

# DYNAMOMETER



For the measurement and control of force in tension and weight, where accuracy, reliability and safety in all conditions is required. Conforms to the International Standards for Safety Inspectorates.

**PIAB**



*PIAB Dynamometer with Readout Instrument type 6:64 with two contact functions.*



*PIAB Dynamometer with portable Readout Instrument type 6:14.*

CE



*PIAB Dynamometer with built-on contact head.*

## RANGE OF APPLICATION

The PIAB Dynamometer is an all-weather instrument, equally suitable for use in the Laboratory or out in the

field for weighing and measuring mechanical forces.

## FUNCTION

The pull rod movement operates the scale drum through a square thread stem.

The power-absorbing element consists of specially made Belleville type spring

washers, so designed as to be entirely free from wear.

The spring washers cannot be overloaded.

## SAFETY

Safety factor 5:1 (Guaranteed to withstand a load of 5 times full scale reading before rupture.) The resistance to rupture is tested by the National Swedish Institute for Materials Testing. The dynamometer may be overloaded by 100% without impairing the accuracy. The dynamometers, types M-G, have drop-forged steel eye brackets (SIS 2174, St 52-3N acc. to DIN 17100, 50 D acc. to BS 4360); giving a guaranteed impact resistance to -4°F (-20°C).

The O-ring of the pull rod is protected by a neoprene rubber membrane.

On instantaneous unloading, e.g. breaking test, the return movement of the pull rod is retarded by a specially made spring washer. The PIAB Dynamometer is approved by the National Board of Occupational Safety and Health for integral connection in the carrying system of a lifting device and for weighing of test loads in connection with inspection.

## PROTECTION AGAINST CORROSION

The PIAB Dynamometer is fully pressure tight and each instrument is pressure tested. No leakage is permitted. The external surfaces are zinc plated with clear chromate passivation. If the

dynamometer is to be used in a very corrosive atmosphere, it can be polyester lacquered.

The dynamometer can also be supplied nickel plated.

## DYNAMOMETER FOR REMOTE READING

The PIAB Dynamometer used for remote reading is supplied with a built-in precision potentiometer. The potentiometer is directly connected to the scale mechanism of the PIAB instrument. The electrical resistance of the potentiometer varies in proportion to the load on the dynamometer. The resistance is indicated on a receiving instrument, calibrated individually and

marked with the same serial number as the dynamometer. The connecting cable of the dynamometer is either 1 foot 7" long (0.5 m) and equipped with a Tuchel plug or 6 feet long (2 m) without the Tuchel plug.

If a dynamometer with potentiometer is delivered without receiving instrument, a resistance chart with at least 10 incremental values is included.

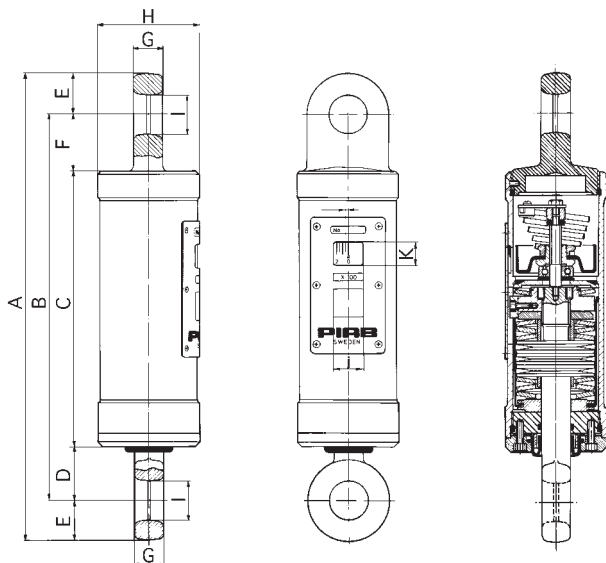
## CONTACT FUNCTION

The PIAB Dynamometer can be equipped with a built-on adjustable contact head. Using a microswitch, which is directly influenced by the pull rod, the dynamometer gives an electrical contact function at a previously set value. For the types MA-O the extension to the body length is about 3.938" (100 mm), for Q about 4.333" (110 mm), for S about 3.078" (78 mm), for U and G about 3.625" (95 mm) and for

the type E about 4.016" (102 mm).

For a dynamometer with 1100 lb. or 2200 lb. capacity, the types MA and MB are used. These have spring assemblies for 1100 lb. or 2200 lb., arranged in type M housings.

The dynamometers MA-O can be equipped with 1-3 and the types Q-E with 1-5 microswitches. The electrical connections are made in the terminal box to a numbered connection block.



## TECHNICAL DATA

### ACCURACY

± 0.6% of the max. capacity.

### WORKING TEMPERATURE

Max. 140°F (+60°C).

### TAREING

The dynamometer can be tared to approx. 10% of the full scale. To obtain best accuracy the dynamometer should be supplied calibrated for a known tare.

### SCALE

White lacquered with black graduation. The dynamometer can be graduated in kg, kp, N, lb., cwt. etc.

ART.NO.	TYPE	CAPACITY 0 -	GRADUATION INCHES AND (MM)	DEAD WEIGHT	MEASUREMENTS IN INCHES AND (MM)									
					A	B	C	D	E	F	G	H	I	J x K
300015	K *	250 kg	5 kg	4.2 lb. 1.9 kg	10.500 (266)	9.063 (230)	6.500 (165)	1.656 (42)	0.703 (18)	0.906 (23)	0.781 (20)	1.969 (50)	0.672 (17)	0.938x0.781 (24x20)
300016	NK *	2500 N	50 N											
300017	L *	550 lb.	12.5 lb.											
300020	A *	500 kg	10 kg											
300021	NA *	5000 N	100 N	5.1 lb. 2.3 kg	11.500 (292)	10.078 (256)	7.016 (191)	1.656 (42)	0.703 (18)	0.906 (23)	0.781 (20)	1.969 (50)	0.672 (17)	0.938x0.781 (24 x 20)
300022	C *	1100 lb.	25 lb.											
300025	B *	1000 kg	20 kg											
300026	NB *	10 kN	200 N											
300027	D *	2200 lb.	50 lb.	17.2 lb. 7.8 kg	15.563 (395)	12.875 (327)	9.219 (234)	1.766 (45)	1.344 (34)	1.891 (48)	0.984 (25)	3.391 (86)	1.297 (33)	1.031x0.781 (26x20)
300230	B x 1.5	1500 kg	50 kg											
300231	NBx1.5	15 kN	250 N											
300232	D x 1.5	3300 lb.	100 lb.											
300030	M	2000 kg	25 kg	33 lb. 15 kg	16.250 (413)	12.938 (329)	9.063 (230)	1.766 (45)	1.656 (42)	2.172 (55)	1.188 (30)	4.797 (122)	1.578 (40)	2.563x0.906 (65x23)
300031	NM	20 kN	250 N											
300032	N	4400 lb.	50 lb.											
300035	O	3000 kg	50 kg											
300036	NO	30 kN	500 N	58.5 lb. 26.5 kg	19.500 (495)	15.156 (385)	10.234 (260)	2.359 (60)	2.172 (55)	2.563 (65)	1.766 (45)	5.859 (149)	2.203 (56)	2.563x0.906 (65x23)
300037	P	6600 lb.	100 lb.											
300040	Q	5000 kg	50 kg											
300041	NQ	50 kN	500 kN											
300042	R	11000 lb.	100 lb.	172 lb. 78 kg	26.578 (675)	19.875 (505)	11.813 (300)	4.016 (102)	3.344 (85)	4.063 (103)	2.750 (70)	8.969 (228)	3.188 (81)	2.563x0.906 (65x23)
300045	S	10000 kg	100 kg											
300046	NS	100 kN	1 kN											
300047	T	22000 lb.	200 lb.											
300050	U	20000 kg	200 kg	254 lb. 115 kg	32.719 (831)	24.844 (631)	15.234 (387)	4.844 (123)	3.938 (100)	4.766 (121)	3.734 (95)	9.219 (234)	4.531 (115)	1.031x0.781 (26x20)
300051	NU	200 kN	2 kN											
300052	V	44000 lb.	500 lb.											
300055	G	25000 kg	200 kg											
300056	NG	250 kN	2 kN	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)	0.109 (2.7)
300057	H	55000 lb.	500 lb.											
300060	E	50000 kg	250 kg											
300061	NE	500 N	2.5 kN											
300062	F	110000 lb.	500 lb.	17.2 lb. 7.8 kg	15.563 (395)	12.875 (327)	9.219 (234)	1.766 (45)	1.344 (34)	1.891 (48)	0.984 (25)	3.391 (86)	1.297 (33)	1.031x0.781 (26x20)
300090	MA	500 kg	10 kg											
300091	NMA	5000 kN	100 N											
300092	MC	1100 lb.	25 lb.											
300095	MB	1000 kg	20 kg	0.156 (3.8)	17.2 lb. 7.8 kg	15.563 (395)	12.875 (327)	9.219 (234)	1.766 (45)	1.344 (34)	1.891 (48)	0.984 (25)	3.391 (86)	1.297 (33)
300096	NMB	10 kN	200 N											
300097	MD	2200 lb.	50 lb.											

\* With built-in potentiometer the length increases by 2.13/64".

# APPLICATIONS FOR THE PIAB DYNAMOMETER

*In line construction it is important to control the installed tension of conductors according to type and conditions.  
For field work light and robust equipment is especially important.  
The PIAB Dynamometers are used for this duty all over the world.*



*Obligatory Standards of Control for Occupational Safety and Health require that safety ropes and belts are regularly and properly checked.*



*This luffing crane in Sweden is protected against overload by a PIAB transducer type Dynamometer in the hook line anchorage, giving the crane operator the actual load on the hook together with overload warnings and power shunt.*



## PIAB

**Force Measurement**

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