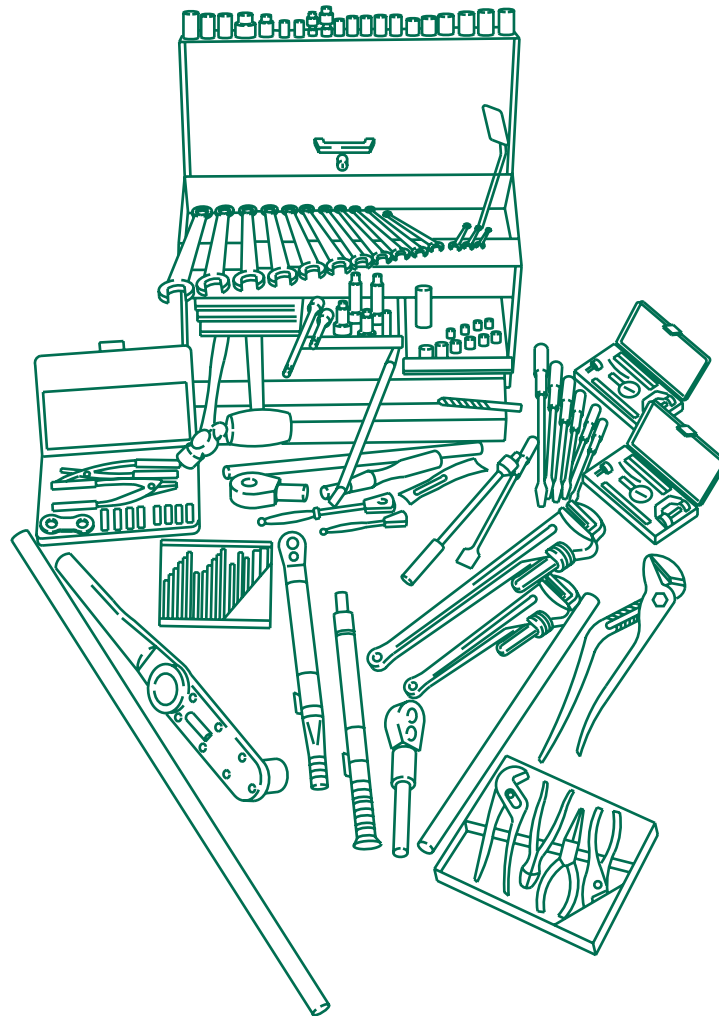




CFR[®] Fuel Rating Engines

Special Tools Catalog



Form 1169-4
4th edition

CFR[®] Fuel Rating Engines

Special Tools Catalog

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Original Instructions (English)

The English version of this manual controls over any error in or conflicting interpretation of any translation.



Form 1169-4
4th edition

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**California
Proposition 65 Warning**

The engine exhaust from this product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

**California
Proposition 65 Warning**

Certain components in this product and its related accessories contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.
Wash hands after handling.

**California Perchlorate
Contamination Prevention Act**

Certain components in this product and its related accessories may contain perchlorate materials – special handling may apply. For more information, see: www.dtsc.ca.gov/hazardouswaste/perchlorate

DISCLAIMERS:

All information, illustrations and specifications in this manual are based on the latest information available at the time of publishing. The illustrations used in this manual are intended as representative reference views only. Products are under a continuous improvement policy. Thus, information, illustrations and/or specifications to explain and/or exemplify a product, service or maintenance improvement may be changed at any time without notice.

NOTICE

Review all applicable Service Bulletins and other documentation, and check with your Authorized Distributor for updates that may supersede the contents of this manual.

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DISPOSAL STATEMENT:

Disposal requirements for waste electrical and electronic equipment:

NOTICE

Electrical and electronic equipment can contain harmful substances which can affect the environment and human health.

WEEE symbol (Waste Electrical and Electronic Equipment): The symbol for the separated disposal of electrical and electronic equipment is a crossed-out waste bin on wheels (Directive 2012/19/EU Waste Electrical and Electronic Equipment).

You must not dispose any electrical and electronic equipment marked with this symbol (battery-operated electrical appliances, measurement equipment, light-bulbs, etc.) in the domestic waste but dispose of these separately. Always use the waste return and collection systems locally available and contribute to the reuse, recycling and all other forms of use for waste electrical and electronic equipment.

GENERAL INFORMATION

ORDERING INFORMATION

CHAPTER 1 – CFR TOOLS

Section 1.00 – CFR TOOL LISTINGS

**Section 1.05 – SPECIALTY CFR TOOL
KITS**

**Section 1.10 – NUMERICAL INDEX BY
TOOL PART NUMBER**

**Section 1.15 – ALPHABETICAL INDEX BY
TOOL NAME**

APPENDIX A – WARRANTY



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GENERAL INFORMATION

The CFR Tools Catalog contains all the tools offered by CFR to assist in the operation and maintenance of CFR Fuel Rating Units. Each tool listing includes the following:

- Illustration of the tool
- Tool part number
- Tool name
- Description of the intended purpose of the tool
- Table listing the appropriate method(s) for which the tool is intended
 - F1 = F-1 Research (ASTM D 2699)
 - F2 = F-2 Motor (ASTM D 2700)
 - F4 = F-4 Supercharge (ASTM D 909)
 - F5 = F-5 Cetane (ASTM D 613)



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ORDERING INFORMATION

Current tool prices are available from your local CFR engine distributor. Tool availability / tool supercessions and prices are subject to change without notice. All tool orders and tool information should be placed with your local CFR Distributor.



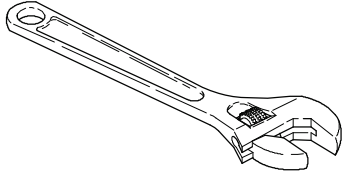
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CFR TOOLS
SECTION 1.00
CFR TOOL LISTINGS



CFR TOOL LISTINGS



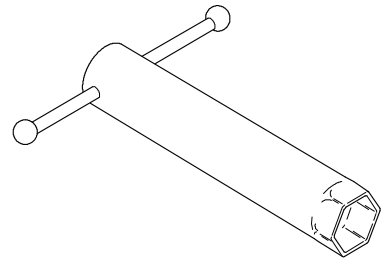
P/N 27827
Adjustable 6-in. Wrench
 Used on various fittings on all CFR Rating Units.

F1 ■ F2 ■ F4 ■ F5 ■



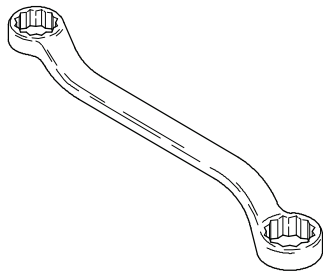
P/N 24088S
Spark Plug 7/8-in. Socket
 Used in the removal and installation of the D-1 pickup and spark plug.

F1 ■ F2 ■ F4 ■ F5 ■



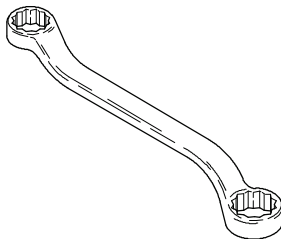
P/N AA24088U
Turnover Wrench Assembly
 Used in the manual rotation of the engine via the crank gear nut.

F1 ■ F2 ■ F4 ■ F5 ■



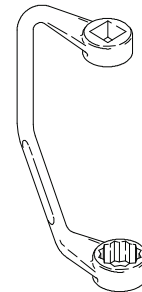
P/N 27828
Double End Box Wrench
11/16 – 3/4 in.
 Used on all CFR Rating Units to aid in the installation and removal of nuts, capscrews and bolts.

F1 ■ F2 ■ F4 ■ F5 ■



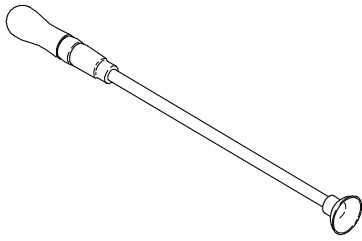
P/N 27829
Double End Box Wrench
1/2 – 9/16 in.
 Use on all CFR Rating Units to aid in the installation and removal of nuts, capscrews and bolts.

F1 ■ F2 ■ F4 ■ F5 ■



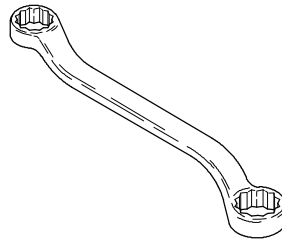
P/N 56372
Torque Wrench Adapter
 Used for removal and installation of the 3/4-in. nut on the long stud of the clamping sleeve base.

F1 ■ F2 ■ F4 ■ F5 ■



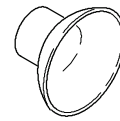
P/N O75644
Valve Lapping Tool
 Used to lap valves to valve seat inserts.

- F1
■
- F2
■
- F4
■
- F5
■



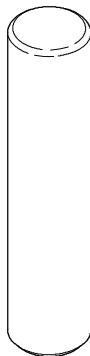
P/N 27830
Double End Box Wrench
3/8 – 7/16 in.
 Used on all CFR Rating Units to aid in the installation and removal of nuts, capscrews and bolts.

- F1
■
- F2
■
- F4
■
- F5
■



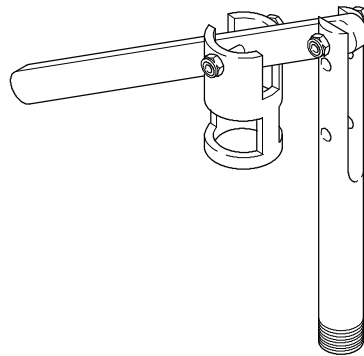
P/N 75644
Suction Cup
 Replacement for worn or oil soaked suction cups used on the Valve Lapping Tool P/N O75644.

- F1
■
- F2
■
- F4
■
- F5
■



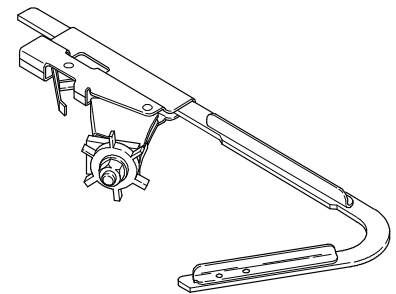
P/N 106821B
Valve Retainer Block
 Used with the Cylinder Overhaul Stand P/N A109226B to aid in the removal of the valve springs.

- F1
■
- F2
■
- F4
■
- F5
■



P/N A106842A
Valve Spring Compressor Assembly
 Used to compress valve springs so that the keepers and springs may be disassembled.

- F1
■
- F2
■
- F4
■
- F5
■



P/N 106950
Ring Groove Cleaner
 Used to aid in the cleaning of and carbon removal from the piston ring lands.

- F1
■
- F2
■
- F4
■
- F5
■

CFR TOOL LISTINGS

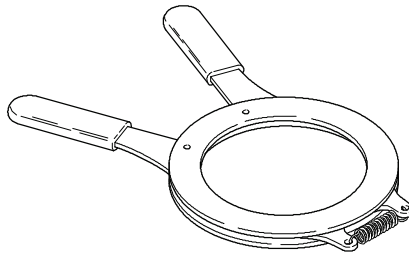


P/N 106821C

Valve Retainer Block

Used to aid in the removal of the valve springs.

F1 ■ F2 ■ F4 ■ F5 ■

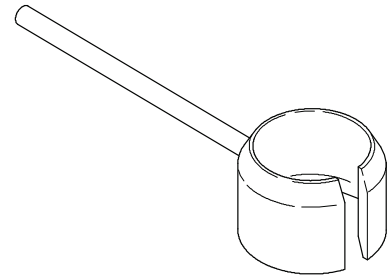


P/N 106893

Ring Expander

Used to remove and install the rings on the piston.

F1 ■ F2 ■ F4 ■ F5 ■

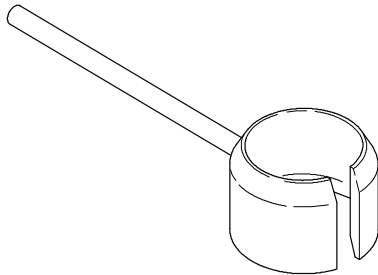


P/N O106965

Ring Compressor

Used to assist in placing the piston assembly into the cylinder without damaging the rings.

F1 ■ F2 ■ F4 ■ F5 ■

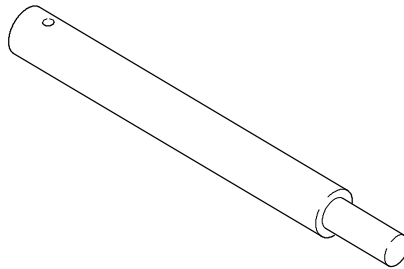


P/N O106965A

Ring Compressor for 0.020-in. Oversized Rings

Used to assist in placing the piston assembly into the cylinder without damaging the rings.

F1 ■ F2 ■ F4 ■ F5 ■

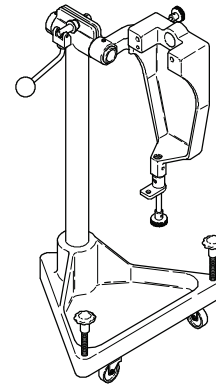


P/N 109023

Piston Pin Remover

Used to aid in the removal of the piston wrist pin.

F1 ■ F2 ■ F4 ■ F5 ■



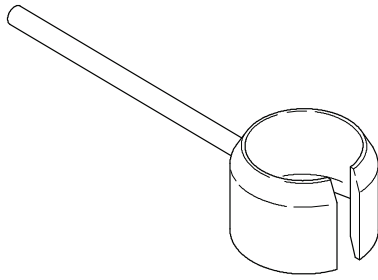
P/N A109226B

Cylinder Overhaul Stand

Used to support both octane and cetane cylinder assemblies while performing maintenance. For a complete assembly, order the Valve Retainer Block P/N 106821B in addition to the Cylinder Overhaul Stand.

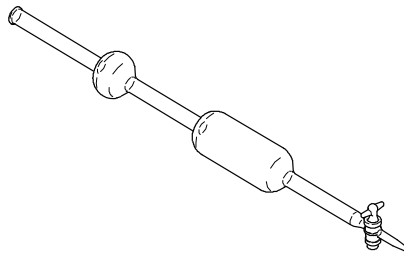
F1 ■ F2 ■ F4 ■ F5 ■





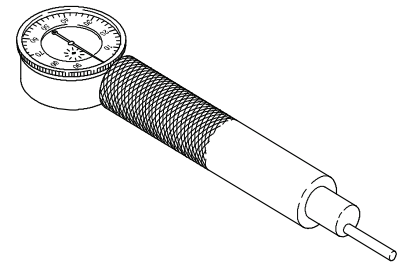
P/N O106965B
Ring Compressor for 0.030-in. Oversized Rings
 Used to assist in placing the piston assembly into the cylinder without damaging the rings.

F1 ■ F2 ■ F4 F5 ■



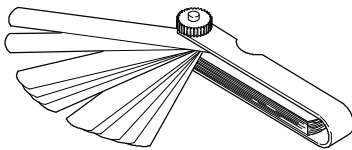
P/N 109221
Cylinder Burette
 Used to set basic cylinder height using the water fill method.

F1 F2 F4 ■ F5



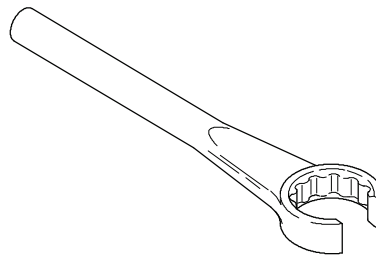
P/N A109268B
Cylinder Depth Gauge
 Used in the indexing of the cylinder height.

F1 F2 F4 ■ F5



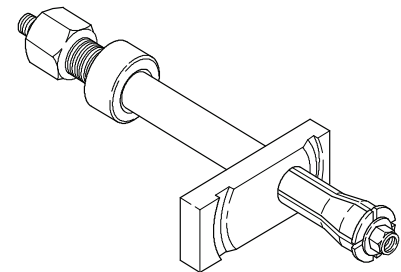
P/N 109284
Feeler Gauge
 Used to make precise gap and clearance measurements.
 Gauge sizes:
 0.0015 – 0.035 in.

F1 ■ F2 ■ F4 F5 ■



P/N 109291B
Injector Pickup Probe Wrench
 Used in adjusting the injector pickup probe clearance.

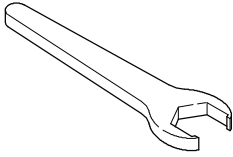
F1 F2 F4 F5 ■



P/N O109405
Valve Seat Removal Fixture
 Used to extract valve seat inserts from the cylinder on F-1, F-2 and F-4 CFR Rating Units. Also can be used on F-5 Rating Units in conjunction with the Cetane Valve Seat Removal Fixture P/N 489391.

F1 ■ F2 ■ F4 ■ F5 ■

CFR TOOL LISTINGS

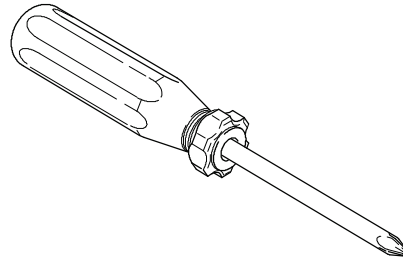


P/N 109291A

Pickup Cable Wrench

Used to assist in removing or installing the detonation pickup cable.

F1 ■ F2 ■ F4 F5

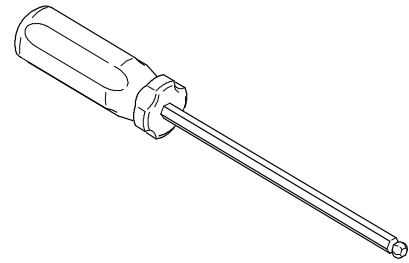


P/N 109298

Phillips Screwdriver

Used on all CFR Rating Units to aid in the installation and removal of Allen-head screws. 8-in. Phillips head screwdriver with No. 2 point.

F1 ■ F2 ■ F4 F5

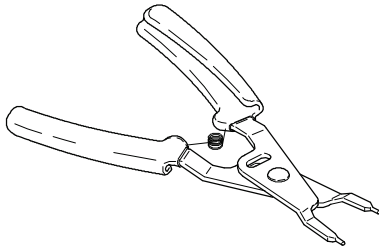


P/N A109802A

Allen-Head Screwdriver

Used in the removal of the carburetor jets.

F1 ■ F2 ■ F4 F5

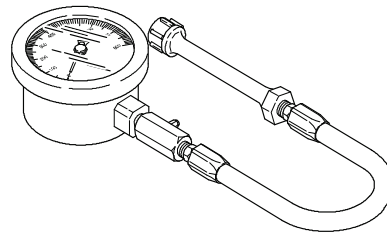


P/N 109885

Snap Ring Pliers

Used to assist in the removal of the retaining clips from the piston wrist pin.

F1 ■ F2 ■ F4 F5

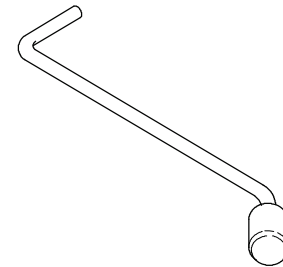


P/N A110376

Diesel Compression Gauge

Used to measure the compression pressure with the engine motoring without fuel.

F1 F2 F4 F5 ■

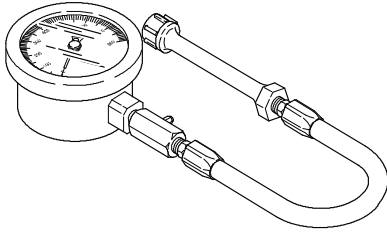


P/N A110546A

Cylinder Height Gauge

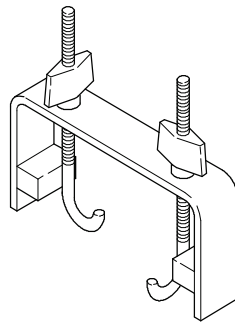
Used for checking the cylinder height.

F1 F2 F4 ■ F5



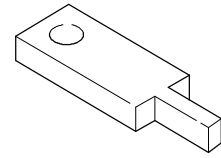
P/N C110340
Compression Pressure Gauge
 Used to measure the cylinder compression pressure while motoring without fuel or ignition.

- F1 ■ F2 ■ F4 F5



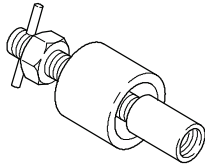
P/N A110538
Valve Depressor Assembly
 Used to depress the valves so that the push rods can be removed and installed.

- F1 ■ F2 ■ F4 F5



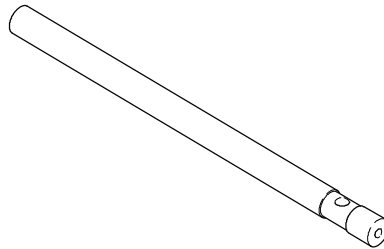
P/N 110653
Valve Guide Alignment Tool
 Used to provide proper alignment during installation of the intake valve guide.

- F1 ■ F2 ■ F4 F5



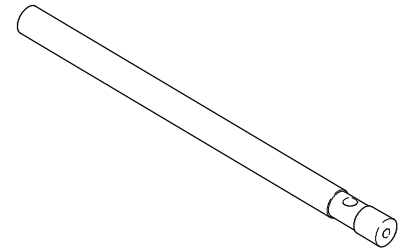
P/N 110781
Valve Seat Extractor
 Used to remove the valve seats from the fuel injection pumps.

- F1 F2 ■ F4 ■ F5



P/N 110866
Tapered Pilot 3/8-in. +0.001 in. Oversized
 Placed in the valve guide to provide proper alignment of the valve seat grinder during grinding operation.

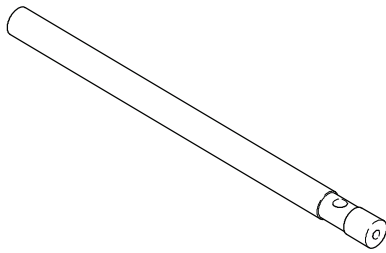
- F1 ■ F2 ■ F4 ■ F5



P/N 110868
Tapered Pilot 3/8-in. +0.003 in. Oversized
 Placed in the valve guide to provide proper alignment of the valve seat grinder during grinding operation.

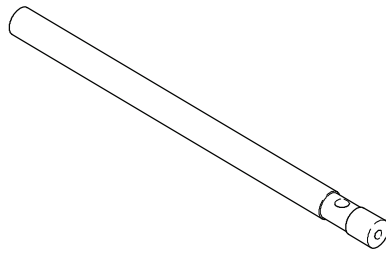
- F1 ■ F2 ■ F4 ■ F5

CFR TOOL LISTINGS



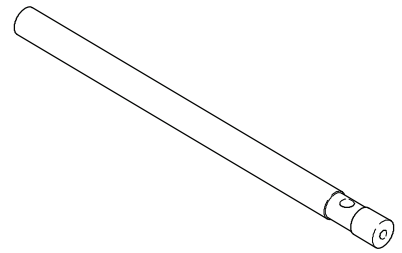
P/N 110865
Tapered Pilot 3/8-in.
 Placed in the valve guide to provide proper alignment of the valve seat grinder during grinding operation.

F1 ■ F2 ■ F4 ■ F5 ■



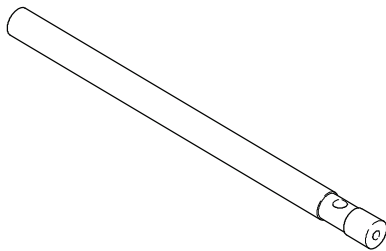
P/N 110867
Tapered Pilot 3/8-in.
+0.002 in. Oversized
 Placed in the valve guide to provide proper alignment of the valve seat grinder during grinding operation.

F1 ■ F2 ■ F4 ■ F5 ■



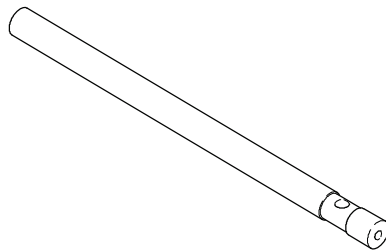
P/N 110869
Tapered Pilot 7/16-in.
Used in F-4 CFR Rating Unit
 Exhaust valve guides to provide proper alignment of the valve seat grinder during grinding operation.

F1 F2 F4 ■ F5



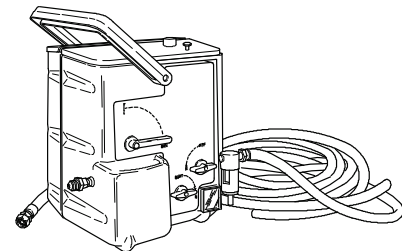
P/N 110870
Tapered Pilot 7/16-in.
+0.001 in. Oversized
 Used in F-4 CFR Rating Unit exhaust valve guides to provide proper alignment of the valve seat grinder during grinding operation.

F1 F2 F4 ■ F5



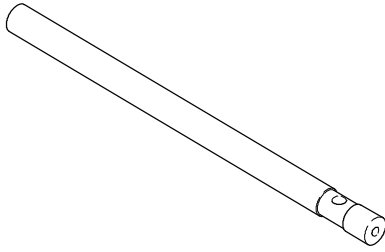
P/N 110872
Tapered Pilot 7/16-in.
+0.003 in. Oversized
 Used in F-4 CFR Rating Unit exhaust valve guides to provide proper alignment of the valve seat grinder during grinding operation.

F1 F2 F4 ■ F5



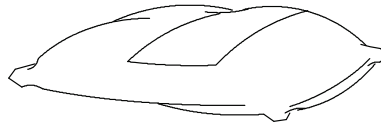
P/N AC110900
Carbon Blaster II
 Used to remove combustion deposits from the cylinder bore and valve ports.

F1 ■ F2 ■ F4 F5



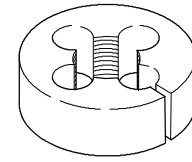
P/N 110871
Tapered Pilot 7/16-in.
+0.002 in. Oversized
 Used in F-4 CFR Rating Unit exhaust valve guides to provide proper alignment of the valve seat grinder during grinding operation.

F1 F2 F4 F5
 ■ ■ ■ ■



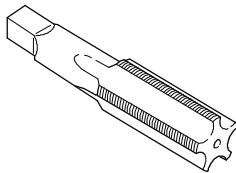
P/N 110899A
Walnut Shells
 Used in the Carbon Blaster II P/N AC1100900 for removing combustion deposits from the cylinder.

F1 F2 F4 F5
 ■ ■ ■ ■



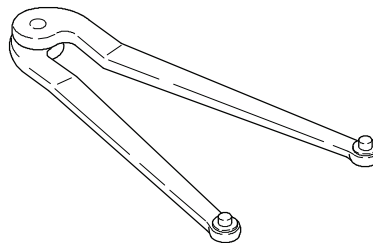
P/N 110902
Threading Die
 Used for reworking the cable connection threads on the D-1 pickup.

F1 F2 F4 F5
 ■ ■ ■ ■



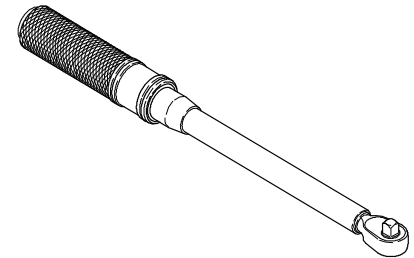
P/N 110904
Spark Plug Hole Tap
 Used for cleaning the threads in the spark plug hole.

F1 F2 F4 F5
 ■ ■ ■ ■



P/N 111262
Adjustable Spanner Wrench
 Used for tightening and loosening the variable compression hand wheel lock nut.

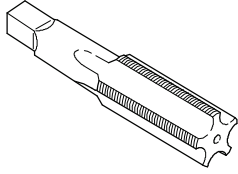
F1 F2 F4 F5
 ■ ■ ■ ■



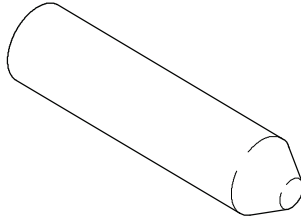
P/N 111680
Torque Wrench
 Used to set critical torque specifications where required.

F1 F2 F4 F5
 ■ ■ ■ ■

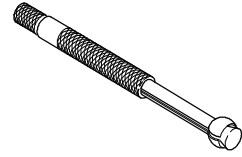
CFR TOOL LISTINGS



**P/N 110905
Pickup Hole Tap**
Used for cleaning the threads in the pickup hole.

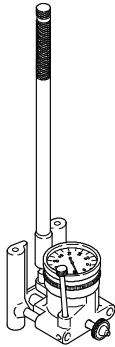


**P/N 111367
Venturi Remover**
Used to assist in the removal of the venturi from the carburetor.

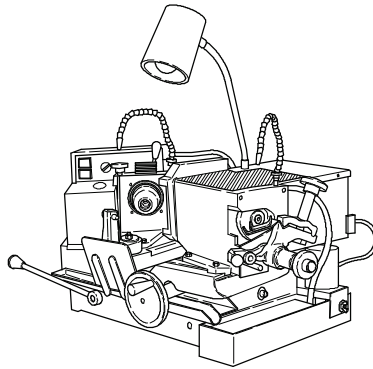


**P/N 111682
Small Hole Gauge**
Used to measure the inside diameter of the valve guides.

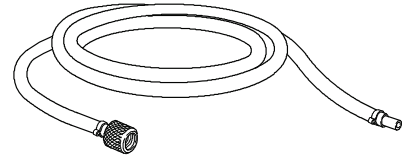
F1 ■ F2 ■ F4 ■ F5 ■ F1 ■ F2 ■ F4 F5 F1 ■ F2 ■ F4 ■ F5 ■



**P/N 111684
Cylinder Diameter Gauge**
Used to measure the cylinder bore diameter.

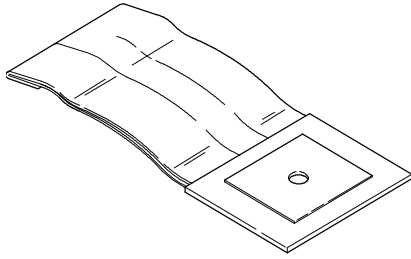


**P/N 489015
Sioux Valve Reconditioning Equipment**
Used to reface valves.



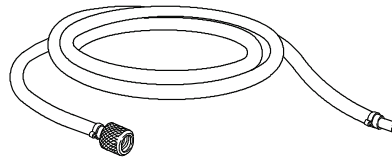
**P/N 489087
Discharge Hose**
Replacement equipment for the Carbon Blaster II P/N AC110900.

F1 ■ F2 ■ F4 ■ F5 ■ F1 ■ F2 ■ F4 ■ F5 ■ F1 ■ F2 ■ F4 ■ F5 ■



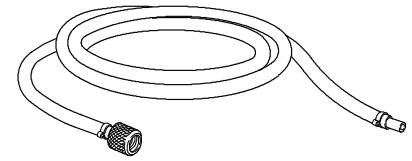
**P/N 489013
Filter Bag (10-pack)**
Replacement equipment for the Carbon Blast II P/N AC110900.

F1 ■ F2 ■ F4 F5



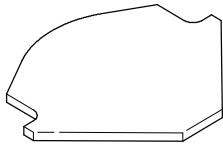
**P/N 489086
Return Hose**
Replacement equipment for the Carbon Blaster II P/N AC110900.

F1 ■ F2 ■ F4 F5



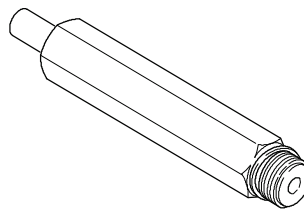
**P/N 489088
Air Supply Hose**
Replacement equipment for the Carbon Blaster II P/N AC110900.

F1 ■ F2 ■ F4 F5



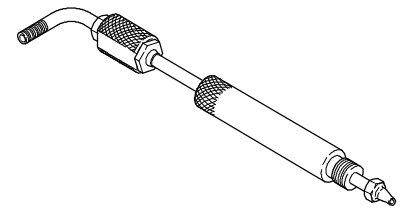
**P/N 489089
Manifold Sealing Plate**
Replacement equipment for the Carbon Blast II P/N AC110900.

F1 ■ F2 ■ F4 F5



**P/N 489091
Blast Return Pipe**
Replacement equipment for the Carbon Blaster II P/N AC110900.

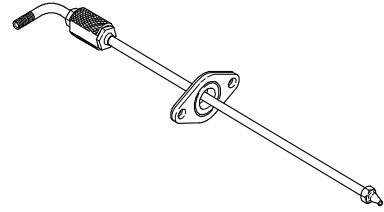
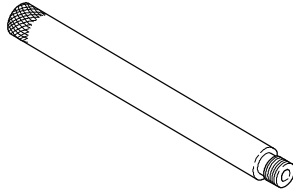
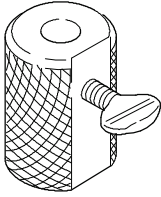
F1 ■ F2 ■ F4 F5



**P/N 489093
Handle Assembly**
Replacement equipment for the Carbon Blaster II P/N AC110900.

F1 ■ F2 ■ F4 F5

CFR TOOL LISTINGS



**P/N 489090
Adapter**

Replacement equipment for the Carbon Blast II P/N AC110900.

**P/N 489092
Adapter - Split Head**

Replacement equipment for the Carbon Blaster II P/N AC110900.

**P/N 489094
CFR Swivel**

Replacement equipment for the Carbon Blaster II P/N AC110900.

F1
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F5

F1
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F2
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F4

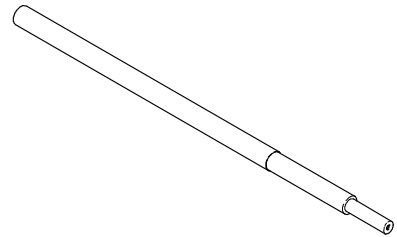
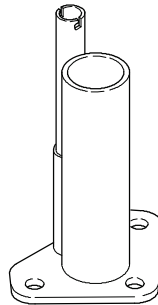
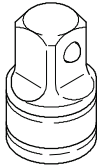
F5

F1
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F2
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F4

F5



**P/N 489121
Socket Adapter
3/8 - 1/2 in.**

Used for socket wrenches to convert from a 3/8-in. drive to a 1/2-in. socket.

**P/N 489264
Stationary Base**

Used to support the Cylinder Hoist P/N 489263 when being used. Extra bases are required for locations with multiple engines.

**P/N 489392
Valve Guide Removal Tool**

Used to remove the valve guides from the cylinder assembly.

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F4
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F5

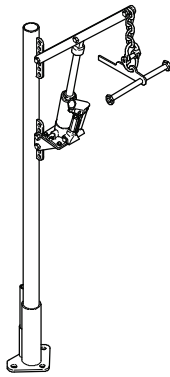
F1
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F2
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F4
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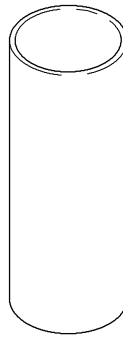
F5
■





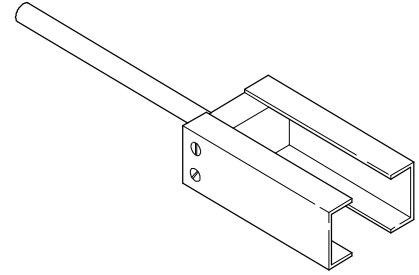
**P/N 489263
Cylinder Hoist**
Used for safe removal and installation of the cylinder and clamping sleeve assembly when maintenance is performed. Includes one Stationary Base P/N 489264.

F1 ■ F2 ■ F4 ■ F5



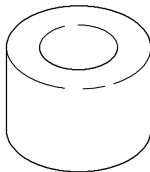
**P/N 489391
Cetane Valve Seat Removal
Fixture**
Used with the Valve Seat Removal Tool P/N O109405 for removal of the valve seat inserts on the F-5 CFR Rating Unit cylinder head.

F1 F2 F4 F5



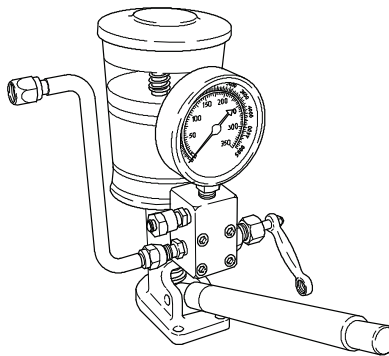
**P/N 489393
Piston Support Tool**
Used to keep the piston level and upright when installing the cylinder assembly.

F1 ■ F2 ■ F4 ■ F5 ■



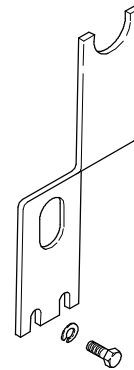
**P/N 489394
Valve Guide Gauging Tool**
Used to set the proper depth of the valve guides when they are pressed into the cylinder.

F1 ■ F2 ■ F4 ■ F5 ■



**P/N G-818-7
Cetane Nozzle Tester Assembly**
Used to test the opening pressure, chatter and spray pattern of the F-4 and F-5 CFR Rating Unit nozzles.

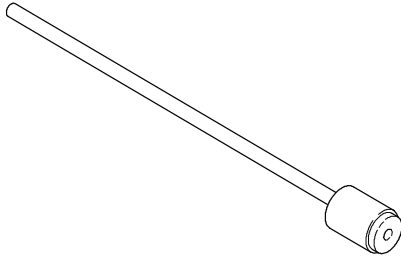
F1 F2 F4 F5



**P/N G-867-3
Turnover Bracket**
Used to assist in keeping the Turnover Wrench Assembly (P/N AA24088U) straight and level when manually rotating the engine via the crank gear nut.

F1 ■ F2 ■ F4 F5

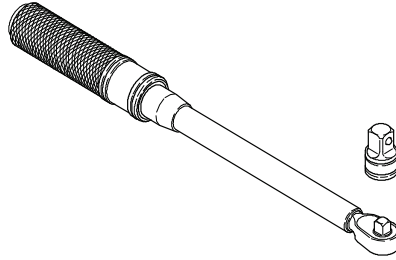
CFR TOOL LISTINGS



P/N 489395

Valve Seat Installation Tool

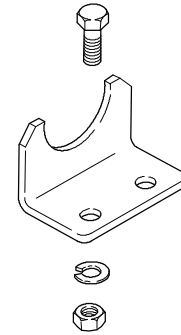
Used for the installation of the valve seat inserts in the cylinder.



P/N G-818-8

Torque Wrench and Adaptor

Used to set critical torque specifications when required. Includes 3/8 – 1/2 in. adaptor.



P/N G-867-4

Turnover Bracket

Used to assist in keeping the Turnover Wrench Assembly (P/N AA24088U) straight and level when manually rotating the engine via the crank nut gear.

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F5
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F1
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F2
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F4
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F5
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F1

F2

F4
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F5
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SECTION 1.05

SPECIALTY CFR TOOL KITS

Several CFR tool kits are available that contain recommended special tools for octane and cetane units.

- *Table 1.05-1:* Assortment of specialty tools specifically designed to assist in the maintenance of Octane Rating Units.
- *Table 1.05-2:* Assortment of specialty tools specifically designed to assist in the maintenance of Cetane Rating Units.
- *Table 1.05-3:* Assortment of specialty tools specifically designed to assist in the maintenance of Octane Rating Units. This kit contains additional tools to those in supplied in Tool Kit G-818-4.

Table 1.05-1: Specialty Tools for Octane Units

RECOMMENDED SPECIAL TOOLS FOR OCTANE UNITS	
G-818-4	
P/N	DESCRIPTION
24088S	Spark Plug 7/8-in. Socket
AA24088U	Turnover Wrench Assembly
56372	Torque Wrench Adapter
O75644	Valve Lapping Tool
106821C	Valve Retainer Block
106893	Ring Expander
106950	Ring Groove Cleaner
O106965	Ring Compressor
109023	Piston Pin Remover
109284	Feeler Gauge
109291A	Pickup Cable Wrench
A109802A	Allen-Head Screwdriver
109885	Snap Ring Pliers
C110304	Compression Pressure Gauge
110904	Spark Plug Hole Tap
110905	Pickup Hole Tap
111367	Venturi Remover
111684	Cylinder Diameter Gauge

Table 1.05-2: Specialty Tools for Cetane Units

RECOMMENDED SPECIAL TOOLS FOR CETANE UNITS	
G-818-5	
P/N	DESCRIPTION
AA24088U	Turnover Wrench Assembly
O75644	Valve Lapping Tool
106893	Ring Expander
106950	Ring Groove Cleaner
O106965	Ring Compressor
109023	Piston Pin Remover
109024	Feeler Gauge
109291B	Injector Pickup Probe Wrench
109885	Snap Ring Pliers
A110376	Compression Pressure Gauge
110905	Pickup Hole Tap
111262	Adjustable Spanner Wrench
111684	Cylinder Diameter Gauge

Table 1.05-3: Expanded Specialty Tools for Octane Units

EXPANDED RECOMMENDED SPECIAL TOOLS FOR OCTANE UNITS	
G-818-6	
P/N	DESCRIPTION
24088S	Spark Plug 7/8-in. Socket
AA24088U	Turnover Wrench Assembly
27827	Adjustable 6-in. Wrench
27828	Double End Box Wrench 11/16 – 3/4 in.
27829	Double End Box Wrench 1/2 – 9/16 in.
27830	Double End Box Wrench 3/8 – 7/16 in.
56372	Torque Wrench Adapter
75644	Suction Cup
O75644	Valve Lapping Tool
A106842A	Valve Spring Compressor Assembly



SPECIALTY CFR TOOL KITS

EXPANDED RECOMMENDED SPECIAL TOOLS FOR OCTANE UNITS	
G-818-6	
P/N	DESCRIPTION
106821B	Valve Retainer Block
106821C	Valve Retainer Block
106893	Ring Expander
106950	Ring Groove Cleaner
O106965	Ring Compressor
109023	Piston Pin Remover
109284	Feeler Gauge
A109802A	Allen-Head Screwdriver
109885	Snap Ring Pliers
C110304	Compression Pressure Gauge
A110546A	Cylinder Height Gauge
110904	Spark Plug Hole Tap
110905	Pickup Hole Tap
111367	Venturi Remover
111684	Cylinder Diameter Gauge
109291A	Pickup Cable Wrench
A109226B	Cylinder Overhaul Stand
G-818-8	Torque Wrench and Adaptor



SECTION 1.10

NUMERICAL INDEX BY TOOL PART NUMBER

P/N	DESCRIPTION	PAGE
24088S	Spark Plug 7/8-in. Socket	1.00-2
AA24088U	Turnover Wrench Assembly	1.00-2
27827	Adjustable 6-in. Wrench	1.00-2
27828	Double End Box Wrench 11/16 – 3/4 in.	1.00-2
27829	Double End Box Wrench 1/2 – 9/16 in.	1.00-3
27830	Double End Box Wrench 3/8 – 7/16 in.	1.00-3
56372	Torque Wrench Adapter	1.00-2
75644	Suction Cup	1.00-3
O75644	Valve Lapping Tool	1.00-3
106821B	Valve Retainer Block	1.00-3
106821C	Valve Retainer Block	1.00-4
A106842A	Valve Spring Compressor Assembly	1.00-3
106893	Ring Expander	1.00-4
106950	Ring Groove Cleaner	1.00-3
O106965	Ring Compressor	1.00-4
O106965A	Compressor for 0.020-in. Oversized Rings	1.00-4
O106965B	Compressor for 0.030-in. Oversized Ring	1.00-5
109023	Piston Pin Remover	1.00-4
109221	Cylinder Burette	1.00-5
A109226B	Cylinder Overhaul Stand	1.00-4
A109268B	Cylinder Depth Gauge	1.00-5
109284	Feeler Gauge	1.00-5
109291A	Pickup Cable Wrench	1.00-6
109291B	Injector Pickup Probe Wrench	1.00-5
109298	Phillips Screwdriver	1.00-6
O109405	Valve Seat Removal Fixture	1.00-5
A109802A	Allen-Head Screwdriver	1.00-6

P/N	DESCRIPTION	PAGE
109885	Snap Ring Pliers	1.00-6
C110304	Compression Pressure Gauge	1.00-7
A110376	Diesel Compression Gauge	1.00-7
A110538	Valve Depressor Assembly	1.00-7
A110546A	Cylinder Height Gauge	1.00-6
110653	Valve Guide Alignment Tool	1.00-7
110781	Valve Seat Extractor	1.00-7
110865	Tapered Pilot 3/8-in.	1.00-8
110866	Tapered Pilot 3/8-in. +0.001 in. Oversized	1.00-7
110867	Tapered Pilot 3/8-in. +0.002 in. Oversized	1.00-8
110868	Tapered Pilot 3/8-in. +0.003 in. Oversized	1.00-7
110869	Tapered Pilot 7/16-in.	1.00-8
110870	Tapered Pilot 7/16 in. +0.001 Oversized	1.00-8
110871	Tapered Pilot 7/16-in. +0.002 Oversized	1.00-9
110872	Tapered Pilot 7/16-in. +0.003 Oversized	1.00-8
110899A	Walnut Shells	1.00-9
AC110900	Carbon Blaster II	1.00-8
110902	Threading Die	1.00-9
110904	Spark Plug Hole Tap	1.00-9
110905	Pickup Hole Tap	1.00-10
111262	Adjustable Spanner Wrench	1.00-9
111367	Venturi Remover	1.00-10
111680	Torque Wrench	1.00-9
111682	Small Hole Gauge	1.00-10
111684	Cylinder Diameter Gauge	1.00-10
489013	Filter Bag (10-pack)	1.00-11
489015	Sioux Valve Reconditioning Equipment	1.00-10



NUMERICAL INDEX BY TOOL PART NUMBER

P/N	DESCRIPTION	PAGE
489086	Return Hose	1.00-11
489087	Discharge Hose	1.00-10
489088	Air Supply Hose	1.00-11
489089	Manifold Sealing Plate	1.00-11
489090	Adapter	1.00-12
489091	Blast Return Pipe	1.00-11
489092	Adapter – Split Head	1.00-12
489093	Handle Assembly	1.00-11
489094	CFR Swivel	1.00-12
489121	Socket Adapter 3/8 – 1/2 in.	1.00-12
489263	Cylinder Hoist	1.00-13
489264	Stationary Base	1.00-12
489391	Cetane Valve Seat Removal Fixture	1.00-13
489392	Valve Guide Removal Tool	1.00-12
489393	Piston Support Tool	1.00-13
489394	Valve Guide Gauging Tool	1.00-13
489395	Valve Seat Installation Tool	1.00-14
G-818-4	Specialty Tools for Octane Units	1.00-15
G-818-5	Specialty Tools for Cetane Units	1.00-15
G-818-6	Expanded Specialty Tools for Octane Units	1.00-15
G-818-7	Cetane Nozzle Tester Assembly	1.00-13
G-818-8	Torque Wrench and Adaptor	1.00-14
G-867-3	Turnover Bracket	1.00-13
G-867-4	Turnover Bracket	1.00-14



SECTION 1.15

ALPHABETICAL INDEX BY TOOL NAME

DESCRIPTION	P/N	PAGE
Adapter	489090	1.00-12
Adapter – Split Head	489092	1.00-12
Adjustable Spanner Wrench	111262	1.00-9
Adjustable 6-in. Wrench	27827	1.00-2
Air Supply Hose	489088	1.00-11
Allen-Head Screwdriver	A109802A	1.00-6
Blast Return Pipe	489091	1.00-11
Carbon Blaster II	AC110900	1.00-8
Cetane Nozzle Tester Assembly	G-818-7	1.00-13
Cetane Valve Seat Removal Fixture	489391	1.00-13
Compression Pressure Gauge	C110304	1.00-7
Cylinder Burette	109221	1.00-5
Cylinder Depth Gauge	A109268B	1.00-5
Cylinder Diameter Gauge	111684	1.00-10
Cylinder Height Gauge	A110546A	1.00-6
Cylinder Hoist	489263	1.00-13
Cylinder Overhaul Stand	A109226B	1.00-4
Diesel Compression Gauge	A110376	1.00-6
Discharge Hose	489087	1.00-10
Double End Box Wrench 11/16 – 3/4 in.	27828	1.00-2
Double End Box Wrench 1/2 – 9/16 in.	27829	1.00-2
Double End Box Wrench 3/8 – 7/16 in.	27830	1.00-3
Expanded Specialty Tools for Octane Units	G-818-6	1.00-15
Feeler Gauge	109284	1.00-5
Filter Bag (10-pack)	489013	1.00-11
Handle Assembly	489093	1.00-11
Injector Pickup Probe Wrench	109291B	1.00-5

DESCRIPTION	P/N	PAGE
Manifold Sealing Plate	489089	1.00-11
Phillips Screwdriver	109298	1.00-6
Pickup Cable Wrench	109291A	1.00-6
Pickup Hole Tap	110905	1.00-10
Piston Pin Remover	109023	1.00-4
Piston Support Tool	489393	1.00-13
Return Hose	489086	1.00-11
Ring Compressor	O106965	1.00-4
Ring Compressor (0.020-in. Oversized)	O106965A	1.00-4
Ring Compressor (0.030-in. Oversized)	O106965B	1.00-5
Ring Expander	106893	1.00-4
Ring Groove Cleaner	106950	1.00-3
Sioux Valve Reconditioning Equipment	489015	1.00-10
Small Hole Gauge	111682	1.00-10
Snap Ring Pliers	109885	1.00-6
Socket Adapter 3/8 – 1/2 in.	489121	1.00-12
Spark Plug 7/8-in. Socket	24088S	1.00-2
Spark Plug Hole Tap	110904	1.00-9
Speciality Tools for Octane Units	G-818-4	1.00-15
Speciality Tools for Cetane Units	G-818-5	1.00-15
Stationary Base	489264	1.00-12
Suction Cup	75644	1.00-3
Tapered Pilot 3/8-in.	110865	1.00-8
Tapered Pilot 3.8-in. (+0.001 in. Oversized)	110866	1.00-7
Tapered Pilot 3.8-in. (+0.002 in. Oversized)	110867	1.00-8
Tapered Pilot 3.8-in. (+0.003 in. Oversized)	110868	1.00-7



ALPHABETICAL INDEX BY TOOL NAME

DESCRIPTION	P/N	PAGE
Tapered Pilot 7/16-in.	110869	1.00-8
Tapered Pilot 7/16-in. (+0.001 in. Oversized)	110870	1.00-8
Tapered Pilot 7/16-in. (+0.002 in. Oversized)	110871	1.00-9
Tapered Pilot 7/16-in. (+0.003 in. Oversized)	110872	1.00-8
Threading Die	110902	1.00-9
Torque Wrench	111680	1.00-9
Torque Wrench Adapter	56372	1.00-2
Torque Wrench and Adapter	G-818-8	1.00-14
Turnover Bracket	G-867-3	1.00-13
Turnover Bracket	G-867-4	1.00-14
Turnover Wrench Assembly	AA24088U	1.00-2
Valve Depressor Assembly	A110538	1.00-7
Valve Guide Alignment Tool	110653	1.00-7
Valve Guide Gauging Tool	489394	1.00-13
Valve Guide Removal Tool	489392	1.00-12
Valve Lapping Tool	O75644	1.00-3
Valve Retainer Block	106821B	1.00-3
Valve Retainer Block	106821C	1.00-4
Valve Seat Extractor	110781	1.00-7
Valve Seat Installation Tool	489395	1.00-14
Valve Seat Removal Fixture	O109405	1.00-5
Valve Spring Compressor Assembly	A106842A	1.00-3
Venturi Remover	111367	1.00-10
Walnut Shells	110899A	1.00-9
CFR Swivel	489094	1.00-12



APPENDIX A – WARRANTY

The CFR Express Limited Warranty is available by:

- Requesting a copy from: CFR Manufacturing Inc.
N8 W22577 Johnson Drive
Pewaukee, WI 53186

Or

- Visiting the following link: <http://www.cfengines.com/tandc>



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