

# The **FLEXAULIC** Bolt Load Meter

## OPERATING INSTRUCTIONS

These robust instruments incorporate a self contained hydraulic load cell which measures the tension in any bolt tightened in them, directly in lbf, kN and kg. When the bolt is tightened there



is a transfer of pressure through the hydraulic fluid which indicates on the 4" diameter pressure gauge. Moving parts in the gauge are immersed in a mixture of glycerine and water to protect them from shock loads and the gauge is rubber mounted.

### IMPACT WRENCH OUTPUT TESTING

#### ITEMS REQUIRED: Bolt Load Meter and Test Bolt Set

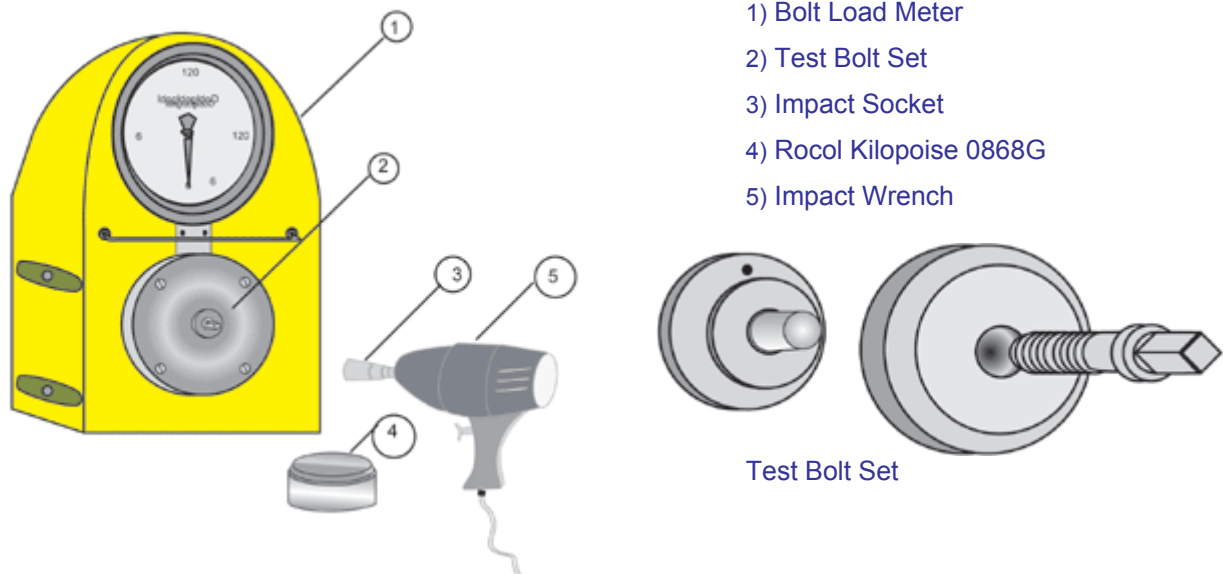
Over a period of time, impact wrenches lose their performance and have to be serviced. The problem is knowing when they should be taken out of use for repair, and what standard of performance repaired tools should achieve.

The **Flexaulic Bolt Load Meter** and Test Bolt Sets provide the perfect solution. If a new impact wrench or one that is performing satisfactorily is used to tighten a Test Bolt in the Load Meter, a reading will be shown on the instrument dial. This reading is given in units of Bolt Tension, not torque and is a comparative figure. This test should be repeated several times and an average standard of performance will be established for that size or type of tool. If a permanent record of this value is kept, the performance of each wrench can be monitored periodically.

To convert the gauge reading from bolt tension into torque, an accurate dial indicating torque wrench is required to tighten the test bolt to the bolt tension figure achieved and noting the value on the torque wrench. It should be noted that the torque value will only be correct for these particular bolt conditions and if the impact wrench is used on a softer or harder joint or the bolt is tightened into a less rigid structure, the torque output will be of a different value.

## METHOD OF OPERATION

- 1) Select the correct Bolt Load Meter and Test Bolt Set using the table below
- 2) Assemble the selected Test Bolt in the Bolt Load Meter ensuring that threads and the underside of the bolt head are well lubricated with Rocol Kilopoise 0868G provided
- 3) Connect air supply to impact wrench
- 4) Tighten Test Bolt with impact wrench using correct size of impact socket
- 5) Note gauge reading
- 6) Loosen test bolt and re-tighten three times noting each reading to obtain average value



- 1) Bolt Load Meter
- 2) Test Bolt Set
- 3) Impact Socket
- 4) Rocol Kilopoise 0868G
- 5) Impact Wrench

Test Bolt Set

Model	Bolt Capacity		Maximum load			Average min. grip length		Approx. torque range with Test Bolt			Test Bolt Hex A/F
	mm	in	kN	lbf	kgf	mm	in	Bolt size	N.m	Lbf.ft	in
00	3-6	1/8-1/4	22	5000	2250	16	5/8	5/8	7-70	5-50	5/8
0	5-11	3/16-7/16	66	15000	7000	17	11/16	7/8	15-200	10-150	7/8
1	6-16	1/4-5/8	130	30000	14000	32	1 1/4	7/8	25-400	20-300	7/8
2	13-32	1/2-1 1/4	350	80000	36000	40	1 9/16	1 1/4	70-1400	50-1000	1 1/4
3	16-32	5/8-1 1/4	500	110000	50000	41	1 5/8	1 3/8	135-2000	100-1500	2 1/4

## DETERMINING TORQUE/TENSION FIGURES

When torque/tension information on a nut and bolt assembly is required, assemble the sample fastener using the correct size of bolt bushing set in an appropriate BOLT Load Meter.

It is important to simulate the application as closely as possible by including any washers or gaskets that will be used on the joint.

Tighten the fastener using an accurate dial type torque wrench until the required bolt tension is reached and note the torque required.

Repeat the test several times using new components each time to establish average torque/tension values.

To carry out accurate torque/tension tests on stud bolts, it is advisable to replace the bolt head immobiliser with a tapped block of the same material being used on the assembly, i.e. cast iron, aluminium etc.

If the correct tension is not known, the nut can be tightened until the bolt is seen to yield; 85% - 90% of this yield point is a good general purpose working load. The yield point is clearly discernible when the pressure gauge needle stops climbing in proportion to the rotation of the nut.