

INSTRUCTIONS AND PARTS LIST

Dillon

MODEL LW

UNIVERSAL TESTER

OUT OF THE DARK

INTO THE LIGHT

**DILLON TESTERS
THE THRESHOLD**

**PUT YOU ON
OF DISCOVERY!**

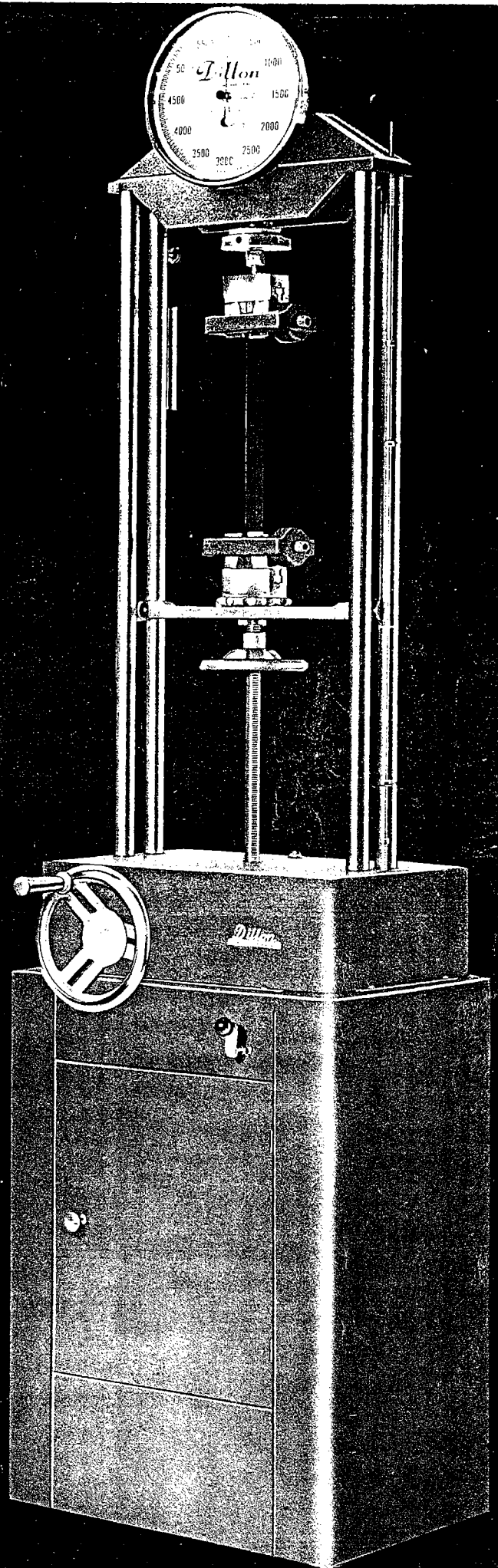
W. C. DILLON & CO. INC.

Van Nuys (Suburb of Los Angeles) Calif. 91407
14620 Keswick Street

BULLETIN LW-3

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SETUP INSTRUCTIONS

PLACING THE DILLON TESTER IN OPERATION IS READILY ACCOMPLISHED

- 1 Open crate and carefully remove all braces holding tester in place.
- 2 Remove containers in which Dynamometer(s), pins, grips, shock absorber, bearings, etc. are packed. Take care not to discard any paper packages which might be mistaken for fillers. Some of these may be quite small.
- 3 Place machine on table or stand wherever it is to be operated. If full length of power screw is to be utilized, and if mounting is being done on bench or table, bore a 1¼" diameter hole in table. Center machine over hole so that power screw will clear sides evenly. Then shim the base so that the level shows level mounting. The metal base may then be bolted to the table if desired. Clearance holes are provided in flange around tester base for this purpose.
- 4 With power screw completely lowered on 19" daylight opening models, mounted on the floor stand, the screw will be fully contained within the stand. However, on 29" and 39" opening models, it will protrude up to 6" and 16" respectively. Thus, on these latter two, it will be necessary to provide a 1½" diameter clearance hole in the floor to accommodate this added length.
- 5 Remove pins from bearings in upper head casting. Take Dynamometer from box and place it inside of the head casting. Replace pins through bearings AND Dynamometer at each side of the casting.
- 6 Screw shock absorber connector screw (Part 202043) through shock absorber block (Part 202040) and place bearing (Part 604151) over top of screw so that it rests on top of block. Then insert this assembly through center hole under top casting and screw the connector screw into the Dynamometer until it is finger tight — no further.
- 7 Attach cord (Part 612003) to screw on side of shock absorber block (Part 202040). Wind cord once around block clockwise and then suspend it over pulley (Part 604051).
- 8 Screw shock absorber weight (Part 202045) to eye bolt (Part 612000) on loose end of cord. Allow weight to hang freely. Function of weight and cord is to keep shock absorber block snugly against the upper head when load is applied to the Dynamometer. When specimen breaks, the resultant shock is thereby shunted through the absorber into the heavy mass of the head. This action protects the Dynamometer against possible injury.
- 9 Shock absorber mechanisms supplied with the Dillon Tester are to be used with all capacities of the Model ANC Dynamometer and with all capacities of the strain gage Dynamometer EXCEPT the 200 pound range.
- 10 Turn desired gripping fixture onto power screw. Then mount upper gripping fixture on shock absorber screw (Part 202043). Diagrams at lower right on Page 3 show details of Type CA grips.
- 11 Insert specimens to depth of at least 1" inside of gripping wedges in Type CA grips. Be sure that strap (Part 204026) is DOWN against pins (Part 204028) on upper grip and UP against pins (Part 204028) on lower grip. Tighten strap screws (Part 204027) securely. Then proceed to apply load. The main pointer will push the maximum indicator ahead of it. When specimen ruptures, the maximum indicator will indicate the peak force. The main pointer may return partially toward zero.
- 12 To reset for the next test, insert release bar (Part 202048) in one of holes in shock absorber block. Turn release bar counter-clockwise. This will release shock absorber and allow main pointer to return to zero. NOTE: It is not necessary to use the release bar when operating with low capacity Dynamometers since the shock absorber may then be easily reversed by hand.
- 13 To reset the maximum indicator, turn small knob in center of dial glass counter-clockwise. This will cause indicator to move in same direction. Continue until it comes to rest GENTLY against the main pointer. The machine is then ready for next test.
- 14 The maximum indicator should not be used when testing brittle materials which have low yield. Shocks generated when breaking this type of specimen may tend to kick the indicator slightly thereby degrading the reading. When working with such specimens, turn the maximum indicator clockwise as far as it will go until it is out of the way. Readings should then be taken at the instant material fails.

RAPID ADJUSTMENT FEATURES

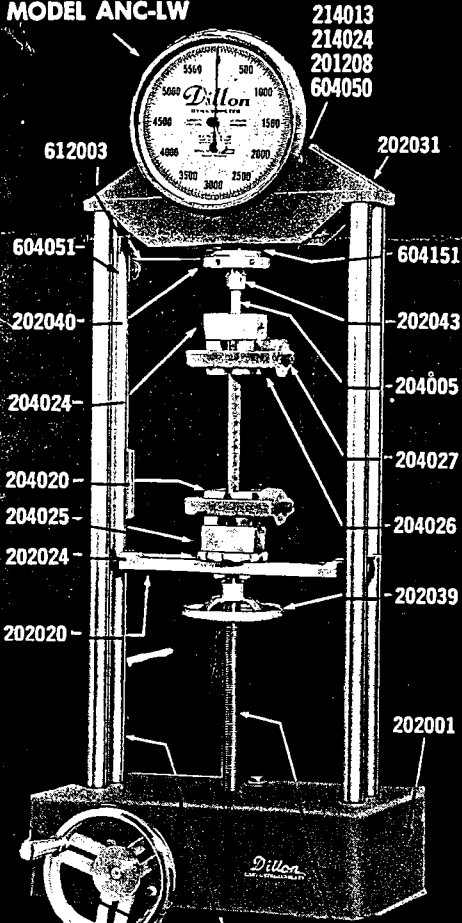
- 1 NOTE: Hand wheels are not included with motorized testers but may be purchased as an accessory if desired. See Page 4.
- 2 When making considerable change in specimen length necessitating raising or lowering grip position, this can be quickly accomplished in the following manner. (a) Loosen wheel nut (Part 202049) under lower grip assembly and continue turning it up until guide bar (Part 202020) disengages from keyways in power screw. Screw can then be turned rapidly in either direction by means of fast return hand wheel (Part 202039), to shorten or lengthen stroke. Then, reset guide bar in keyways on power screw. (b) Tighten the wheel nut, and tester is ready for operation.
- 3 Type CA grip illustration on Page 3 reveals all working parts. When adjustment screws (Part 204027) are out, this allows operator to separate the straps for specimen insertion. Specimens should be carefully aligned and should be inserted inside wedges to a depth of at least 1". Strap screws (Part 204027) are then tightened firmly by means of Allen wrench provided for this purpose. Operation is the same for either upper or lower grip.
- 4 NOTE: Be sure before test starts that strap (Part 204026) is down against pins (Part 204028) on upper assembly and up against pins (Part 204028) on lower assembly.
- 5 Gripping wedges for flats are supplied with coarse serrations as standard equipment. If desired, additional sets of wedges may be purchased with fine serrations or with smooth faces. These are all interchangeable. There are four wedges to a set — 2 for the upper grip and 2 for lower grip. The same is true of wedges for round specimens.
- 6 Caution: Always be sure that grips are screwed fully onto power screw at bottom and into shock absorber connector screw at top.
- 7 Zero setting is made by turning a small knurled wheel on the back of the Dynamometer.
- 8 In setting zero, be sure to remove any gripping fixture from shock absorber first. Then, hold shock absorber weight in one hand and turn shock absorber block (Part 202040) until there is clearance between it and the head casting. Slowly release weight. This will cause shock absorber to move forward and allow it to apply only that amount of load represented by the weight. Zero should then be set.
- 9 It is a good plan to lift the weight and release the shock absorber block several times letting it come to rest to make certain that the zero setting is satisfactory. The upper gripping fixture may then be replaced. Dynamometer will show a slight reading due to the weight of the fixture.
- 10 Complete parts for motorizing hand operated testers are all available from the Dillon Company. When inquiring, please state maximum load involved and desired cross-head speed. Quotation will be submitted on single fixed cross-head speed or variable speed drive. Please state speed or speeds involved.

PROTECTED BY PATENTS

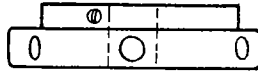
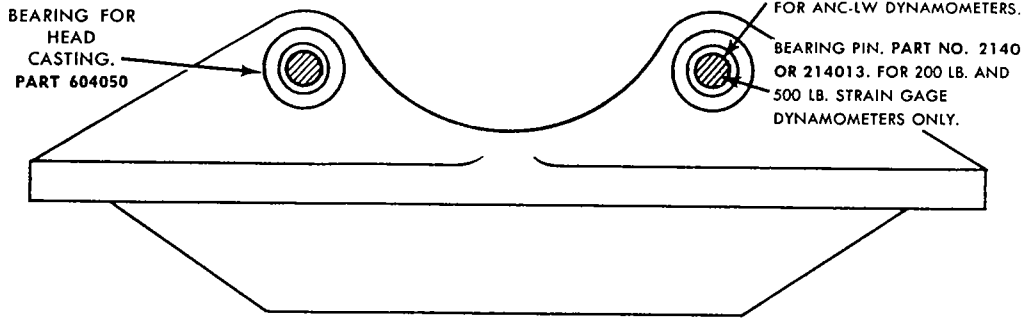
STRAIN GAGE
DYNAMOMETER



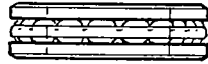
10" DIAMETER
DYNAMOMETER.
MODEL ANC-LW



- 202017
- 311007
- 202065-2
- 202065-3
- 202065-4
- 202058-2
- 202058-3
- 202058-4

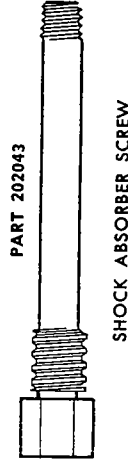


SHOCK ABSORBER BLOCK
PART 202040



SHOCK ABSORBER BEARING
PART 604151

26393-0083



PART 202043
SHOCK ABSORBER SCREW

USED WITH MODEL ANC-LW
& STRAIN GAGE DYNA-
MOMETERS ONLY.

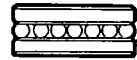


BUSHING
PART 202041



CAM FOLLOWER BEARING ON EACH END

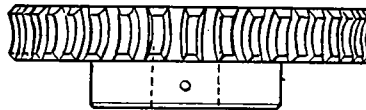
GUIDE BAR ASSEMBLY FOR
POWER SCREW IS COMPRISE
OF THESE PART NUMBER
MUST BE ORDERED AS CO-
MPLETE ASSEMBLY. SIMPLY
SPECIFY "ASSEMBLY 101013
ONLY BEARINGS 604300 CAN BE
ORDERED SEPARATELY.



PART NO. 604150

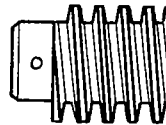
MAIN DRIVE
GEAR THRUST
BEARING

26393-0059



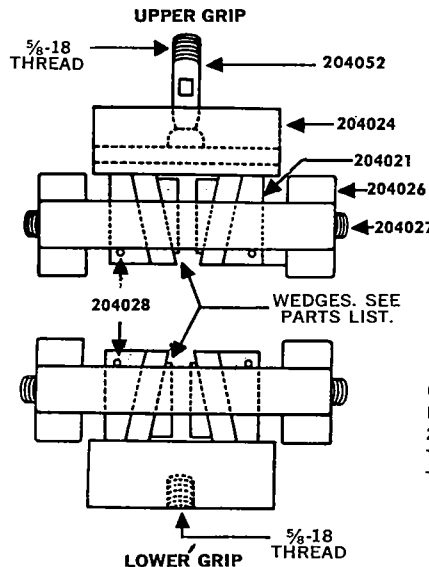
MAIN
DRIVE
GEAR

- 10 - 1 RATIO PART 202012
- 20 - 1 RATIO PART 202010
- 40 - 1 RATIO PART 202008



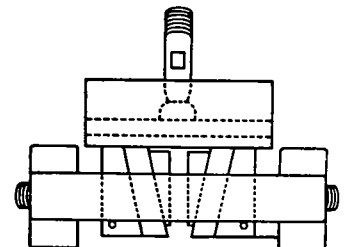
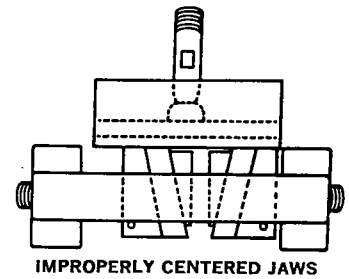
DRIVE
WORM

- 10 - 1 RATIO PART 202013
- 20 - 1 RATIO PART 202011
- 40 - 1 RATIO PART 202009



BE SURE CLAMP (PART
204026) IS DOWN AGAINST
PINS (PART 204028) ON
UPPER GRIP & UP AGAINST
PINS (PART 204028) ON
LOWER GRIP WHEN MAK-
ING TESTS.

CENTER JAWS (PART 204021)
IN "T" CHANNEL (PART
204024) BEFORE MAKING
TESTS. REFER TO ILLUSTRATIONS
AT RIGHT.



PROPERLY CENTERED JAWS

DILLON MODEL LW UNIVERSAL TESTER PARTS LIST

PART NO.	PART NAME AND DESCRIPTION
202008	Main drive gear. 40:1 ratio
202009	Main drive worm. 40:1 ratio
202010	Main drive gear. 20:1 ratio
202011	Main drive worm. 20:1 ratio
202012	Main drive gear. 10:1 ratio
202013	Main drive worm. 10:1 ratio
202005	Main drive shaft
604150	Main drive thrust bearing <i>26393-0059</i>
202065-2	Pressure column 37" long for 19" opening tester
202065-3	Pressure column 47" long for 29" opening tester
202065-4	Pressure column 57" long for 39" opening tester
202031	Upper Head casting
202001	Base
202017	Hand wheel
311007	1/4-20 x 3/4 set screw for hand wheel
612004	Spirit level
202032	Upper Head casting stud (4 required)
202003	Lower casting
319584	Lower casting column bolt (4 required)
202006	Lower casting bushing
202058-2	Power screw for 19" opening tester 32" long Acme Screw
202058-3	Power screw for 29" opening tester 42" long Acme Screw
202058-4	Power screw for 39" opening tester 52" long Acme Screw
202004	Gear retainer plate
202049	Wheel nut
202020	Guide Bar
202022	Guide Bar key (2 required)
308732	Guide Bar key screw (2 required)
604300	Cam follower (2 required)
101013	Guide Bar assembly (consisting of Parts 202020, 202022, 604300, & 308732)
202039	Fast return hand wheel
311028	Fast return hand wheel set screw
202037	Helical compression spring
202038	Washer
202026	Guide bar bracket
202075-2	Actuator rod for 19" daylight opening
202075-3	Actuator rod for 29" daylight opening
202075-4	Actuator rod for 39" daylight opening
202073	Actuator rod coupling
608002	Actuator rod set collar (2 required)
600008	Actuator rod spring
202080	Actuator rod guide bolt
202025	Actuator rod bracket
502000	Micro-switch
202079	Limit switch contact rod

PART NO.	PART NAME AND DESCRIPTION
202083	Limit switch housing cover
202082	Micro-switch housing
101008	Limit switch assembly
214024	Bearing pin 3/8" dia. for 200 lb. capacity Strain Gage Dynamometer only
214013	Bearing pin .562 dia. for 500 lb. capacity Strain Gage Dynamometer only
201208	Bearing pin .625 dia. for Model ANC-LW & 1K, 2K, 4K, 6K, 8K, & 10K, Strain Gage Dynamometers
604050	Bearing for Upper Head (4 required)
202016	Base side cover plate
202018	Floor stand cover plate
202085	Tester shaft front cap
202040	Shock absorber block
202041	Shock absorber bushing. For ANC-LW & Strain Gage Dynamometers
604151	Shock absorber thrust bearing <i>26393-0083</i>
202043	Shock absorber - connector screw
202048	Shock absorber release bar
604051	Shock absorber column pulley
202044	Shock absorber pulley stud
202045	Shock absorber weight

MISC. PARTS FOR TYPE "CA" GRIPS

204020	"T" outer jaw for lower grip
204021	"T" outer jaw for upper grip
204022	Wedge guide. Right hand style
204023	Wedge guide. Left hand style
204037	Gripping wedges for flats. Coarse serrations. Upper grip
204038	Ditto for lower grip
204039	Same as above except with fine serrations. Upper grip
204040	Ditto for lower grip
204035	Same as above except with smooth face. Upper grip
204036	Ditto for lower grip
204026	Grip strap
204052	Ball socket screw for upper grip Swivel screw
204027	Set screw for grip strap
600002	Wedge spring for upper grip
204024	"T" channel for top grip
204025	"T" channel for lower grip
204041	Wedges for rounds. 3/8" to 1/2" dia. Upper grip
204042	Ditto as above except for lower grip
204043	Wedges for rounds. 1/2" to 3/4" dia. Upper grip
204044	Ditto as above except for lower grip
204045	Wedges for rounds. 3/4" to 1" dia. Upper grip
204046	Ditto as above except for lower grip

SHOCK ABSORBER PRINCIPLE & METHOD OF OPERATION

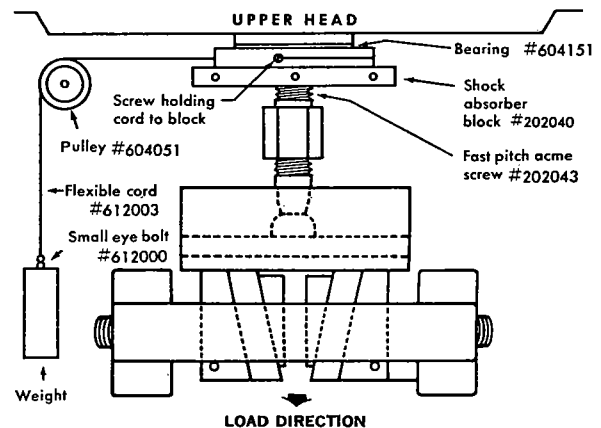
The Dillon Tester, although an exceptionally rugged instrument, cannot withstand repeated shock loading without some form of protection. This is provided in a specially designed shock absorber which is normally furnished with this unit. To understand the functioning of the shock absorber, it is first necessary to consider the action of the Dynamometer.

When a Dynamometer is placed under test load, the pressure bar, (through which the mounting pins pass), moves outwardly at each end and downward at its center. Maximum deflection is only .025" with Type ANC-LW or strain gage Dynamometers when the instrument is subjected to full capacity. Shocks which occur when a specimen breaks would naturally cause the instrument to rebound in the opposite direction with considerable force IF it were not for the shock absorber. A glance at the illustration (right) shows key parts of this assembly. These consist of a fast pitch acme screw (No. 202058), shock absorber block (No. 202040), thrust bearing (No. 604151) and actuating weight. Operation is as follows:

Load is applied against the acme screw (a) by means of any suitable gripping fixture which may be attached to it. The screw passes through a clearance hole in the tester head and is itself turned into the Dynamometer pressure bar. A flexible cord which is wrapped around the shock absorber block (b) and which is tied to the weight (d) at its opposite end, causes the block to revolve clockwise on the acme screw and tighten up against the bearing. Thus, the slightest downward travel of the pressure bar is instantly compensated for by a corresponding takeup on the part of the shock absorber block. When a break occurs, there is no gap between the top race of the thrust bearing or the head casting, and thus the shock is not directly transmitted to the Dynamometer. Instead, it is absorbed by the massive head casting and the four pressure columns of the tester itself. Purpose of the bearing is to assist the shock absorber block as it revolves thereby eliminating any friction between the block and the head casting.

It is a good plan to remove the shock absorber assembly from the tester occasionally and to clean the bearing and screw in solvent. This will remove dirt or grit that may have been picked up from the air. It is especially advisable to clean in this way if the tester is being used in gritty or dirty surroundings. Remember, the freer and the more smoothly the shock absorber works, the greater the protection it affords. A few drops of LIGHT oil on the threads of the screw and on the bearing will be helpful.

Individual parts for the Dillon Tester shock absorber may be purchased at any time for replacement purposes. These are described above.





**No Info. the
Limit Switch.*

INSTALLING THE DYNAMOMETER

1. Remove containers in which Dynamometer(s), pins, grips, shock absorber, bearing, etc. are packed. Take care not to discard any paper packages which might be mistaken for fillers. Some of these may be quite small.
2. Remove pins from bearings in upper head casting. Take Dynamometer from box and place it inside of the head casting. Replace pins through bearings AND Dynamometer at each side of the casting.
3. Screw shock absorber connector screw through shock absorber block (P/N 30966-0017) and place bearing (P/N 26393-0059) over top of screw so that it rests on top of block. Then insert this assembly through center hole under top casting and screw the connector screw into the Dynamometer until it is finger tight - no further.
4. Attach cord (P/N 27312-0014) to screw on side of shock absorber block (P/N 30966-0017). Wind cord once around block clockwise and then suspend it over pulley (P/N 26455-0013).
5. Screw shock absorber weight (P/N 30528-0018) to eye bolt (P/N 14466-5007) on loose end of cord. Allow weight to hang freely. Function of weight and cord is to keep shock absorber block snugly against the upper head when load is applied to the Dynamometer. When specimen breaks, the resultant shock is thereby shunted through the absorber into the heavy mass of the head. This action protects the Dynamometer against possible injury.
6. Turn desired gripping fixture onto power screw. Then mount upper gripping fixture on shock absorber screw (P/N 30967-0016).
7. Insert specimens to depth of at least 1" inside of gripping wedges in Type CA grips. Be sure that strap (P/N 31304-0016) is DOWN against pins (P/N 14450-0337) on upper grip and UP against pins (P/N 14450-0337) on lower grip. Tighten strap screws (P/N 31300-0010) securely. Then proceed to apply load. The main pointer will push the maximum indicator will indicate the peak force. The main pointer may return partially toward zero.
8. To reset for the next test, insert release bar into one of the holes in the shock absorber block. Turn release bar counter-clockwise. This will release shock absorber and allow main pointer to return to zero. NOTE: It is not necessary to use the release bar when operating with low capacity Dynamometers since the shock absorber may then be easily reversed by hand.



9. To reset the maximum indicator, turn small knob in center of dial glass counter-clockwise. This will cause indicator to move in same direction. Continue until it comes to rest GENTLY against the main pointer. The machine is then ready for next test.

10. The maximum indicator should not be used when testing brittle materials which have low yield. Shocks generated when breaking this type of specimen may tend to kick the indicator slightly thereby degrading the reading. When working with such specimens, turn the maximum indicator clockwise as far as it will go until it is out of the way. Readings should then be taken at the instant material fails.

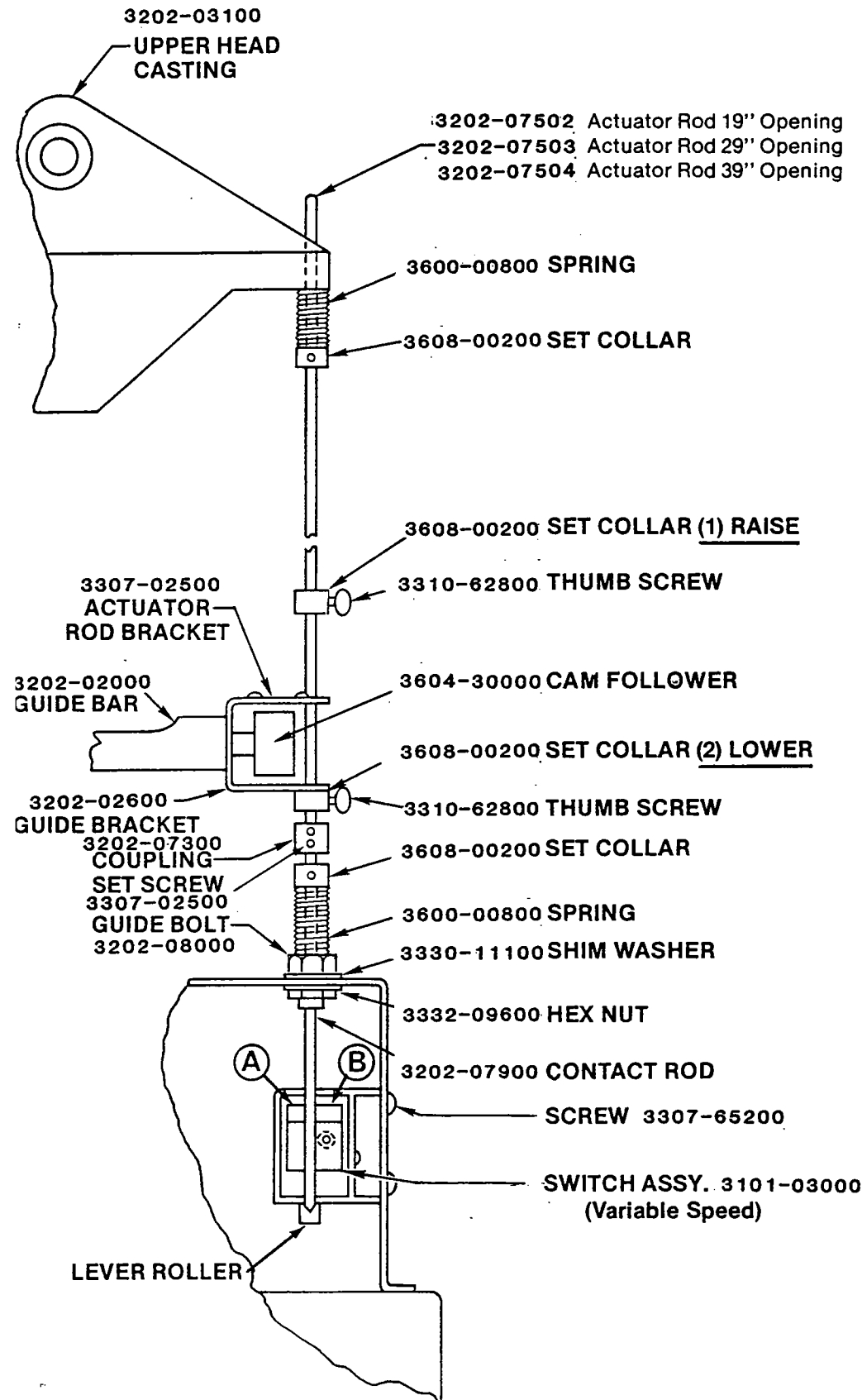
MISC. PARTS FOR TYPE "CA" GRIPS

31301-0019	"T" outer jaw for lower grip
31302-0018	"T" outer jaw for upper grip
31297-0015	Wedge guide. Right hand style
31298-0014	Wedge guide. Left hand style
31293-0019	Gripping wedges for flats. Coarse serrations. Upper grip
31294-0018	Gripping wedges for flats. Coarse serrations. Lower grip
31295-0017	Gripping wedges for flats. Fine serrations. Upper grip
31296-0016	Gripping wedges for flats. Fine serrations. Lower grip
31305-0015	Gripping wedges for flats. Smooth face. Upper grip
31306-0014	Gripping wedges for flats. Smooth face. Lower grip
31304-0016	Grip strap
31111-0019	Ball socket screw for upper grip, Swivel screw
31300-0010	Set screw for grip strap
17917-0030	Wedge spring for upper grip
31303-0017	"T" channel for top grip
31299-0013	"T" channel for lower grip
31307-0013	Wedges for rounds. 3/8" to 1/2" dia. Upper grip
31308-0012	Wedges for rounds. 3/8" to 1/2" dia. Lower grip
31309-0011	Wedges for rounds. 1/2" to 3/4" dia. Upper grip
31310-0018	Wedges for rounds. 1/2" to 3/4" dia. Lower grip
31311-0017	Wedges for rounds. 3/4" to 1" dia. Upper grip
31312-0016	Wedges for rounds. 3/4" to 1" dia. Lower grip

OPERATING INSTRUCTIONS — DILLON MODEL LW TESTER

LIMIT SWITCH ASSEMBLY

**IMPORTANT:
SPECIFY SERIAL
NUMBER OF
TESTER WHEN
ORDERING PARTS**



Motorized Model LW Testers are shipped with automatic limiting switches installed and ready to use.

Limiting switches can be installed on hand operated models which are later motorized by following simple assembly instructions shown here. Complete limit switch "kit" with all parts is available on order from the factory.

Adjustable set collars (1) and (2) may be moved to any desired position depending upon amount of stroke required for a particular test. They also prevent accidental over-travel at top or bottom of power screw stroke.

Switch (A) controls the forward (DOWN) travel of the lower grip.

Switch (B) controls the reverse (UP) travel of the lower grip.

Contacts of switch (B) are normally open.

They are adjusted to close when the angle of the pointed end of the actuator rod rests on the lever roller.

Contacts of switch (A) are normally closed.

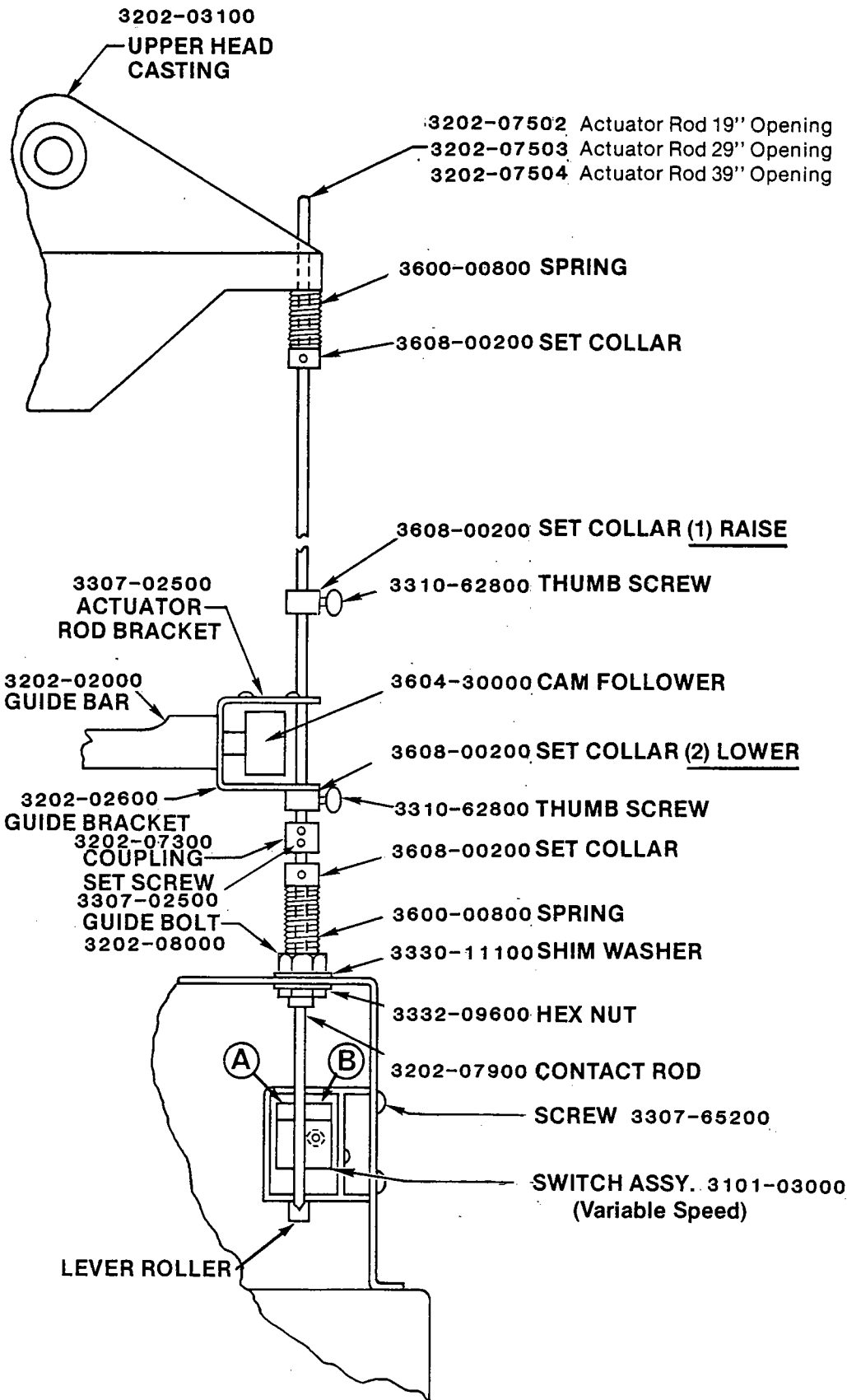
They are adjusted to open when the angle of the pointed end of the actuator rod passes beyond the center of the lever roller.

Should re-setting the actuator rod become necessary, it is important to position the tapered point of the rod in relation to the lever roller as shown.

OPERATING INSTRUCTIONS — DILLON MODEL LW TESTER

LIMIT SWITCH ASSEMBLY

**IMPORTANT:
SPECIFY SERIAL
NUMBER OF
TESTER WHEN
ORDERING PARTS**



Motorized Model LW Testers are shipped with automatic limiting switches installed and ready to use.

Limiting switches can be installed on hand operated models which are later motorized by following simple assembly instructions shown here. Complete limit switch "kit" with all parts is available on order from the factory.

Adjustable set collars (1) and (2) may be moved to any desired position depending upon amount of stroke required for a particular test. They also prevent accidental over-travel at top or bottom of power screw stroke.

Switch (A) controls the forward (DOWN) travel of the lower grip.

Switch (B) controls the reverse (UP) travel of the lower grip.

Contacts of switch (B) are normally open.

They are adjusted to close when the angle of the pointed end of the actuator rod rests on the lever roller.

Contacts of switch (A) are normally closed.

They are adjusted to open when the angle of the pointed end of the actuator rod passes beyond the center of the lever roller.

Should re-setting the actuator rod become necessary, it is important to position the tapered point of the rod in relation to the lever roller as shown.



VARIABLE SPEED MOTORIZATION INSTALLATION INSTRUCTIONS

HAND TOOLS REQUIRED TO INSTALL: (Not supplied by Manufacturer)

(Step #1) 3/4" open end wrench (qty 2)

(Step #4) 3/16" allen wrench & 7/16" open end wrench, hex
(Step #6) Medium width tip screwdriver and 3/8" open end wrench, hex

(Step #7) 5/32" or 1/8" allen wrench (as required)

REFERENCE DRAWINGS: (As Applicable)

30959-0016 Installation Diagram

32655-0019 Schematic (120V)

32654-0010 Schematic (240V)

Using appropriate reference drawings and hand tools, follow Step #1 through Step #10 in order to install your tester properly.

Step #2 may be omitted if no gear box is present.

BEFORE MOUNTING TESTER ONTO FLOOR STAND:
(Facing rear of floor stand)

(Step #1) Remove the 4 leveling bolts from plastic bag and mount them with nuts to bottom of floor stand.

(Step #2) Uncoil line cord, already plugged into power control box at one end, and dress cord to rear of floor stand. Insert cord within a 'key-slot' provided on rear wall. A rubber grommet has already been provided on the line cord to assure a safe mounting of the cord within the key-slot.

MOUNTING TESTER ONTO FLOOR STAND: (Facing rear of floor stand)

(Step #4) Place the tester base on top of the floor stand, Dillon Company nameplate to the front. Inside the tester base, up and to the left, is the limit switch assembly. Reach up and free the limit switch cable from its shipping position. Fasten the tester base to the floor stand using eight 1/4-20 screws, lockwashers and nuts provided.

(Step #5) Plug previously freed limit switch cable, red connector, 5 pin, (P2) into mating red connector, 5 pin (J2) from speed control box. This is the only internal wiring required to make tester operational. Note: Mating connectors are polarized to prevent a mismatch.

MOUNTING POWER TRAIN SAFETY ENCLOSURE & SPROCKETS

(Facing rear of floor stand)

(Step #6) Mount six #10-32 screws, using six #10 hex nut (spacers) to the back plate of the power train enclosure. Lift and place the back plate onto the floor stand, aligning the screws with holes provided in the floor stand chassis. Permanent mounting will be made using six #10 lockwashers and wing nuts provided and be attached from the inside of the floor stand.

(Step #7) Remove the two sprockets and the chain from the accessory carton. Place the chain over the sprockets and install the sprockets on the appropriate shafts (correct location found on label affixed to side of motor). Secure the sprockets by means of keys taped to the shaft. Tighten the set screws found on the sprockets, onto the key to assure permanent mounting.

(Step #8) Attach the power train safety enclosure cover to the back plate with four #10-32 thumb screws provided.

(Step #9) Turn power switch, on front of tester, to 'Off' position. Insert power cord into 120/240 VAC wall outlet.

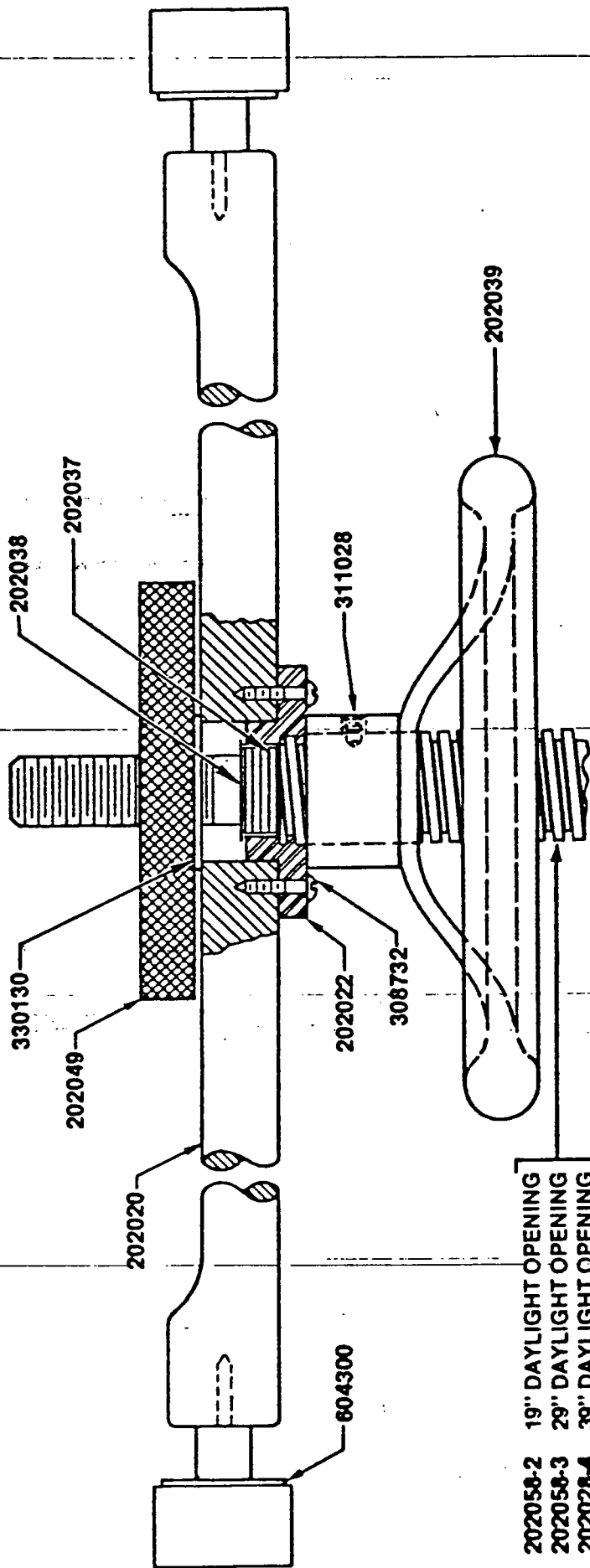
(Step #10) Place all documents, instructions, diagrams, and schematic into clear plastic envelope provided and place it inside steel pocket on rear of floor stand door for future reference.

The tester is now ready for operation.

OPERATING INSTRUCTIONS — DILLON MODEL LW TESTER

FAST RETURN HAND WHEEL & GUIDE BAR ASSEMBLIES

IMPORTANT: SPECIFY SERIAL NUMBER OF TESTER WHEN ORDERING PARTS



- 202058-2 19" DAYLIGHT OPENING
- 202058-3 29" DAYLIGHT OPENING
- 202058-4 39" DAYLIGHT OPENING

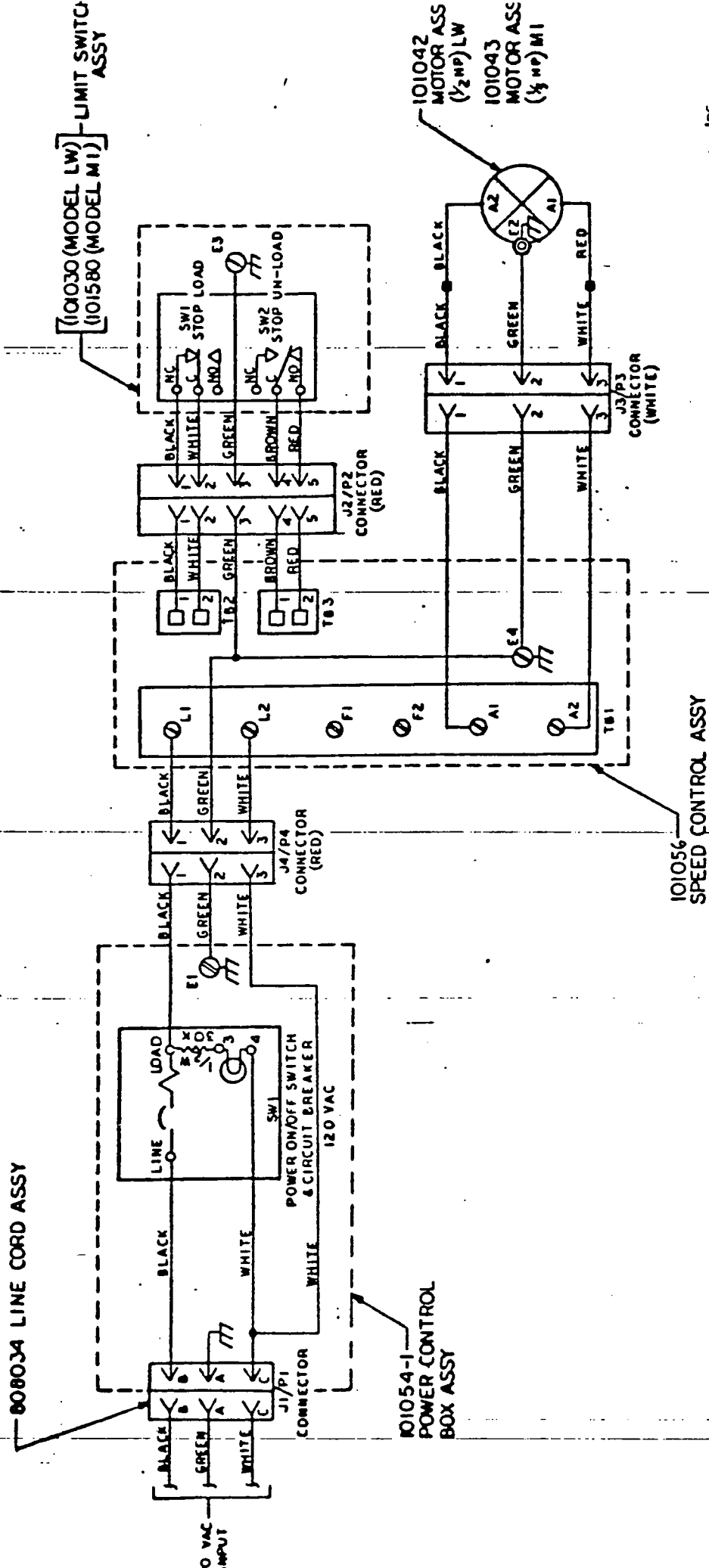
The assemblies shown in this drawing are designed for one specific purpose — rapid positioning of the lower grip and power screw on the Dillon model LW Testing Machine.

To operate: Loosen wheel nut #202049 and back this off with the fingers. A coil spring pt. #202037 (located under the guide bar) will push the guide bar up and hold it out of the keyway on the power screw.

Spin the fast return handwheel pt. #202039 in either direction depending upon whether it is desired to raise or lower the power screw, then line up keys on guide bar with keyways on power screw and re-tighten wheel nut #202049.

PART NO.	REQU.	DESCRIPTION OF PARTS
202058-2 THRU 202058-4	1	ACME SCREW 1" DIA. 8-TPI ACME
202049	1	HAND NUT
202020	1	GUIDE BAR
202022	2	GUIDE BAR KEY
308732	2	SCREW 8-32 X 1/2 RD. HD.
604300	2	CAM FOLLOWER MCGILL CF 1-1/2" DIA.
202038	1	WASHER. 832 I.D. X .718 O.D. X .047 THK.
202037	1	HELICAL COMP. SPRING
202039	1	FAST RETURN HANDWHEEL
311028	1	SET SCREW 1/4-20 X 3/8 LG. CUP POINT
330130	1	WASHER 21/32 I.D. X 1-19/64 O.D. X 3/32 THK.

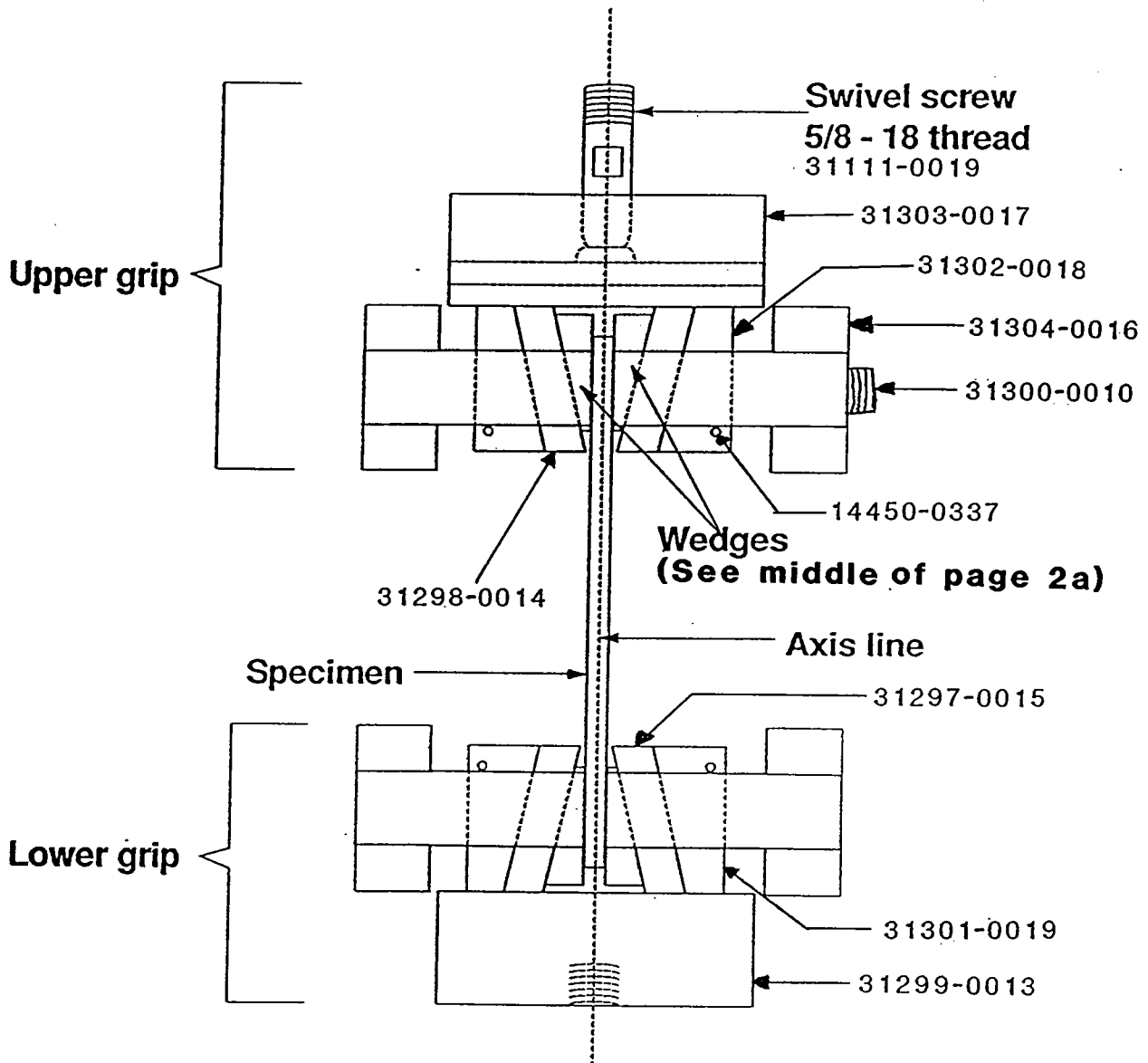
REV	DESCRIPTION	DATE	BY
A	REVISED FOR SCHEMATIC	10/15/58	W.C. BILLOM



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W.C. BILLOM & COMPANY, INC. PART
NAME OF SCHEMATIC, LW/MI TESTER, VARIABLE SPEED, 120 VAC
(WITH GEAR BOX)
FROM LW SERIAL NO. 6



INTRODUCTION

The Dillon Tester, although an exceptionally rugged instrument, cannot withstand repeated shock loading without some form of protection. This is provided in a specially designed shock absorber which is normally furnished with this unit. To understand the functioning of the shock absorber, it is first necessary to consider the action of the Dynamometer.

When a Dynamometer is placed under test load, the pressure bar (through which the mounting pins pass), moves outwardly at each end and downward at its center. The amount of this movement is approximately .025" when the instrument has been loaded to full capacity. Shocks which occur when an object or specimen breaks would naturally cause the Dynamometer pressure bar to rebound in the opposite direction with considerable force if it were not for the shock absorber. A glance at the illustration below shows key parts of this assembly. These consist of (1) a fast pitch acme screw, (2) shock absorber block, (3) thrust bearing, and (4) an actuating weight.

OPERATION

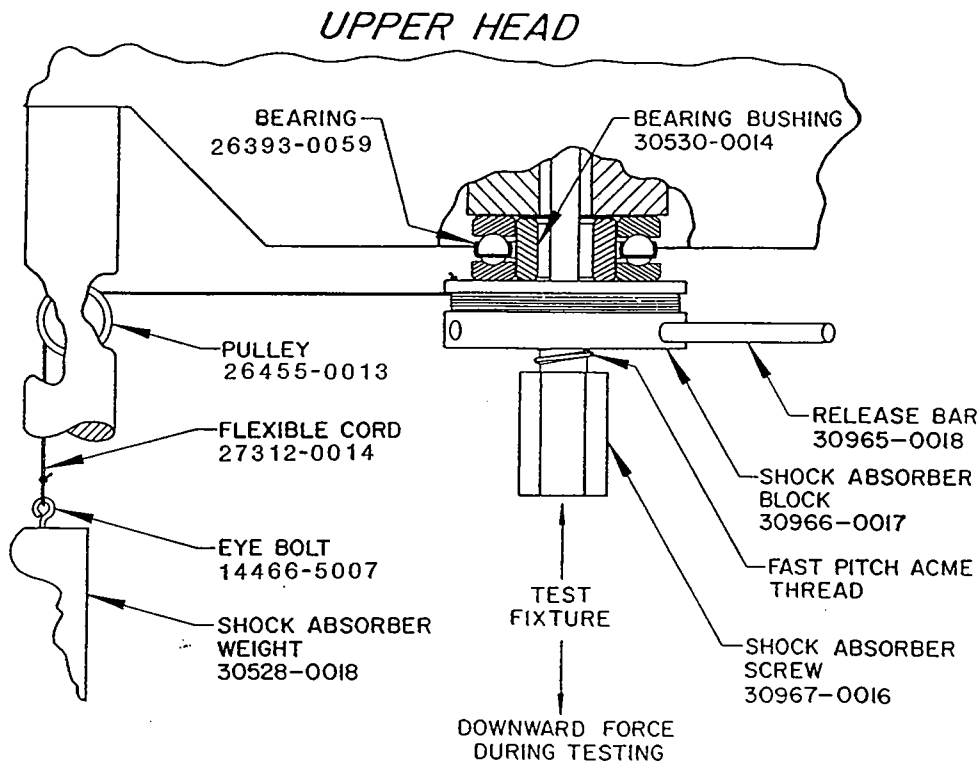
Load is applied against the acme screw by means of any accessory which may be attached to it. The screw passes through a clearance hole in the tester head and is itself turned into the Dynamometer pressure bar. As the test proceeds, the screw pulls down against the pressure bar. A flexible cord which is wrapped around the shock absorber

block and which is tied to the weight at its opposite end, causes the block to revolve clockwise on the acme screw and tighten up against the bearing. Thus, the slightest downward travel of the pressure bar is instantly compensated for by a corresponding take-up on the part of the shock absorber block. When a break occurs, there is no gap between the top race of the thrust bearing and the head casting, and thus the shock is not directly transmitted to the Dynamometer. Instead, it is absorbed by the massive head casting and the four pressure columns of the tester itself. Purpose of the bearing is to assist the shock absorber block as it revolves, thereby eliminating any friction between the block and the head casting.

After the test is completed, the release bar should be inserted into one of the holes in the shock absorber block to turn it counter-clockwise, and thus return the pointer to zero.

MAINTENANCE

It is a good plan to remove the shock absorber assembly from the test occasionally and to clean the bearing and screw in solvent. This will remove dirt or grit that may have been picked up from the air. It is especially advisable if the tester is being used in gritty or dirty surroundings. Remember, the freer and the more smoothly the shock absorber works, the greater the protection it affords. A few drops of light oil on the threads of the screw and on the bearing will be helpful.



MODEL LW TESTER SHOCK ABSORBER

PRINCIPLE AND METHOD OF OPERATION

The Dillon Tester, although an exceptionally rugged instrument, cannot withstand repeated shock loading without some form of protection. This is provided in a specially designed shock absorber which is normally furnished with this unit. To understand the functioning of the shock absorber, it is first necessary to consider the action of the Dynamometer.

When a Dynamometer is placed under test load, the pressure bar (through which the mounting pins pass), moves outwardly at each end and downward at its center. The amount of this movement is approximately .025" when the instrument has been loaded to full capacity. Shocks which occur when an object or specimen breaks would naturally cause the Dynamometer pressure bar to rebound in the opposite direction with considerable force if it were not for the shock absorber. A glance at the illustration on reverse side shows key parts of this assembly. These consist of a fast pitch acme screw (a), shock absorber block (b), thrust bearing (c), and actuating weight (d). Operation is as follows:

Load is applied against the acme screw (a) by means of any accessory which may be attached to it. The screw passes through a clearance hole in the tester head and is itself turned into the Dynamometer pressure bar. As the test proceeds, the screw pulls down against the pressure bar. A flexible cord which is wrapped around the shock absorber block (b) and which is tied to the weight (d) at its opposite end, causes the block to revolve clockwise on the acme screw and tighten up against the bearing. Thus, the slightest downward travel of the pressure bar is instantly compensated for by a corresponding take-up on the part of the shock absorber block. When a break occurs, there is no gap between the top race of the thrust bearing and the head casting, and thus the shock is not directly transmitted to the Dynamometer. Instead, it is absorbed by the massive head casting and the four pressure columns of the tester itself. Purpose of the bearing is to assist the shock absorber block as it revolves, thereby eliminating any friction between the block and the head casting.

After the test is completed, the release bar should be inserted into one of the holes in the shock absorber block to turn it counter-clockwise, and thus return the pointer to zero.

It is a good plan to remove the shock absorber assembly from the tester occasionally and to clean the bearing and screw in solvent. This will remove dirt or grit that may have been picked up from the air. It is especially advisable to clean in this way if the tester is being used in gritty

or dirty surroundings. Remember, the freer and the more smoothly the shock absorber works, the greater the protection it affords. A few drops of light oil on the threads of the screw and on the bearing, will be helpful.

Individual parts for the Dillon Model LW Tester shock absorber may be purchased at any time for replacement purposes. These are described in Bulletin LW-3.

