

HIGH TENSION HARNESSES

CONTINENTAL[®] IGNITION SYSTEMS

SERVICE SUPPORT MANUAL



Publication X43001-1

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AUG 2011



Supersedure Notice

This manual revision replaces the front cover and list of effective pages for Publication Part No. X43001, dated October 1989. Previous editions are obsolete upon release of this manual.

Effective Changes for this Manual

0	October 1989		
1	31 August 2011		

List of Effective Pages

Document Title: High Tension Harness Service Support Manual
 Publication Number: X43001-1

Initial Publication Date: October 1989

Page	Change	Page	Change	Page	Change	Page	Change
Cover.....	1	11-1 thru 11-16	0				
A.....	1						
Highlights deleted.....	1						
Record of Revisions deleted	1						
Record of Temporary Revisions deleted.....	1						
Service Bulletin List.....	0						
List of Effective Pages deleted	1						
Table of Contents	0						
1-1 thru 1-2.....	0						
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3-1 thru 3-2.....	0						
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Published and printed in the U.S.A. by Continental Motors, Inc.

Available exclusively from the publisher: P.O. Box 90, Mobile, AL 36601

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WARNING

(Please note the following statements from FAA Advisory Circular 20-62C entitled "ELIGIBILITY, QUALITY, AND IDENTIFICATION OF APPROVED REPLACEMENT PARTS"):

3. **BACKGROUND.** An increasing amount of replacement parts (including standard parts), materials, appliances, and instruments are offered for sale as being of aircraft quality when actually the quality and origin of these units are unknown. Users of such units are usually not aware of the potential hazards involved with replacement parts that are **not** eligible for use on certificated aircraft. Frequently such units are deceptively advertised or presented as "**unused**," "**like new**," or "**remanufactured**." This implies that the quality of such units is equal to an original or appropriately repaired or overhauled unit.

The performance rules for replacement of parts and materials used in the maintenance and alteration of U.S. certificated aircraft are specified in Federal Aviation Regulations (FAR) 43.13 and FAR 145.57. The responsibility for the continued airworthiness of the aircraft, which includes the replacement of parts, is the **responsibility** of the owner/operator as outlined in FAR 91.163, FAR 121.363, FAR 123.45, FAR 127.131 and FAR 135.143 (a).

4. **IDENTIFICATION OF THE APPROVED PARTS.** Approved serviceable replacement parts are identified as follows:
 - a. By an FAA Form 8130-3 (Formerly FAA Form 186), Airworthiness Approval Tag. An Airworthiness Approval Tag identifies a part or group of parts that have been approved by authorized FAA representatives.
 - b. By an FAA Technical Standard Order (TSO) number and identification mark that indicates the part or appliance has been manufactured under the requirements of FAR 37.
 - c. By an FAA/PMA symbol, together with the manufacturer's name, trademark or symbol, part number, and the make and model of the type certificated product on which the part is eligible for installation, stamped on the part. An FAA Parts Manufacturer Approval (FAA/PMA) is issued under FAR 21.305. The make and model information may be on a tag attached to the part.
 - d. By shipping ticket, invoice, or other document which provides evidence that the part was produced by a manufacturer holding an FAA Approved Production Inspection System issued under FAR 21, Subpart F, or by a manufacturer holding an FAA Production Certificate issued under FAR 21, Subpart G.
 - e. By a certificate of airworthiness for export issued by a foreign government under the provisions of FAR 21, Subpart N.

11. **KNOW YOUR SUPPLIER.** It has come to our attention that many reproduced parts and components, particularly instruments which have been manufactured by persons other than the original manufacturer, are available for purchase and installation on U.S. certificated aircraft. Often, an original part is used as a sample to produce duplicates. The reproduced parts appear to be as good as the original part; however, there are many unknown factors to be considered that may not be readily apparent to the purchaser, i.e., heat treating, plating, inspections, tests and calibrations. All too often the faulty part is not discovered until a malfunction or an accident occurs.

12. **SUMMARY.** In accordance with FAR's, certification of materials, parts, and appliances for return to service, for use on aircraft, is the responsibility of the person or agency who signs the approval. The owner/operator, as denoted in paragraph 3 of this advisory circular, is responsible for the continued airworthiness of the aircraft. To assure continued safety in aircraft operation, it is essential that great care be used when inspecting, testing, and determining the acceptability of all parts and materials. Particular caution should be exercised when the identity of materials, parts, and appliances cannot be established or when their origin is in doubt.

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SERVICE BULLETIN LIST

The following is a list of service bulletins which have been incorporated into this manual.

Service Bulletin	Date Incorporated
597A	October 1989
603	October 1989

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SECTION 1. INTRODUCTION AND SPECIFICATIONS

1.1 GENERAL

- A. This manual provides complete maintenance and overhaul instructions with illustrated parts list for High Tension Ignition Harnesses, manufactured by Teledyne Continental Motors, Aircraft Products, Mobile, Alabama 36601. TCM high tension harnesses conduct high voltage pulses from the magnetos to the spark plugs for reciprocating engine ignition.
- B. This manual is subdivided with sub-heads as listed in the Table of Contents. Revision service may be provided by ordering Form X40000. This manual may be included in Chapter 74-20 of applicable GAMA format publications.
- C. These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or particular problems arise which are not covered sufficiently for purchaser's purpose, the matter should be referred to Teledyne Continental Motors, Aircraft Products, Mobile, Alabama 36601.
- D. Good standard shop practices and safety precautions should be observed at all times to avoid damage to equipment and/or injury to personnel.

TABLE 101: ABBREVIATIONS

US Standard Unit	Abbreviation
Degrees Fahrenheit	°F
Inch	in.
Pound Inches	lb. in.
Pound Force	lbf
Pound (Mass)	lb
Pounds per Square Inch, Absolute	psia
Pounds per Square Inch Gage	psig
Feet	ft
Gallons	gal
Ounces	oz

- E. All maintenance instructions in this manual have been shop verified. Shop verified procedures are those by which the manufacturer has accomplished all Disassembly, Assembly, Testing and Fault Isolation by performing the functions described in this manual on equipment identical in configuration to that described.
- F. Dimensions are given in US Standard Units. For reference, abbreviations used are listed in Table 101.
- G. Numbers in parentheses following part nomenclature refer to item numbers in Illustrated Parts List Figure 1 unless otherwise specified.

**Table 102
Table of Leading Particulars**

Lubrication

Grommet (43) and Sleeves (33,46,47)	MS-122 Fluorocarbon Spray Miller Stephenson Chemical Company P. O. Box 950 Danbury, CT 06813
-------------------------------------	--

Testing

Continuity and Insulation strength	Use 11-8950-2 High Tension Lead Tester
------------------------------------	---

Torques

Spark Plug Coupling Nut ('B' Nut):	
5/8-24	90 - 95 lb. in.
3/4-20	110 - 120 lb. in.
Harness Securing Nuts (S-1200)	17 - 19 lb. in.
Harness securing screws (S-20 and S-200)	25 - 35 lb. in.

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SECTION 2. DESCRIPTION AND OPERATION

2.1 GENERAL DESCRIPTION

- A. TCM High Tension Ignition Harnesses, manufactured by Teledyne Continental Motors, Mobile, Alabama 36601 are designed to conduct ignition energy through radio shielded leads from magnetos to spark plugs and four, six and eight cylinder engines utilizing TCM S-20, S-200 and S-1200 Series Magnetos.

NOTE:

Harnesses used on TCM D-3000 and D-2000 Series Magnetos are covered in the latest revision of D-3000 Series High Tension Ignition Systems, Form X42003.

- B. Harness design depends on the following factors.
- (1) Lead length, lead routing, magneto rotation and engine firing order.
 - (2) Degree of pre-assembly. See paragraph C.
 - (3) Spark plug terminal type: 5/8-24, 3/4-20 straight or 3/4-20 elbow. See paragraph D.
 - (4) Type of magneto determines the shape of the outlet plate: S4-20 or -200, S6-20 or -200, S4-1200, S6-1200, or S8-1200.

- C. TCM High Tension Ignition Harnesses are supplied in one of the following forms:

- (1) Custom Dressed: Magneto and spark plug ends pre-assembled, all clamps and ties dressed. See Figure 201.
- (2) Custom Hybrid: Magneto and spark plug ends pre-assembled, only key clamps dressed. Most clamps and ties supplied as bag parts. See Figure 202.
- (3) Custom Ready-to-Fit: Magneto and spark plug ends pre-assembled, all clamps and ties supplied as bag parts. See Figure 203.
- (4) Universal Harness Kits and Outlet Kits: Spark plug ends pre-assembled,* magneto end must be cut and assembled to outlet plate in the field. See Figure 204.

- D. Spare leads with spark plug ends pre-assembled* are available in two lengths for TCM-only type kits and in five lengths for universal adapter kits. Part number suffix equals lead length in inches. See Figure 205.

* For 3/4-20 elbow types, elbow (35), spring (45), spring assembly (48) and sleeve (33) not included.

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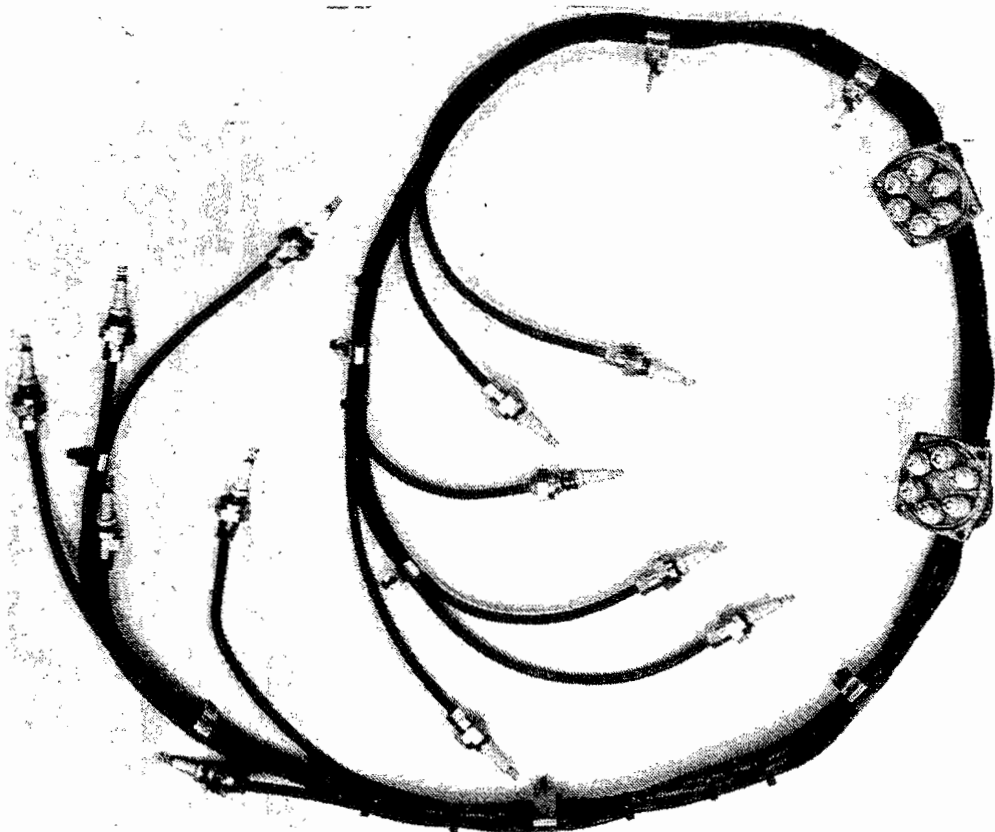


FIGURE 201: CUSTOM DRESSED HARNESS

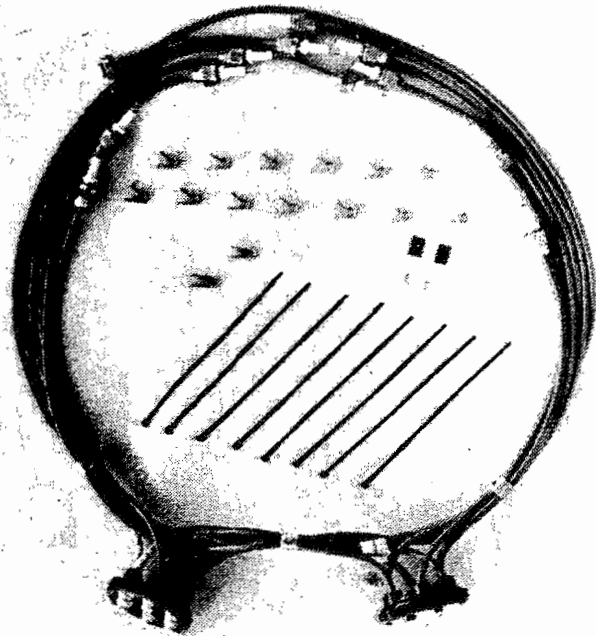


FIGURE 202: CUSTOM HYBRID HARNESS

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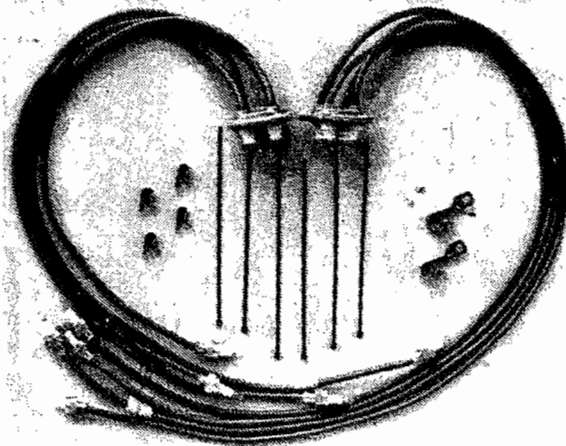


FIGURE 203: CUSTOM READY-TO-FIT HARNESS

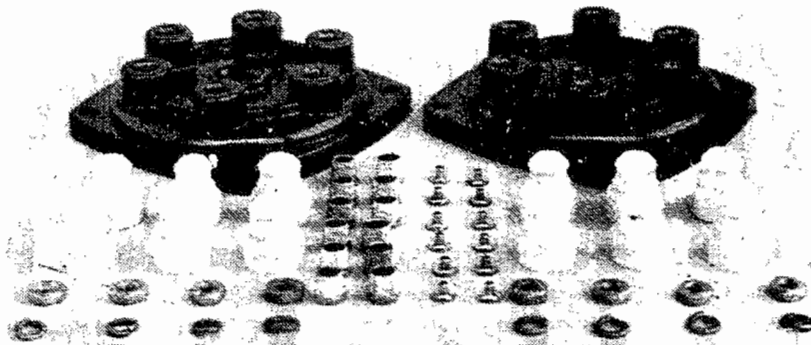
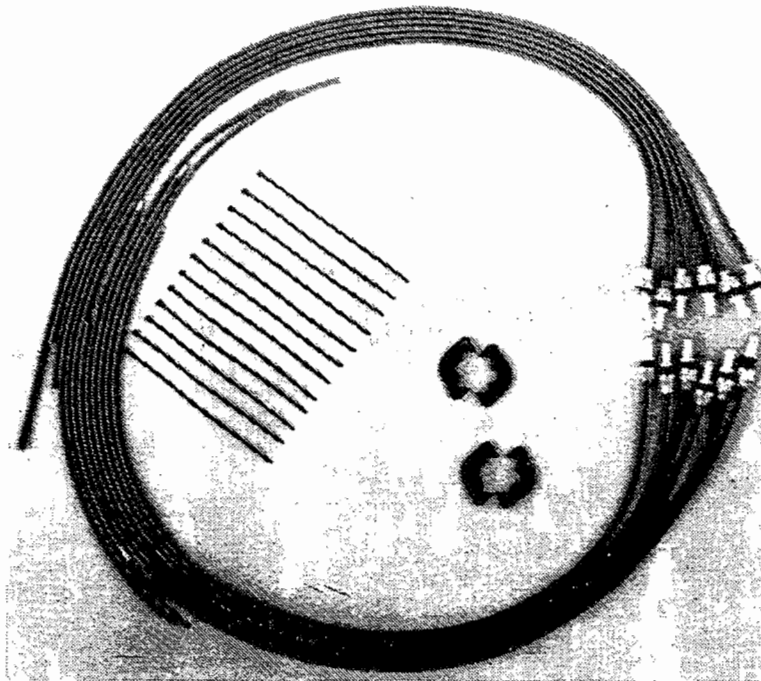


FIGURE 204: UNIVERSAL HARNESS KIT AND OUTLET KIT

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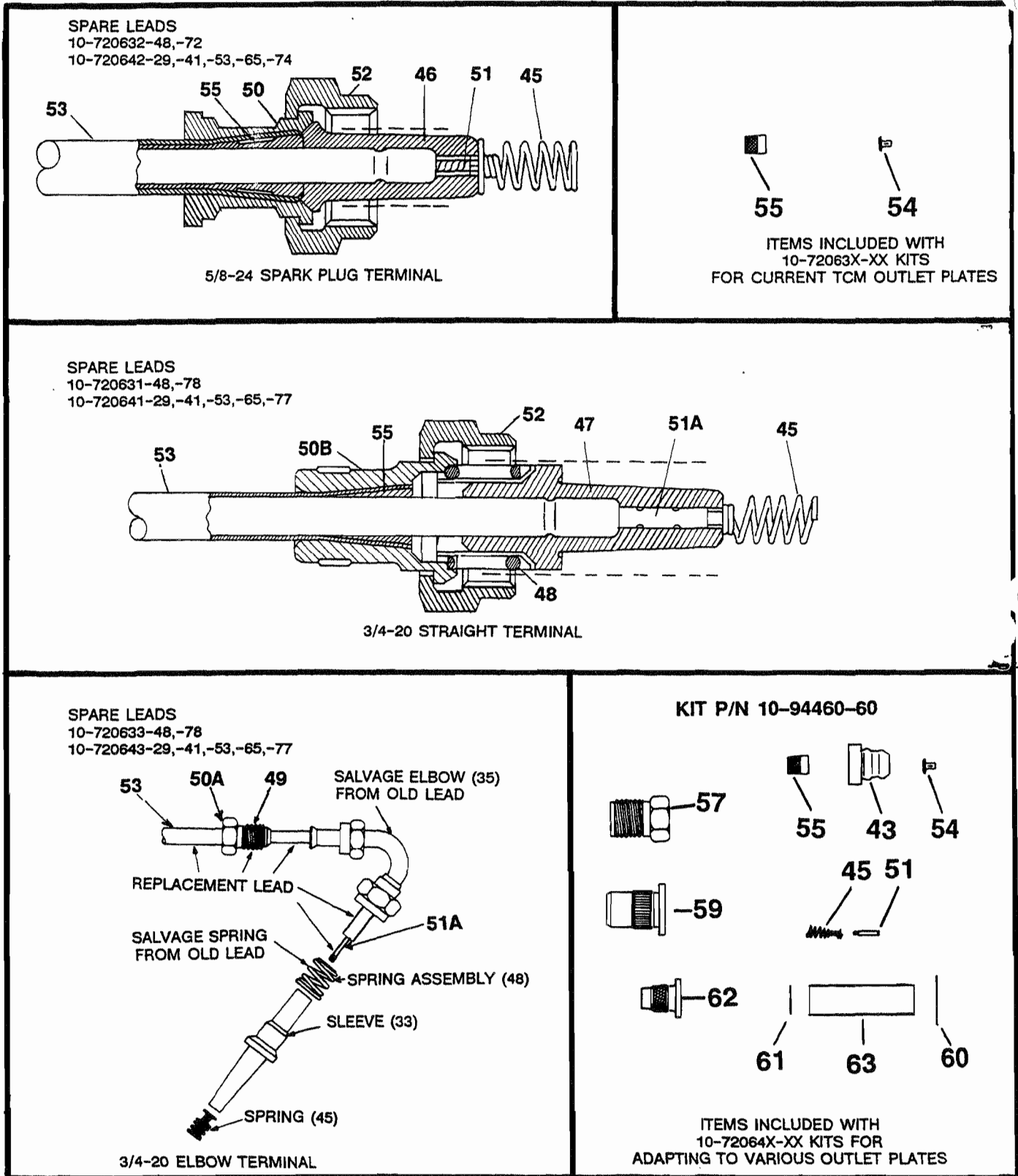


FIGURE 205: SPARE LEAD KITS

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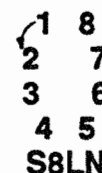
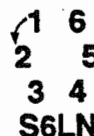
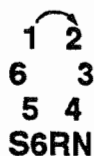
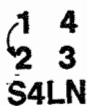
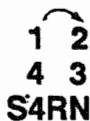
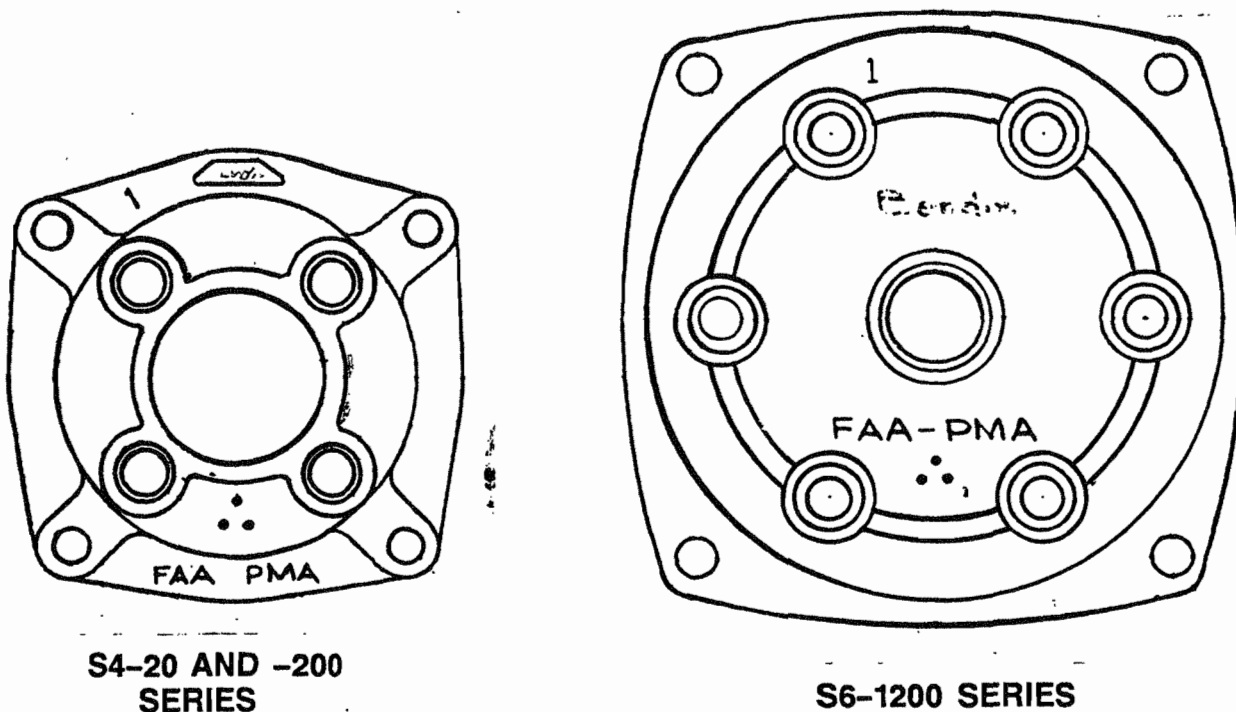


FIGURE 206: OUTLET ADAPTER PLATES

E.. Magneto/Harness Outlet Adapter Plates. The first cylinder in the firing order of a given engine is cylinder number one. Lead to this cylinder is always in upper left portion of outlet plate, identified with numeral 1. Depending on magneto rotation, the lead to the second cylinder in the firing order may be determined by the charts shown in Figure 206. Follow Engine Manufacturer's Instructions regarding lead routing, cylinder numbering and engine firing order.

F. Dura-Blue High Tension cable (53), used on all TCM High Tension Harnesses is available in 100 foot rolls. Dark blue silicone coating provides maximum abrasion resistance. Tightly woven tinned copper braid insures minimum radio interference radiation. Sixteen strands of braided stainless steel wire form the durable conductor. Flexibility is retained up to -65°F. The cable can withstand temperatures up to +400°F. Refer to Figure 207.

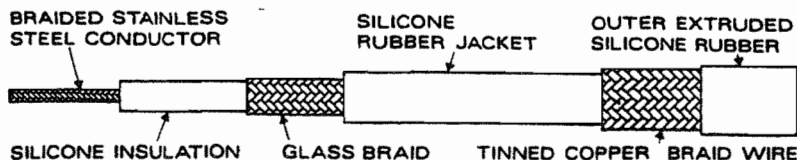


Figure 207

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2.2 RECOMMENDED MAINTENANCE AND OVERHAUL PRACTICES

- A. Harness components should be visually inspected whenever maintenance allows access. Remove and replace damaged components as necessary.
- B. Whenever replacement of pancake style outlet grommet and/or threaded style outlet plate is necessary, retrofit to individual grommets (43), current ferrule (55), eyelet (54) and current outlet plate (42).
- C. Harness should be discarded and replaced at engine overhaul.

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SECTION 3. TESTING AND FAULT ISOLATION

3.1 GENERAL

NOTE:

Refer to ILLUSTRATED PARTS LIST Figure 1 for Harness Exploded View.

Table 30
Testing and Fault Isolation materials and tools

Tool	Description
11-8950-2 High Tension Lead Tester Kit	Used to test insulation strength and continuity of harness leads

3.2 DETAILED TESTING PROCEDURES

A. Using continuity circuit of 11-8950-2 lead tester, test for continuity between each spark plug terminal spring (45) and its respective eyelet (54). Proper assembly may be confirmed by comparing engine manufacturer's recommendations for lead routing and firing order with spark plug numbers marked on "B" nuts (35,52)¹ and outlet plate (42) wiring arrangement. Continuity must also be observed from each outer ferrule (50,50A,50B) and elbow (35) to common ground at outlet plates (42).

B. Check harness leads for high voltage breakdown using the 11-8950-2 high tension lead tester as follows:

- (1) Connect red high voltage test lead to spark plug terminal spring (45). Connect black lead of tester to ferrule (50,50A,50B) or elbow (35) of the same lead assembly.
- (2) Depress push-to-test switch
- (3) Observe that indicator lamp flashes and gap fires simultaneously as long as switch is depressed. Whenever indicator lamp flashes and gap fails to fire, lead under test is defective and must be replaced.

NOTE:

High tension breakdown test may be performed from either spark-plug terminal end or outlet plate end of a given lead. Ensure opposite end is not adjacent to ground.

¹ Only factory assembled harnesses feature spark plug numbers stamped on nuts (35,52).

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3.3 FAULTISOLATION

- A. A fault isolation chart is provided as an aid for locating troubles thought to be in the ignition system.

SYMPTOM	PROBABLECAUSE	TEST
Engine Roughness Mag Drop off Check Out of Limits	Damaged ignition leads	Check leads for high voltage breakdown and continuity from correct outlet location to corresponding spark plug.
Radio Noise	<p>Frayed shielding at spark plug terminal, outlet plate (42) or intermediate chafing point on harness lead</p> <p>Inadequate shielding ground at spark plug terminal or outlet plate (42)</p>	<p>Remove and replace lead (44)</p> <p>Remove and replace inner ferrules (55) with current P/N 10-620109 ferrule following procedures in ASSEMBLY, paragraph 9.2</p>

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SECTION 4. DISASSEMBLY

4.1 GENERAL

- A. Refer to ILLUSTRATED PARTS LIST Figure 1 for Harness Exploded View.
- B. Refer to Table 401 for tools required for disassembly.
- C. Disassemble harness only to extent necessary to effect adequate repair.

Table 401
Disassembly Tools

Tool	Description
11-10386 Ferrule Pressing Tool	Used to remove inner ferrules (49,55) from outer ferrules (50, 50A, 50B) and outlet plates (42)

4.2 DETAILED DISASSEMBLY

- A. Inner ferrules (49,55) may be removed from outer ferrules (50,50A,50B) and/or outlet plate (42) using .25 inch diameter drift and arbor press or 11-10386 ferrule seating tool. (See Special Tools, Fixtures and Equipment, Figure 1003). See Figure 401.
- B. All other harness hardware may be disassembled using standard shop practices.
- C. Discard ferrules (49,55,62), eyelets (54) and terminals (51,51A) following disassembly. All other parts may be re-used on an on-condition basis.

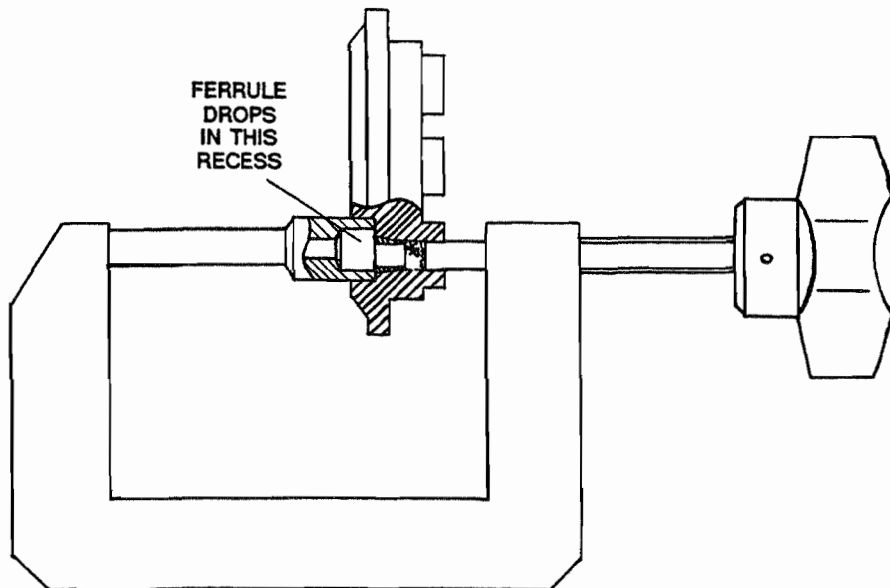


Figure 401
Removing Ferrule (55) from Adapter Plate (42)

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SECTION 5: CLEANING

5.1 GENERAL

NOTE:

Refer to ILLUSTRATED PARTS LIST Figure 1 for Harness Exploded View.

- A. Using a clean, dry, lint-free cloth, wipe accessible external surfaces free of grease, oil film or other contaminants.

5.2 DETAILED HARNESS CLEANING PROCEDURES

- A. The only approved cleaning solvents for this application are methyl-ethyl-ketone (MEK) and unleaded gasoline. These solvents are potentially harmful and must be used with caution in accordance with the following WARNINGS.

WARNING

Methyl-Ethyl-Ketone Fed Spec TT-M-261

- Flammable - Keep away from heat, sparks, and open flames.
- Use only with adequate ventilation.
- Avoid prolonged or repeated breathing of vapors.
- Avoid prolonged or repeated contact with skin. Prolonged contact may cause drying and irritation of skin.
- Keep in approved safety container.

WARNING

Unleaded Gasoline

- Flammable -- do not use near welding areas, near open flames, electrical sparks, or on very hot surfaces.
- Use only with adequate ventilation.
- Do not smoke when using it.
- Do not get in eyes, on skin, or on clothing.

- Avoid prolonged or repeated breathing of vapors.
 - Store in approved metal safety containers.
- (1) Using a clean lint free cloth moistened with methyl-ethyl-ketone (MEK) or unleaded gasoline, wipe the insulating sleeves (33,46,47) until free of contaminants.

CAUTION:

Use only MEK or unleaded gasoline.

- (2) Clean the contact spring (45) in a similar manner.
- (3) Dry the sleeve and springs with a gentle blast of compressed air not exceeding 30 psig.

WARNING

Cleaning with Compressed Air

- Use approved personnel protective equipment to protect eyes and face when using compressed air.
 - Maximum allowable air pressure for cleaning operation is 30 psi.
 - Do not direct airstream towards yourself or towards another person.
- B. Wipe exterior of harness, using a cloth moistened with MEK or unleaded gasoline, or a detergent and hot water solution. Dry thoroughly. See above Warnings.

CAUTION:

Do not immerse the harness in any of the cleaning solutions.

CAUTION

Use of chlorinated solvents ("tuner cleaners") for cleaning any portion of the harness may result in chemical reaction which will dissolve sleeve (33,46,47), grommet (43) and silicone portion of cable (53).

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SECTION 9: ASSEMBLY

9.1. GENERAL

Refer to ILLUSTRATED PARTS LIST Figure 1 for Harness Exploded View.

Refer to Table 901 for a list of materials and tools used during assembly.

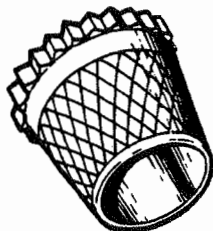
**Table 901
Assembly Tools and Materials**

Material/Tool	Description
MS-122 Fluorocarbon Spray Miller-Stephenson Chemical Company P. O. Box 950 Danbury, CT 06813	Used to lubricate sleeves (33,46,47) and grommets (43) at installation on engine
WT-111 M Crimping Tool (Must be modified. See Figure 906) Thomas & Betts Co., Inc. 1001 Frontier Road Bridgewater, NJ 08807-0993	Used to crimp eyelets (54) and terminals (51,51A) onto cable (53) conductor
11-9596 Braid Cutting Backup Tube	Used to protect inner silicone insulation when stripping tinned copper braid and blue silicone coating from cable (53)
11-10386 Ferrule Seating Tool	Used to remove and seat ferrule (55)

9.2 HARNESS ASSEMBLY PROCEDURES

A. General

In order to ensure positive grounding of radio shielding of cable (53), use of current design inner ferrule (55) is recommended. See Figure 901. For ease of identification, harnesses utilizing this ferrule are marked with three raised dots or pin punches in a configuration as shown in Figure 206. Upon field replacement of all ferrules (55), add identification mark.



10-620109

**Figure 901
Current Design Ferrule (55)**

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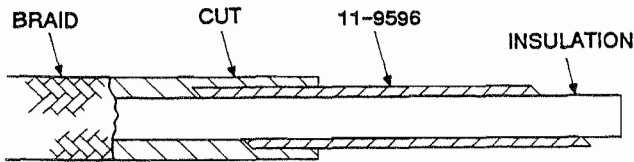


Figure 902
Cutting Metallic Braid from Cable

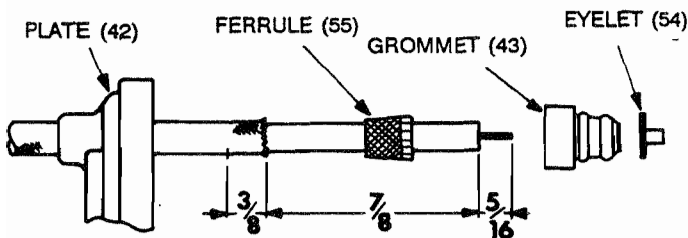


Figure 903
New Lead Parts Assembly

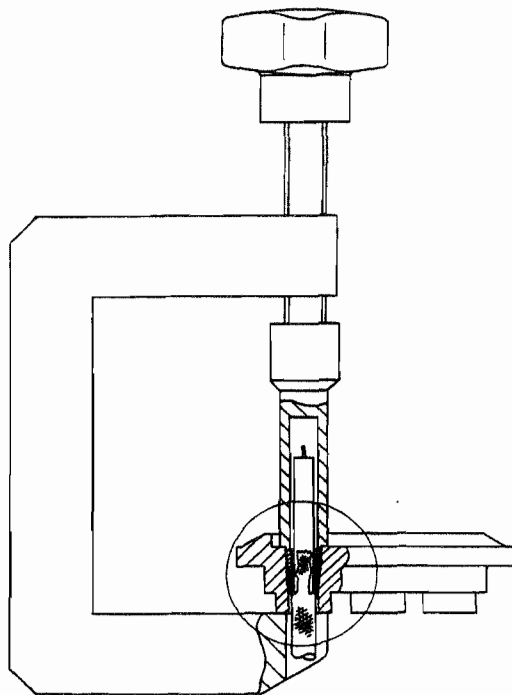


Figure 904
Ferrule Seating Tool in Position

9.2.1 Lead Assembly Replacement

NOTE:

Except for 3/4-20 elbow types, lead kits (44) are supplied with spark plug terminal fully assembled. For replacement of 3/4-20 elbow leads, salvage spring (48) and elbow (35) and purchase spring (45) and sleeve (33) separately. For all leads, salvage grommet (43).

- A. Disassemble harness as necessary to remove damaged lead. Press ferrule (55) from plate (42) using 0.25 inch drift or 11-10386 ferrule seating tool (see Figure 1004). Measure lead length and cut new lead slightly longer.
- B. Insert nylon tube 11-9596 between shielding and insulation to approximately 1 1/2 inch depth. See Figure 902.
- C. With nylon tube 11-9596 acting as a protective sleeve, cut off 7/8 inch of shielding and scrape off 3/8 inch Blue covering of remaining shielding.
- D. Remove nylon tube 11-9596 tool.
- E. Cut and remove 5/16 inch insulation from conductor to facilitate crimping of eyelet. See Figure 903.
- F. Insert replacement lead through plate (42)
- G. Place ferrule (55) over insulation and slide tapered end under braid. Cover approximately 3/4 of ferrule taper.
- H. Pull lead and ferrule back into plate (42). Braid should be flush with plate (42).
- I. Fully seat ferrule, (55), using 11-10386 ferrule seating tool, as shown in Figure 904. Ferrule (55) must seat flush to 0.031 in. below the adjacent surface of plate (42).
- J. Using 11-9596 tube, remove any shavings of blue coating and/or stray shielding strands from ferrule seating area. Use care not to nick silicone insulation.
- K. Install grommet (43) over insulation.

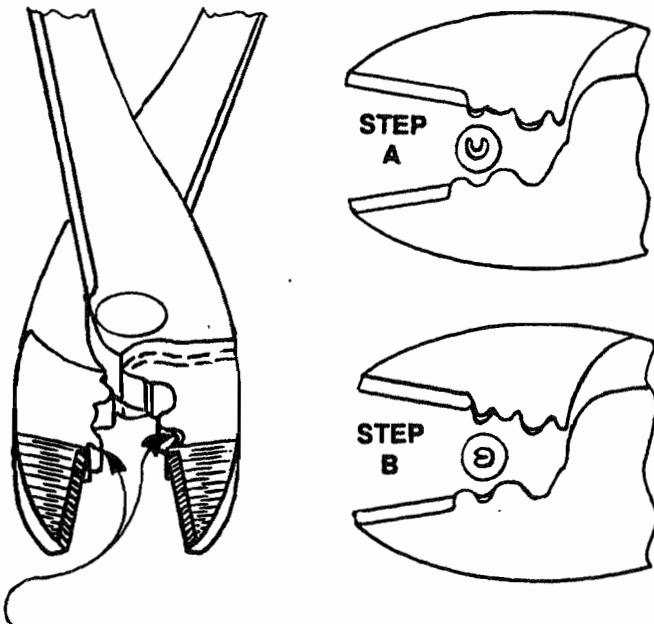
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L. Using modified WT-111 M crimping tool (see Figure 906), crimp eyelet (54) as follows:

- (1) Seat eyelet (54) over inner conductor flush against grommet (43)
- (2) Crimp eyelet (54) as shown in Figure 905.
- (3) Rotate tool 90° and crimp eyelet (54) a second time as shown in Figure 905. Trim excess conductor flush with eyelet.
- (4) Crimp shall have no breaks, cracks, voids or areas of distortion. Joint shall withstand 15 lb pull test. If these conditions are not met, remove and discard eyelet (54).

M. Pull conductor from spark plug terminal end of seat grommet (43) flush against plate (42). Milk outer braid for proper length. Dress lead with clamps and cable ties (31) as necessary. Clean sleeve (33,46,47) and grommet (43) as specified in CLEANING paragraph 5.3. Test lead as specified in TESTING AND FAULT ISOLATION, paragraph 3.3.



CONTOUR INDICATED EDGES ROUND WITH FILE. TEST WITH EYELETS (54) AND SCRAP CABLE TO ENSURE SATISFACTORY CRIMP QUALITY.

Figure 905
Eyelet (54) Crimping

9.2.2 Lead Assembly Replacement for Various Out-of-Production and Competitive Outlet Arrangements (Use 10-72064X-XX Lead Kits)

NOTE:

Pancake-style grommets are no longer available. Inspect grommet for burns, cracks or brittleness. If any such condition exists, replace pancake grommet with current grommets (43), ferrules (55) eyelets (54) and outlet plate (42). See kits P/N 10-94460-48, -49, -50 and -51 for S-20, S-200 and S-1200 types.

A. Prepare lead as specified in paragraph 9.2.1, steps A through F.

B. PLATE/COVER PREPARATION

- (1) Insert new lead in plate/cover hole. If it does not fit, follow steps (2) through (4).
- (2) Place a piece of masking tape or equivalent over the lead hole in inner side of plate/cover to retain metal chips.
- (3) Using a 9/32 inch drill or straight reamer, slowly enlarge hole in plate/cover taking care that cutting tool does not pierce masking tape.
- (4) Clean all chips from hole before carefully removing tape.

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C. S-20, S-200, S-700 and S-1200 adapter plate with pancake grommet (see Figure 906).

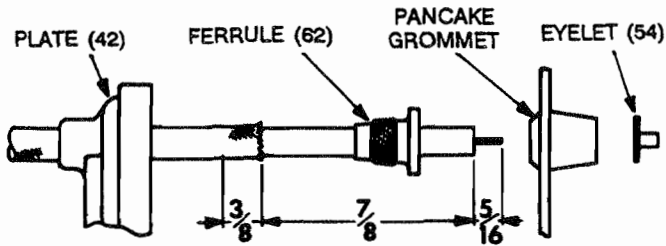


Figure 906

- (1) Insert replacement lead through plate.
- (2) Place ferrule (62) over insulation and slide tapered end under braid until braid covers approximately 1/2 of knurl on ferrule (62).
- (3) Pull lead and ferrule back into adapter plate (42).
- (4) Fully seat ferrule (62) with braid into plate (42) using 11-10386 Ferrule Seating Tool.
- (5) Insert lead into grommet with inner conductor extending beyond end of grommet.
- (6) Place eyelet (54) over inner conductor and crimp as described in paragraph 9.2.1, step L. Cut any excess inner conductor flush with eyelet.

- (3) Pull lead and ferrule back into bushing. Braid should be flush with bushing.
- (4) Fully seat ferrule with braid into bushing using 11-10386 Ferrule Seating Tool.
- (5) Install sleeve (63) over insulation.
- (6) Insert lead into plate (42) and grommet, with inner conductor extending beyond end of grommet.
- (7) Screw nut into plate fingertight. (For ease of performing step 8).
- (8) Place eyelet (54) over conductor and crimp as described in paragraph 9.2.1, step L.
- (9) Tighten nut (57) using suitable wrench.

D. S-20 and S-200 threaded outlet types (see Figure 907).

NOTE:

Strip shielding as shown, length may vary for various threaded type plates.

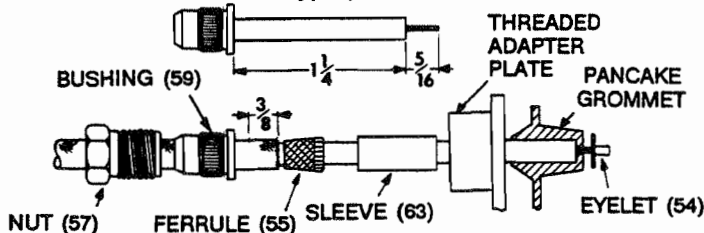


Figure 907

- (1) Insert replacement lead through nut (57) and bushing (59).
- (2) Place ferrule (55) over insulation and slide tapered end under braid until braid covers approximately 3/4 of ferrule taper.

E. Lycoming Plates

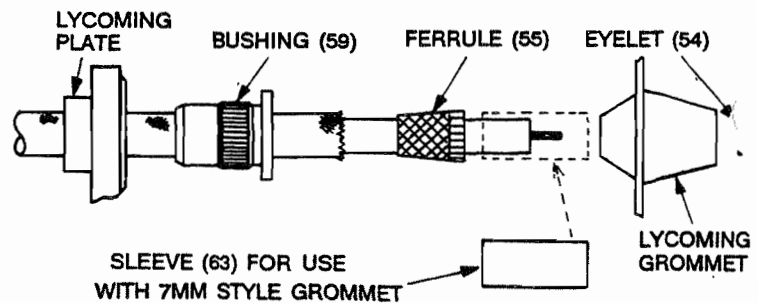


Figure 908

- (1) Prepare replacement lead as required.
- (2) Press bushing (59) into plate using 11-10386 Ferrule Seating Tool. The bushing may not require pressing into plate.
- (3) Install lead through plate and bushing (59)
- (4) Place ferrule (55) over insulation and slide tapered end under braid until braid covers approximately 3/4 of ferrule.
- (5) Pull lead and ferrule (55) into bushing and plate.
- (6) Fully seat ferrule using 11-10386 Ferrule Seating Tool

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- (7) Insert lead through grommet with inner conductor extending beyond end of grommet. (For 7MM grommet place sleeve over insulation).
- (8) Place eyelet over conductor and crimp as described in paragraph 9.2.1, step L. Cut any excess inner conductor flush with eyelet.

F. Slick 400 and 600 Series.

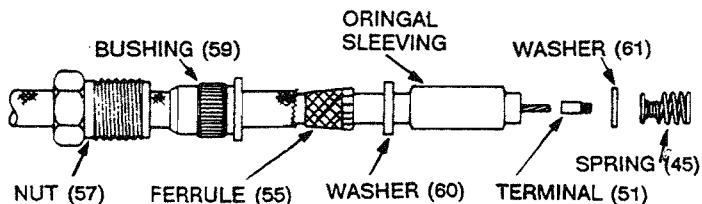


Figure 909

- (1) Prepare replacement leads as required.
- (2) Install lead through nut (57) and bushing (59).
- (3) Place ferrule (55) over insulation and slide tapered end under braid until braid covers approximately 3/4 of ferrule.
- (4) Pull lead and ferrule (55) into bushing (59).
- (5) Fully seat ferrule (55) into bushing (59) using 11-10386 Ferrule Seating Tool.
- (6) Install terminal (51) over conductor and crimp using modified WT-111 M crimp tool. See paragraph 9.2.3, step C(5). Trim excess conductor.
- (7) Install washer (60) and original sleeve over insulation.
- (8) Install washer (61) over terminal. Screw spring on terminal.

G. Slick 4200 and 6200 Series

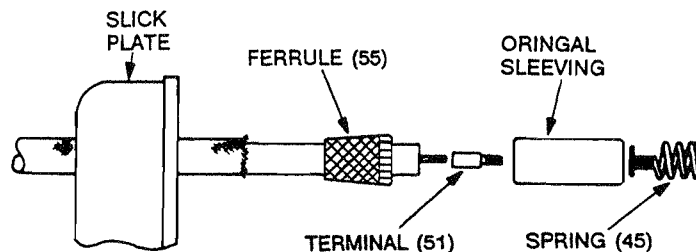


Figure 910

- (1) Prepare replacement lead as required.
- (2) Insert replacement lead through plate.
- (3) Place ferrule (55) over insulation and slide tapered end under braid until braid covers approximately 3/4 of ferrule taper.
- (4) Pull lead and ferrule into adapter plate.
- (5) Fully seat ferrule into plate using 11-10386 Ferrule Seating Tool.
- (6) Install terminal (51) over conductor and crimp using modified WT-111 M crimp tool. Crimp terminal (51) only once to provide joint capable of withstanding 15 lb. pull test. Avoid damage to threaded portion of terminal (51). Trim excess conductor.
- (7) Place original sleeve over insulation and screw spring (45) on terminal.

- H. Following lead replacement, clean grommets as described in CLEANING paragraph 5.2. Test replaced leads as specified in TESTING AND FAULT ISOLATION, paragraph 5.2. Dress lead onto harness and engine with clamps and cable ties (31) as necessary.

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9.2.3 Assemble Spark Plug Terminals

A. 3/4-20 elbow spark plug terminals (see Figure 911).

- (1) Insert 11-9596 nylon tube between shielding and insulation to approximately 4 inch depth.
- (2) With nylon tube 11-9596 acting as a protective sleeve, cut off 4 inches of sleeving. Using nylon tube to protect insulation, scrape 3/8 in. blue coating from end of braided copper shielding.
- (3) Remove nylon tube and strip 3/8 inch of insulation from conductor.
- (4) Crimp terminal (51A) to conductor, using modified WT-111 M crimping tool.

NOTE:

Crimp terminal (51A) only once to provide joint capable of withstanding 15 lb pull test. Avoid damage to threaded portion of terminal.

- (5) Place outer ferrule (50A) over terminal (51A) past insulation and into shielding of cable.
- (6) Place ferrule (49) over terminal (51A) into insulation and start under shielding of cable.
- (7) Feed terminal (51A) through elbow (35).
- (8) Tighten nut on elbow (35) onto outer ferrule (50A) to seat ferrule (49). Nut may then be loosened until installation on engine is complete.
- (9) Slide sleeve (33) over insertion tool (Figure 912). Slide spring (48) over sleeve (33). Tapered side of spring retainer must rest against on sleeve (33).
- (10) Screw insertion tool to terminal (51A) and work sleeve (33) off of tool into elbow (35). Unscrew insertion tool.

NOTE:

It may be necessary to lubricate the cable and insulating sleeve with a thin film of isopropyl alcohol to facilitate assembly.

- (11) Install spring (45) onto terminal (51A).
- (12) Clean terminal as described in CLEANING, paragraph 5.2
- (13) Test lead as specified in TESTING AND FAULT ISOLATION, paragraph 3.2.

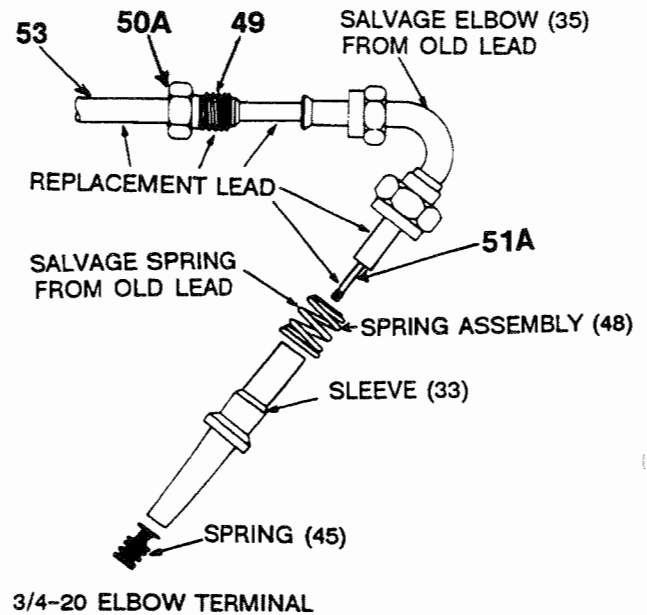


Figure 911
Elbow End Hardware

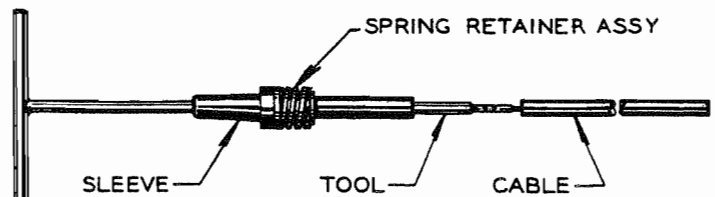


Figure 912
Using the Assembly Tool

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B. 3/4-20 straight spark plug terminals.

- (1) Follow steps B through E of paragraph 9.2.1.
- (2) Assemble nut (52) and ferrule (50B) onto cable (53).
- (3) Place ferrule (55) over insulation and slide tapered end under braid. Cover approximately 3/4 of ferrule taper.
- (4) Position outer ferrule (50B) snug against inner ferrule (55). Seat parts together using 11-10386 ferrule seating tool.
- (5) Crimp terminal (51A) onto conductor using modified WT-111 M Crimping Tool.

NOTE:

Crimp terminal (51A) only once to provide joint capable of withstanding 15 lb. pull test. Avoid damage to threaded portion of terminal.

- (6) Assemble spring (48) and sleeve (47) onto lead. Tapered side of spring retainer must rest against taper on sleeve (47). Use assembly tool shown in Figure 912 as necessary.
- (7) Assemble spring (45) onto terminal (51A).
- (8) Clean terminal as described in CLEANING, paragraph 5.2.
- (9) Test lead as specified in TESTING AND FAULT ISOLATION, paragraph 3.2.

C. 5/8-24 spark plug terminals.

- (1) Follow steps B through E of paragraph 9.2.1.
- (2) Assemble nut (52) and ferrule (50) onto cable.
- (3) Place ferrule (55) over insulation and slide tapered end under braid. Cover approximately 3/4 of ferrule taper.
- (4) Position outer ferrule (50) snug against inner ferrule (55). Seat parts together using 11-10386 ferrule seating tool.

- (5) Crimp terminal (51) onto conductor using modified WT-111 M Crimping Tool.

NOTE:

Crimp terminal (51) only once to provide joint capable of withstanding 15 lb. pull test. Avoid damage to threaded portion of terminal.

- (6) Assemble sleeve (46) onto lead. Use assembly tool shown in Figure 912 as necessary.
- (7) Assemble spring (45) onto terminal (51).
- (8) Clamp (11), screw (5) and nut (7) may be assembled loosely at this time. Do not tighten fasteners until terminal is installed in spark plug on engine.
- (9) Clean terminal as described in CLEANING, paragraph 5.1.
- (10) Test lead as specified in TESTING AND FAULT ISOLATION, paragraph 3.2.

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9.2.4 INSTALLATION ON ENGINE

- A. If used, insert gasket between plate (42) and magneto. Install outlet plate (42) onto magneto (number one cable will be in upper left). Evenly draw down nuts (65) and lockwashers (66) or screws. Apply 17-19 lb. in. torque to harness securing nuts (65) or 25-35 lb. in. to screws.
- B. Carefully dress the high tension spark plug leads of the ignition harness to the engine in accordance with engine manufacturer's instructions for the particular engine. Dress leads away from hot spots, such as manifolds, and sharp edges which might cause heat damage or chafing. When clamps are tightened, ensure leads will not be crushed. Leads should be taut to prevent chafing due to vibration, but not so taut as to produce undue strain on leads.
- C. Prior to seating spark plug lead terminal in plug barrel use MS-122 fluorocarbon spray on spark plug terminal insulating sleeves (33,46,47) to prevent heat from sticking sleeve to spark plug barrel. See Figure 913.

CAUTION:

Avoid contamination of terminal sleeves (33,46,47) during installation to spark plug wells.

- D. After all harness leads have been properly dressed to the engine recheck all clamp securing screws for tightness. Fasten coupling nuts to the proper spark plugs and apply torque as specified in Table 902. Using a second wrench, do not allow ferrules to turn while tightening nuts.

Table 902

<u>Spark Plug Coupling Thread</u>	<u>Torque In. Lb.</u>
5/8-24	90-95
3/4-20	110-120

- E. If used, secure elbow nuts (35) to ferrule (50A) in final position.

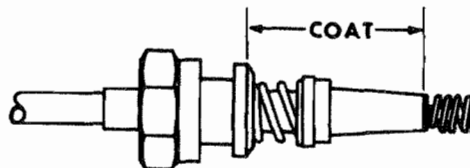


Figure 913. Lubricating Sleeve

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SECTION 10. SPECIAL TOOLS, FIXTURES AND EQUIPMENT

Refer to Table 1001 for a list of special tools, fixtures and equipment. Figures 1001 through 1003 illustrate fabrication of special tools required for disassembly and assembly. All measurements are in inches, unless otherwise noted.

Table 1001

Item	Tool No.	Nomenclature	Application
1	11-8950-2	High Tension Lead Tester Kell-Strom Tool Co., Inc. 214 Church Street Wethersfield, CT06102	Used to test lead assemblies for continuity and insulation strength.
2	11-9596	Tube, Backup, Braid Cutting Kell-Strom Tool Co., Inc. 214 Church Street Wethersfield, CT06102	Used to protect inner silicone insulation when stripping tinned copper braid and blue silicone coating from cable (53)
3	11-10386	Ferrule Seating Tool Kell-Strom Tool Co., Inc. 214 Church Street Wethersfield, CT06102	Used to remove and seat ferrule (55)
4	WT-111M	Crimping Tool (Must be modified see Figure 905) Thomas and Betts Co., Inc. 1001 Frontier Rd. Bridgewater, NJ 08807-0993	Used to crimp eyelets (54 and terminals (51,51A) onto cable (53).

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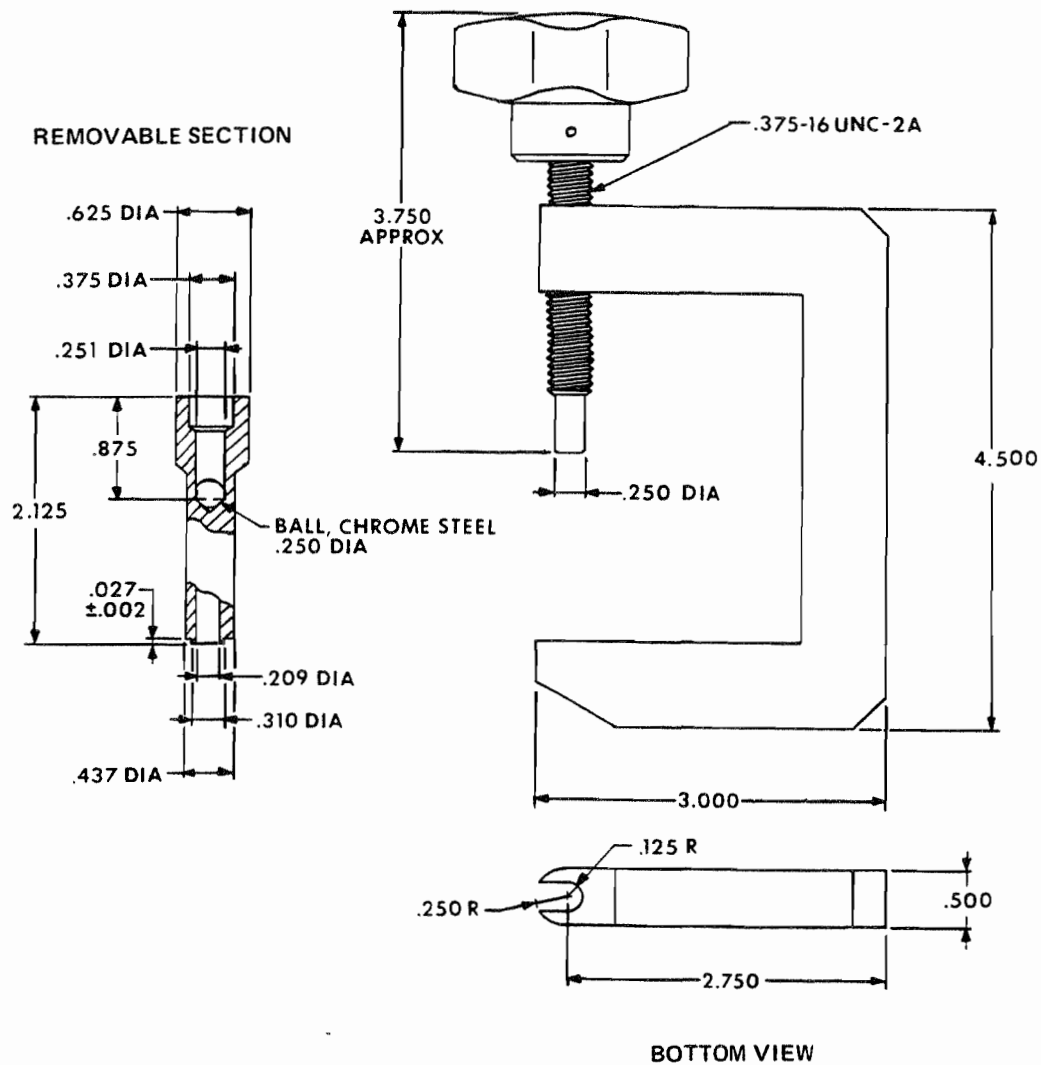


Figure 1001
11-10386 Ferrule Seating Tool

NOTE:

11-10386 tool is intended for replacement of ferrule (55) with remainder of harness dressed to aircraft engine. In the shop, ferrule (55) may be removed and replaced using threaded portion and removable section of tool as arbor press drifts. A special arbor press spider may be made using bottom view of tool as a guide. See Figure 1002.

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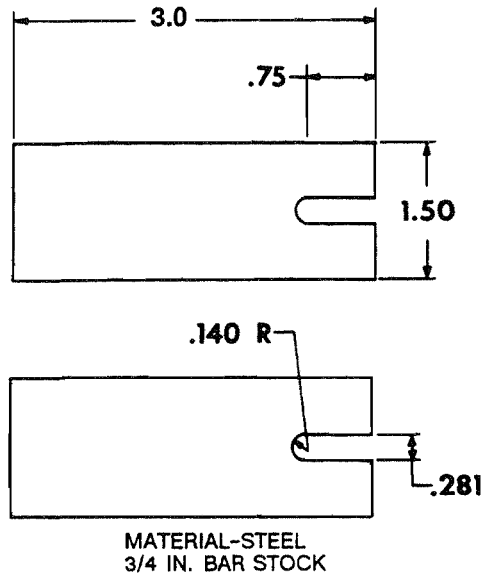


Figure 1002
Arbor Spider for Pressing Ferrules

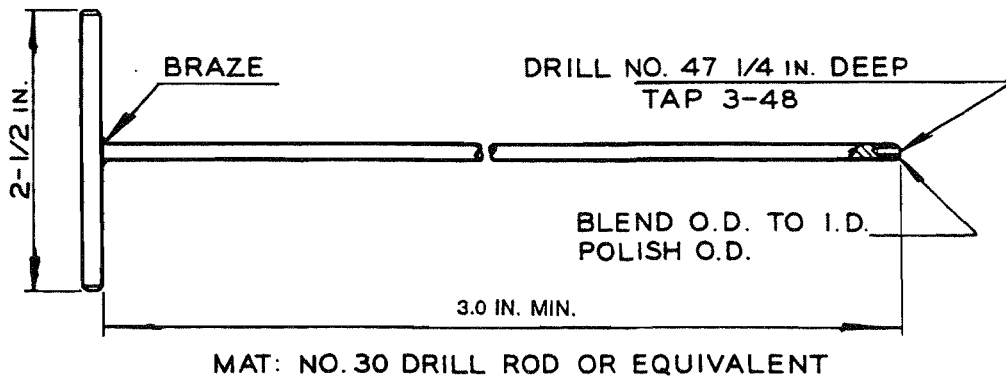


Figure 1003
Elbow Sleeve Assembly Tool

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INTENTIONALLY

LEFT

BLANK



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SECTION 11 - ILLUSTRATED PARTS LIST TABLE 1101: EQUIPMENT COVERED

Custom Harnesses 10-720XXX-X Series

Part Number	Magneto Series	Spark Plug Terminals	For Parts List See Table	Harness Type
10-720095-5	S6-20/200	3/4-20E	1103	CD
10-720095-7	S6-1200	3/4-20E	1103	CD
10-720095-9	S6-20/200	5/8-24S	1103	CH
10-720095-105	S6-20/200	3/4-20S	1103	CH
10-720095-106	S6-20/200	3/4-20S	1103	CH
10-720095-107	S6-1200	3/4-20S	1103	CH
10-720095-108	S6-1200	3/4-20S	1103	CH
10-720095-118	S6-1200	3/4-20S	1103	CH
10-720178-104	S6-20/200	3/4-20S	1103	CD
10-720315-102	S4-20/200	3/4-20S	1103	CH
10-720320-2	S6-20/200	3/4-20E	1103	CD
10-720320-102	S6-20/200	3/4-20S	1103	CD
10-720320-104	S6-20/200	3/4-20S	1103	CD
10-720320-108	S6-20/200	3/4-20S	1103	CD
10-720320-109	S6-20/200	3/4-20S	1103	CD
10-720325-4	S4-20/200	5/8-24S	1103	CRTF
10-720326-2	S4-20/200	5/8-24S	1103	CD
10-720326-3	S4-20/200	3/4-20E	1103	CD
10-720365-102	S6-20/200	3/4-20S	1103	CH
10-720405-3	S6-20/200	5/8-24S	1103	CH
10-720410-3	S4-20/200	5/8-24S	1103	CD
10-720420-2	S6-20/200	3/4-20E	1104	CD
10-720420-102	S6-20/200	3/4-20S	1104	CH
10-720420-103	S6-1200	3/4-20S	1104	CH
10-720420-113	S6-1200	3/4-20S	1104	CH
10-720435-1	S6-1200	3/4-20E	1104	CD
10-720435-3	S6-1200	3/4-20E	1104	CD
10-720435-4	S6-1200	3/4-20E	1104	CD
10-720435-5	S6-1200	3/4-20E	1104	CD
10-720445-1	S6-1200	3/4-20E	1104	CD
10-720465-2	S6-1200	3/4-20E	1104	CD
10-720470-2	S6-1200	5/8-24S	1104	CD
10-720470-3	S6-1200	5/8-24S	1104	CD
10-720470-4	S6-1200	5/8-24S	1104	CD
10-720470-5	S6-1200	5/8-24S	1104	CD
10-720470-6	S6-20/200	5/8-24S	1104	CD
10-720480-1	S6-1200	3/4-20E	1104	CD

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TABLE 1101: EQUIPMENT COVERED (Continued)
Custom Harnesses (continued)
10-720XXX-X Series

Part Number	Magneto Series	Spark Plug Terminals	For Parts List See Table	Harness Type
10-720480-3	S6-1200	3/4-20E	1104	CD
10-720505-1	S4-1200	5/8-24S	1104	CD
10-720510-1	S4-1200	5/8-24S	1104	CD
10-720510-2	S4-1200	5/8-24S	1104	CD
10-720510-3	S4-1200	5/8-24S	1104	CD
10-720510-4	S4-1200	5/8-24S	1104	CD
10-720515-1	S6-1200	5/8-24S	1105	CD
10-720515-3	S6-1200	3/4-20E	1105	CD
10-720515-5	S6-1200	3/4-20E	1105	CD
10-720515-203	S6-1200	3/4-20E	1105	CD
10-720570-4	S8-1200	3/4-20E	1105	CD
10-720570-14	S8-1200	3/4-20E	1105	CD
10-720580-1	S6-1200	3/4-20E	1105	CD
10-720580-11	S6-1200	3/4-20E	1105	CD
10-720605-3	S6-20/200	3/4-20E	1105	CD
10-720605-4	S6-1200	3/4-20E	1105	CD
10-720605-5	S6-20/200	5/8-24S	1105	CD
10-720640-1	S6-20/200	5/8-24S	1105	CD
10-720645-1	S4-20/200	5/8-24S	1105	CD
10-720645-2	S4-20/200	3/4-20S	1105	CD
10-720655-1	S4-20/200	3/4-20S	1105	CRTF
10-720690-1	S4-20/200	5/8-24S	1105	CRTF
10-720695-1	S4-20/200	5/8-24S	1105	CRTF
10-720700-1	S4-20/200	5/8-24S	1105	CRTF
10-720710-1	S4-20/200	5/8-24S	1105	CD
10-720710-101	S4-20/200	3/4-20S	1105	CD
10-726714-1	S6-20/200	3/4-20S	1105	CRTF
10-726714-2	S6-20/200	3/4-20S	1105	CRTF
10-726814-1	S6-1200	3/4-20S	1105	CRTF

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TABLE 1101: EQUIPMENT COVERED (Continued)
Custom Ready-to-Fit Harnesses
10-721XXX-X Series

Part Number	Magneto Series	Spark Plug Terminals	For Parts List See Table	Harness Type
10-721002-2	S6-1200	3/4-20S	1106	CRTF
10-721005-2	S4-20/200	5/8-24S	1106	CRTF
10-721008-2	S4-1200	3/4-20S	1106	CRTF
10-721009-2	S6-1200	5/8-24S	1106	CRTF
10-721011-2	S4-1200	5/8-24S	1106	CRTF
10-721013-2	S6-20/200	3/4-20S	1106	CRTF
10-721014-2	S6-20/200	3/4-20S	1106	CRTF
10-721015-2	S4-20/200	3/4-20S	1106	CRTF
10-721018-2	S6-1200	5/8-24S	1106	CRTF
10-721019-2	S4-1200	3/4-20S	1106	CRTF
10-721020-2	S6-1200	3/4-20S	1106	CRTF
10-721021-2	S6-1200	3/4-20S	1106	CRTF
10-721022-2	S6-1200	3/4-20S	1106	CRTF
10-721024-2	S6-20/200	5/8-24S	1106	CRTF
10-721025-2	S4-1200	5/8-24S	1106	CRTF
10-721026-2	S6-20/200	5/8-24S	1106	CRTF
10-721033-2	S6-20/200	5/8-24S	1106	CRTF
10-721034-2	S6-20/200	5/8-24S	1106	CRTF
10-721036-2	S4-1200	5/8-24S	1106	CRTF
10-721040-2	S4-1200	5/8-24S	1106	CRTF
10-721041-2	S4-1200	5/8-24S	1106	CRTF
10-721042-2	S4-1200	5/8-24S	1106	CRTF

Harness Type Codes:

- CD - Custom Dressed
- CH - Custom Hybrid
- CRTF - Custom Ready-To-Fit

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TABLE 1101: EQUIPMENT COVERED
UNIVERSAL HARNESS KITS, 10-94460 SERIES

Universal Spare Leads, 10-72064X-XX Series

Part Number	Nomenclature	See Table
10-94460-47	Outlet Kit - fits 12 leads to Slick 400, 600, 4200 or 6200 Series Magnetos	1107
10-94460-48	Outlet Kit S6-20/S6-200	1107
10-94460-49	Outlet Kit S4-20/S4-200	1107
10-94460-50	Outlet Kit S4-1200	1107
10-94460-51	Outlet Kit S6-1200	1107
10-94460-52	6 Cylinder, 12 leads, 3/4-20 straight	1107
10-94460-53	6 Cylinder, 12 leads, 5/8-24 straight (with elbow clamps)	1107
10-94460-54	4 Cylinder, 8 leads, 3/4-20 Straight	1107
10-94460-55	4 Cylinder, 8 leads, 5/8-24 straight (with elbow clamps)	1107
10-94460-56	6 Cylinder, 12 leads, 3/4-20 elbow	1107
10-94460-57	4 Cylinder, 8 leads, 3/4-20 elbow	1107
10-94460-59	Outlet Kit - fits one lead to Slick 400, 600, 4200 or 6200 Series Magneto	1107
10-94460-60	Outlet Kit - Universal - fits one lead to current, out of production and competitive outlet arrangements	1107
10-720641-29	Spare Lead, 3/4-20 straight with universal outlet kit, 29 in.	1107
10-720641-41	Spare Lead, 3/4-20 straight with universal outlet kit, 41 in.	1107
10-720641-53	Spare Lead, 3/4-20 straight with universal outlet kit, 53 in.	1107
10-720641-65	Spare Lead, 3/4-20 straight with universal outlet kit, 65 in.	1107
10-720641-77	Spare Lead, 3/4-20 straight with universal outlet kit, 77 in.	1107
10-720642-29	Spare Lead, 5/8-24 straight with universal outlet kit, 29 in.	1107
10-720642-41	Spare Lead, 5/8-24 straight with universal outlet kit, 41 in.	1107
10-720642-53	Spare Lead, 5/8-24 straight with universal outlet kit, 53 in.	1107
10-720642-65	Spare Lead, 5/8-24 straight with universal outlet kit, 65 in.	1107
10-720642-74	Spare Lead, 5/8-24 straight with universal outlet kit, 74 in.	1107
10-720643-29	Spare Lead, 3/4-20 elbow with universal outlet kit, 29 in.	1107
10-720643-41	Spare Lead, 3/4-20 elbow with universal outlet kit, 41 in.	1107
10-720643-53	Spare Lead, 3/4-20 elbow with universal outlet kit, 53 in.	1107
10-720643-65	Spare Lead, 3/4-20 elbow with universal outlet kit, 65 in.	1107
10-720643-77	Spare Lead, 3/4-20 elbow with universal outlet kit, 77 in.	1107

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TABLE 1102
SUPERSEDED AND DISCONTINUED ITEMS

OLD P/N	SUPERSEDED BY	Supersedure of 10-320XXX-X "Red" custom harnesses and 10-620XXX-X "Light Blue" custom harnesses may be determined as follows:	
10-94460-19	10-94460-48 and 10-94460-52	10-320XXX-X	10-720XXX-X
10-94460-20	10-94460-48 and 10-94460-53	10-620XXX-X	10-720XXX-X
10-94460-21	10-94460-49 and 10-94460-52	Except for the following:	
10-94460-22	10-94460-49 and 10-94460-53	10-320095-5	10-720095-105
10-94460-23	10-94460-59	10-320095-6	10-720095-106
10-94460-24	10-94460-52	10-320095-7	10-720095-107
10-94460-25	10-94460-53	10-320095-8	10-720095-108
10-94460-26	10-94460-54	10-320420-2	10-720420-102
10-94460-27	10-94460-55	10-320420-3	10-720420-103
10-94460-28	10-94460-47		
10-94460-29	10-94460-52	10-520005-2	10-721005-2
10-94460-30	10-94460-53	10-520015-2	10-721015-2
10-94460-31	10-94460-54	10-520325-4	10-720325-4
10-94460-32	10-94460-55	10-720095-206	*
10-94460-33	10-94460-48	10-720470-13	*
10-94460-34	10-94460-49	10-720475-1	*
10-94460-35	10-94460-50	10-720475-3	*
10-94460-36	10-94460-51	10-720605-1	*
10-94460-39	10-94460-52	10-720635-1	*
10-94460-40	10-94460-53	10-721017-2	*
10-94460-41	10-94460-54	10-721028-2	*
10-94460-42	10-94460-55	10-721035-2	*
10-94460-43	10-94460-56	10-721046-2	*
10-94460-44	10-94460-57		
10-94460-45	10-94460-60		
10-94460-46	10-94460-59		
10-94460-58	10-94460-60		
10-157277-1	*		
10-157278-1	*		
10-157279-1	*		
10-157290-1	*		

* Superseding Part Number will be supplied upon request.

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HIGH TENSION IGNITION HARNESSSES

TABLE 1103
CUSTOM HARNESSSES 10-720095-5 THROUGH 10-720410-3

IPL Figure-1	Description	Part Number	10-720095-5	10-720095-7	10-720095-9	10-720095-105	10-720095-106	10-720095-107	10-720095-108	10-720095-118	10-720178-104	10-720315-102	10-720320-2	10-720320-102	10-720320-104	10-720320-108	10-720320-109	10-720325-4	10-720326-2	10-720326-3	10-720365-102	10-720405-3	10-720410-3
			AR	AR						AR	AR	AR								AR	AR		AR
1	. TUBING, Spiral, 25 ft.	10-180157-2	AR	AR																			
2	. SCREW, Self Tapping hex	10-320151	2	2	2	2	2	2	2	2	2	2											
3	. SCREW, Round hd.	10-320411	1	1	1	1	1	1	1	1	2	1	2	2	1	2	3	2	1	1	2	1	
4	. SCREW	10-91431-8	1	1							7	4					2		1	1		4	1
5	. SCREW, W/Lock Washer, 8-32 thd.	10-35936-6																8				12	8
**	. SCREW, 1/4-20 thd.	10-91426-12																				4	
**	. WASHER, Lock, Flat, External Tooth	10-90706-5																				4	
6	. NUT, Speed, Flat	10-320150	2	2	2	2	2	2	2	2		2											
7	. NUT, Plain, hex, 8.32 thd.	10-90404-4																8					8
8	. NUT, Self-Locking, hex, 10-32	10-13799	1	1							7	4					2		1	1		4	1
10	. CLAMP, Cable mounting	10-620036-4			2	2	2	2	2	2			2	2	3	2	1					2	
11	. CLAMP, Elbow 70°	10-320283																8				12	8
12	. CLAMP, Single Cable Mtg.	10-620026-1									2	4											
	. CLAMP, Single Cable Mtg.	10-620026-2	8	8	12	12	13	12	13	13		4					4	4	2				2
	. CLAMP, Single Cable Mtg.	10-620026-3									2												
	. CLAMP, Single Cable Mtg.	10-620026-5	1	1																			
13	. CLAMP, Cable Mtg.	10-620028-1									2		2	2	2	2	4		3	3		2	3
	. CLAMP ASSY, Cable Mtg.	10-620027-2																	1	1			
	. CLAMP, Cable Mtg.	10-620028-2	1	1		2		2	2									2	1			2	1
	. CLAMP, Cable Mtg.	10-620028-3									2											2	
14	. CLAMP, Triple Cable Mtg.	10-620029-1	1	1							2										1		
	. CLAMP, Triple Cable Mtg.	10-620029-6									2					6							
15	. CLAMP, Cable Mtg.	10-620032-1									1	2	2	2	2	2			1	1			
	. CLAMP, Cable Mtg.	10-620032-2																					
15a	. CLAMP	10-320300-2																				2	1
16	. CLAMP, Four Cable Mtg.	10-620033-3																2	1	1			
	. CLAMP	10-620033-2										2											
17	. CLAMP, Cable Mtg.	10-620038-1									2		2	2	1	2	3					2	1
	. CLAMP, Cable Mtg.	10-620038-2																					
	. CLAMP, Cable Mtg.	10-620038-3			1		1	1	1	1													
	. CLAMP, Cable Mtg.	10-620038-4	1	1																			
18	. CLAMP ASSY., Cable Mounting	10-620027-1																			2	3	
21	. CLAMP, Cable Mounting	10-620037-4	2	2																			
22	. CLAMP ASSY., Cable Mounting	10-620034-1																				2	
23	. BRACKET, Wiring Harness Mtg., 90°	10-89027-4																	1	1			
	. BRACKET, Wiring Harness Mtg., 90°	10-85491									1												
24	. BRACKET, Wiring Harness Mtg.	10-78916									6						2					2	

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HIGH TENSION IGNITION HARNESSSES

TABLE 1103
CUSTOM HARNESSSES 10-720095-5 THROUGH 10-720410-3 (continued)

IPL Figure-1	Description	Part Number	10-720095-5	10-720095-7	10-720095-9	10-720095-105	10-720095-106	10-720095-107	10-720095-108	10-720095-118	10-720178-104	10-720315-102	10-720320-2	10-720320-102	10-720320-104	10-720320-108	10-720320-109	10-720325-4	10-720326-2	10-720326-3	10-720365-102	10-720405-3	10-720410-3	
25	. BRACKET, Harness Mtg.	10-78918	1	1																				
28	. BRACKET, Harness Mtg.	10-320328										4												
31	. CABLE TIE, 8.0 IN.	10-620013	32	31	12	12	9	13	12	11	6	10	26	26	11	25	31	6	12	12	28	20	10	
33	. SLEEVE, Terminal Insulating	10-320582	12	12								12									8			
35	. ELBOW ASSY., 70' x 3/4-20 . ELBOW ASSY., 90' x 3/4-20 . ELBOW ASSY., 110' x 3/4-20	10-320573-1 10-320573-2 10-320573-3	6 5 1	6 5 1										12							8			
36	. PLATE, Cable Supporting	10-620039-1									4						4					4		
37	. PLATE, Cable Supporting . PLATE, Spark Plug Cable	10-620039-5 10-320546																				8	4	
39	. GROMMET, Rubber	10-320502-1																				1		
41	. SLEEVING, Elec., Insulating	10-180016-37																					AR	
42	. PLATE, Cable Outlet, S4-20/200 . PLATE, Cable Outlet, S6-20/200 . PLATE, Cable Outlet, S6-1200 . PLATE, Cable Outlet, S6-1200/Press.	10-620001-4 10-620001-6 10-620052-6 10-620062-6	2		2	2	2		2	2		2	2	2	2	2	2	2	2	2	2	2	2	
43	. GROMMET, Distributor	10-320777	12	12	12	12	12	12	12	12	12	8	12	12	12	12	12	8	8	8	12	12	8	
44	. LEAD ASSY., 3/4-20 Straight . LEAD ASSY., 3/4-20 Straight . LEAD ASSY., 5/8-24 Straight . LEAD ASSY., 5/8-24 Straight . LEAD ASSY., 3/4-20 Elbow . LEAD ASSY., 3/4-20 Elbow	10-720631-48 10-720631-78 10-720632-48 10-720632-72 10-720633-48 10-720633-78				12	12	12	12	12	10	8		10	10	9	9				12			
			11	12														8	8		6	8		
			1									10	2							8	6			
45	. SPRING, Spark Plug Lead *	10-32326	12	12	12	12	12	12	12	12	12	8	12	12	12	12	12	8	8	8	12	12	8	
46	. SLEEVE, Insulating	10-320473			12													8	8			12	8	
47	. SLEEVE, Insulating	10-320466				12	12	12	12	12	12	8		12	12	12	12				12			
48	. SPRING ASSY.*	10-94225-2	12	12		12	12	12	12	12	12	8	12	12	12	12	12			8	12			
49	. FERRULE, Inner	10-620011	12	12									12							8				
50	. FERRULE, Outer	10-620022			12													8	8			12	8	
50a	. FERRULE, Outer	10-620024	12	12									12								8			
50B	. FERRULE, Outer	10-620091				12	12	12	12	12	12	8		12	12	12	12					12		
51	. TERMINAL, Wire, Short	10-320468			12													8	8			12	8	
51A	. TERMINAL, Wire, Long	10-320467	12	12		12	12	12	12	12	12	8	12	12	12	12	12			8	12			
52	. NUT, Hex, Coupling 5/8-24 . NUT, Hex, Coupling 3/4-20	10-320618 10-320621			12													8	8			12	8	
						12	12	12	12	12	12	8		12	12	12	12			8	12			
53	. CABLE, 100 feet	10-180209-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	
54	. EYELET	10-163012	12	12	12	12	12	12	12	12	12	8	12	12	12	12	12	8	8	8	8	12	12	8
55	. FERRULE, Inner	10-620109	12	12	24	24	24	24	24	24	24	16	12	24	24	24	24	16	16	8	24	24	16	

* Note items 45 and 48 are not included in Kits P/N 10-720633-48 and 10-720633-78

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HIGH TENSION IGNITION HARNESSSES

TABLE 1104

CUSTOM HARNESSSES 10-720420-2 THROUGH 10-720510-4 (continued)

IPL Figure-1	Description	Part Number	10-720420-2	10-720420-102	10-720420-103	10-720420-113	10-720435-1	10-720435-3	10-720435-4	10-720435-5	10-720445-1	10-720465-2	10-720470-2	10-720470-3	10-720470-4	10-720470-5	10-720470-6	10-720480-1	10-720480-3	10-720505-1	10-720510-1	10-720510-2	10-720510-3	10-720510-4
			AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
1	. TUBING, Spiral, 25 ft.	10-180157-2	AR	AR	AR	AR		AR	AR	AR	AR							AR	AR	AR	AR			AR
2	. SCREW, Self Tapping hex	10-320151		2	2	2																		
3	. SCREW, Round hd.	10-320411	1	1	1	1		2		2		1	5	2	4	5	5	2	2	2	2			2
4	. SCREW	10-91431-8			1	1	1	2	2	1	3		2		2	2	2	2	4	6	4	4		4
5	. SCREW, W/Lock Washer, 8-32 thd.	10-35936-6										6	2			12	12							
6	. NUT, Speed, Flat	10-320150		2	2	2																		
7	. NUT, Plain, hex, 8-32 thd	10-90404-4											6	2		12	12					1		8
8	. NUT, Self Locking, hex, 10-32	10-13799			1	1	1		2	1	3		2			2	2	2		6		4		4
9	. WASHER, Spring Lock	10-92879-43			1	1																		
10	. CLAMP, Cable Mounting	10-620036-4	2	2	2	2	4	3		2	3							2	4					
11	. CLAMP, Elbow 70'	10-320283											6	2		12	12					1		8
12	. CLAMP, Single Cable Mtg. . CLAMP, Single Cable Mtg. . CLAMP, Single Cable Mtg.	10-620026-1 10-620026-2 10-620026-3	8	12	12	12			2	3	4		2	2	2		2	13	13	3	2	2	2	2
							4	6		2		4						1	1	3	4	1	1	4
13	. CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP, Cable Mtg.	10-620028-1 10-620028-2 10-620028-3					7	4	1	2	4	4	1	2	2	2		2	1		3	4	4	6
												6							1	1	2	2	1	4
14	. CLAMP, Triple Cable Mtg. . CLAMP, Triple Cable Mtg. . CABLE, Triple Cable Mtg.	10-620029-1 10-620029-5 10-620029-6						1	1	2		1						1	1					
													3	2	1		3							
												2	5	3	1	3	3							
15	. CLAMP, Cable Mtg. . CLAMP, Cable Mtg.	10-620032-1 10-620032-4								1												1		
15a	. CLAMP	10-320300-2											2			2	2							
16	. CLAMP, Four Cable Min.	10-620033-1																		2	2			2
17	. CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP, Cable Mtg.	10-620038-1 10-620038-2 10-620038-3	1	1				1		2			1	1	1	1	1	2	2					
19	. CLAMP, Cable Mounting	10-620036-3							2	2		1												
20	. CLAMP, Four Cable Mtg. . CLAMP, Four Cable Mtg.	10-620031-1 10-620031-2						1							4	1	3		4					
21	. CLAMP, Cable Mounting . CLAMP, Cable Mounting	10-620037-3 10-620037-4										1												
												1												
22	. CLAMP ASSY., Cable Mounting	10-620034-1							2									2	2					
23	. BRACKET, Wiring Harness Mtg., 90' . BRACKET, Wiring Harness Mtg., 90'	10-89027-4 10-89027-17					1	1	2	1												2		
24	. BRACKET, Wiring Harness Mtg.	10-78916						1							2					3	2	1		2
25	. BRACKET, Harness Mtg.	10-78918		1	1																			
26	. BRACKET, Harness Mtg.	10-320328																		3	2	1		8

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TABLE 1104
CUSTOM HARNESSSES 10-720420-2 THROUGH 10-720510-4 (continued)

IPL Figure-1	Description	Part Number	10-720420-2	10-720420-102	10-720420-103	10-720420-113	10-720435-1	10-720435-3	10-720435-4	10-720435-5	10-720445-1	10-720465-2	10-720470-2	10-720470-3	10-720470-4	10-720470-5	10-720470-6	10-720480-1	10-720480-3	10-720505-1	10-720510-1	10-720510-2	10-720510-3	10-720510-4
			27	. BRACKET, Flat	10-320431									1							2	4		
31	. CABLE TIE, 8.0 in.	10-620013	23	10	11	11	22	23	31	30	21	16	24	12	19	24	16	39	37	16	17	17	14	17
32	. CLAMP	10-620048																					2	
33	. SLEEVE , Terminal Insulating	10-320582	12				12	12	12	12	12	12						12	12					
35	. ELBOW ASSY., 70° x 3/4-20	10-320573-1	4				3		1	6	6	4												
	. ELBOW ASSY., 90° x 3/4-20	10-320573-2	2				7	7	4	2	1	6						8	8					
	. ELBOW ASSY., 110° x 3/4-20	10-320573-3					2	5	7	4	5	2						4	4					
	. ELBOW, 130° x 3/4-20	10-320573-4	6																					
36	. PLATE, Cable Supporting	10-620039-1									4		4	4	4		4							
37	. PLATE, Cable Supporting	10-620039-5																		4	4	4	4	4
40	. GROMMET	10-19933					1	1																
42	. PLATE, Cable Outlet, S6-20/200	10-620001-6	2	2													2							
	. PLATE, Cable Outlet, S4-1200	10-620052-4																			2	2	2	2
	. PLATE, Cable Outlet, S6-1200	10-620052-6			2		2	2	2	2	2	2	2	2	2	2		2	2					
	. PLATE, Cable Outlet, S6-1200 Press.	10-620062-6				2																		
43	. GROMMET, Distributor	10-320777	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	8	8	8	8	8
44	. LEAD ASSY., 3/4-20 Straight	10-720631-48		12	12	12																		
	. LEAD ASSY., 5/8-24 Straight	10-720632-48											12	10	10	12	12			8	8	8	6	8
	. LEAD ASSY., 5/8-24 Straight	10-720632-72												2	2								2	
	. LEAD ASSY., 3/4-20 Elbow	10-720633-48	12				9	10	10	9	8	6						10	10					
	. LEAD ASSY., 3/4-20 Elbow	10-720633-78					3	2	2	3	4	6						2	2					
45	.. SPRING, Spark Plug Lead*	10-32326	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	8	8	8	8	8
46	.. SLEEVE, Insulating	10-320473											12	12	12	12	12			8	8	8	8	8
47	.. SLEEVE, Insulating	10-320466		12	12	12																		
48	.. SPRING RETAINER ASSY.*	10-94225-2	12	12	12	12	12	12	12	12	12							12	12					
49	.. FERRULE, Inner	10-620011	12				12	12	12	12	12							12	12					
50	.. FERRULE, Outer	10-620022											12	12	12	12	12			8	8	8	8	8
50A	.. FERRULE, Outer	10-620024	12				12	12	12	12	12							12	12					
50B	.. FERRULE, Outer	10-620091	12	12	12	12																		
51	.. TERMINAL, Wire, Short	10-320468											12	12	12	12	12			8	8	8	8	8
51A	.. TERMINAL, Wire, Long	10-320467	12	12	12	12	12	12	12	12	12							12	12					
52	.. NUT, Hex, Coupling 5/8-24	10-320618											12	12	12	12	12			8	8	8	8	8
	.. NUT, Hex, Coupling 3/4-20	10-320621		12	12	12																		
53	.. CABLE, 100 feet	10-180209-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
54	.. EYELET	10-163012	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	8	8	8	8	8
55	.. FERRULE, Inner	10-620109	12	24	24	24	12	12	12	12	12	12	24	24	24	24	24	12	12	16	16	16	16	16

*: Items 45 and 48 are not included in kits 10-720633-48 and 10-720633-78

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TABLE 1105
CUSTOM HARNESSSES 10-720515 AND UP

IPL Figure-1	Description	Part Number	10-720515-1	10-720515-3	10-720515-5	10-720515-203	10-720570-4	10-720570-14	10-720580-1	10-720580-11	10-720605-3	10-720605-4	10-720605-5	10-720640-1	10-720645-1	10-720645-2	10-720655-1	10-720690-1	10-720695-1	10-720700-1	10-720710-1	10-720710-101	10-726714-1	10-726714-2	10-726814-1		
1	. TUBING, Spiral, 25 ft.	10-180157-2																									
2	. SCREW, Self-Tapping Hex	10-320151																									
3	. SCREW, Round Hd.	10-320411	3		1				2	2	4	4	4	3	1	1		2	2	2				1	1	1	
4	. SCREW	10-91431-8		2	1	2	2	2	2	2	12	12	12	3													
5	. SCREW, W/Lock Washer, 8-32 thd.	10-35936-6											8	6	8												
6	. NUT, Speed, Flat	10-320150																						2	2	2	
7	. NUT, Plain, hex, 8-32 thd.	10-90404-4											8	6	8												
8	. NUT, Self Locking, hex, 10-32	10-13799		2	1	2		2	2	2	12	12	12	3													
10	. CLAMP, Cable Mounting	10-620036-4		1		1	2		2	2														2	2	2	
11	. CLAMP, Elbow 70°	10-32083											8	6	8												
12	. CLAMP, Single Cable Mtg. . CLAMP, Single Cable Mtg. . CLAMP, Single Cable Mtg.	10-620026-1 10-620026-2 10-620026-3	4	2	1	2	9	9	2	2	2	2	2	2	2	2		4	4	4			2	2	13	8	12
13	. CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP, Cable Mtg.	10-620028-1 10-620028-2 10-620028-3	4	2	1	2			2	2	4	4	4	2	4	4						1	1	2	2	2	
14	. CLAMP, Triple Cable Mtg. . CLAMP, Triple Cable Mtg. . CLAMP, Triple Cable Mtg.	10-620028-1 10-620029-5 10-620029-6	2		2	1	1	1	1					2													
15	. CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP	10-620032-1 10-620032-2 10-620032-4 10-620032-7					4	4						1													
16	. CLAMP, Four Cable Mtg. . CLAMP, Four Cable Mtg.	10-620033-3 10-620033-1												2	1	1		2	2	2							
17	. CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP, Cable Mtg.	10-620038-1 10-620038-2 10-620038-3 10-620038-4	2		1				2	2	2	2	2												1	1	1
18	. CLAMP ASSY., Cable Mounting	10-620027-1											1														
19	. CLAMP, Cable Mounting	10-620036-1					1	1	1	1																	
20	. CLAMP, Four Cable Mtg.	10-620031-2	1											1													
21	. CLAMP, Cable Mounting	10-620037-4		1		1																					
22	. CLAMP ASSY., Cable Mounting	10-620034-1					1	1	4	4																	
23	. BRACKET, Wiring Harness Mtg., 90° . BRACKET, Wiring Harness Mtg., 90° . BRACKET ASSY., 90°	10-89027-4 10-89027-17 10-320664			1				1	1	2	2	2														
24	. BRACKET, Wiring Harness Mtg.	10-78916							1	1				1													
25	. BRACKET, Harness Mtg.	10-78918												1													
27	. BRACKET ASSY., Flat	10-320562									2	2	2														
28	. BRACKET, Flat	10-320554		2		2					2	2	2														
31	. CABLE TIE, 8.0 in.	10-620013	23	29	33	29	45	45	20	20	20	20	22	31	15	15		6	6	6	23	23	11	31	11		
33	. SLEEVE, Terminal Insulating	10-320582		12	12	12	16	16	12	12	12	12															

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TABLE 1105
CUSTOM HARNESSSES 10-720515 AND UP

IPL Figure-1	Description	Part Number	10-720515-1	10-720515-3	10-720515-5	10-720515-203	10-720570-4	10-720570-14	10-720580-1	10-720580-11	10-720605-3	10-720605-4	10-720605-5	10-720640-1	10-720645-1	10-720645-2	10-720655-1	10-720690-1	10-720695-1	10-720700-1	10-720710-1	10-720710-101	10-726714-1	10-726714-2	10-726814-1
			33	. SLEEVE, Terminal Insulating	10-320582	12	12	12	16	16	12	12	12	12											
34	. BUSHING	10-382815			2																				
35	. ELBOW ASSY., 70° x 3/4-20	10-320573-1			1						6	6													
	. ELBOW ASSY., 90° x 3/4-20	10-320573-2	12	3	12	16	16	8	8	6	6														
	. ELBOW ASSY., 110° x 3/4-20	10-320573-3		8				4	4																
36	. PLATE, Cable Supporting	10-620039-1	4	4																		4			
	. PLATE, Cable Supporting	10-620039-2																							
37	. PLATE, Cable Supporting	10-620039-5															4	4	4	4					
38	. BRACKET	10-320658				2	2																		
40	. GROMMET, Split, Rubber	10-320563									2	2	2												
42	. PLATE, Cable Outlet, S4-20/200	10-620001-4									2		2	2	2	2	2	2	2	2	2	2	2	2	2
	. PLATE, Cable Outlet, S6-20/200	10-620001-6																							
	. PLATE, Cable Outlet, S6-1200	10-620052-6	2	2	2			2			2														2
	. PLATE, Cable Outlet, S8-1200	10-620052-8				2																			
	. PLATE, S6-1200, Pres.	10-620062-6							2																
	. PLATE, S8-1200, Pres.	10-620062-8						2																	
42a	. PLATE, S6-1200, Thrd., Pres.	10-620060-6			2																				
43	. GROMMET, Distributor	10-320777	12	12	12	12	16	16	12	12	12	12	12	12	8	8	8	8	8	8	8	8	12	12	12
44	. LEAD ASSY., 3/4-20 Straight	10-320631-48		10												8						8	12	11	12
	. LEAD ASSY., 3/4-20 Straight	10-320631-78		2																			1		
	. LEAD ASSY., 5/8-24 Straight	10-720632-48	10										6	12	8		8	8	8	8	8				
	. LEAD ASSY., 5/8-24 Straight	10-720632-72	2										6												
	. LEAD ASSY., 3/4-20 Elbow	10-720633-48			8	10	7	7	6	6	7	6													
	. LEAD ASSY., 3/4-20 Elbow	10-720633-78			4	2	9	9	6	6	5	6													
45	.. SPRING, Spark Plug Lead*	10-32326	12	12	12	12	16	16	12	12	12	12	12	12	8	8	8	8	8	8	8	8	12	12	12
46	.. SLEEVE, Insulating	10-320473	12										12	12	8		8	8	8	8	8				
47	.. SLEEVE, Insulating	10-320466		12												8						8	12	12	12
48	.. SPRING ASSY.*	10-94225-2		12	12	12	16	16	12	12	12	12			8							8	12	12	12
49	.. FERRULE, Inner,	10-620011			12	12	16	16	12	12	12	12													
50	.. FERRULE, Outer	10-620022	12										12	12	8		8	8	8	8	8				
50A	.. FERRULE, Outer	10-620024			12	12	16	16	12	12	12	12													
50B	.. FERRULE, Outer	10-620091		12											8							8	12	12	12
51	.. TERMINAL, Wire, Short	10-320468	12										12	12	8		8	8	8	8	8				
51A	.. TERMINAL, Wire, Long	10-320467		12	12	12	16	16	12	12	12	12			8							8	12	12	12
52	.. NUT, Hex, Coupling 5/8-24	10-320618	12										12	12	8		8	8	8	8	8				
	.. NUT, Hex, Coupling 3/4-20	10-320621													8							8	12	12	12
53	.. CABLE, 100 feet	10-180209-1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
54	.. EYELET	10-163012	12	12	12	12	16	16	12	12	12	12	12	12	8	8	8	8	8	8	8	8	8	12	12
55	. FERRULE, Inner	10-620109	24	24	12	12	16	16	12	12	12	12	24	24	16	16	16	16	16	16	16	16	16	24	24

* NOTE: Items 45 and 48 are not included in kits 10-720633-48 and 10-720633-78.

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TABLE 1106
READY-TO-FIT HARNESSSES 10-721XXX-X SERIES

IPL Figure-1	Description	Part Number	10-721002-2	10-721005-2	10-721008-2	10-721009-2	10-721011-2	10-721013-2	10-721014-2	10-721015-2	10-721018-2	10-721019-2	10-721020-2	10-721021-2	10-721022-2	10-721024-2	10-721025-2	10-721026-2	10-721033-2	10-721034-2	10-721036-2	10-721040-2	10-721041-2	10-721042-2
			AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
1	. TUBING, Spiral, 25 ft.	10-180157-2	AR							AR														
10	. CLAMP, Cable mounting	10-620036-4	4		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
12	. CLAMP, Single Cable . CLAMP, Single Cable	10-620026-2 10-620026-3	4 4	2 1	4 4	4 4	4 4	4 4	4 4	2 1	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4	4 4
13	. CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP, Cable Mtg. . CLAMP	10-620028-1 10-620028-2 10-620028-3 10-620028-6	4 4 4 2		2 2 8	2 4 4	2 2 8	2 4 4	2 4 4	2 3 2	2 4 4	2 2 8	2 4 4	2 4 4	2 4 4	2 4 4	2 4 8	2 4 4	2 4 4	2 4 4	2 2 8	2 2 8	2 2 8	2 2 8
14	. CLAMP, Triple Cable	10-620029-5	7		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7				
15	. CLAMP, Cable Mtg.	10-620032-4	7	1	2	7	2	7	7	1	7	2	7	7	7	7	2	7	7	7	2	2	2	2
19	. CLAMP, Cable Mounting	10-620036-1	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
31	. CABLETIE	10-620013	16	18	10	16	10	16	16	18	16	10	16	16	16	16	10	16	16	16	10	10	10	10
36	. PLATE, Cable Supporting	10-620039-1			4					4		4	4	4	4	4	4	4	4					
37	. PLATE, Cable Supporting	10-620039-5		4	4	4			4		4				4					4	4	4	4	4
42	. PLATE, Outlet, S4-20/200 . PLATE, Outlet, S6-20/200 . PLATE, Outlet, S4-1200 . PLATE, Outlet, S6-1200	10-620001-4 10-620001-6 10-620052-4 10-620052-6	2	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
43	. GROMMET, Distributor	10-320777	12	8	8	12	8	12	12	8	12	8	12	12	12	12	8	12	12	12	8	8	8	8
44	. LEAD ASSY., 3/4-20 Straight . LEAD ASSY., 3/4-20 Straight . LEAD ASSY., 5/8-24 Straight . LEAD ASSY., 5/8-24 Straight	10-720631-48 10-720631-78 10-720632-48 10-720632-72	10 2	8			6	12	8		8	10	8	10										
45	. SPRING, Spark Plug Lead	10-32326	12	8	8	12	8	12	12	8	12	8	12	12	12	12	8	12	12	12	8	8	8	8
46	. SLEEVE, Insulating	10-320473		8		12	8			12					12	8	12	12	12	12	8	8	8	8
47	. SLEEVE, Insulating	10-320466	12	8			12	12	8		8	12	12	12										
48	. SPRINGRETAINERASSY.	10-94225-2	12	8			12	12	8		8	12	12	12										
50	. FERRULE, Outer	10-620022		8		12	8			12					12	8	12	12	12	12	8	8	8	8
50A	. FERRULE, Outer	10-620091	12	8			12	12	8		8	12	12	12										
51	. TERMINAL, Wire, Short	10-320468		8		12	8			12					12	8	12	12	12	12	8	8	8	8
51A	. TERMINAL, Wire, Long	10-320467	12	8			12	12	8		8	12	12	12										
52	. NUT, Hex, Coupling 5/8-24 . NUT, Hex, Coupling 3/4-20	10-320618 10-320621	12	8		12	8			12					12	8	12	12	12	12	8	8	8	8
53	. CABLE, 5MM, 100 ft.	10-180209-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
54	. EYELET	10-163012	12	8	8	12	8	12	12	8	12	8	12	12	12	12	8	12	12	12	8	8	8	8
55	. FERRULE, Inner	10-620109	24	16	16	24	16	24	24	16	24	16	24	24	24	24	16	24	24	24	16	16	16	16
56	. BUSHING	10-320653		4						4														

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TABLE 1107
UNIVERSAL HARNESS KITS AND UNIVERSAL SPARE LEADS

IPL Figure-1	Description	Part Number	10-94460-47	10-94460-48	10-94460-49	10-94460-50	10-94460-51	10-94460-52	10-94460-53	10-94460-54	10-94460-55	10-94460-56	10-94460-57	10-94460-59	10-94460-60	10-720641-29	10-720641-41	10-720641-53	10-720641-65	10-720641-77	10-720642-29	10-720642-41	10-720642-53	10-720642-65	10-720642-74	10-720643-29	10-720643-41	10-720643-53	10-720643-65	10-720643-77
1	Tubing, Spiral, 2ft.	10-180157-1						A	A	A	A	A	A																	
5	Screw	10-35936-6						12	8																					
7	Nut	10-90404-4						12	8																					
9	Washer, Lock	10-92879-43			8	8																								
11	Clamp, Elbow	10-320283						12	8																					
31	Cable, Tie	10-620013					12	12	10	10	12	10																		
36	Plate, Support	10-620039-1					4	4			4																			
42	Plate, Outlet S4-20/200	10-620001-4		2																										
	Plate, Outlet S6-20/200	10-620001-6	2																											
	Plate, Outlet S4-1200	10-620052-4			2																									
	Plate, Outlet S6-1200	10-620052-6				2																								
43	Grommet	10-320777	12	8	8	12								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
44	Lead Assy. 3/4-20S	10-720631-48					4		4						1	1														
	Lead Assy. 3/4-20S	10-720631-78					8		4									1	1	1										
	Lead Assy. 5/8-24S	10-720632-48						4		4											1	1								
	Lead Assy. 5/8-24S	10-720632-72						8		4												1	1							
	Lead Assy. 3/4-20E	10-720633-48									4	4											1	1			1	1		
	Lead Assy. 3/4-20E	10-720633-78									8	4																1	1	1
45	Spring*	10-32326	12				12	12	8	8			1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
46	Sleeve	10-320473						12	8												1	1	1	1	1					
47	Sleeve	10-320466						12	8						1	1	1	1	1											
48	Spring Assy.*	10-94225-2						12	8						1	1	1	1	1											
49	Ferrule, Inner	10-620011									12	8														1	1	1	1	1
50	Ferrule, Outer	10-620022						12	8												1	1	1	1	1					
50A	Ferrule, Outer	10-620091					12	8							1	1	1	1	1											
50B	Ferrule, Outer	10-620024									12	8														1	1	1	1	1
51	Terminal, Short	10-320468	12					12	8	8			1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	1
51A	Terminal, Long	10-320467					12	8		12	8				1	1	1	1	1							1	1	1	1	1
52	Nut 5/8-24	10-320618						12	8	8											1	1	1	1	1					
	Nut 3/4-20	10-320621					12	8							1	1	1	1	1											
53	Cable	10-180209-1						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
54	Eyelet	10-163012	12	8	8	12								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
55	Ferrule	10-620109	12	12	8	8	12							1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1
57	Nut	10-620051	12											1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
58	Sleeve	10-320319	12										1																	
59	Bushing	10-620023	12											1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
60	Washer	10-320323	12											1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
61	Washer	10-320324	12											1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
62	Ferrule	10-163011												1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
63	Sleeve	10-320651												1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
64	Screw	10-35937-12	8	8																										
65	Nut	10-92873-302			8	8																								

* NOTE: Items 45 and 48 are not included in kits 10-720633-48 and 10-720633-78.

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TABLE 1108: NUMERICAL PARTS LIST

NOTE:

NOTE: Use of Qty/100 unit column:

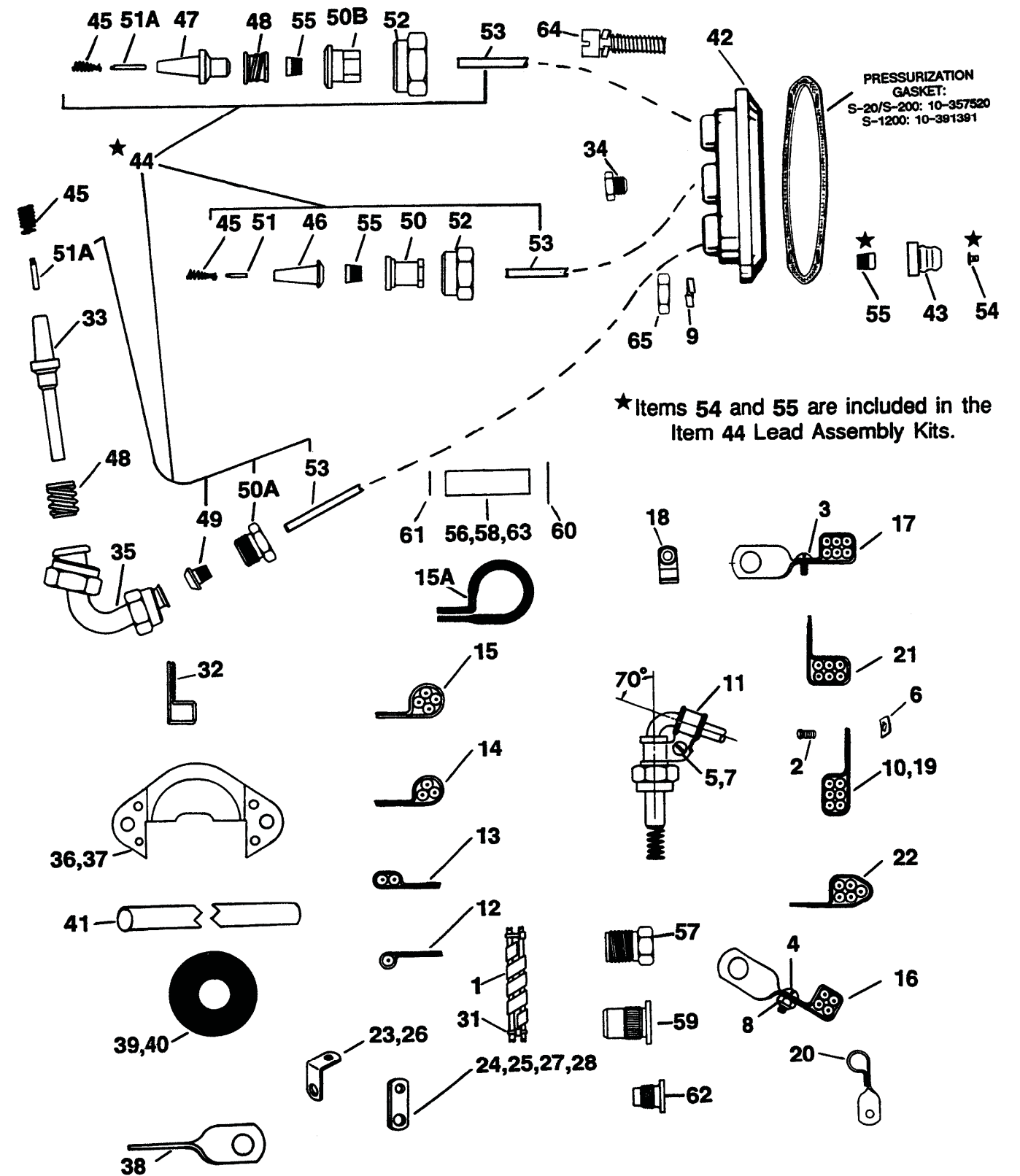
- (1) Quantity is estimated for overhaul/maintenance of 100 units
- (2) Quantities of 100 or more indicate 100% replacement items at each disassembly
- (3) Figures less than one are estimated minimum factor to be multiplied by Parts List Quantity X100

Part Number	Description	Ref. No. (Figure 4-1)	Qty. to Support 100 Units (See NOTE)	Part Number	Description	Ref. No. (Figure 4-1)	Qty. to Support 100 Units (See NOTE)
10-13799	NUT	8	.10+	10-320554	BRACKET	28	10
10-19933	GROMMET	40	30	10-320562	BRACKETASSY.	27	10
10-32326	SPRING	45	.25+	10-320563	GROMMET	40	30
10-35936-6	SCREW	5	.05+	10-320573-1	ELBOWASSY., 70°	35	.05+
10-35937-12	SCREW	64	800	10-320573-2	ELBOWASSY., 90°	35	.05+
10-78916	BRACKET	24	10	10-320573-3	ELBOWASSY., 110°	35	.05+
10-78918	BRACKET	25	5	10-320573-4	ELBOWASSY., 130°	35	.05+
10-85491	BRACKET	23	5	10-320582	SLEEVE	33	60
10-89027-4	BRACKET	23	5	10-320618	NUT, 5/8-24	51	.05+
10-90404-4	NUT	7	.05+	10-320621	NUT, 3/4-20	51	.05+
10-90706-5	WASHER, Lock	**	100	10-320651	SLEEVE	63	.05+
10-91426-12	SCREW	**	10	10-320653	BUSHING	56	.05+
10-91431-8	SCREW	4	10	10-320658	BRACKET	38	.05+
10-92873-302	NUT	65	800	10-320777	GROMMET, Dist.	43	60
10-92879-43	WASHER, Lock	9	800	10-382815	BUSHING	34	2
10-94225-2	SPRINGRETAINERASSY.	48	60	10-620001-4	PLATE, Outlet S4-20/200	42	4
10-163011	FERRULE	62	100	10-620001-6	PLATE, Outlet S6-20/200	42	4
10-163012	EYELET	54	.25+	10-620011	FERRULE	49	.25+
10-180016-37	SLEEVING, 25 ft.	41	25 ft.	10-620013	CABLETIE	31	.10+
10-180157-1	TUBING, Spiral, 2 ft.	1	2 ft.	10-620022	FERRULE	50	.05+
10-180157-2	TUBING, Spiral, 25 ft.	1	25 ft.	10-620023	BUSHING	59	.05+
10-180209-1	CABLE, 100 ft.	53	.25+	10-620024	FERRULE	50A	60
10-320150	NUT	6	10	10-620026-1	CLAMP	12	.05+
10-320151	SCREW	2	10	10-620026-2	CLAMP	12	.05+
10-320283	CLAMP	11	.05+	10-620026-3	CLAMP	12	.05+
10-320300-2	CLAMP	15a	.05+	10-620026-5	CLAMP	12	.05+
10-320319	SLEEVE	58	.05+	10-620027-1	CLAMP	18	.05+
10-320323	WASHER	60	.05+	10-620027-2	CLAMP	13	10
10-320324	WASHER	61	.05+	10-620028-1	CLAMP	13	.05+
10-320328	BRACKET	26	5	10-620028-2	CLAMP	13	.05+
10-320411	SCREW	3	.05+	10-620028-3	CLAMP	13	.05+
10-320431	BRACKET	27	10	10-620028-6	CLAMP	13	.05+
10-320466	SLEEVE	47	300	10-620029-1	CLAMP	14	.05+
10-320467	TERMINAL, Wire	51a	300	10-620029-5	CLAMP	14	.05+
10-320468	TERMINAL, Wire	50	300	10-620029-6	CLAMP	14	.05+
10-320473	SLEEVE	46	300	10-620031-1	CLAMP	20	.05+
10-320502-1	GROMMET	39	30	10-620031-2	CLAMP	20	.05+
10-320546	PLATE	37	40				

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TABLE 1108: NUMERICAL PARTS LIST (CONTINUED)

Part Number	Description	Ref. No. (Figure 4-1)	Qty. to Support 100 Units (See NOTE)
10-620032-1	CLAMP	15	.05+
10-620032-2	CLAMP	15	.05+
10-620032-3	CLAMP	15	.05+
10-620032-4	CLAMP	15	.05+
10-620032-7	CLAMP	15	.05+
10-620033-1	CLAMP	16	10
10-620033-2	CLAMP	16	5
10-620033-3	CLAMP	16	5
10-620034-1	CLAMP	22	.05+
10-620036-1	CLAMP	19	5
10-620036-3	CLAMP	19	5
10-620036-4	CLAMP	10	5
10-620037-3	CLAMP	21	5
10-620037-4	CLAMP	21	.05+
10-620038-1	CLAMP	17	.05+
10-620038-2	CLAMP	17	5
10-620038-3	CLAMP	17	.05+
10-620038-4	CLAMP	17	.05+
10-620039-1	PLATE	36	20
10-620039-2	PLATE	36	10
10-620039-5	PLATE	37	20
10-620048-2	CLAMP	32	4
10-620051	NUT	57	.05+
10-620052-4	PLATE, Outlet S4-1200	42	4
10-620052-6	PLATE, Outlet S6-1200	42	4
10-620052-8	PLATE, Outlet S8-1200	42	2
10-620060-6	PLATE, Outlet S6-1200, Press., Thd.	42a	2
10-620062-6	PLATE, Press, S6-1200	42	2
10-620062-8	PLATE, Press, S8-1200	42	2
10-620091	FERRULE, Outer	50B	60
10-620109	FERRULE, Inner	55	.25+
10-720631-48	LEAD ASSY., 48 in., 3/4-20	44	25
10-720631-78	LEAD ASSY., 78 in., 3/4-20	44	25
10-720632-48	LEAD ASSY., 48 in., 5/8-24	44	25
10-720632-72	LEAD ASSY., 72 in., 5/8-24	44	25
10-720633-48	LEAD ASSY., 48 in., 3/4-20	44	25
10-720633-78	LEAD ASSY., 78 in., 3/4-20	44	25





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