperture	Working distance (mm)	Cat.No.
Planachromat	2.5/0.08	8.9	46 01 10-9906
F-Achromat	2.5/0.08	8.9	46 01 05
Achromat	3.2/0.07	23.2	46 01 00-9903
Planachromat	6.3/0.16	4.9	46 03 10
Achromat	10 /0.22	5.0	46 04 00-9903
Achromat	10 /0.22 Ph 1	5.0	46 04 01-9904
F-Achromat	10 /0.25	6.8	46 04 05
F-Achromat	10 /0.25 Ph 1	6.8	46 04 06
Planachromat	10 /0.22	4.8	46 04 10
Neofluar	10 /0.30	4.8	46 04 20
Planachromat	16 /0.35	2.8	46 05 10
Planachromat	16 /0.35 Ph 2	2.8	46 05 11
LD-EIPLAN	16/0.30 Pol	4.1	46 21 23
F-Achromat LD	20/0.25	2.0 ¹⁾	46 06 05
F-Achromat LD	20/0.25 Ph 1	2.0 ¹⁾	46 06 06
Planachromat	25/0.45	1.4	46 06 10
F-Achromat LD	32/0.40	1.0 ²⁾	46 07 02
F-Achromat LD	32/0.40 Ph	1.0 ²⁾	46 07 03
LD Achroplan ³⁾	32/0.40	6.8 ⁴⁾	44 08 50
LD Achroplan ³⁾	32/0.40 Ph 2	6.8 ⁴⁾	44 08 51

¹⁾ For coverglass thicknesses of 1 - 2 mm
With coverglass thickness of 2 mm, the working distance is 2 mm

²⁾ For coverglass thicknesses of 0.5 - 1.5 mm
With coverglass thickness of 1.5 mm, the working distance is 1.0 mm.

³⁾ Screw objective in ID 03 nosepiece via adapter
f = 160 mm (44 49 00).

⁴⁾ For coverglass thicknesses of 1.2 - 1.8 mm
With coverglass thickness of 1.5 mm, the working distance is 6.8 mm.
The following coverglass caps are required to compensate different coverglass thicknesses:
Coverglass cap D = 0 - 0.6 (44 49 30) for coverglass thicknesses of 0-0.6 mm
Coverglass cap D = 0.6 - 1.2 mm (44 49 31) for coverglass thicknesses of 0.6 - 1.2 mm

CPL compensating flatfield eyepieces, highly corrected, for sophisticated work.

Kpl compensating flatfield eyepieces, optimally corrected, for most exacting demands.

Magnification/ Field-of-view number	Angular field	Cat.No.
CPL 10x/18 Br. ¹⁾	42°	46 40 22
CPL 10x/18 Br. ¹⁾ foc. ²⁾	42°	46 40 23
Kpl-W 10x/18 Br. ¹⁾	41°	46 40 42
Kpl-W 10x/18 Br. ¹⁾ foc. ²⁾	41°	46 40 43
Kpl 12,5x/18 Br. ¹⁾	48°	46 41 42
Kpl 12,5x/18 Br. ¹⁾ foc. ²⁾	48°	46 41 43
Kpl 16x/16	55°	46 42 44

¹⁾ High-eyepoint eyepiece for eyeglass wearers. Users who do not wear eyeglasses use the fold-down rubber cups.

²⁾ Focusing eyepiece

Magnification of the microscope

$$M_{\text{Microscope}} = M_{\text{objective}} \times M_{\text{eyepiece}}$$

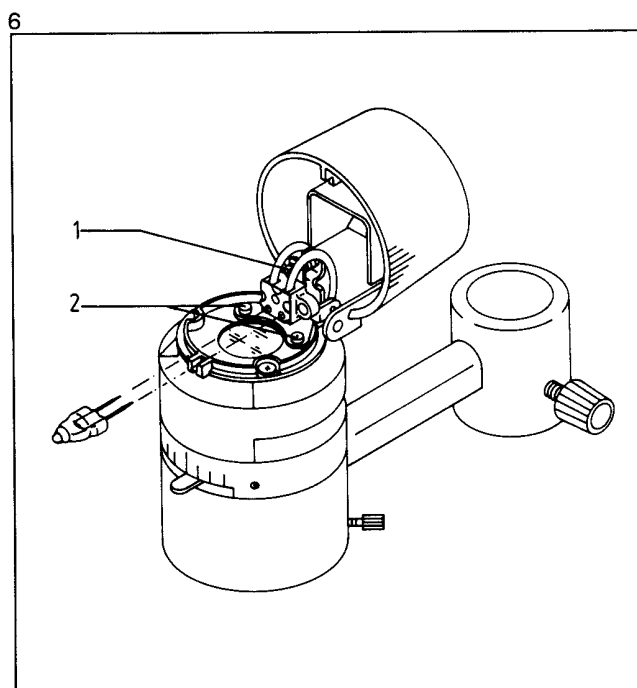
e.g. 200 = 20 x 10

where:

$M_{\text{objective}}$ = objective magnification (20 in the example)

M_{eyepiece} = eyepiece magnification (10 in the example)

- Disconnect microscope from line supply
- Open black lamp cap of illuminator 20 to the left
- Remove defective lamp. Use paper cloth to hold new lamp and plug into socket.
Breathe on lamp and wipe off any finger prints with a clean cloth
- The lamp can be focused with (6.1)
- The lamp can be centered after loosening (6.2)



Spare fuses

for 220...240 V: T0.16A/250V (380127-0120)

for 100...127 V: T0.4A/250V (380142-0285)

Two fuses are inserted beside the power plug in the instrument base. To exchange them, remove bayonet mount and replace defective fuses.