

# 3161 GOVERNOR TEST

## OPERATING INSTRUCTIONS FOR ELECTRONIC DIGITAL INDICATOR

### CONTROL FUNCTION (FRONT FACE)

**ON/OFF** - SWITCHES INDICATOR ON OR OFF. SWITCHING ON SETS DISPLAY TO 0, OTHER INTERNAL FUNCTIONS AND REGISTERS REMAIN AT PREVIOUS SETTING.

**CLEAR** - RESETS ALL INTERNAL REGISTERS TO 0. "HOLD", "LOW", "HIGH" FUNCTIONS ARE CLEARED. IF INDICATOR IS OFF, "CLEAR" WILL ALSO TURN INDICATOR ON. CLEAR MAY BE USED TO SET 0 AT ANY SPINDLE POSITION.

**IN/MM** - SWITCHES DISPLAY MODE FROM ENGLISH TO METRIC OR REVERSE. "IN" OR "MM" IS DISPLAYED TO THE RIGHT OF READING. THIS IS A DIRECT CONVERSION AND IT'S USE WILL NOT AFFECT ACCURACY OR OTHER FUNCTIONS.

**HOLD** - CAUSES THE "PEAK" (OR HIGHEST) READING ATTAINED TO BE DISPLAYED. SPINDLE MOVEMENT WILL CAUSE THE READING TO CHANGE ONLY IF THE NEW SPINDLE POSITION REPRESENTS A HIGHER READING THAN THAT WHICH IS BEING HELD. IF THE "." SIGN IS DISPLAYED AT THE TIME "HOLD" IS ACTIVATED, THE HIGHEST "." READING WILL BE HELD. AN "H" WILL APPEAR IN THE UPPER LEFT CORNER OF THE DISPLAY WHEN "HOLD" IS ON.

**LOW** - SETS MEMORY TO THE DIMENSION DISPLAYED AT THE TIME "LOW" IS PRESSED; SUBSEQUENT READINGS WHICH ARE LOWER (OR MORE NEGATIVE) THEN THE SET DIMENSION WILL CAUSE THE DISPLAY TO FLASH, INDICATING THAT THE LOW LIMIT SETTING HAS BEEN EXCEEDED.

*NOTE: "HOLD" AND "LOW" FUNCTIONS ARE MUTUALLY EXCLUSIVE: I.E., PRESSING "HOLD" WILL CANCEL "LOW" FUNCTION.*

**HIGH** - SETS MEMORY TO THE DIMENSION DISPLAYED AT THE TIME "HIGH" IS PRESSED; SUBSEQUENT READINGS WHICH ARE HIGHER (OR LESS NEGATIVE) THAN THE SET DIMENSION WILL CAUSE THE DISPLAY TO FLASH INDICATING THAT THE HIGH LIMIT SETTING HAS BEEN EXCEEDED.

"HIGH" May be used in combination with "LOW" or "HOLD" Functions.

### OTHER

#### TRAVEL

**REVERSE** - (SLIDE SWITCH ON EDGE OF BEZEL, RIGHT SIDE) REVERSES THE SIGN OF THE READING RELATIVE TO THE DIRECTION OF SPINDLE TRAVEL. "." IS DISPLAYED TO THE LEFT OF THE DIMENSION FOR NEGATIVE TRAVEL.

#### EXTERNAL

**CONNECTIONS** - A 6 PIN CONNECTOR IS PROVIDED FOR OPTIONAL USE OF DATA COLLECTION OR COMPUTER SYSTEMS, ETC. OUTPUT SIGNAL IS A STROBED MULTIPLEXED 4 BIT BCD, OPERATING AT 5 VOLT CMOS LEVELS. A 4 PIN CONNECTOR IS PROVIDED FOR ATTACHMENT OF BATTERY CHARGER.

#### POWER

**SUPPLY** - 4 INTERNAL RECHARGEABLE NICKEL CADMIUM CELLS WILL PROVIDE SUFFICIENT POWER FOR APPROXIMATELY 7 HOURS OF CONTINUOUS OPERATION. INDICATOR SWITCHES OFF AUTOMATICALLY AFTER APPROXIMATELY 4 MINUTES OF NON-USE TO PERMIT 30-40 HOURS OF NORMAL OPERATION.

#### BATTERY

**CHARGING** - CONNECTING CHARGER DISABLES THE AUTOMATIC OFF FUNCTION, ALLOWING THE INDICATOR TO BE USED ON A CONTINUOUS BASIS. BATTERIES SHOULD BE CHARGED FOR 24 HOURS BEFORE INITIAL OPERATION. DAILY OVERNIGHT CHARGING IS RECOMMENDED. INDICATOR CAN BE USED WHILE CHARGING. IF INDICATOR IS TO BE USED WITH CHARGER ATTACHED FOR LONG PERIODS OF TIME, IT IS RECOMMENDED THAT THE CHARGER BE DISCONNECTED AT LEAST ONCE A WEEK. INDICATOR SHOULD THEN BE USED UNTIL BATTERIES ARE LOW, THEN RECHARGED OVERNIGHT. THIS WILL HELP THE BATTERIES MAINTAIN OPTIMUM CHARGE CAPABILITY.

#### ERROR

**INDICATION** - "E" IS DISPLAYED TO INDICATE ANY CONDITION WHICH COULD CAUSE ERRONEOUS READINGS. THIS CAN BE CAUSED BY EXCESSIVE SPINDLE SPEEDS. FAULTS IN EXTERNALLY ATTACHED EQUIPMENT, BATTERIES, ETC. INDICATOR MUST BE CLEARED AND ANY "HIGH" OR "LOW" SETTINGS RE-ENTERED AFTER ANY "E" CONDITION OCCURS.

### OPERATING PRECAUTIONS

1. OPERATION OF INDICATOR ADJACENT TO ELECTRICAL NOISE GENERATING EQUIPMENT. SUCH AS ARC WELDERS, LARGE SCR CONTROLLED MOTORS, ETC. SHOULD BE AVOIDED. HIGH ELECTRICAL TRANSIENTS CAN CAUSE LOCK-UP OF THE INTERNAL CIRCUITRY OF THE INDICATOR OR FREQUENT "E" (ERROR) INDICATION, PARTICULARLY WHEN THE CHARGER IS CONNECTED. IF LOCK-UP SHOULD OCCUR, DISCONNECT CHARGER, DO NOT USE THE INDICATOR FOR AT LEAST 4 HOURS, THEN RECHARGE. USE OF AN ISOLATED AC LINE FOR CHARGING OR CONTINUOUS OPERATION MAY PREVENT THIS TYPE OF PROBLEM.
2. DO NOT USE THE BOTTOM OF THE SPINDLE STROKE AS A BASE OF MEASUREMENT REFERENCE. THE BOTTOM OF THE SPINDLE STROKE IS PROTECTED WITH A RUBBER SHOCK ABSORBER TO REDUCE SHOCK TO SPINDLE MECHANISM.
3. WHEN MOUNTING IN A FIXTURE, SPINDLE MUST BE PERPENDICULAR TO THE SURFACE TO BE MEASURED.
4. REPLACE BATTERIES ONLY WITH APPROVED NICKEL CADMIUM CELLS. OTHER COMMERCIALY AVAILABLE BATTERIES COULD CAUSE SERIOUS DAMAGE TO INDICATOR AND WILL VOID WARRANTY.
5. THE BEZEL ROTATION IS MECHANICALLY LIMITED TO 270, TO PROVIDE CONVENIENT VIEWING POSITIONS. ANY ATTEMPT TO ROTATE BEZEL PAST THE INTERNAL STOPS WILL DAMAGE THE INDICATOR.
6. IF SPINDLE BECOMES SLUGGISH OR STICKY, WIPING OF SPINDLE O.D. WILL GENERALLY CURE THIS PROBLEM.