Lester Electrical

DUAL MODE BATTERY CHARGER
TYPE 24EL8
TECHNICIAN DIAGNOSTIC AND SERVICE INSTRUCTIONS

To discourage end users from disassembling the charger, UNDERWRITERS LABORATORIES and CANADIAN STANDARDS ASSOCIATION require that the internal replaceable fuses be omitted from the Owners Manual wiring diagram and parts list. Those parts are included in the enclosed service wiring diagrams and parts lists.

Refer to the Owners Manual for installation, normal operating procedures, and safety precautions. FOLLOW ALL SAFETY PRECAUTIONS.

DUAL MODE CHARGER TEST PROCEDURES

Disconnect both the AC and DC charger cordsets. Remove the screws on each side of the charger and lift the cover off. Refer to the Service Parts List and compare to the charger under test to locate the described test points. Make sure that all the charger internal connections are secure and tight.

TEST FOR CORRECT AC VOLTAGE AVAILABLE AT TRANSFORMER

Connect the AC cord to a live outlet; move the power switch to AUTO. Verify that AC line voltage is measured across terminals P-P on the transformer (110-127 for 120 VAC models; 215-245 for 230 VAC models).

TEST FOR CORRECT AC VOLTAGE AT TRANSFORMER AUXILIARY COIL

Verify that approximately 26-30 VAC is measured across terminals 1-3 on the transformer. Unplug the electronic timer assembly and verify this same voltage across the control cable assembly electronic timer edge connector contacts 4-6.

One half of this measured AC voltage should appear across transformer terminals 2-1 and 2-3. With the electronic timer assembly unplugged, the same reading should also appear across plug contacts 3-4 and 3-6, and 7-4 and 7-6, as well as 9-4 and 9-6.

TEST FOR CORRECT AC VOLTAGE AT TRANSFORMER SECONDARY

Verify that approximately 58-64 VAC is measured across transformer secondary terminals 4-7. Half of this measured AC voltage should also appear across the transformer coil center tap and each end, transformer terminals 5-7 and 5-4, as well as 6-7 and 6-4.

Transformer failure is indicated when the measured AC voltages are significantly lower than specified.

TEST FOR COMPLETE CIRCUIT FROM CHARGER TO WHEELCHAIR BATTERIES IN THE WHEELCHAIR

Move the power switch to OFF and unplug the AC power cord and connect the charger DC output plug to the charging receptacle of the wheelchair under test.

Remove covers from wheelchair battery box and measure battery system voltage at the battery terminals inside the battery box, about 24 VDC.

Make sure this same battery pack voltage, about 24 VDC, is measured across where the RED lead from the thyristor assembly connects to the ammeter (+, POSITIVE), and transformer terminal 5 as well as terminal 6 (-, NEGATIVE). Refer to the wiring diagram.

IF THE CORRECT BATTERY VOLTAGE DOES NOT APPEAR INSIDE THE CHARGER, THEN TEST ALL CIRCUITS UNTIL THE OPEN CIRCUIT IS ELIMINATED.

Repair or replace: Wheelchair charging circuit wiring, or wheelchair charging circuit fuses and/or fuseholders, or wheelchair charging circuit breakers, or wheelchair charging receptacle. Charger DC cordset with charging plug, or charger DC fuse and/or fuseholders. Charger control cable assembly if shunt resistor tests as an open circuit, or charger ammeter if

the ammeter tests as an open circuit, until a complete circuit is established to the battery pack and correct battery pack voltage is measured across these terminals.

Unplug the connector from the electronic timer assembly. Inspect the plug contacts for distortion, corrosion or any condition that would prevent electrical contact with the pads on the electronic timer assembly. Test all of the leads of the control cable assembly to verify that none test as an open circuit.

Repair or replace the control cable assembly to correct any deficiencies.

If all of the above test in good condition and the charger still has not had output, then the only two components remaining are the thyristor assembly and the electronic timer assembly.

The complexity of the electronic timer assembly prohibits field service and replacement with a known good unit for test purposes is the only alternative. For this reason, it is essential to have a spare electronic timer assembly on hand when performing diagnosis and repair.

The feedback control design of the charger makes it possible for one of the thyristors in the thyristor assembly to not function and the charger to still have some output. This condition can be detected by noting the temperature of the separate thyristors and replacing the complete assembly if one of the thyristors feels cold and the other hot. This condition may also suggest its presence by continual melting of the DC fuse.

The thyristors may be turned on one at a time to test for failure. Use a 1.5 volt "AA" (Double A) penlight battery. DO NOT USE A HIGHER VOLTAGE OR LARGER BATTERY TO PERFORM THIS TEST OR YOU CAN DESTROY THE THYRISTOR. Connect the AC cord to a live outlet, set the power switch to AUTO, unplug the electronic timer, and connect the charging plug to a fully charged battery pack. Connect a lead from the NEGATIVE (-) end of the AA penlight to contact #9, or #7 or #3 of the electronic timer plug. Momentarily touch a lead from the POSITIVE (+) end of the AA penlight to contact #1 and then to contact #2. Do not continue this for more than a few seconds as it is possible to damage the thyristors and charger.

If the ammeter does not indicate current flow for each thyristor, then one of the thyristors has failed and the complete assembly must be replaced.

SERVICE NOTICE – JANUARY, 1987

There has been a change in the AC power fuse used in some Type 24EL8 dual mode wheelchair battery chargers. This change affects the models listed below designed to operate on 120 VAC, 60 Hertz power.

Models affected:	***12090***	***12160***
	12395	***12620***
	12425	***12630***

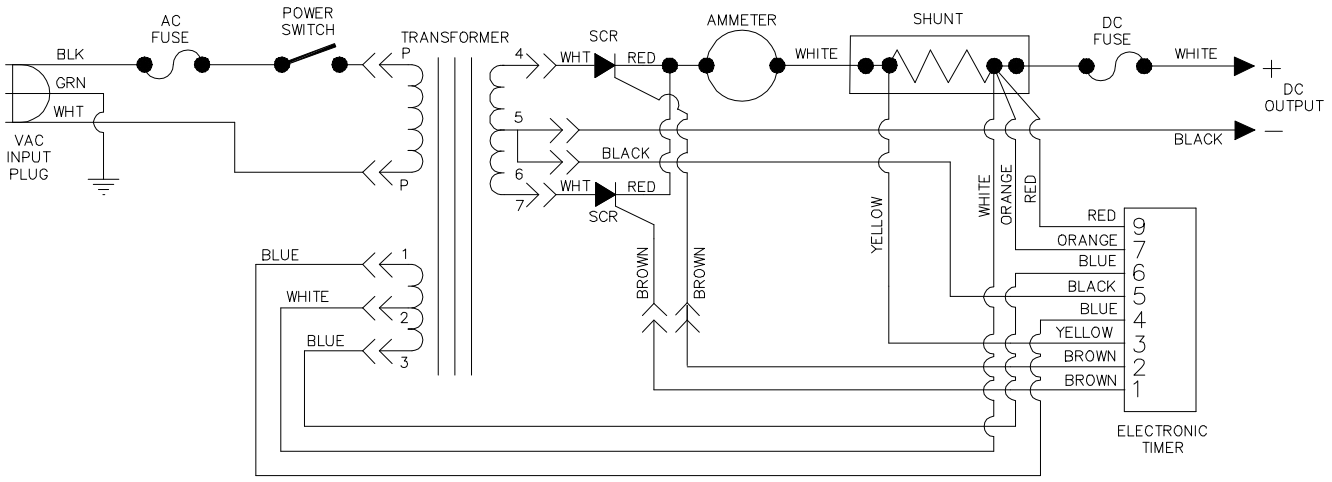
The 5 amp, fast blow single element AC power fuse (Lester Part No. 14359S, Buss MDX-5), used in these charger models, was replaced by a 5 amp slow blow dual element AC power fuse (Lester Part No. 16208S, Buss MDX-5).

False blowing of the fast blow AC power fuse (Lester Park No. 14359S, Buss MTH-5) has been reported. Replacing this fuse with its slow blow equivalent (Lester Part No. 16208S, Buss MDX-5) is intended to eliminate this.

The replacement fuse is a round cartridge fuse, ¼" diameter by 1¼" long. It is rated at 5 amps, is designed for use in circuits with a maximum operating voltage of 125 volts, and is a slow blow dual element design.

Locally available replacement fuses with these specifications may be used if you encounter a situation where false blowing of the AC fuse is determined.

WIRING DIAGRAMS



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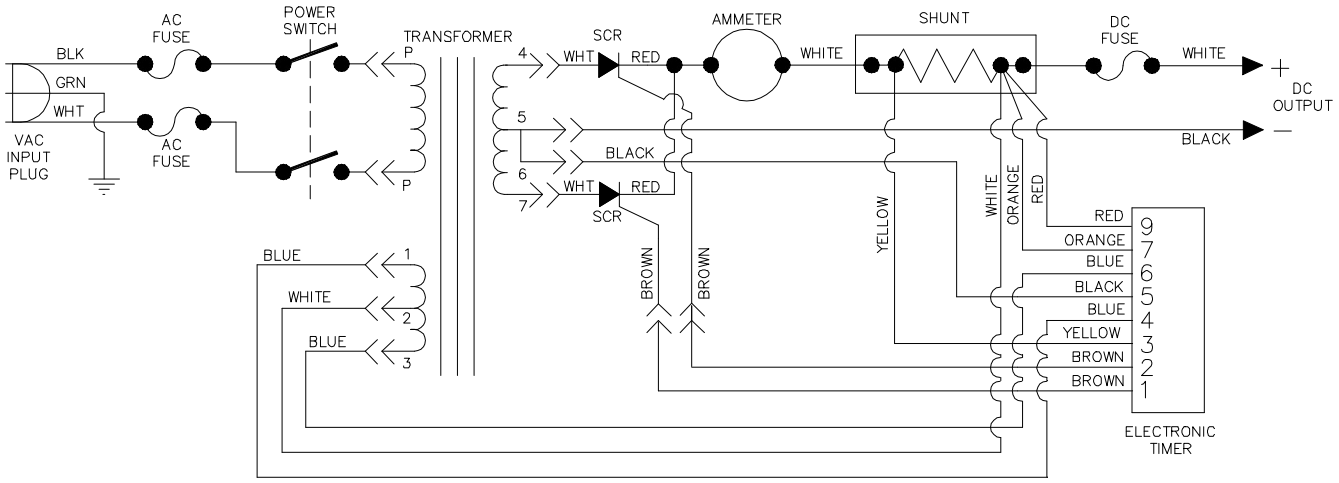
SERVICE PARTS LIST – TYPE 24EL8
120 VAC / 60 HZ

	CHARGER DESCRIPTION		
	EVEREST & JENNINGS #90483465	INVACARE #1014758	LESTER #12610
	MODEL NOS.		
DESCRIPTION	**12630**	**12620**	**12610**
CASE ASSEMBLY	14358S	14454S	14432S
TRANSFORMER ASSEMBLY	12600S	12600S	12600S
THYRISTOR ASSEMBLY (SCRs)	14341S	14341S	14341S
CONTROL CABLE ASSEMBLY	14308S	14308S	14308S
ELECTRONIC TIMER ASSEMBLY	12450S	12245S	12245S
AMMETER, 10 AMP	13811S	13811S	13811S
FUSEHOLDER, AC AND DC, CLIP, SINGLE	10375S	10375S	10375S
FUSEHOLDER TAG, DC	14329S	14329S	14329S
FUSE, DC, 15 AMP, AGC-15	03838S	03838S	03838S
POWER SWITCH, SLIDE, SPST, 125 VAC, 6 AMP	15184S	15184S	15184S
FUSEHOLDER TAG, AC	13919S	13919S	13919S
FUSE, AC 5 AMP, MDX-5, 125V, SLOW BLOW	16208S	16208S	16208S
BUSHING, INSULATOR, 6N3-4, FOR CORDSETS	04275S	04275S	04275S
CORDSET, AC, 18/3, W/ MOLDED PLUG, 102"	14334S	14444S	14444S
CORDSET, DC, 14/2, 80", 2/ 30 AMP POWERPOLE	11687S	-	-
CORDSET, DC, 14/2, 108", BLACK & RED POWERPOLE	-	14421S	14421S
CORDSET, DC, 14/2, 108", YELLOW & WHITE POWERPOLE	-	-	14422S
CORDSET, DC, 16/2, 108", W/ CANNON PLUG	-	-	16221S
CORDSET, DC, 14/2, 108", W/ ALLIGATOR CLIPS	-	-	14538S

WIRING DIAGRAM



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SERVICE PARTS LIST – LESTER MODEL 13770
TYPE 24EL8 230 VAC / 60 HZ

PART NO.	DESCRIPTION
16273S	CASE ASSEMBLY
13775S	TRANSFORMER ASSEMBLY
14341S	THYRISTOR ASSEMBLY (SCRs)
14308S	CONTROL CABLE ASSEMBLY
12245S	ELECTRONIC TIMER ASSEMBLY
13811S	AMMETER, 10 AMP
10375S	FUSEHOLDER, DC, CLIP, SINGLE
14329S	FUSEHOLDER TAG, DC
03838S	FUSE, DC, 15 AMP, AGC-15
16247S	POWER SWITCH, SLIDE, DPST, 250 VAC, 6 AMP
15897S	FUSEHOLDER, AC, CLIP, DUAL
16249S	FUSEHOLDER TAG, AC
16268S	FUSE, AC, 2.25 AMP, MDA-2.5, 250V, SLOW BLOW
04275S	BUSHING, INSULATOR, 6N3-4, FOR CORDSETS
16243S	CORDSET, AC, 18/3, W/O PLUG, 108"
11687S	CORDSET, DC, 14/2, 80", 2/ 30 AMP POWERPOLE
14421S	CORDSET, DC, 14/2, 108", BLACK & RED POWERPOLE
14422S	CORDSET, DC, 14/2, 108", YELLOW & WHITE POWERPOLE
16221S	CORDSET, DC, 16/2, 108", W/ CANNON PLUG
14538S	CORDSET, DC, 14/2, 108", W/ ALLIGATOR CLIPS
16404S	CORDSET, DC, 14/2, 108", 2/ SB-50 PLUG, GRAY