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G.W. Brownell

ENGINEERING APPARATUS INSTRUCTIONS

GENERAL MOTOR LOCOMOTIVE GROUP
General Motors Corporation

SUBJECT	Part Identification
AFFECTS MODELS	
PART NOS AFFECTED	
REF. DRAWINGS	

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The purpose of this Apparatus Instructions to specify the general requirements of the various procedures for applying identification to finished parts.

1. General

Stamping, engraving, electric etching, acid etching, and scribing shall not be nearer than 0.031" to any corner, fillet, or sharp edge. This restriction does not apply to inked (rubber stamped) or blasted markings.

2. Types of Markings

A. Stamp

- 1) The word "STAMP" shall indicate a permanent marking which is an impression that is cut, pressed, stamped or rolled into the part with suitable tools. The depth of the impression shall be 0.001 - 0.003" and all intersecting surfaces of the impressions shall have fillets of not less than 0.006". Care shall be taken to prevent distortion while marking.
- 2) "HEAVY STAMP" shall indicate the same type of marking as "STAMP" except that the depth of the impressions shall of 0.002 - 0.006".
- 3) "EXTRA HEAVY STAMP" shall indicate the same type of marking as "STAMP" except that the depth of the impressions shall be 0.015 to 0.025". Extra heavy stamping shall be used to prevent identification obliteration on parts that are subsequently shotblasted.

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AF	02/24/2005	D68673	3	F.M. Graczyk	E.J. Cryer III

B. Engrave

- 1) The word "ENGRAVE" shall indicate a permanent marking which is an impression cut or peened into the part by means of a suitable round nosed tool. A rotating cutter or an axially vibrating needle is satisfactory. The depth of the impressions shall be 0.001 - 0.003".
- 2) "DEEP ENGRAVE" shall indicate the same type of marking as "ENGRAVE", except that the depth of the impressions shall be 0.002 - 0.006".

C. Electric Etch

- 1) The words "ELECTRIC ETCH" shall indicate a permanent marking which is an impression made on the part by means of an electric arc between the part and a suitable scriber. The desired intensity of etch shall be produced by an open AC circuit of not over 2 volts.
- 2) The words "DEEP ELECTRIC ETCH" shall indicate the same type of marking as "ELECTRIC ETCH", except that the usual voltage shall be 1.5 - 3.0 volts, producing a greater intensity of etch.

D. Acid Etch

- 1) The word "ACID ETCH" shall indicate a permanent marking which is an impression made in the part by the use of strong acids. A machine may be used to form the characters, but care shall be exercised to prevent acid or fumes spreading to surrounding areas of the part. The depth of the impressions shall be 0.001 - 0.003". The surface to be etched shall be clean. After etching, the acid shall be neutralized and the surface oiled to prevent corrosion.
- 2) The words "DEEP ACID ETCH" shall indicate the same type of etching as "ACID ETCH", except that the depth of the impressions shall be 0.002 - 0.004".

E. Scribe

- 1) The word "SCRIBE" shall indicate a permanent marking which is an impression cut or scratched into the part by means of a suitable tool, operated by hand. The depth of impressions shall be 0.001 - 0.003".
- 2) The words "HEAVY SCRIBE" shall indicate the same type of marking as "SCRIBE", except the depth of the impressions shall be 0.004 - 0.006".

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F. Rubber Stamp

- 1) The words "RUBBER STAMP" shall indicate the application of a satisfactory marking fluid or solution with a rubber stamp or by other means that do not scratch or injure the surface.
- 2) Electrochemical etching may be substituted for rubber stamping provided there is no measurable depth of impression and no pitting.
- 3) The surface shall be clean before marking. After marking, any acid used shall be neutralized and the parts shall be oiled to prevent corrosion.

G. Blast

- 1) The word "BLAST" shall indicate a marking made, by light blasting with steel grit, sand, or other abrasive. The depth of impressions shall be 0.001" maximum.
- 2) The words "DEEP BLAST" shall indicate the same type of marking as "BLAST", except that the depth of impressions shall not be deeper than 0.003".
- 3) Blasting should not be specified on painted, plated, or chemically treated surfaces.

H. Vibro-Peen

The words "Vibro-Peen" shall indicate a permanent marking which is an impression made on the part by means of a reciprocating needle which may be either air or electric operated. The depth of the impressions shall be .001 - .006".

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J. Laser Mark

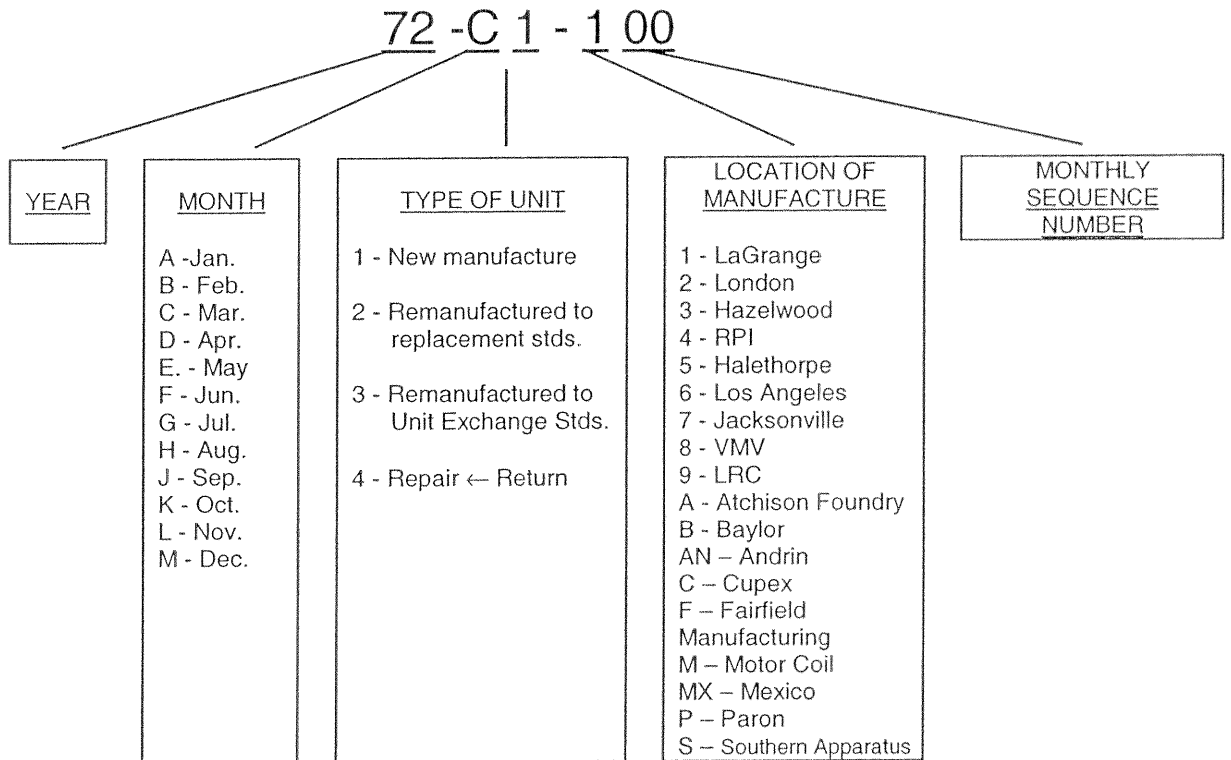
The words "Laser Mark" shall indicate a permanent, legible marking by an impression made on the part through means of light amplification by stimulated emission of radiation. Markings may be either a dot matrix pattern or solid lines and to a depth of .006" maximum.

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3. Coded Dates and Serial Numbers:

- A. All new or remanufactured assemblies having nameplates - including major assemblies, control devices, crankshafts, etc. - shall be marked as illustrated below: (Ref. Standard Procedure #503, Section II-B) (Exception: Crankcases & oil pans shipped as assemblies will be marked as illustrated on page 5)



NOTE: Vendor supplied assemblies with nameplates which include Vendor's serial number may, with Engineering approval, use a condensed version of the above giving only year and month of manufacture as illustrated below:

EXAMPLE:

72 - C (Vendor's Serial No.)

NOTE: Repair and Return product are to retain the original serial number and additional serial number is to be stamped below the original serial number. Use the same sequencing as shown in the example above.

NOTE: Effective 1995 Numbers 8 and 9 are designated to VMV and LRC except in Camshaft Production.

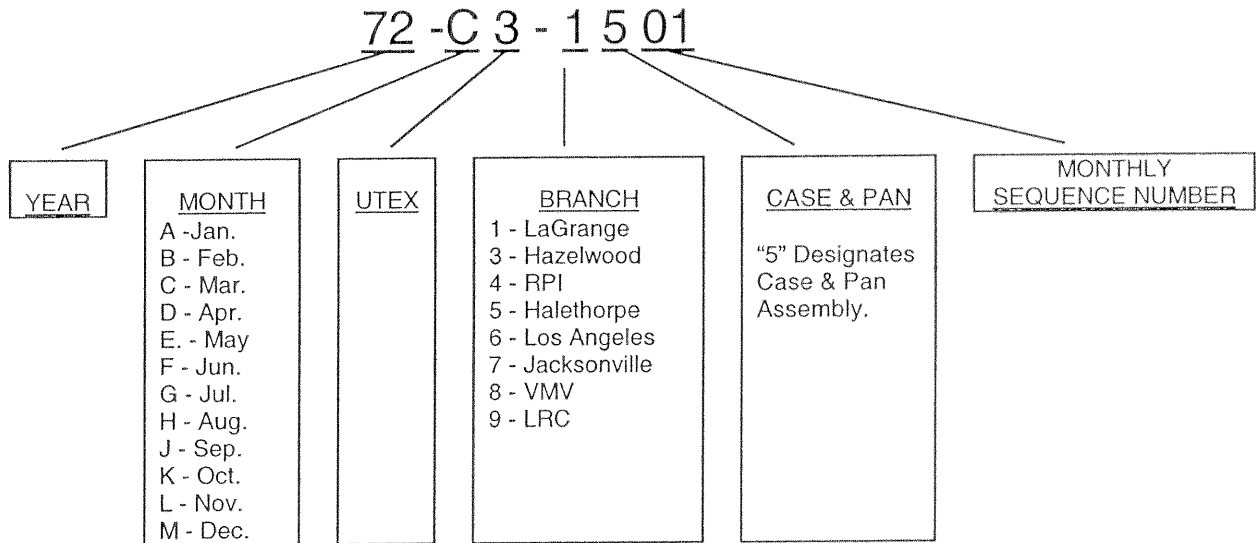
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3. Coded Dates and Serial Numbers: (Continued)

- B. All new or remanufactured crankcases and oil pans shipped as assemblies are to be stamped with an engine serial number as illustrated below.

EXAMPLE:



NOTE: All crankcases and oil pans built into engines and shipped as engines shall be serialized as shown in the example above and on page 4.

The name plate for a UTEX engine must have only the new serial number stamped on it.

The name plate for a repair and return engine must retain its original serial number and have a new one stamped below it.

The nameplate on a repair and return case and pan must have a new serial number stamped below the original serial number.

The nameplate for a UTEX case and pan must have a new serial number stamped on it.

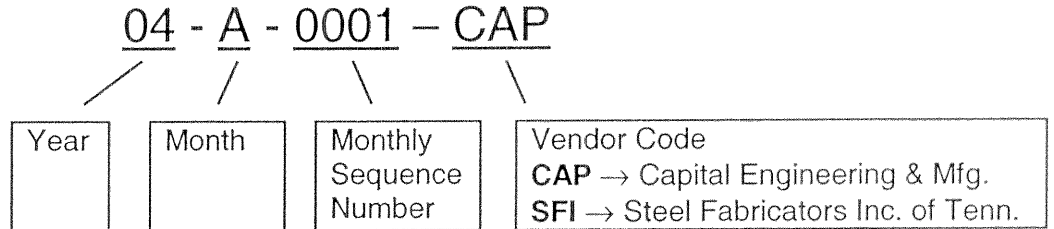
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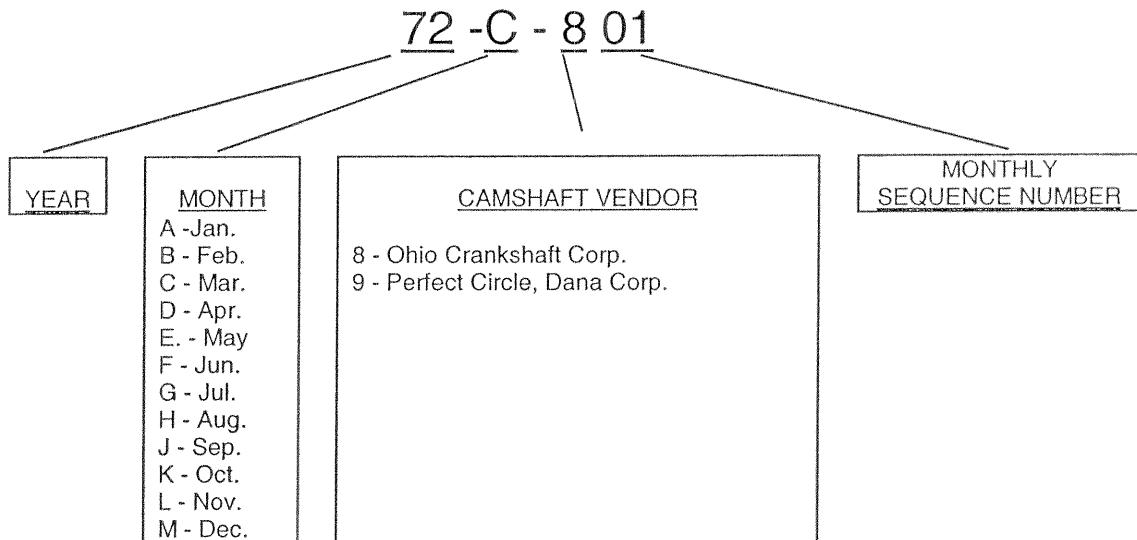
3. Coded Dates and Serial Numbers (Continued)

NOTE: All new oil pans "Manufactured Complete" by vendors shall be marked giving year and month of manufacture, monthly sequence number plus supplier identification as follows:

EXAMPLE:



C. All new camshafts are to be stamped with year, month, vendor and monthly sequence number as follows:



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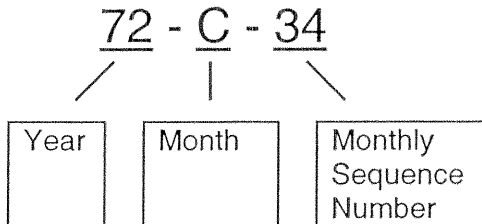
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3. (Continued)

D. Individual parts not requiring nameplates:

Unless otherwise specified on the Engineering Drawing, parts that require coded dates and/or serial numbers shall be marked with a condensed version of (A) above giving year and month of manufacture plus monthly sequence number as follows:

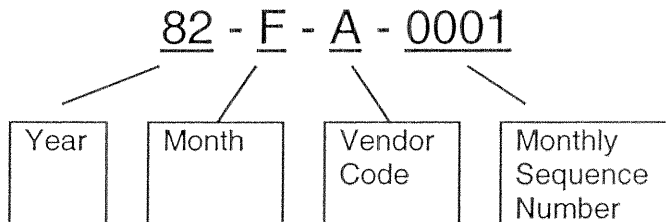
EXAMPLE:



E. Piston Pins

All new piston pins are to be stamped with year, month, vendor and monthly sequence number as follows:

EXAMPLE:



NOTE: Vendor code represents bar stock supplier.

- A. → COPPERWELD
- B. → REPUBLIC STEEL
- C. → GREEN RIVER STEEL
- D. → MAC STEEL

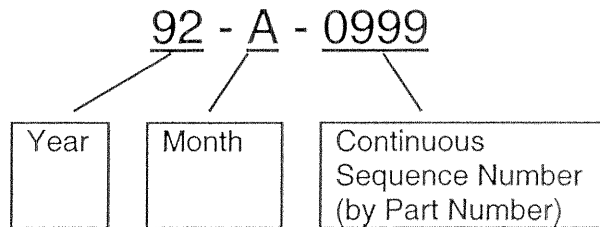
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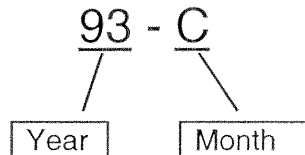
3. (Continued)

F. CIRCUIT MODULES (60 SERIES AND LATER)

All new 60 Series and later modules and electronic assemblies are to be serialized with the year, month, and consecutive sequence number. The sequence number does NOT restart each month. It is consecutive for each part number assembly.



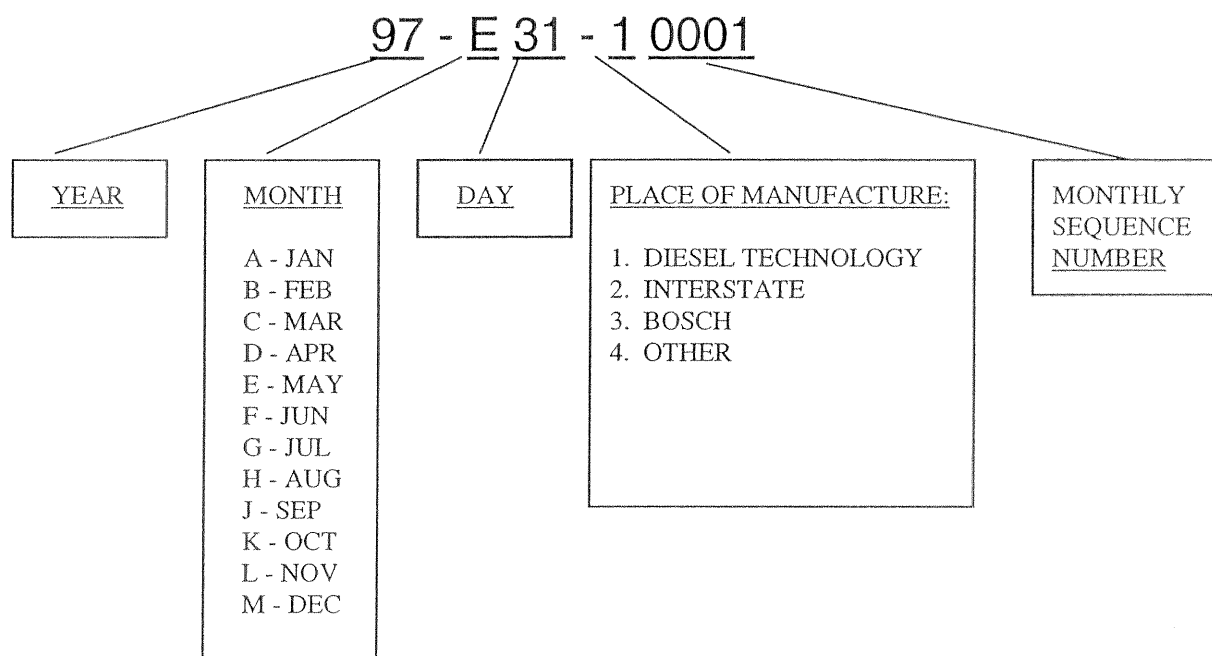
UTEX and remanufactured modules will retain the original serial number. Only the remanufacture year and month will be added the nameplate.



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3. Coded Dates and Serial Numbers (Continued)

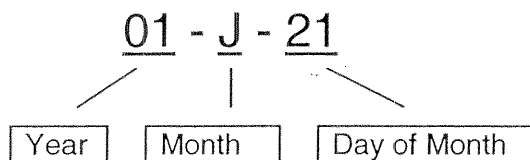
- G. All new and remanufactured (UTEX) injector assemblies are to be stamped with year, month, day of the month, supplier identification and monthly sequence number as shown below.



- H. Part identification and date code for engine valves:

Engine valves are to be marked with a date code consisting of a condensed version of (A) above giving year and month of manufacture. The day of the month may be included at the vendor's option. The date code is to be marked in the location that is indicated on the drawing using the marking method that is specified on the drawing.

Example: date code



Engine valves are to be marked with the appropriate part number in the location that is indicated on the drawing using the marking method that is specified on the drawing.

Vendor identification is required on all engine valves. Each vendor is to be assigned a unique letter for identification purposes. This letter is to be added to the part number as a suffix and is to be marked on the valve in the location that is indicated on the drawing using the marking method that is specified on the drawing.

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EXAMPLE: part number and vendor identification:

9319735E

NOTE: currently assigned vendor identification letters

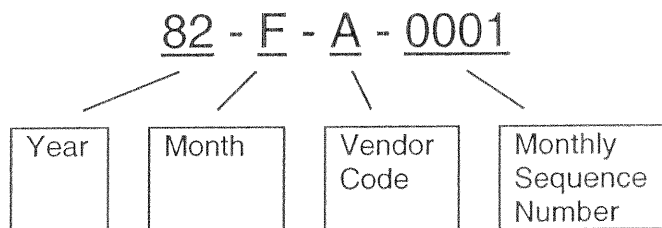
Eaton Corporation **E**
Kar Mobiles, Ltd. **K**

Valves not having a vendor identification letter suffixed to the part number were manufactured by EMD. The EMD valve line ceased operation in 1995.

I. Engine coupling discs and generator coupling discs.

All new coupling discs are to be stamped with year, month, vendor and monthly sequence number as follows:

EXAMPLE:



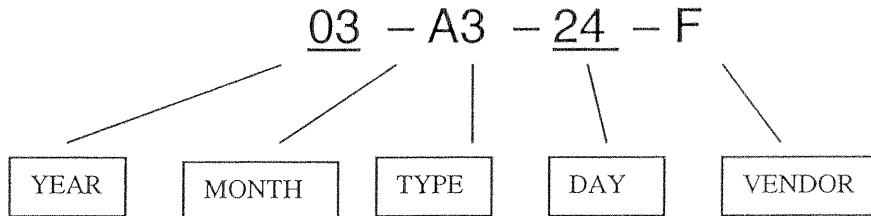
NOTE: Vendor code represents the supplier of the disc weldment.

A. → WOHERT
B. → LARSEN & TOUBRO LTD

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- J. All new and remanufactured valve bridge assemblies are to be rubber stamped with year, month, day of the month and supplier identification. The size of the characters and the location of the rubber stamp marking shall be as shown on 8085260. The following is a typical identification marking.

EXAMPLE:



The following is the correct interpretation of the above example:

03	indicates the year	2003
A	indicates the month	January
3	indicates a UTEX assembly	(1 for a NEW asm)
24	indicates the day of the month	the 24th
F	indicates the vendor	Infinitive, Inc.

NOTE: Vendor identification code letters are as follows:

F Infinitive, Inc.

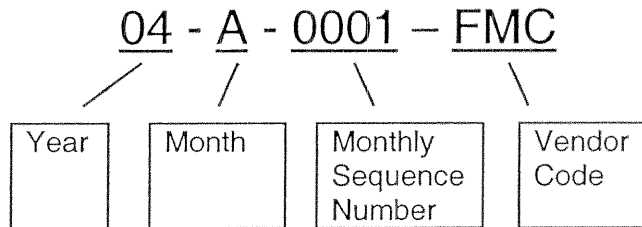
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K. TRACTION GEARS:

Unless otherwise specified on the Engineering Drawing, Traction Gears shall be marked above giving year and month of manufacture, monthly sequence number plus supplier identification as follows:

EXAMPLE:



NOTE:

- Vendor code represents the supplier of the traction gear and will be assigned by EMD.
- Stamping of a supplier logo on the traction gear is OPTIONAL.
- Letter height on the Stamping may vary from 3/16" to 5/16".

FMC. → FAIRFIELD MANUFACTURING CO.

OGT. → OVERTON GEAR & TOOLS

KPC. → KIRLOSKAR PNEUMATIC CO. LTD

4. Location of Markings

When it is necessary to restrict the location of serial number markings to a specific area, a note shall be placed on the Engineering Drawing to designate the proper location of the markings.

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