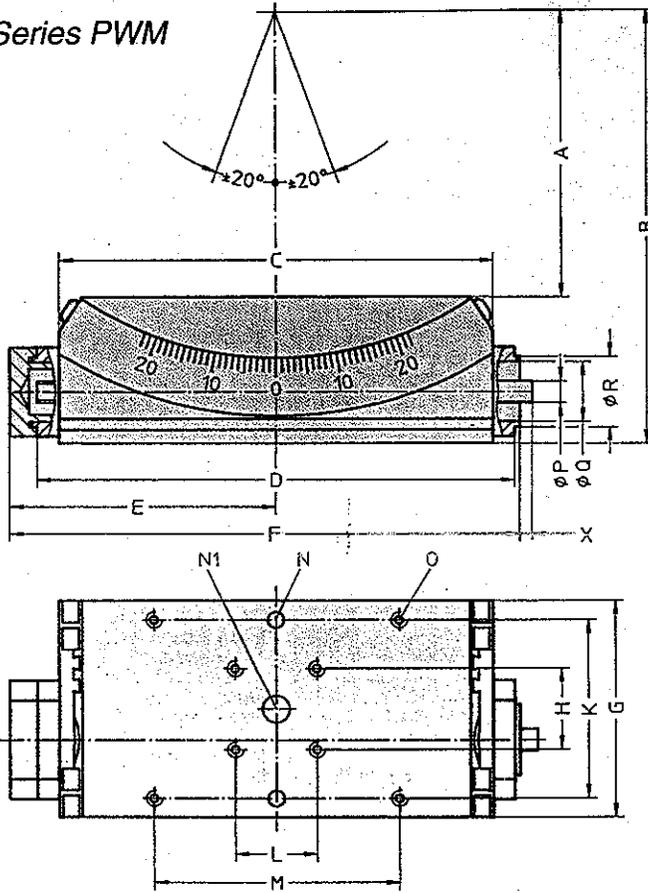
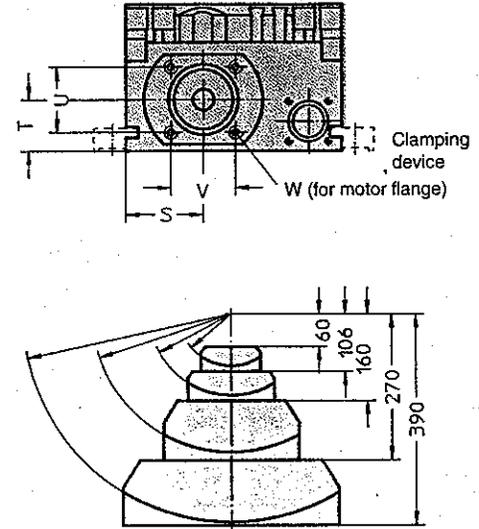


# Goniometers

## Series PWM



View X



Nom. $\beta$	Load $C_0$																Weight		Order number									
		A	B	C	D	E	F	G	H	K	L	M	N	N1	O	P	Q	R	S	T	U	V	W	X	without mot.	with mot.	without mot.	with mot.
60/106	450	60	106	110	130	75	142	80	34	-	34	-	-	10 <sup>H7</sup>	4xM4	8 <sup>H4</sup>	22 <sup>H6</sup>	26	28,5	18,0	24	24	M4	-2	0,9	1,5	91031B	91035E
106/160	600	106	160	160	180	100	192	80	30	66	30	90	6 <sup>H7</sup>	10 <sup>H7</sup>	8xM5	8 <sup>H4</sup>	22 <sup>H6</sup>	26	28,5	19,0	24	24	M4	-2	1,5	2,5	91032B	91036E
160/270	3500	160	270	250	274	163	300	110	-	90	-	90	6 <sup>H7</sup>	10 <sup>H7</sup>	4xM8	8 <sup>H4</sup>	24	28	40,0	34,0	50	32	M4	18	24	27	91033B	91037E
270/390	4000	270	390	400	429	231	448	344	135	80	80	135	-	10 <sup>H7</sup>	8xM8	8 <sup>H6</sup>	-	38 <sup>H6</sup>	67,5	18,5	26	45	M5	10	42	47	91034B	91038E

Dimensions [mm], Load [N], Moments [Nm], Weight [kg]

**Application:** PWM goniometers are precision devices to orient a sample in a limited range, usually  $\pm 20^\circ$  in the vertical plane. Four different models are available, providing a wide range of sizes and load carrying capacities. The larger sizes are suitable to mount the sample on auxiliary equipment such as cryostats magnets and furnaces.

Each goniometer is designed in such a manner that when it is mounted on the next larger size the two goniometers have a common center of rotation. Thus any two adjoining-size goniometers and MDM rotary table will provide a device with three degrees of freedom of rotation: two in the vertical plane mutually perpendicular to each other, and one in the horizontal plane.

Where several tables are combined they are fastened from top through the holes provided for this purpose. The connection from the bottom is effected by the clamping elements which are shown in the sketch (not contained in the scope of delivery), with the PWM 270/390 the attachment is also effected by fastening holes.

**Resolution:** 0.01° with transmission ratio 180:1; 0.005° with 360:1 each with 2 phase stepping motor in full step operation.

**Load capacity:** According to the loads in the table above. Other loads on request.

**Mounting position:** Optional

**Limit switches and plug connections** with motorized version are integrated in the table body.

Nominal dimension A/B	[mm]	60/106	106/160	160/270	270/390
Max. deviation to ideal center of rotation	[mm]	$\pm 0,20$	$\pm 0,30$	$\pm 0,40$	$\pm 0,40$
Permissible deviation of tilt	[mm]	$\pm 0,03$	$\pm 0,04$	$\pm 0,04$	$\pm 0,05$
Repetitive accuracy		$< \pm 30$	$< \pm 30$	$< \pm 25$	$< \pm 20$
Gear ratio		180 : 1	180 : 1	180 : 1	180 : 1

Higher precision on request

**Motors:** 5-phase stepping motor. Other motors on request.

**Lubrication:** With roller bearing grease according to lubrication instructions (See page 77).

**Preload:** Antifriciton bearing and worm drive are adjusted without clearance.

**Distance measuring system:** An encoder (option) can be attached to the free end of the worm drive.

**Material:** Table body: Ribbed aluminium casting  
Races: High alloy spring steel non-corrosive steel  
Rolling elements: Ball bearing steel non-corrosive steel  
partly non-magnetical version on request

**Further information:** Accessories and technical information see page 77.