DILLON
Quantrol™

Twin-Column Motorized Tension, Compression & Cycle Tester (M5KNE & M10KNE) User's Manual

UNITED STATES

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Class A prescrites dans le Reglement sur le brouillage radioelectrique que edicte par le ministere des Communications du Canada.

EUROPEAN COUNTRIES

WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which the user may be required to take adequate measures.

CAUTION

Risk of electrical shock. Do not remove cover. No user service-able parts inside. Refer servicing to qualified service personnel.

Weigh-Tronix reserves the right to change specifications at any time.

08/08/00 M5KNEUSE.P65 PN 29658-0012e1 Printed in USA

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Specifications

Load capacity:	M5KNE 1100lb (500kg, 5000N)
	M10KNE 2200lb (1000kg, 10,000N)
Power consumption:	150 watts (maximum)
Weight (stand only):	59.6lb (27kg)

CROSSHEAD MOTION

Travel range:	3.9in (100mm)
Maximum daylight:	22.8in (580mm)
Base plate threads:	M10 x 1.5
Speed range:	M5KNE 0.2-7.5in/min (5-190mm/min)
	M10KNE 0.1 to 1.4in/min (3-35mm/min)
Speed accuracy:	±5% of indicated speed
Up and down settings:	Yes
Speed indicated on stand:	Yes
Direction of travel indicated on stand:	Yes
Limit switch repeatability:	<0.004in (0.1mm)
Overrun at top speed:	<0.08in (2mm)
Operating modes:	Manual, cyclic and single cycle
Reverse on alarm point:	Yes, with AFG/AFTI and cable (PN49756-1043)
Reverse on sample break:	Yes, with AFG/AFTI and cable (PN49756-1043)

STANDARD LOAD MEASUREMENT OPTIONS

Force gauge & dovetail bracket

Smart loadcell, tension block module & AFTI

SPECIAL OPTIONS (details available on request)

Increased crosshead travel:	Yes (load capacity is reduced)
Machine guard:	Yes
Horizontal operation:	Yes
Simple logging/ plotting PC software:	DataPlot
Full computer control:	Computer control version of this test frame is available.

Introduction

Read, understand and follow all instructions in this manual before operating your test stand.

The Dillon Quantrol M5KNE is a motorized, twin column, ball screw driven test stand with a tension and compression load cell rating of 1100 lb (5000N). The M10KNE is similar in design but has a 2200 lb (10,000 N) rating. Complemented by a Dillon loadcell or force gauge, together with special fixtures and accessories your test stand constitutes a key component in force measurement systems suitable for accurately and reproducibly testing a wide range of products.

Thank you for choosing the Dillon Quantrol M5KNE or M10KNE . With correct use it will give many years of reliable service.

Installing the M5KNE or M10KNE

Unpacking the Test Stand

If any damage is discovered do not go any further with installation and do not connect the unit to a power supply under any circumstances.

The power supply for the test frame must have a third-wire earth ground. Connecting the test frame to an outlet without an earth ground is extremely dangerous and could lead to a risk of electrocution.

Upon receiving the unit please check for obvious physical damage to the packaging material and the instrument itself. If any damage is evident, or if any of the items listed below are missing, please notify your Dillon Quantrol distributor immediately.

- This User's Manual
- Adapter plates for force gauges
- Appropriate power cable
- Four rubber feet with integral attachment screws, and hex key if necessary

We strongly recommend you keep all packaging for future shipping requirements. Screw on (hand tighten only) the four rubber feet to the TC^2.

Be sure you have adequate equipment available to safely lift the test frame from the packaging. Trying to lift heavy items without adequate assistance or the correct equipment may lead to accidental personal injury.

Once removed from the packaging, place the test frame on a stable work surface. Inspect the machine for any signs of obvious transit damage.

Check that the inlet voltage corresponds to your electrical installation — either 220 VAC or 110 VAC. The machine has a label close to the power connector which advises which voltage it is set for. If the machine does not correspond to your supply, inform your local distributor.

After all the above points have been checked and confirmed to be correct you may connect the machine to the power outlet only with the supplied power cord. When power is applied the power indicator will illuminate. This shows power is reaching the machine and is ready for use.

Operating the Test Stand

Speed Setting

The Test Stand has variable speed control in both upward and downward directions. Speeds can be independently set and controlled by the speed control knobs on the front panel, shown in Figure 2. The white pointer on the speed control knobs relates to the speed setting. See Figure 1 below.

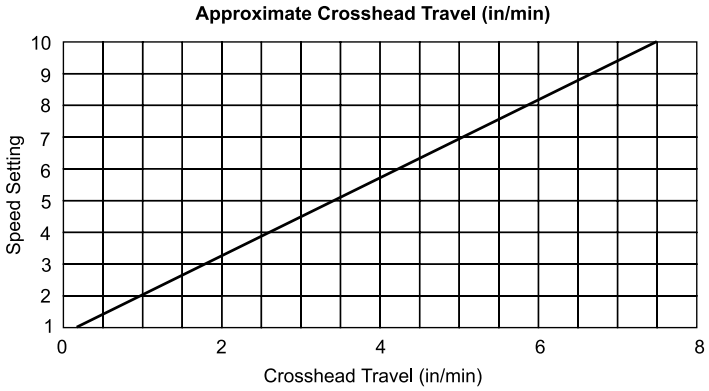

Figure 1
Crosshead speed

Some test standards place particular requirements upon speed accuracy/ reproducibility, which may exceed the normal performance of the test stand. Under such circumstances calibration of each individual test stand may be appropriate.

Start-up Procedure

Pressing the red 'Emergency Stop' button will, at any time, stop the crosshead moving. Note that the green power bar light fades over a period of about one second.

Follow these steps to prepare your test stand for use:

1. Set the limit switches (see Figure 2) by turning each thumbscrew counterclockwise and moving them approximately two inches either side of the moving crosshead and retighten. Do not confuse these limit switches with the (preset) safety stop. See Figure 2.
2. Be sure your test stand is connected to an appropriate power supply.
3. Turn on the power switch shown in Figure 2. If the power bar does not illuminate, turn the red emergency stop button in a clockwise direction.

Manual Operation

Manual operation of the test stand allows movement of the crosshead only when you hold the up or down switch in position. Stand travel ceases when you release the switch.

The crosshead will not move in a given direction if it is against a limit switch stop.

Follow these steps to manually operate the test stand:

1. Set the **MODE** rocker switch to **Manual Control** (center position).

2. Set each speed control knob to a midrange position (with pointer close to 12 o'clock).

3. Hold the **START/STOP** toggle switch in either the **Up** or **Down** position…

   A red LED will illuminate showing that the crosshead is moving and indicating the direction of travel.

4. Release the **START/STOP** switch to stop the crosshead movement.

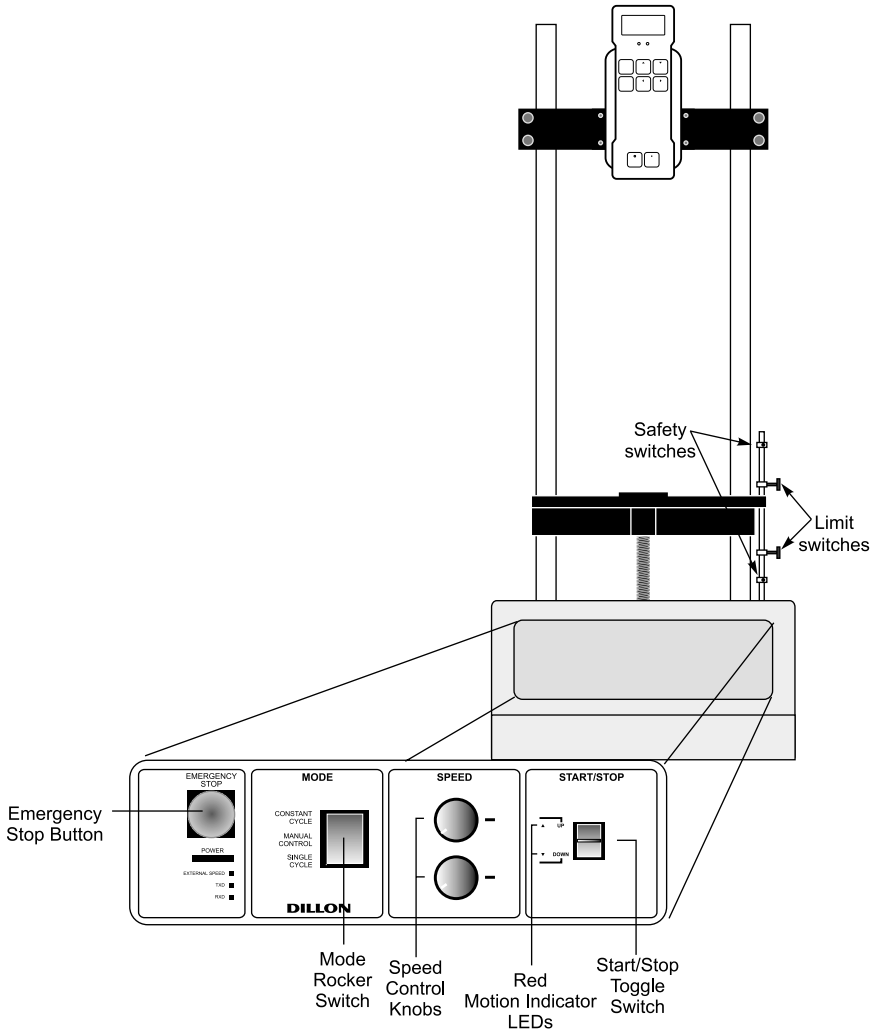

Figure 1
Test stand control panel

Single Cycle Operation

The crosshead will move in the direction you choose with the START/STOP switch. The crosshead will travel until it reaches a limit switch or until a stand-reverse signal is received from the Force Gauge or AFTI.

Control up and down speeds by using the UP and DOWN speed control knobs.

1. Set the **MODE** switch to **Single Cycle**.

2. Move the **START/STOP** switch to the **Up** or **Down** position, and then release…

The crosshead will move and the LED indicating direction of travel will illuminate. When a limit switch position is reached, the crosshead will begin to travel in the opposite direction. When the position of the other limit switch is reached, the motor will stop and the crosshead will come to rest.

During the cycle, setting the **MODE** switch to **Manual Control**, or selecting either the **Up** or **Down** position will stop the crosshead movement.

Constant Cycle Operation

The crosshead will travel up and down between the two limit switches until you stop it using the methods mentioned at right.

1. Set the **MODE** switch to **Constant Cycle**

2.. Move the **Start/Stop** switch to the **Up** or **Down** position, and then release…

The crosshead will move and the LED indicating direction of travel will illuminate. The crosshead will cycle continuously between the limit switch positions. During the cycle, setting the **MODE** switch to **Manual Control**, or selecting either the **Up** or **Down** position will stop the crosshead movement.

Force Gauges, Loadcells and Your Fixturing

Attaching an AFG

You will need to attach a force measuring device to your test stand. This will usually be a Dillon Quantrol Advanced Force Gauge, a remote Advanced Force/Torque Indicator, or a smart loadcell. The AFG/AFTI can control the test stand direction via an optional interface cable (PN 49756-1043). See the AFG/AFTI User's manual for instructions on setup.

Follow these steps to attach an AFG to the upper crosshead:

1. Attach the force gauge or loadcell to the crosshead (B) with the screws provided. When using a force gauge with a remote loadcell, attach the loadcell to the optional mounting block and the gauge to the left hand column with the optional bracket.
2. Attach the required grips or anchors for your particular application.
3. Position the crosshead at the correct height for your test by loosening the hex head bolts, moving the crosshead and retightening the bolts.

Attaching a Smart Loadcell

To attach a smart loadcell screw it into a tension block module, then proceed as for an AFG.

If you have purchased special fixturing, attach this to the gauge/loadcell and/or your test stand.

Precautions

Loadcells and force gauges are delicate pieces of equipment and can easily be damaged irreparably. One way of doing this would be to drive the crosshead upward until it contacts the loadcell, loadcell stud, grips or fixtures.

This is a risk when a user is not yet familiar with operating a new test stand. Consequently the safety stop has been preset to significantly limit downward travel of the crosshead.

Adjust the limit switches according to your sample dimensions and testing requirements to reduce the potential for damage to the loadcell, force gauge, test stand, fixturing or personnel.

Warning

Do not place any material between the test stand base and lower crosshead. Serious damage can occur to the item and/or test stand.

Never place fingers on the test stand except for the controls during testing. Serious injury can result.

Never touch the test specimen or fixturing while the crosshead is in motion. Serious injury can result.

Stand Control

There are two external control ports at the rear of the test stand. See Figure 2.

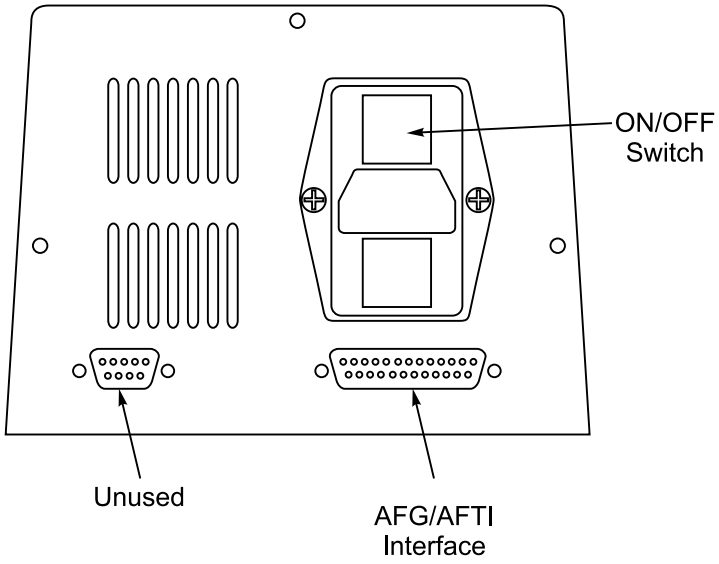

Figure 2
Control interfaces

The AFG/AFTI Interface, shown above, enables the test stand to respond, via the appropriate Dillon cable, to signals from a Dillon Quantrol AFG/AFTI. Please refer to your AFG *User's Manual* for further details.

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