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INSTRUCTION MANUAL

MODELS K-475DV, 475D, 450DV, 450D, DR 351D, & DR 353D,

INSTRUCTION MANUAL

MODELS K-475DV, DR 351D, 353D, 471D, 473D, & 470DV

WIRING INSTRUCTIONS

READ INSTRUCTIONS CAREFULLY BEFORE WIRING

WARNING: TESTER MUST BE WIRED BY A LICENSED ELECTRICIAN ACCORDING TO LOCAL CODES.

WARNING: IMPROPER ELECTRICAL CONNECTIONS MAY VOID WARRANTY.

5 HP, 220V 1 PHASE 40 AMPS

5 HP, 220V 3 PHASE- 30 AMPS

7 ½ HP, 220V 1 PHASE- 50 AMPS

7 ½ HP, 220V 3 PHASE - 30 AMPS

NOTE: LOCAL ELECTRICAL CODE REQUIRES A SAFETY DISCONNECT SWITCH LOCATED NEAR TESTER.

ELECTRICAL CONNECTIONS:

A. 1 -PHASE, LINE 1 (WHITE WIRE), LINE 2 (BLACK WIRE), GROUND (GREEN WIRE)

B. 3 PHASE, LINE 1 (RED WIRE), LINE 2 (BLACK WIRE), LINE 3 (WHITE WIRE), LINE 4 (GREEN WIRE) IS GROUND.

WARNING: ON THREE PHASE CONNECTION THE "RED" WIRE MUST BE CONNECTED TO THE HIGH LEG OF THE POWER CIRCUIT, OTHERWISE DAMAGE WILL OCCUR TO THE METERS.

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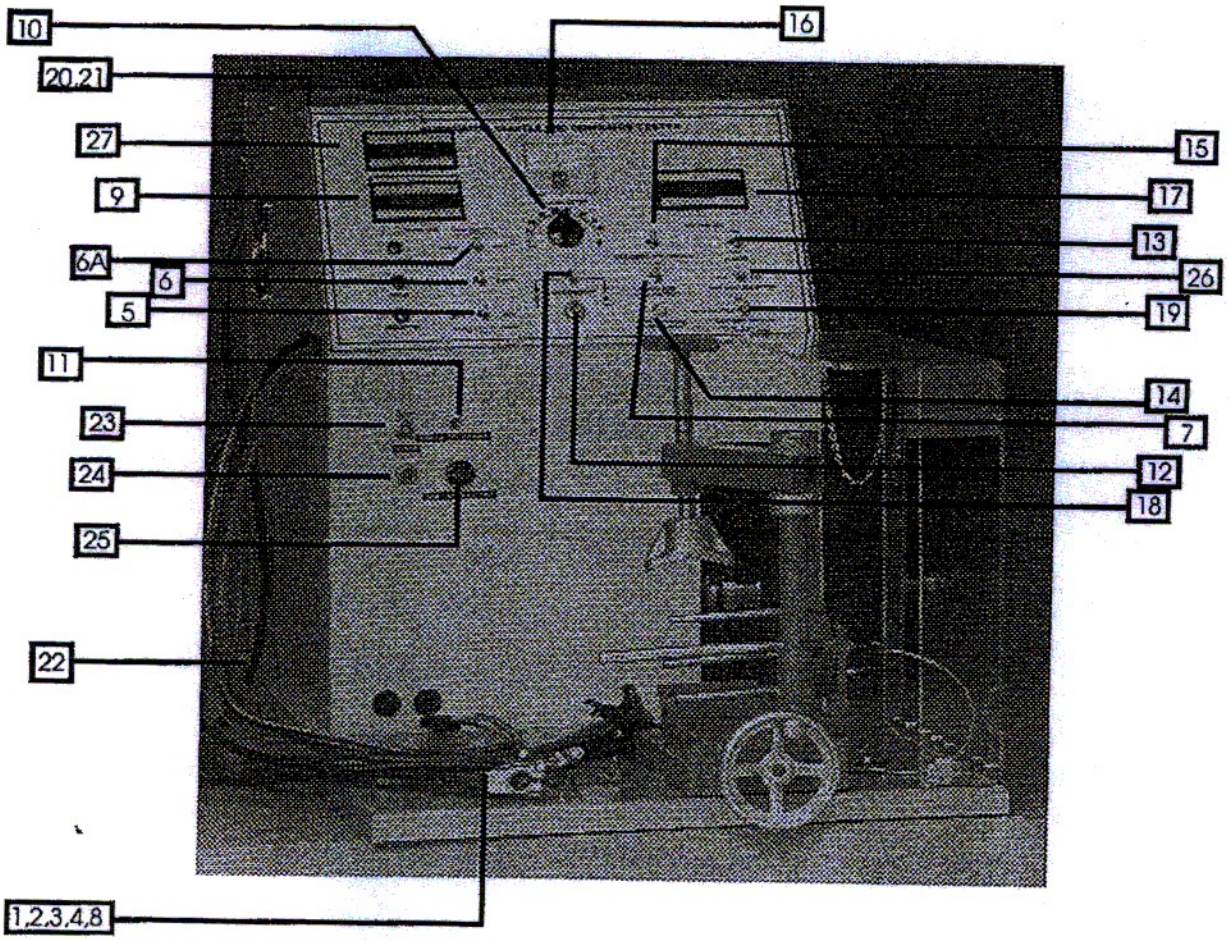

FIGURE 1

BOARD COMPONENTS

*****PLEASE REFER TO FIGURE 1, ABOVE*****

NO.	DESCRIPTION
1	POSITIVE LEAD (RED): TO ALTERNATOR BATTERY CONNECTION.
2	FIELD LEAD (GREEN): TO ALTERNATOR FIELD TERMINAL.
3	NEGATIVE LEAD (BLACK): TO ALTERNATOR NEGATIVE CONNECTION.
4	STATOR LEAD (BLUE): TO ALTERNATOR STATOR CONNECTION.

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5 LOAD CONTROL SWITCH: 20 AMP LOAD AND 40 AMP LOAD.

6 LOAD CONTROL SWITCH: 70 AMP LOAD AND 100 AMP LOAD.

6A. LOAD CONTROL SWITCH: 130 AMP LOAD AND 160 AMP LOAD
NOTE: DO NOT USE LOAD FOR MORE THAN FIVE (5) SECONDS AT A TIME.

7 FULL FIELD SWITCH.

8 INDICATOR LIGHT (FOR ALTERNATORS WITH INTERNAL REGULATOR): LEAD AND INTEGRAL PLUG CONNECTOR.

9. AMMETER: TO MEASURE ALTERNATOR OUTPUT AND STARTER DRAW.

10 VARIABLE FIELD CONTROL.

11 MOTOR SWITCH: FORWARD-OFF-REVERSE.

12 DTL LAMP: IDIOT LAMP.

13 VOLT AND AMMETER POWER SWITCH.

14 CIRCUIT BREAKER: PRESS TO RESET.

15 EXTERNAL VOLTMETER SWITCH: PRESS TO READ STATOR VOLTAGE IN VOLTMETER.

16 AMMETER: TO MEASURE FIELD CURRENT.

17 VOLTMETER

18 FIELD SELECTOR SWITCH: TO SELECT EITHER "A" OR "B" CIRCUITS. "B" CIRCUIT IS POSITIVE, "A" CIRCUIT IS NEGATIVE.

19 BATTERY SWITCH. POSITION SWITCH TO LEFT FOR ALTERNATOR, CENTER FOR OFF, RIGHT FOR STARTER.

20 & 21 BATTERY LEADS FROM BACK OF THE TESTER: RED LEAD TO BATTERY POSITIVE 12V & 24 V POST, BLACK LEAD TO BATTERY NEGATIVE POST.

22 AC LEAD CONNECTOR: TO SAFETY DISCONNECT SWITCH.

23 MOTOR POWER SWITCH (IN TESTERS WITCH VARIABLE SPEED)

24 POWER LAMP ON (IN TESTERS WITCH VARIABLE SPEED)

25 VARIABLR SPEED CONTROL (IN TESTERS WITCH VARIABLE SPEED)

26 12-24 VOLT SELECTOR

27 R.P.M. METER (IN TESTERS WITH VARIABLE SPEED)

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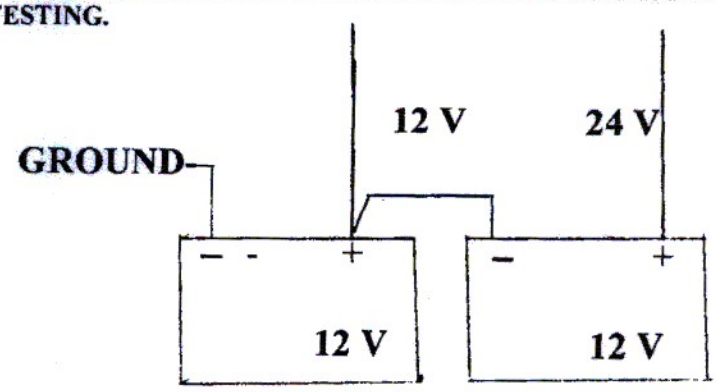
BATTERY INSTALLATION & MAINTENANCE

MAINTENANCE-FREE BATTERIES WITHOUT BATTERY CAPS ARE NOT RECOMMENDED.

STEP I CHECK THAT SWITCH NUMBER 19 IS IN THE "OFF" POSITION.

STEP 2 CONNECT THE TWO 12 VOLT BATTERIES.

NOTE: THE MOST IMPORTANT MAINTENANCE TASK IS THE PROPER CARE OF THE BATTERIES. CHECK THE ELECTOLYTE LEVEL OF EACH BATTERY, FILL WITH DISTILLED WATER IF LEVEL IS LOW AND WIPE THE TOPS AT THE SAME TIME. INCREASE MAINTENANCE TO A DAILY BASIS IF THE TESTER IS USED CONTINUOUS 8-HOUR PRODUCTION. PROPER MAINTENANCE OF THE BATTERIES ISTHE SINGLE MOST IMPORTANT FACTOR IN CONSISTENT AND ACCURATE ALTERNATOR TESTING.



MANUAL INSTRUCTION

MODELS K-475DV, DR 351D, 353D, 471D, 473D, & 470DV

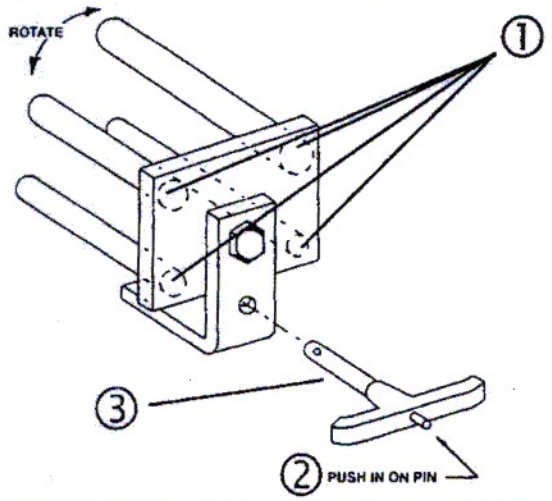
ALTERNATOR MOUNTING INSTRUCTIONS

STEP 1 FOR THE FIRST USE OF THE TESTER: REMOVE THE HAND-WHEEL FROM THE ½" PIN WITH ALLEN WRENCH AND MOUNT IT ON THE VISE SHAFT. TIGHTEN IT WITH THE ALLEN WRENCH.

STEP 2a FOR ALTERNATORS WITH MOUNTING EARS:
MOUNT THE ALTERNATOR ON THE VISE USING THE APPROPRIATE PIN. THERE ARE FOUR PINS (5/16", 3/8", 7/16", AND ½") 1 TO ACCOMMODATE ALTERNATORS OF DIFFERENT SIZES - FROM FOREIGN-MADE UNITS TO HEAVY-DUTY DOMESTIC UNITS.

TO ADJUST PIN SPINDLE FOR PROPER PIN SIZE, PUSH IN ON THE SMALL PIN 2 LOCATED ON THE BACK OF THE T-HANDLE 3. PULL OUT T-HANDLE FROM SPINDLE, THEN ROTATE SPINDLE SO THAT PROPER PIN IS IN POSITION FOR MOUNTING ALTERNATOR. RELOCATE T-HANDLE BACK IN LOCKING POSITION BY AGAIN PUSHING IN ON SMALL PIN ON BACK OF T-HANDLE, (THEN SLIDE T-HANDLE BACK INTO HOLE IN SPINDLE). CLAMP THE ALTERNATOR TO THE VISE AND SECURE USING THE TOP HOLD DOWN SCREW CLAMP.

STEP 2b FOR ALTERNATORS THAT DO NOT HAVE MOUNTING EARS, MOUNT IT DIRECTLY ON THE "V" BLOCK AND SECURE PROPERLY WITH THE TOP HOLD DOWN SCREW CLAMP.



STEP 3 PLACE THE BELT IN THE APPROPRIATE PULLEY AND TIGHTEN IT WITH THE HANDWHEEL.

NOTE: THE SIZE OFTHE PULLEY DETERMINES THE RPM. FOR ALTERNATORS WITH SMALL DIAMETER PULLEY, USE THE SMALL MOTOR PULLEY. FOR LARGER DIAMETER PULLEYS (3.5 AND LARGER), USE THE LARGE DIAMETER MOTOR PULLEY.

STEP 4 ALIGN THE ALTERNATOR PULLEY WITH THE MOTOR PULLEY: UNFASTEN THE WING NUTS HOLDING THE VISE TO THE BASE, SLIDE VISE TO ONE SIDE OR THE OTHER TO FIND PROPER ALIGNMENT, SECURE VISE TO BASE BY TIGHTENING THE WING NUTS SECURELY.

WARNING: NEVER RELEASE ALTERNATOR WHILE TESTER IS OPERATING.

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ALTERNATOR TESTING INSTRUCTIONS FOR INTEGRAL-TYPE ALTERNATORS THOSE WITH AN INTERNALLY CONNECTED (IC) REGULATOR ONLY.

NOTE: ALTERNATORS WITH IC REGULATORS HAVE A DIODE TRIOTO PROVIDE FIELD EXCITATION. FIELD AMMETER"16",VARIABLE FIELD CONTROL"10", AND FULL FIELD"7"SHOULD BE IGNORED WHEN USING IC REGULATED ALTERNATORS.

OPERATING INSTRUCTIONS -

STEP 1 TURN TESTER ON: TURN POWER SWITCH "19" AND "13" TO THE "ALTERNATOR" POSITION. SELECT DESIRED VOLTAGE FROM SWITCH "26" (12V OR 24V).

WARNING: DO NOT DISCONNECT BATTERY SWITCH "19" DURING TEST. THIS WILL SIMULATE A LOAD DUMP AND POTENTIALLY DAMAGE THE ALTERNATOR.

STEP 2 ALTERNATOR CONNECTION:

A. CONNECT (6 GA.) BLACK LEAD TO GROUND.

B. CONNECT (6 GA.) RED LEAD TO ALTERNATOR OUTPUT OR BATTERY TERMINAL.

C. CONNECT INTEGRAL PLUG CONNECTOR, (14 GA.) BLACK AND RED TO ITS LOCATION ON ALTERNATOR (WHERE APPLICABLE).

NOTE: WHEN INTEGRAL PLUG IS CONNECTED THE CHARGE INDICATOR LIGHT "l 2" WILL BE "ON"WHILETHE MOTOR IS NOT RUNNING. IF THE DTL PLUG IS CONNECTED; WITH THE MOTOR RUNNING, THE LIGHT SHOULD BE "OFF"TO INDICATE THE IC REGULATOR IS IN FACT PERFORMING ITS FUNCTION.

TO CHECK CONDITION OF INDICATOR LIGHT "l 2" WITH POWER SWITCH "l 9" ON, TOUCH THE NEGATIVE GROUND LEAD (6 GA. BLACK COMING FROM THE LEFT SIDE OF THE TESTER) TO THE INTEGRAL PLUG (14 GA.) BLACK LEAD: THE INDICATOR LAMP SHOULD LIGHT, IF NOT, REPLACE THE BULB.

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D. CONNECT (14 GA.) BLUE LEAD TO ALTERNATOR OUTPUT OR BATTERY TERMINAL.

WARNING: IF DURING THE CONNECTION PROCESS A BIG SPARK IS OBSERVED, THE ALTERNATOR MAY BE SHORTED OUT. DO NOT CONTINUE THE CONNECTING PROCESS OR TESTER WILL BE DAMAGED.

STEP 3 CLOSE SHIELD PROTECTOR, PRESS RUN ON MOTOR STARTER, SWITCH "25". TURN MOTOR "ON" AT DESIRED ROTATION BY TURNING MOTOR SWITCH "l l " TO EITHER FORWARD OR REVERSE.

STEP 4 PRESS LOAD SWITCH "5", "6", OR "6A" TO DESIRED AMPERAGE LOAD AND OBSERVE READINGS IN THE FOLLOWING METERS:

A. AMMETER, "9", SHOWS ALTERNATOR OUTPUT.
B. VOLTMETER, "17", SHOWS OPERATING VOLTAGE.

NOTE: WHEN DEPRESSING SWITCH "15" WHILE UNIT IS BEING TESTED UNDERLOAD, VOLTMETER"17"WILL SHOW OUTPUT VOLTAGE OF REGULATOR.

WARNING: KEEPING THE FULL OUTPUT FOR MORE THAN FIVE TO TEN SECONDS WILL OVERHEAT ALTERNATOR AND IS NOT RECOMMENDED.

CAUTION: IF MOTOR STALLS DURING START-UP, STOP TEST AND CHECK FOR DEFECTIVE REGULATOR.

INSTRUCTION MANUAL

MODELS K-475DV, DR 351D, 353D, 471D, 473D, & 470DV

ALTERNATOR TESTING INSTRUCTIONS FOR NON-INTEGRAL TYPE ALTERNATORS

STEP 1 TURN TESTER ON: TURN POWER SWITCH "19" AND "13" TO THE "ON" POSITION.

WARNING: DO NOT DISCONNECT BATTERY SWITCH "19" DURING TEST. THIS WILL SIMULATE A LOAD DUMP AND POTENTIALLY DAMAGE THE ALTERNATOR.

STEP 2 SELECT PROPER "A" OR "B" FIELD CIRCUIT ON FIELD SELECTOR "18".

A. "B" IS FOR POSITIVE FIELD UNITS, THOSE WHOSE REGULATOR IS CONNECTED BETWEEN OUTPUT (+) AND FIELD.

B. "A" IS FOR NEGATIVE FIELD UNITS. THOSE WHOSE REGULATOR IS CONNECTED BETWEEN FIELD AND GROUND.

NOTE: SEE PAGE FOR DETAILED EXPLANATIONS OF "A" AND "B" CIRCUITS.

STEP 3 ALTERNATOR CONNECTIONS:

A. CONNECT (6 GA.) BLACK LEAD TO THE NEGATIVE TERMINAL OR GROUND.

B. CONNECT (6 GA.) RED LEAD TO THE POSITIVE OUTPUT OR BATTERY TERMINAL.

NOTE: FOR UNITS THAT ARE POSITIVE GROUND, REVERSE RED AND BLACK LEADS.

C. CONNECT (12 GA. GREEN) FIELD LEAD TO FIELD TERMINAL.

D. CONNECT (14 GA. BLUE) STATOR LEAD TO STATOR TERMINAL: "S" ON FORD ALTERNATORS, OR "R" ON EARLY DELCO ALTERNATORS.

STEP 4 TURN MOTOR "ON" AT DESIRED ROTATION BY TURNING MOTOR SWITCH "11" TO EITHER FORWARD OR REVERSE.

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STEP 5 APPLYING LOADS TO ALTERNATOR:

WITH MOTOR RUNNING, SLOWLY TURN THE FIELD CONTROL RHEOSTAT "10" TO MAXIMUM AND OBSERVE READINGS IN ALL THREE METERS "9", "16", AND "17",

A. AMMETER, "9", SHOWS ALTERNATOR OUTPUT.

B. VOLTMETER, "17", SHOWS OPERATING VOLTAGE.

C. FIELD AMMETER, "16", SHOWS ROTOR AMPERAGE DRAW.

D. EXTERNAL VOLTMETER READING, "6", SHOWS STATOR OUTPUT AND CAN ALSO BE USED AS AN AUXILIARY VOLTMETER WHEN SWITCH NUMBER "15" IS DEPRESSED.

STEP 6 FULL OUTPUT:

TO DETERMINE FULL OUTPUT OF ALTERNATOR, DEPRESS SWITCH "7" FOR FULL OUTPUT AND OBSERVE THE SAME READINGS AS OUTLINED IN STEP "5" ABOVE.

WARNING: KEEPING THE FULL OUTPUT FOR MORE THAN FIVE TO TEN SECONDS WILL OVERHEAT ALTERNATOR AND IS NOT RECOMMENDED.

CAUTION: IF MOTOR STALLS DURING START-UP, STOP TEST AND CHECK FOR DEFECTIVE REGULATOR.

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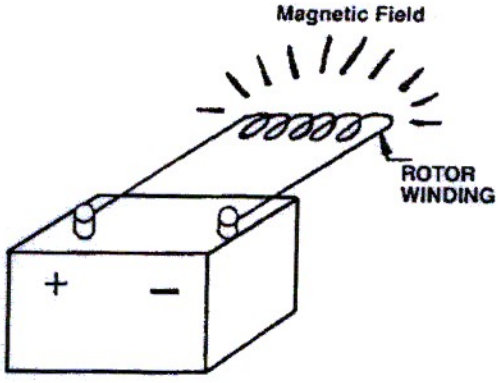
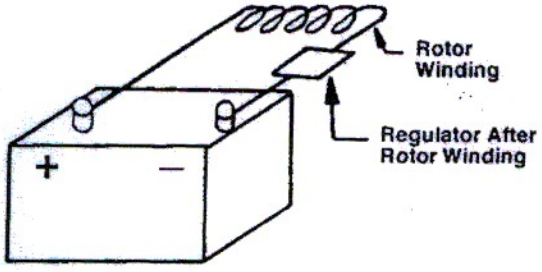
EXPLANATIONS OF "A" AND "B" CIRCUIT ALTERNATORS

THE ROTOR IN AN ALTERNATOR SERVES AS AN ELECTROMAGNET TO INDUCE VOLTAGE AND AMPERAGE IN THE STATOR. IT IS BASICALLY CONSTRUCTED OF TWO IRON POLE PIECES, A SHAFT, ONE CONTINUOUS COIL OF WIRE AND TWO SLIP RINGS FOR THE BRUSHES TO RIDE ON. BEING ONE CONTINUOUS COIL OF WIRE, ANYTIME A CIRCUIT IS CREATED (ONE END OF WIRE TOUCHED TO POSITIVE AND THE OTHER END TO NEGATIVE), A MAGNETIC FIELD IS PRODUCED.



THE REGULATOR SERVES AS A MEANS OF CONNECTING OR DISCONNECTING THE ONE CONTINUOUS COIL OF WIRE FROM A POWER SOURCE, THEREFORE, WEAKENING OR STRENGTHENING THE MAGNETIC FIELD IN THE ROTOR, AN ALTERNATOR DESIGNER HAS THE OPTION OF MAKING THE VOLTAGE REGULATOR CONNECTION ON THE POSITIVE SIDE ("B" CIRCUIT) OR ON THE NEGATIVE SIDE ("A" CIRCUIT). KNOWING WHICH CIRCUIT THE ALTERNATOR IS DESIGNED TO USE IS VERY IMPORTANT WHEN TESTING EXTERNALLY REGULATED ALTERNATORS. AN EASY WAY TO REMEMBER "A" AND "B" CIRCUITS IS TO THINK OF "A" AS STANDING FOR "AFTER" AND "B" AS STANDING FOR "BEFORE". EXAMPLE OF "A" (AFTER) CIRCUIT-



AS YOU CAN SEE IN THE DIAGRAM THE ONE END OF THE ROTOR WINDING IS CONNECTED TO THE POSITIVE BATTERY TERMINAL AND MAKES A CIRCUIT OR A PATH TO GROUND THROUGH THE REGULATOR "AFTER" THE ROTOR COIL.

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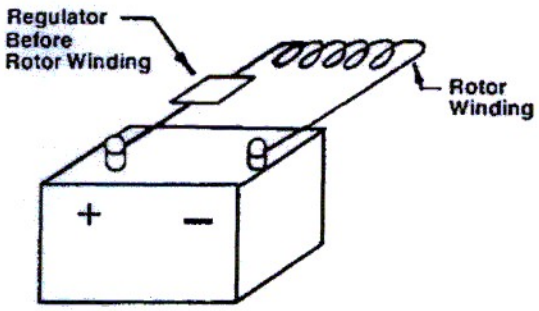
EXAMPLE OF "B" (BEFORE) CIRCUIT:



IN THIS EXAMPLE YOU CAN SEE THAT ONE END OF THE ROTOR WINDING IS CONNECTED TO THE NEGATIVE BATTERY TERMINAL, AND THE REGULATOR COMPLETES OR BREAKS THE CONNECTION TO POSITIVE "BEFORE" THE ROTOR COIL.

GENERALLY YOU WILL FIND TWO VERSIONS OF EXTERNALLY REGULATED ALTERNATORS. THE ONE VERSION HAS TWO FIELD TERMINALS AND THE OTHER ONLY HAS ONE.

TWO FIELD TERMINAL ALTERNATORS:

ALTERNATORS WITH TWO FIELD TERMINALS ACCESS TO BOTH ENDS OF THE ROTOR WINDING. IT IS NEITHER AN "A" OR "B" CIRCUIT UNTIL ONE TERMINAL IS EITHER CONNECTED TO NEGATIVE OR POSITIVE BY MEANS OF A JUMPER OR STRAP, ETC. IF ONE OF THE FIELD TERMINALS IS CONNECTED TO NEGATIVE; PLACE THE TEST LEAD ON THE OTHER FIELD TERMINAL AND SET ON "B" CIRCUIT. IF ONE OF THE FIELD TERMINALS IS CONNECTED TO POSITIVE; PLACE THE TEST LEAD ON THE OTHER FIELD TERMINAL AND SET ON "A" CIRCUIT. IF NEITHER TERMINAL HAS ANY JUMPERS INSTALLED CONNECT ONE TERMINAL TO NEGATIVE (GROUND) AND PLACE THE TEST LEAD ON THE OTHER TERMINAL AND SET ON "B" CIRCUIT.

ONE FIELD TERMINAL ALTERNATOR:

HAVING ONLY ONE FIELD TERMINAL ASSUMES THAT THE ALTERNATOR MANUFACTURER HAS CONNECTED ONE END OF THE CONTINUOUS COIL OF WIRE IN THE ROTOR TO EITHER POSITIVE OR NEGATIVE INSIDE THE ALTERNATOR. GO AHEAD AND TOUCH ONE LEAD OF AN OHMMETER TO THE FIELD TERMINAL, AND THE OTHER LEAD OF OHMMETER TO THE ALTERNATOR NEGATIVE TERMINAL. IF YOU HAVE A CIRCUIT (LOW RESISTANCE) YOU CAN ASSUME THAT THE ALTERNATOR IS A "B" CIRCUIT. IF YOU PERFORM THE OHMMETER TEST AND FIND THAT THERE IS NO CIRCUIT (HIGH RESISTANCE) YOU CAN ASSUME YOU HAVE AN "A" CIRCUIT.

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GENERATORS:

"A" AND "B" CIRCUIT GENERATORS RELATES TO WHETHER THE FIELD COILS ARE INTERNALLY OR EXTERNALLY GROUNDED.

AN INTERNALLY GROUNDED FIELD IS A "B" CIRCUIT, AND AN EXTERNALLY GROUNDED FIELD IS AN "A" CIRCUIT

AN INTERNALLY GROUNDED FIELD, OR "B" CIRCUIT, HAS ONE END OF THE FIELD COIL CONNECTED TO A GROUND BRUSH (SEE FIGURE 2).

AN EXTERNALLY GROUNDED FIELD, OR "A" CIRCUIT, HAS ONE END OF THE FIELD COIL CONNECTED TO AN INSULATED BRUSH (SEE FIGURE 3).

"B" CIRCUIT GENERATOR

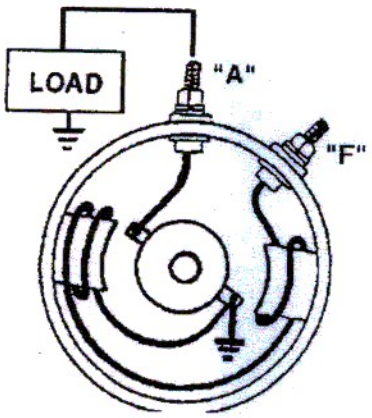

FIGURE 2

"A" CIRCUIT GENERATOR

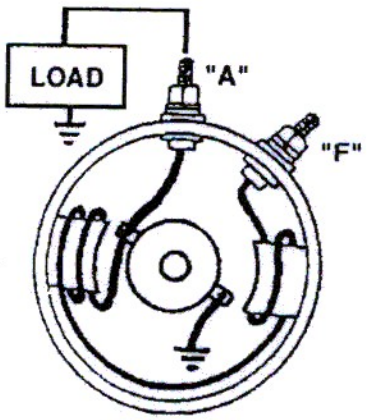

FIGURE 3

INSTRUCTION MANUAL

MODELS K-475DV, DR 351D, 353D, 471D, 473D, & 470DV

GENERATORTESTING INSTRUCTIONS

THE TESTER HAS BEEN DESIGNED TO TEST ALTERNATORS AND GENERATORS. FOLLOWING ARE THE GENERATOR TESTING PROCEDURES.

STEP 1 MOUNT GENERATOR ON VISE, CLAMP TO THE VISE USING THE TOP SCREW-CLAMP AND ALIGN WITH MOTOR PULLEY.

STEP 2 TURN TESTER OFF: TURN POWER SWITCH "19" TO THE "OFF" POSITION.

NOTE: SEE PAGE 10 FOR DETAILED EXPLANATION OF "A" AND "B" CIRCUITS.

STEP 3 FIELD SELECTOR "18" MUST BE IN THE PROPER POSITION, "A" OR "B".

STEP 4 GENERATOR CONNECTION:

A. CONNECT BLACK LEAD (6 GA.) TO THE NEGATIVE TERMINAL OR GROUND.

B. CONNECT RED LEAD (6 GA.) TO THE POSITIVE OUTPUT OR BATTERY TERMINAL.

NOTE: FOR POSITIVE GROUND OPERATION REVERSE THE CONNECTION MENTIONED ABOVE.

C. CONNECT FIELD LEAD (12GA.GREEN) TO FIELD TERMINAL.

STEP 5 TURN ON SWITCH "7", FULL OUTPUT SWITCH.

STEP 6 TURN SWITCH "19" ON TO FIND OUT WHICH WAY THE GENERATOR ROTATES. ONCE THE DIRECTION OF ROTATION IS DETERMINED, TURN SWITCH "19" OFF AND TIGHTEN BELT.

STEP 7 TURN MOTOR "ON" (SWITCH "11") IN THE SAME DIRECTION AS THE GENERATOR WAS TURNING. WHEN THE GENERATOR IS RUNNING, TURN SWITCH "19" ON.

STEP 8 TEST THE GENERATOR USING THE SAME STEPS OUTLINED FOR THE TESTING OF A NON-INTEGRAL ALTERNATOR (STEP 5, PAGE OF THESE INSTRUCTIONS).

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FREE RUNNING STARTER TEST INSTRUCTIONS

STEP 1 LOCK STARTER IN HOLDING VISE USING THE TOP HOLD DOWN SCREW CLAMP

STEP 2 SELECT VOLTAGE 12V OR 24V.

STEP 3 CONNECT POSITIVE CLAMP (RED) TO STARTER POST ON STARTER. CONNECT NEGATIVE CLAMP (BLACK) TO STARTER GROUND OR NEGATIVE TERMINAL.

STARTERS WITH SOLENOID.

A. CONNECT POSITIVE CLAMP (RED) TO BATTERY POST ON SOLENOID.

B. CONNECT A JUMPER LEAD FROM BATTERY CLAMP TO SOLENOID SWITCH POST.

STEP 4 USE STARTER SELECT SWITCH TO OPERATE SOLENOID.

STEP 5 READ FREE RUNNING DRAW ON AMMETER #9.

REFER TO MANUFACTURER SPEC'S FOR PROPER DRAW.

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ALTERNATOR TERMINAL DESIGNATIONS
UNITED STATES AND EUROPEAN DESIGNATIONS

TERMINAL	DESIGNATION
15	SWITCH (+) OUTPUT FROM BATTERY IGNITION SWITCH OUTPUT
15a	OUTPUT AT BALLAST RESISTOR TO IGNITION COIL
16	USE 15 AND 15a
30	INPUT DIRECTLY FROM BATTERY
31	RETURN DIRECT TO BATTERY (-) OR GROUND
50	STARTING MOTOR CONTROL (DIR)
61	CHARGE INDICATOR (IND. LIGHT)
67	FIAT (DF)
A	BATTERY (FORD REGULATOR) CONNECTS TO B+ TERMINAL
ARM	AUTOLITE (D+)
Al	LUCAS (LOAD)
B	LUCAS, DUCEL, DELCO, AUTOLITE (B+)
B+	OUTPUT TO (+) BATTERY TERMINAL
B-	OUTPUT TO (-) BATTERY TERMINAL
BAT	AUTOLITE, DELCO, AUTOLITE, (+)
C	COMPUTER IF GROUNDED - LOWERS OUTPUT
D	DUMMY (NO) CONNECTION
D+	TRIO DIODE TRIO OUTPUT GENERATOR LIGHT TERMINAL
D-	GROUND FOR REGULATOR
DF	FIELD (LUCAS)
DYN	DUCEL (D+)
E	DUCEL (DF), GROUND FOR REGULATOR
EXC	DUCEL (DF)
F	FIELD MAY BE "A" OR "B" CIRCUIT, MAY BE TWO TERMINALS - EXT. REG.
FL	DAUTOLITE (DF)
FR	FAULT RELAY SIGNAL TO COMPUTER
G	AUTOLITE (D-), (B-), 0
GEN	DELCO (D+)
GND	AUTOLITE, DELCO, (D-), (B-), (31)
L	LIGHT (FORD) LIGHT SIGNAL - NOT TRIO DO NOT CONNECT DIRECTLY TO BATTERY
I	IGNITION TERMINAL CONNECTS TO BATTERY
IG	IGNITION
IL	TRIO LIGHT TERMINAL
K	DIODE TRIO
IND	LUCAS (61)
L	LIGHT AND/OR RELAY DO NOT CONNECT DIRECTLY TO BATTERYMAY BE GEN. LIGHT ONLY MAY BE TRIO TERMINAL

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M	EARTH GROUND
N	STATOR
P	STATOR
R	RELAY - STATOR OR IGNITION
S	SENSE CONTROLS REG. VOLTS MAY BE STATOR - EXT REG.
W	STATOR
WL	LUCASE (61)
+	BOSCH AUXILIARY OUTPUT RADIO NOISE CAPACITOR VOLT SURGE PROTECTION DEVICE, ETC.

JAPANESE DESIGNATION

TERMINAL DESIGNATION

A	ALTERNATOR OUTPUT AUXILIARY
B	ALTERNATOR OUTPUT TO BATTERY
E	ALTERNATOR OUTPUT GROUND
F	ALTERNATOR FIELD (+) SOMETIMES
(-)	INPUT FROM V.R.
IG(-)	INPUT FROM IGNITION SW
L(+)	INPUT FROM INDICATOR LIGHT CIRCUIT OUTPUT TO INDICATOR LIGHT IN CHARGING MODE
N	ALTERNATING CURRENT OUTPUT
P	PSEUDO ALTERNATING CURRENT OP
R(+)	INPUT VOLTAGE SENSOR
S(+)	INPUT VOLTAGE SENSOR

NOTE: THIS INFORMATION HAS BEEN AVAILABLE BY THE APRA TECHNICAL SERVICE.

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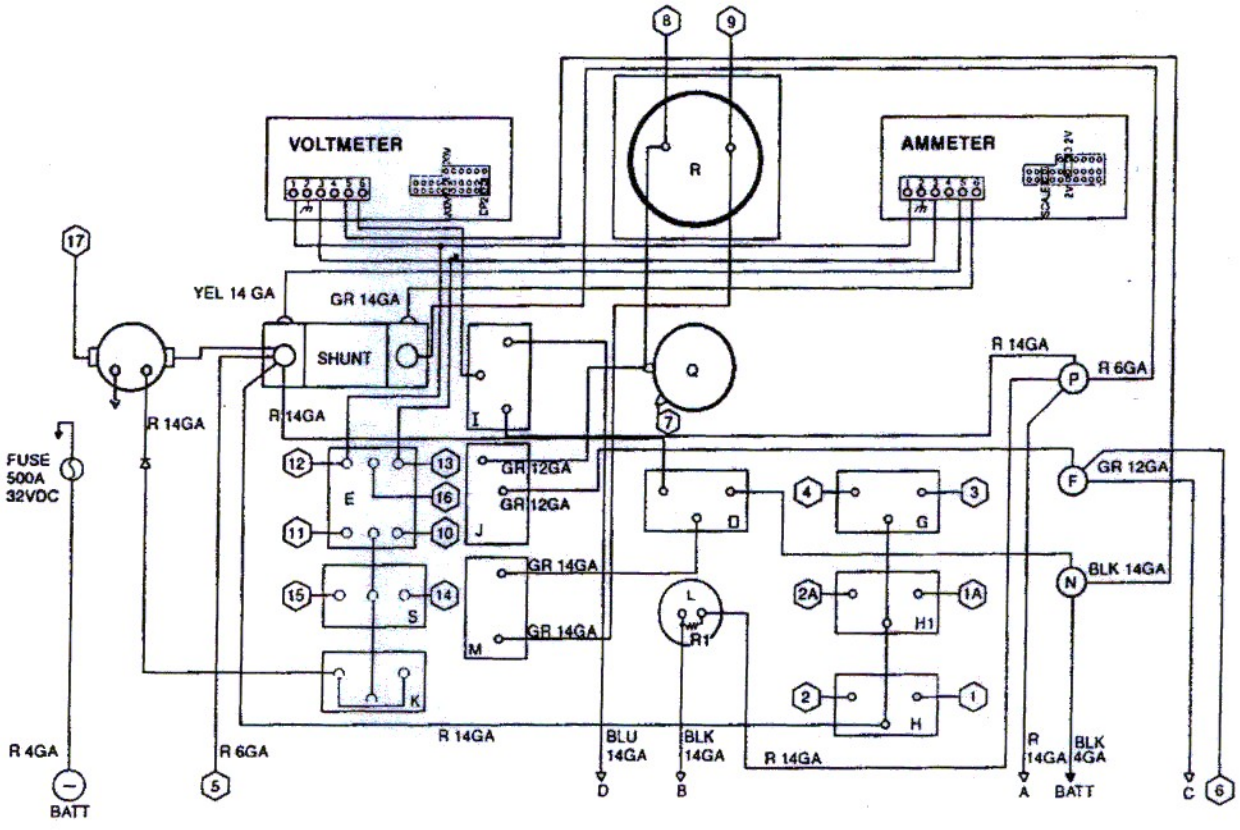

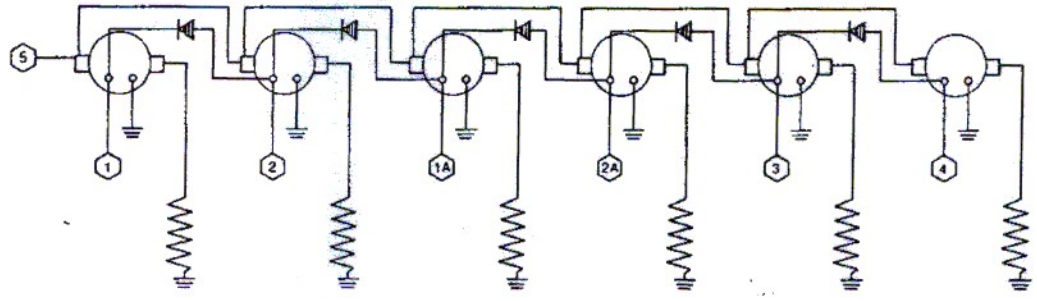

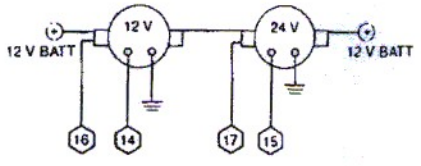

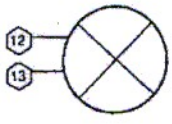

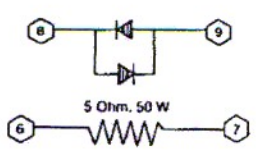

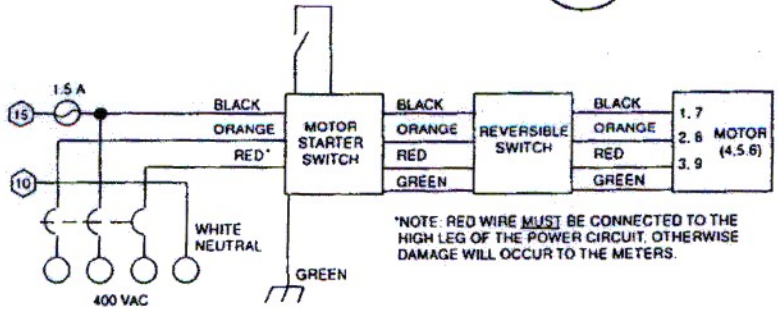

INSTRUCTION MANUAL

MODELS K-475DV, DR 351D, 353D, 471D, 473D, & 470DV

WARRANTY

THE ALTERNATOR AND REGULATOR TESTER IS WARRANTED BY KAR INDUSTRIES CORP. AGAINST DEFECTS IN WORKMANSHIP OR MATERIALS UNDER NORMAL USE FOR ONE YEAR AFTER DATE OF PURCHASE UNLESS SPECIFIED BELOW. ALL ELECTRONIC PARTS ARE WARRANTED BY THE MANUFACTURER FOR TWELVE MONTHS AFTER DATE OF PURCHASE. ALL MOTOR PARTS ARE WARRANTED BY THE MANUFACTURER FOR ONE YEAR AFTER DATE OF PURCHASE. ALL PARTS RETURNED FOR REPAIRS UNDER WARRANTY MUST BE SHIPPED PREPAID TO MIAMI,FLORIDA IN CARE OF:

THIS WARRANTY DOES NOT APPLY TO DAMAGE(S) RESULTING FROM ACCIDENT(S), ALTERATION(S), OR MISUSE OF THE EQUIPMENT.

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