

Section 4 - Level 3 Group 2

Cylinder Head Component Rebuild Tools Group

This section contains major component rebuild tools for the Cylinder Head Group family. See below for a general description of contents for this grouping of tools.

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Crack Detection Kit

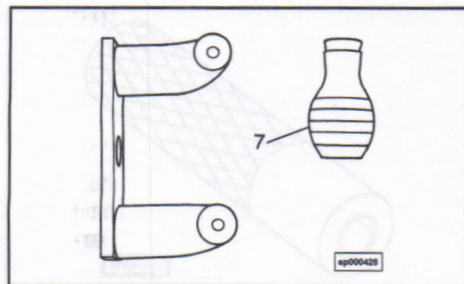
ST 1166

Magnetic Crack Detector

Engine Series: All

This tool is used to inspect cylinder heads or blocks for cracks that cannot be magnafluxed easily for cracks, especially in the area of the valve seat, injector bore area and/or counterbores.

Ref. No.	Part No.	Description
7	ST 1166-7	Powder Spray Bulb
	ST 1166-8	Powder, 1/2 lb. package



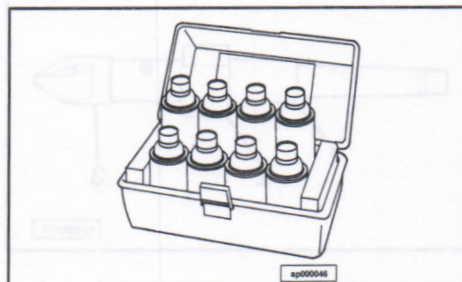
3375432

Crack Detection Kit

Engine Series: All

This kit contains the non-magnetic crack detection test kit to detect cracks in engine components as required. The kit comes complete with the cleaner, dye penetrant and developer required to perform this test.

Part No.	Description
3375433	Cleaner
3375434	Developer
3375435	Penetrant



Crosshead Guide Tools

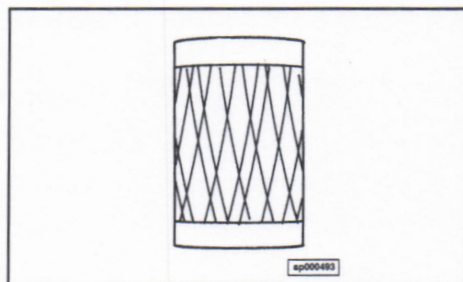
ST 633

Crosshead Guide Spacer

Engine Series: All Except B and C Series

These spacers are used when installing new crosshead guides in the cylinder head to assure the proper assembled height. The arbor press will 'bottom' out when the arbor contacts the spacer.

Part No.	Description
ST 633	Crosshead Guide Spacer (NH, NT, V28, L10)
ST 791	Crosshead Guide Spacer (V378, V504, V555)
ST 1264	Crosshead Guide Spacer (K19, K38, K50)
3375092	Crosshead Guide Spacer (V903)

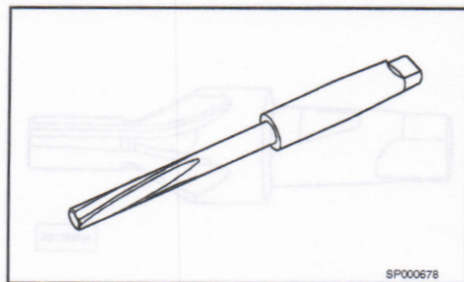


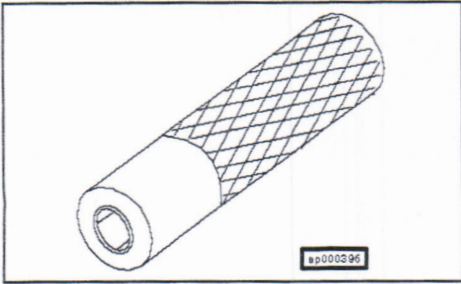
3377149

Crosshead Guide Reamer

Engine Series: L10

This special reamer is used to resize the cylinder head crosshead guide bore to install oversize crosshead guides.

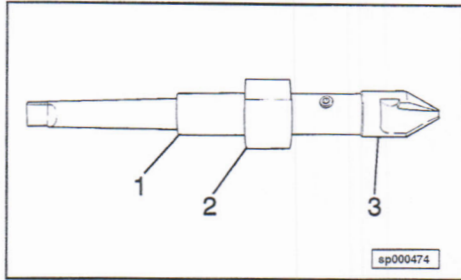




3824920
Crosshead Guide Installer

Engine Series: QST30

This is a special sized mandrel to install the crosshead guide pin in the cylinder head to the proper assembled height.



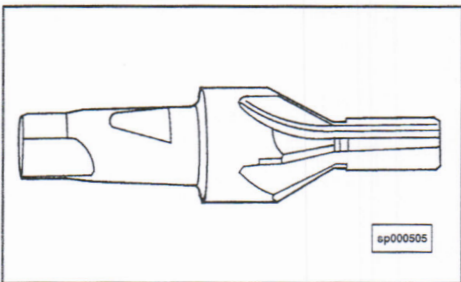
Injector Sleeve Tools

ST 379
Injector Seat Cutter

Engine Series: C & J, NH, NT, V28, V378, V555, V903, V504, L10

These special ground cutters are required to cut the injector sleeve seat area after sleeves have been rolled into the cylinder head. The injector seats must be machined to the proper depth to allow specified injector tip protrusion through the cylinder head.

Ref. No.	Part No.	Description
	ST 379	Injector Seat Cutter (C & J)
1	ST 379-1	Holder
2	ST 379-2	Pilot (Also L10)
3	ST 379-3	Cutter
	ST 389	Injector Seat Cutter (L Series Engines)
	ST 884	Injector Seat Cutter (NH, NT, V903, V28)
1	ST 884-1	Holder (Also L10)
2	ST 884-5	Pilot (NH 5 1/8)
2	ST 884-6	Pilot (NT, V903, V28)
3	ST 884-3	Cutter (Also L10)
	ST 920	Injector Seat Cutter (V378, V504, V555)
1	ST 920-1	Holder
2	ST 920-2	Pilot
3	ST 920-3	Cutter



ST 788
Bead Cutting Tool

Engine Series: C & J, NH, NT, V28, V378, V555, V903, V504, L10

These bead cutters are required to machine the lower injector sleeve seat area of the cylinder head. Use **ST 884-1 Holder** and **ST 884-6 Pilot** with **ST 788** and use **ST 884-5 pilot** with **ST 1110**.

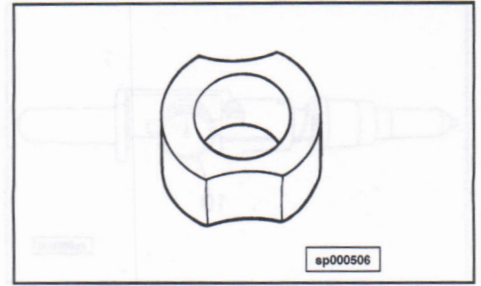
Part No.	Description
ST 788	Bead Cutting Tool (NT, V28, V903, V378, V504, V555, L10)
ST 1110	Bead Cutting Tool (NH) (5 1/8 bore)

ST 826
Bead Cutter Pilot

Engine Series: C & J, NH

These pilots are designed to be used with the bead cutting tools and appropriate holders. See bead cutting tool for holder required.

Part No.	Description
ST 826	Bead Cutter Pilot (H, NH, V12 (4 7/8 & 5 1/8 bore))

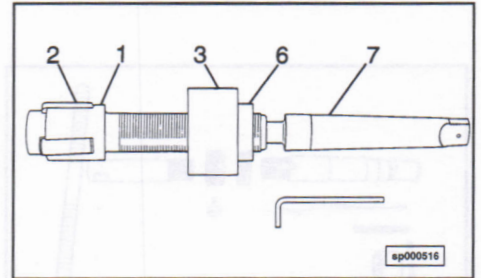


ST 880
Injector Sleeve Expander

Engine Series: NH, NT, V28, V378, V555, V903, V504, L10

This tool is used to "roll" or expand the upper portion of the injector sleeve when new sleeves are installed. This operation assures the necessary seal of the sleeve to the cylinder head to prevent coolant leaks.

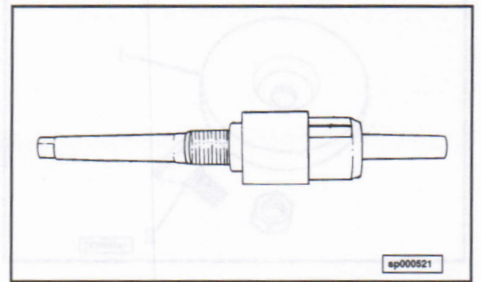
Ref. No.	Part No.	Description
1	ST 880-1	Cage
2	ST 880-2	Roller
3	ST 880-3	Collar
6	ST 880-6	Thrust Nut
7	ST 880-7	Mandrel



ST 918
Injector Sleeve Expander

Engine Series: NH

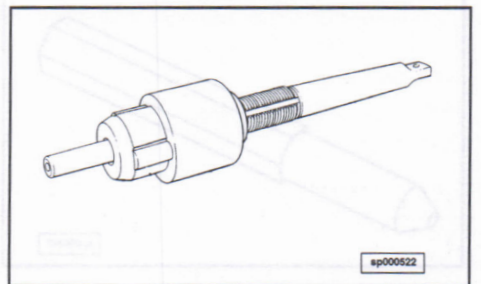
This expander is used to roll the upper portion of the injector sleeve to properly seal the sleeve in the cylinder head thus preventing any coolant leaks. This tool applies to the older model Cummins engines H/NH 4 7/8 and 5 1/8 bore engines and V12 5 1/8 bore.

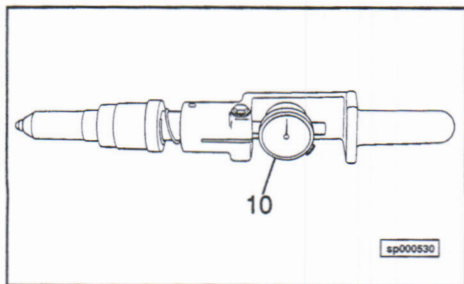


ST 922
Injector Sleeve Expander

Engine Series: C & J

This expander is used to roll the upper portion of the injector sleeve into the cylinder head, preventing coolant leaks.





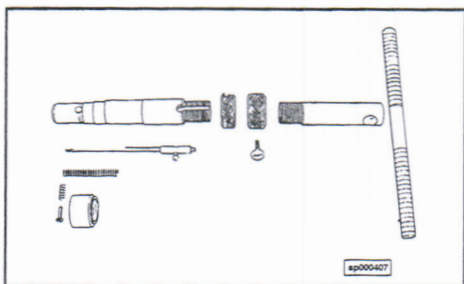
**ST 981
Injector Protrusion Comparator**

Engine Series: C & J, NH, NT, V28, V378, V555, V903, V504, L10

This comparator will quickly determine if the injector sleeves have been properly cut to permit the required amount of injector tip protrusion while the injectors are removed from the cylinder head.

NOTE: This tool checks the injector sleeve cut depth. It does not measure injector protrusion. 3823495 will actually measure protrusion with an injector installed properly.

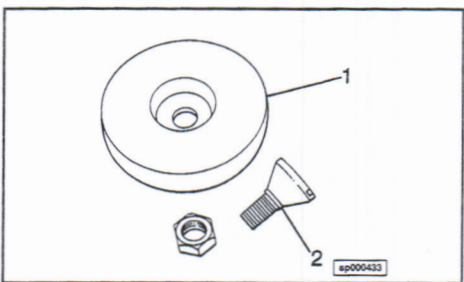
Ref. No.	Part No.	Description
10	ST 981-10	Dial Indicator



**ST 1100
Grooving Tool**

Engine Series: NT, V28, V378, V555, V903, V504

This tool is required to cut the injector sleeve O'Ring groove in the cylinder head as desired. The O'Ring groove provides an additional seal to protect against possible coolant leaks past the injector sleeve. This tool was released to update older cylinder heads to current production heads.

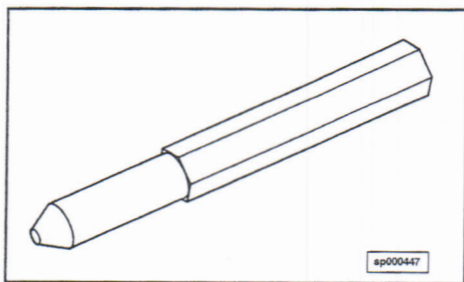


**ST 1179
Injector Sleeve Holding Tool**

Engine Series: C & J, NH, NT, V28, V378, V555, V903, V504, L10

This tool is used to hold the injector sleeve tightly in place in the cylinder head while rolling the upper portion of the sleeve.

Ref. No.	Part No.	Description
1	ST 1179-4	Anvil
2	3377347	Nut and Plug Assembly



**ST 1227
Injector Sleeve Driver**

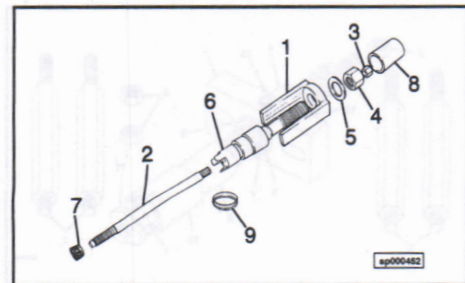
Engine Series: C & J, NH, NT, V28, V378, V555, V903, V504, L10

This tool is designed to install the injector sleeve into the cylinder head. The angle is machined to match the angle of the injector sleeve.

ST 1245
Injector Sleeve Puller

Engine Series: C & J, NH

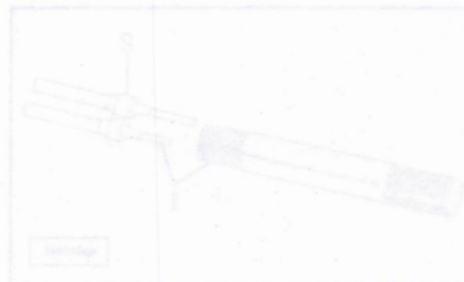
These injector pullers are "wedge" type pullers used to remove the injector sleeves from cylinder heads. The design requires hammer blow to the tool to wedge and collapse the sleeve around the extractor tip. A large impact socket ST 1247 is then used to pull the sleeve.

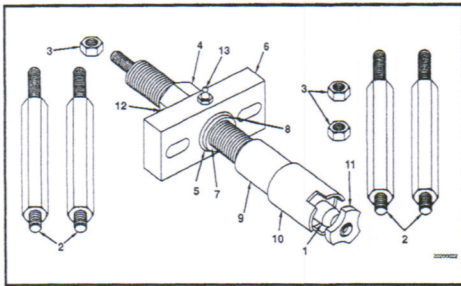


Ref. No.	Part No.	Description
	ST 1245	Injector Sleeve Puller (H, NH, V12 5 1/8 bore)
	ST 1246	Injector Sleeve Puller (C & J)
	ST 1247	Impact Socket
Breakdown of above parts including obsoleted ST 1244:		
1	P/N - 1	Injector Sleeve Support Bridge
2	3375616	Injector Sleeve Rod
3	P/N - 3	Injector Sleeve Nut (9/16-12)
4	P/N - 4	Injector Sleeve Nut (1 in.-8)
5	P/N - 5	Injector Sleeve Thrust Washer
6	3375614	Injector Sleeve Forming Collar (for ST 1244)
6	3375618	Injector Sleeve Forming Collar (for ST 1245)
6	3375620	Injector Sleeve Forming Collar (for ST 1246)
7	3375825	Injector Sleeve Extractor Tip (for ST 1244)
7	3375832	Injector Sleeve Extractor Tip (for ST 1246)
7	3375843	Injector Sleeve Extractor Tip (for ST 1245)
8	P/N - 8	Injector Sleeve Driver
9	P/N - 9	Injector Sleeve Spacer (V378, V504, V555)
10	3375615	Injector Sleeve Collar

The following assemblies contain details 2, 6, 7 and 10 from above illustration.

3375617	Forming Collar Assembly for ST 1244
3375619	Forming Collar Assembly for ST 1245
3375621	Forming Collar Assembly for ST 1246



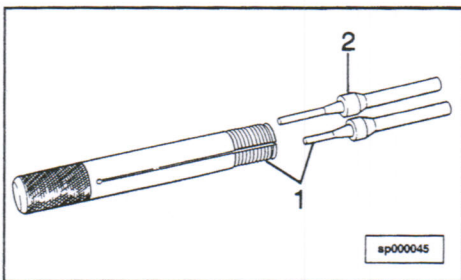


3163523 Injector Sleeve Remover

Engine Series: L10, M11, N14

This kit is used to remove the fuel injector sleeves from the L10, M11, ISM, NH, NT, and N14 engines. This extractor can be used with the cylinder head installed on the engine when used with other tools in the fuel injector sleeve replacement kit, Part Number 3163113. (Note that Part Number 3163113 is not available for purchase.)

Ref. No.	Part No.	Description
1	3163637	Extractor Adapter
2	3163518	Mounting Adapter, L10/M11
2	3163517	Mounting Adapter, N14
3	3163519	Hexagon-flanged Nut
4	3163509	Forcing Nut
5	3163634	Thrust Washer
6	3163510	Remover Plate
7	3163520	Retaining Ring
8	3163636	Square Key (not shown)
9	3163508	Forcing Screw
10	3163507	Forming Collar
11	3163505	Extractor
12	3163635	Grease Fitting
	3163522	Socket Set Screw (extractor)
	3163633	Socket Set Screw (forming collar)



3375425 Injector Sleeve Extractor

Engine Series: C & J, NH, NT, V28, V378, V555, V903, V504

These pullers are used with a hydraulic press to remove the injector sleeves from the cylinder head. Special teeth bite into the injector sleeve as the mandrel expands and pushes the sleeve from the head. **Head must be removed.**

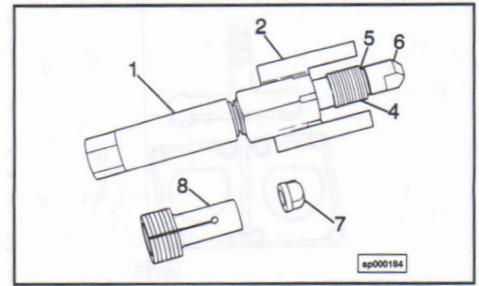
Ref. No.	Part No.	Description
1	3375425	Injector Sleeve Extractor (NT, V903, V28, V555)
2	3376327	Injector Sleeve Extractor (Mandrel (NT, V903, V28))
2	3377466	Injector Sleeve Extractor (Mandrel (V555))
1	3375456	Injector Sleeve Extractor (NH 5 1/8 bore)
1	3375984	Injector Sleeve Extractor (C & J)

**3377079
Injector Sleeve Puller**

Engine Series: All NH, V28, L10, V903, V504, V555

This special puller is designed to pull the injector sleeves from the cylinder head with minimal effort.

Ref. No.	Part No.	Description
1	3377089	Injector Sleeve Puller Remover Nut
2	3377091	Injector Sleeve Puller Body
	3377092	Injector Sleeve Puller Circlip
4	3377093	Injector Sleeve Puller Small Collet (All Except NH 5 1/8)
5	3377094	Injector Sleeve Puller Center Screw
6	3377095	Injector Sleeve Puller End Stop (All Except Small-V)
7	3377096	Injector Sleeve Puller End Stop (Small-V)
8	3377097	Injector Sleeve Puller Large Collet (NH 5 1/8)
	3377090	Injector Sleeve Puller Thrust Bearing Kit



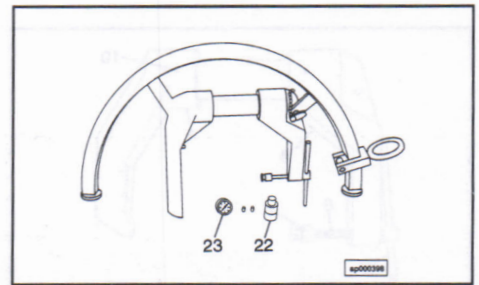
Leakage Test Devices

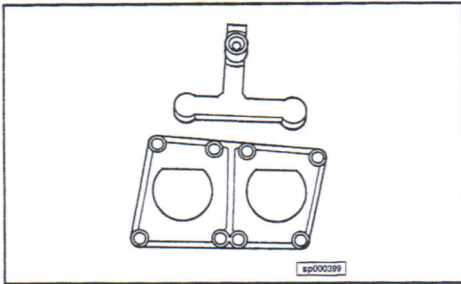
**ST 1012
Hydrostatic Tester**

Engine Series: All Except L10, B and C Series

This fixture is used in conjunction with appropriate water test plates to water test cylinder heads with the pressure test system. The appropriate test plate(s) are clamped to the cylinder head. A hoist is used to raise and then lowered into a water tank. Air pressure is applied to see if air bubbles are apparent. The special lifting quadrant allows the immersed head to be rotated for thorough inspection.

Ref. No.	Part No.	Description
22	ST 1012-22	Pressure Regulator
23	ST 1012-23	Pressure Gauge





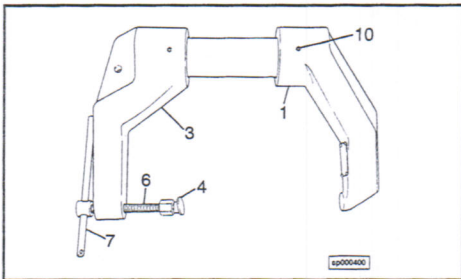
ST 1013
Water Test Plates

Engine Series: All Except L10, B and C Series

These water test plates are designed to seal all the water holes of the cylinder head for pressure testing the head for coolant leaks. Use these plates with **ST 1012 Hydrostatic Tester**.

NOTE: **ST 1016 Clamps** must be used to test heads that cover more than 3 cylinders.

Part No.	Description
ST 1013	Water Test Plates (NT (5 1/2 bore))
ST 1015	Water Test Plates (V903)
ST 1020	Water Test Plates (V12 (5 1/8 bore))
ST 1021	Water Test Plates (V28 (5 1/2 bore))
ST 1055	Water Test Plates (V378)
3375070	Water Test Plates (K19, K38, K50)
O'Rings for the above adapters may be ordered as follows.	
ST 1013-1	O'Rings (Lower Plate, all engines except K Series)
ST 1013-8	O'Rings (Upper Plate NT (5 1/2))
ST 1017-2	O'Rings (Upper Plate H, NH (4 7/8, 5 1/8))
3375071	O'Rings (K19, K38, K50 Complete Set)

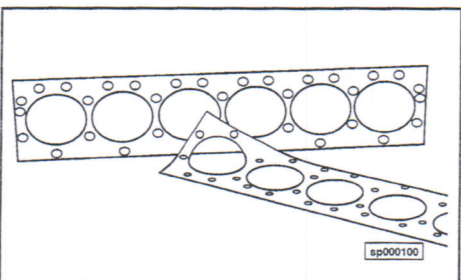


ST 1016
Adapter Plate Clamp

Engine Series: C & J, V28, V378, V555, V903, V504

This clamp is required to clamp the water tester adapter plates on cylinder heads that cover more than 2 cylinders. Example: V903, V28. This clamp is to be used in conjunction with **ST 1012 Hydrostatic Tester Kit** and appropriate water test plates.

Ref. No.	Part No.	Description
1	ST 1016-1	Lower Arm
3	ST 1016-3	Upper Arm
4	ST 1016-4	Swivel Pad
6	ST 1016-6	Screw
7	ST 1016-7	Handle
10	ST 1016-10	Roll Pin



3376082
Cylinder Head Water Test Kit

Engine Series: L10

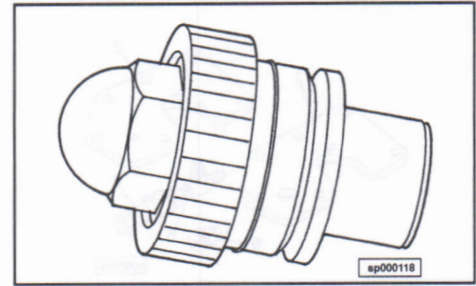
This kit contains all the necessary gaskets and cover plates to seal all the water passages for pressure testing the cylinder head for coolant leaks.

Part No.	Description
3376084	Gasket
3376658	Plate

3376298
Water Test Plug

Engine Series: C & J, NH, NT, V28, V378, V555, V903, V504, L10

This plug is used to seal water holes in the top of the cylinder block during the check for water leakage around the cylinder liner flange.

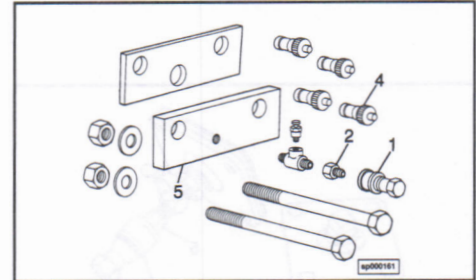


3376810
Cylinder Head Water Test Kit

Engine Series: K19, K38, K50

This kit contains all the gaskets and plates to seal all the water passages to pressure test the cylinder head for coolant leaks.

Ref. No.	Part No.	Description
1	ST 435-7	Female Coupler
2	ST 435-8	Male Nipple
4	3377375	Water Test Plug (Qty. 4)
5	3377373	Plate

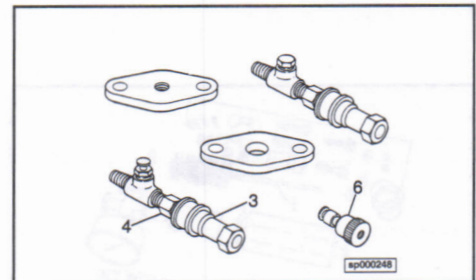


3377376
Cylinder Head Water Test Kit

Engine Series: NH and NT

This kit contains all the necessary gaskets, plates and plugs to seal all the water passages for pressure testing the cylinder head for coolant leaks.

Ref. No.	Part No.	Description
3	ST 435-7	Female Coupler
4	ST 435-8	Male Nipple
6	3376298	Water Test Plug (Qty. 8)

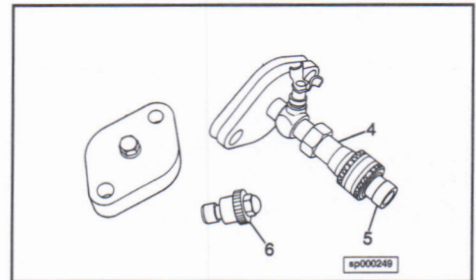


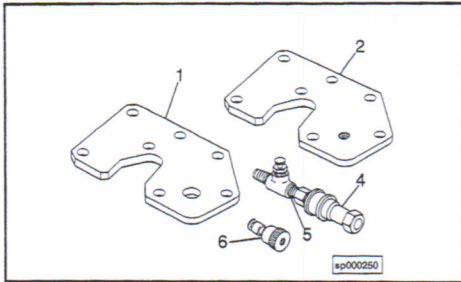
3377378
Cylinder Head Water Test Kit

Engine Series: V28

This kit includes all the necessary gaskets and plates to seal all the water passages for pressure testing cylinder heads for coolant leaks.

Ref. No.	Part No.	Description
4	ST 435-7	Female Coupler
5	ST 435-8	Male Nipple
6	3376298	Water Test Plug (Qty. 18)



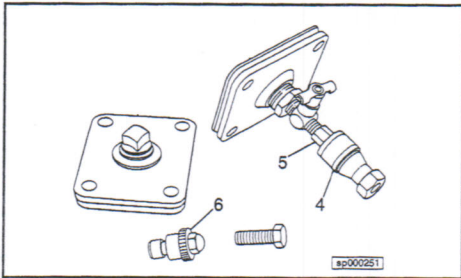


3377381
Cylinder Head Water Test Kit

Engine Series: V378, V555, V504

This kit contains all the necessary gaskets, plates and plugs to seal all the water passages for pressure testing the cylinder head for coolant leaks.

Ref. No.	Part No.	Description
1	3376110	Gasket
2	3377382	Plate
4	ST 435-7	Female Coupler
5	ST 435-8	Male Nipple
6	3376298	Water Test Plug (Qty. 16)

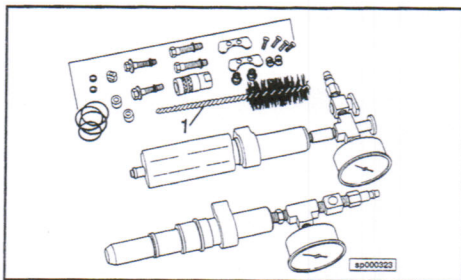


3377383
Cylinder Head Water Test Kit

Engine Series: V903

This kit contains all the necessary gaskets, plugs and plates to seal all the water passages for pressure testing the cylinder head for coolant leaks.

Ref. No.	Part No.	Description
4	ST 435-7	Female Coupler
5	ST 435-8	Male Coupler
6	3376298	Water Test Plug (Qty. 16)



3824079
Cylinder Head Leak Test Kit

Engine Series: NH/NT, N14, V28

This kit is used to check cylinder heads for fuel and/or coolant leaks without removing the cylinder head from the block. Remove the injector in the suspected cylinder and install this tool. Apply recommended air pressure to determine if a leak is present. This tool is used "in chassis".

NOTE: To test V28 engines, order **3824709 Leak Test Kit** and use all the above parts. This is a dummy injector and clamp so that all 3 cylinders of each cylinder head can be tested at the same time.

Ref. No.	Part No.	Description
1	3824102	Nylon Brush
	3824082	Leak Test Accessory Kit
	3824086	Test Seal Kit
	3824087	Hardware Kit
	3824081	Fuel Passage Tester Assembly
	3824103	Fuel Tester Fitting Assembly
	3824104	Sleeve Tester Fitting Assembly
	3824080	Injector Sleeve Tester Assembly
	3824088	Drawbar Assembly

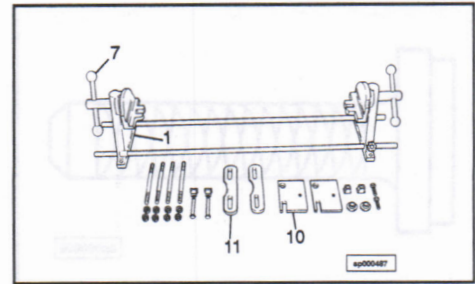
Miscellaneous

ST 583 Head Holding Fixture

Engine Series: All

This fixture is designed to hold and rotate the cylinder head to various positions during the rebuild process as required. The fixture may be adjusted to desired length by moving the end brackets.

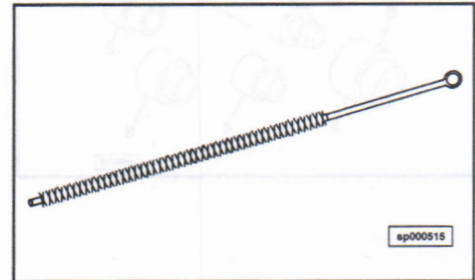
Ref. No.	Part No.	Description
1	ST 583-1	Bracket
7	ST 583-7	Handle
10	ST 583-10	Plate
11	ST 583-11	Plate



ST 876 Fuel Passage Cleaning Brush

Engine Series: All

This cleaning brush is used when cleaning internal fuel passages when rebuilding cylinder heads or other small passages.

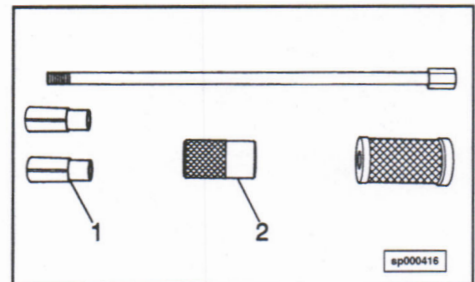


ST 1134 Dowel Pin Puller

Engine Series: All

This puller kit contains various size collets to remove crosshead guides or dowels throughout the engine.

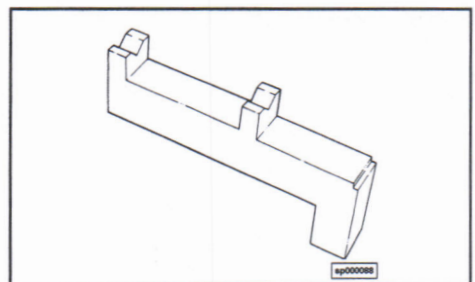
Ref. No.	Part No.	Description
1	ST 1134-1	Puller Head (3/8)
1	ST 1134-2	Puller Head (7/16)
1	ST 1134-3	Puller Head (1/2)
2	ST 1134-4	Extractor Collar
1	ST 1134-9	Puller Head (9/16)
1	ST 1134-10	Puller Head (5/8)
1	ST 1134-11	Puller Head (11/16)
1	3376003	Puller Head (1/4)
1	3376004	Puller Head (5/16)
	Optional:	
	3376945	Puller Head (L10)

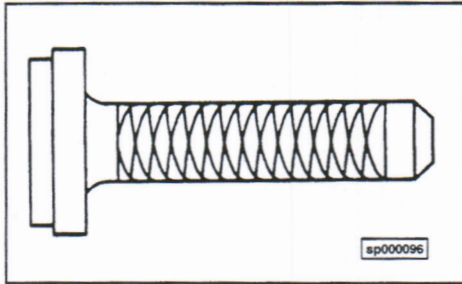


3375938 Valve Head Checking Tool

Engine Series: V555

This tool is used to visually check the valve head thickness after reconditioning for accept or reject purposes.

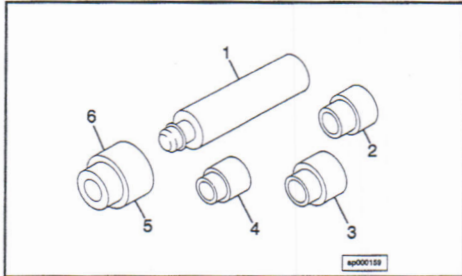




3376058
Cup Plug Driver

Engine Series: L10

This cup plug driver is used to install the cup plug into the cylinder head.
Ref. 206741 plug.



3376793
Cup Plug Driver

Engine Series: K19, K38, K50, NT, V28, V903, B and C Series, L10, M11

Cup plug drivers are required to install new cup plugs to their proper depth plus avoiding damage to the cup plug and the surrounding area.

NOTE: Detail 1 Universal Handle part number 3376795 is required to use the listed driver heads. The handle must be ordered separately.

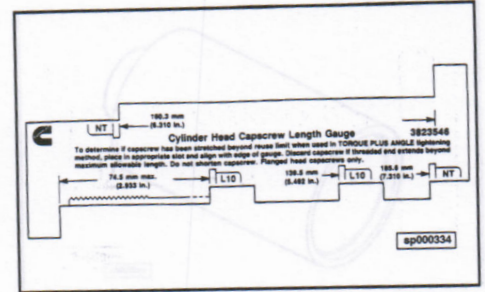
Ref. No.	Part No.	Description
1	3376795	Cup Plug Universal Handle
2	3376793	Cup Plug Driver Head (1/2 nom.)
2	3376812	Cup Plug Driver Head (1 1/8 nominal)
2	3376813	Cup Plug Driver Head (7/8 nominal (K, NH, NT, L10, B))
3	3376814	Cup Plug Driver Head (1 5/8 nominal (K, L10, NH, NT))
4	3376815	Cup Plug Driver Head (3/4 nominal Install Plug p/n 213394 (NT, V903, V28))
5	3376816	Cup Plug Driver Head (1" nom. Install Plug p/n 213395 (N14, V903, V28, L10, M11, B, C))
6	3376817	Cup Plug Driver Head (1 1/4 nominal Install Plug p/n 216525 (NT, V903, V28, B))
	3376818	Cup Plug Cam Bore Plug (NT 2 1/2 in. cam and Big Cam II)
6	3823520	Cup Plug Driver Head (11/16 nominal)
6	3823521	Cup Plug Driver Head (13/16 nominal)
6	3823522	Cup Plug Driver Head (1 3/16 nominal)
6	3823523	Cup Plug Driver Head (1 3/8 nominal)
6	3823524	Cup Plug Driver Head (2 1/4 nominal)
6	3824731	Cup Plug Driver Head (2 Nominal (L10/M11 Cylinder Head))
6	3824895	Cup Plug Driver Head (30 mm Nominal QST 30 block)
6	3824896	Cup Plug Driver Head (40 mm Nominal QST 30 block)

**3823546
Cylinder Head Capscrew Length Gauge**

Engine Series: See Below

These templates are designed especially to measure the free length (stretch) of the used cylinder head capscrews that have been used in the torque plus angle tightening method prior to installing in the cylinder head.

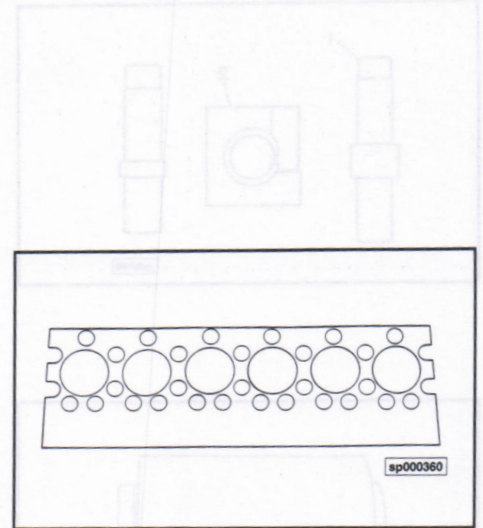
Part No.	Description
3823546	Cylinder Head Capscrew Length Gauge (L10 and all NH)
3823921	Cylinder Head Capscrew Length Gauge (B and C Series)
3824955	Cylinder Head Capscrew Length Gauge (QSK19 Series)
3163162	Cylinder Head Capscrew Length Gauge (Signature 600/ISX)
3163328	Cylinder Head Capscrew Length Gauge (QSK45/60)
3825140	Cylinder Head Capscrew Length Gauge (140mm max. length B)



**3823861
Cylinder Head Capscrew Template**

Engine Series: L10

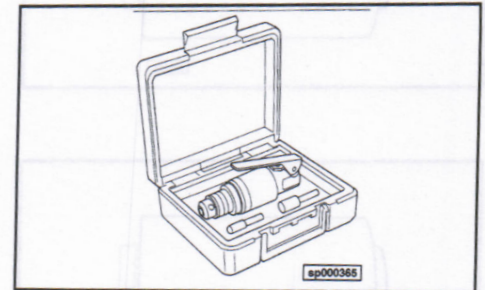
This light weight plastic template provides the recommended capscrew tightening sequence when assembling the cylinder head to the block. The template identifies the capscrew by number so that it is easy to follow. The template also describes the proper torquing sequence using the torque angle sequence or standard torque sequence.



**3823895
Die Grinder**

Engine Series: All

This air powered die grinder is an excellent tool to use when salvaging cylinder heads, cylinder blocks or welding clean up. The kit comes complete with 1/4 in. jacobs chuck plus 2 styles of rotary files packaged in a plastic box. **Part Number 3823896 is the Die Grinder less chuck.**

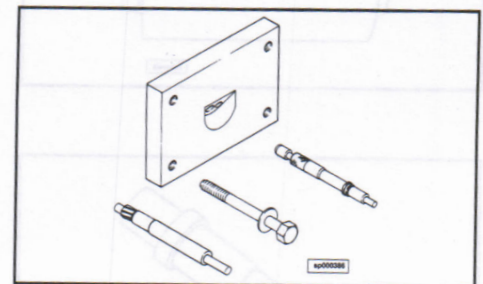


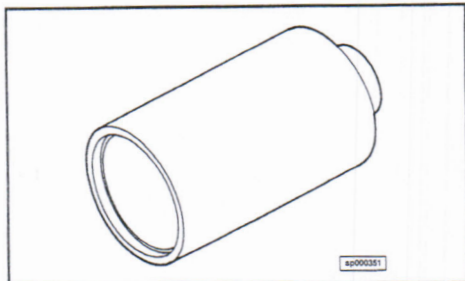
**3824531
Injector Bore Facing Tool**

Engine Series: C Series

This kit is designed to salvage C series cylinder heads when the injector sealing face has become mutilated, due to leaking combustion gases, rusty or other conditions that will prevent proper seating/sealing of the injector in the cylinder head. The spotface tool removes a precise amount of material from the counterbore so that a new sealing surface is provided. A special micrometer is used to measure depth of cut.

NOTE: Cylinder head must be removed for this operation.



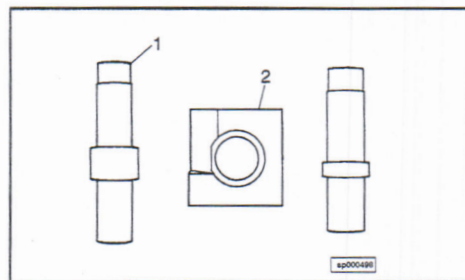


**3824861
Valve Head Thickness Gauge**

Engine Series: See Below

This tool is used to check the intake and exhaust valve head thickness after reconditioning.

Part No.	Description
3824861	Valve Head Thickness Gauge (Q19)
3823798	Valve Head Thickness Gauge (V903, V1710, N855 and N14)
3823800	Valve Head Thickness Gauge (All K and KV Series)



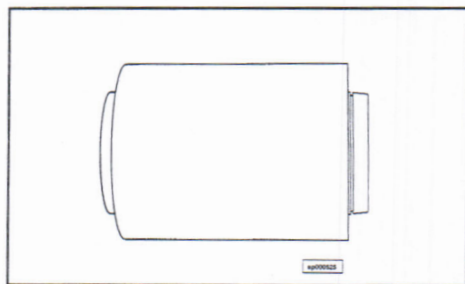
Rocker Lever Tools

**ST 691
Rocker Lever Block & Mandrel Set**

Engine Series: C & J, NH, NT, V28

This block and mandrel set is used to remove and install the precision steel bushings in the rocker levers. One end of the mandrel is used for removal and the other for installation.

Ref. No.	Part No.	Description
1	ST 691-1	Mandrel (C & J, H/NH, V28)
2	ST 691-2	Block

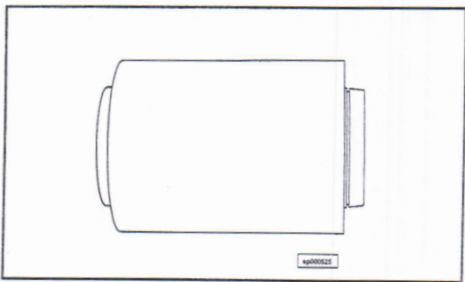


**ST 969
Expansion Plug Driver**

Engine Series: NH

This expansion plug driver is used to install the cup plugs into the rocker lever housings.

This driver is used to drive the expansion plug into the rocker lever housing. One end is standard and the other end will drive the cup plug .045 inch deeper as required.

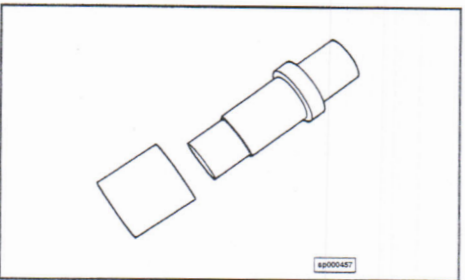


**ST 1053
Expansion Plug Driver**

Engine Series: NH

This expansion plug driver is used to install the cup plugs into the rocker lever housings.

This driver is used to install the expansion plugs in both the rocker lever housing and the cam follower housing when the new style deeper expansion plugs are used.



**ST 1284
Rocker Lever Bushing Mandrel**

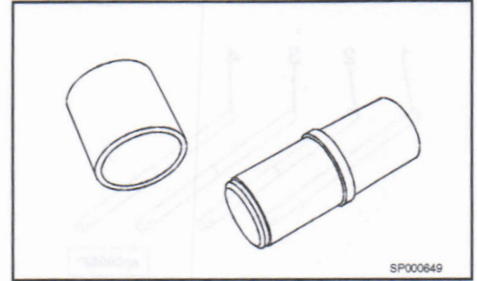
Engine Series: K19, K38, K50, L10, M11

This mandrel and sleeve are used to install and/or remove the rocker lever bushings.

3162458
Rocker Bushing R&I Tool

Engine Series: QSK19

To install and remove rocker bushings in QSK19.



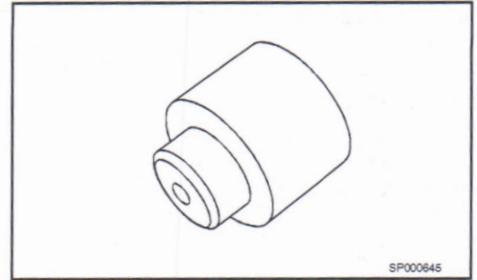
3376792
Expansion Plug Driver

Engine Series: NH, NT, V28, V378, V555, V903, V504

These expansion plug drivers are used to install the expansion plugs into the rocker lever shaft.

NOTE: 3376795 Handle must also be used with these drivers.

Part No.	Description
3376792	Expansion Plug Driver (NH, NT, V378/V504, V555 (5/8 nominal x 1/2 deep))
3376791	Expansion Plug Driver (V28 (5/8 nominal x .285 deep))
3376790	Expansion Plug Driver (V903 (7/16 nominal x .235 deep))

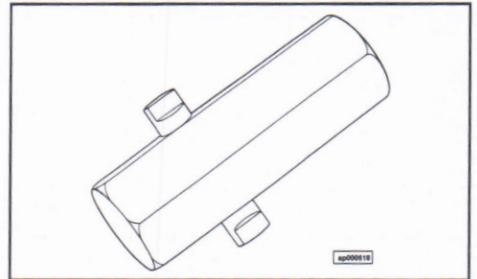


Spark Plug Sleeve Tools

ST 890
Spark Plug Sleeve Tool

Engine Series: NT and L10

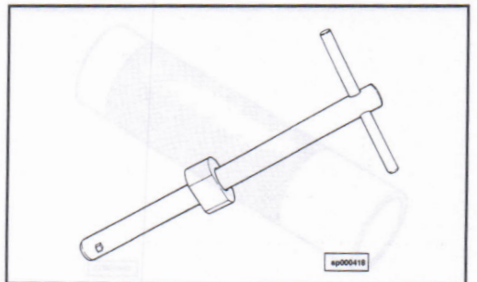
This tool is used to remove or torque the spark plug sleeve in the cylinder head before installing the spark plugs.

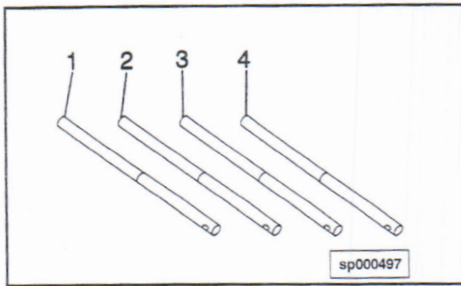


ST 1142
Spark Plug Sleeve Seat Facer

Engine Series: NT and L10

This facing tool is required to clean the scale and pits out of the spark plug sleeve seat in the cylinder head.





Valve Guide Tools

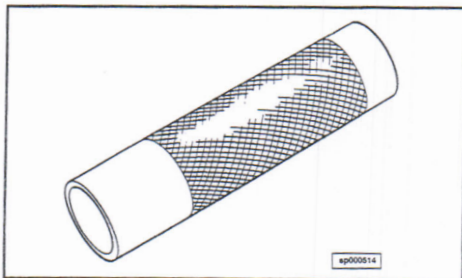
ST 663

Valve Guide Arbors

Engine Series: See Below

Use these special tapered arbors with ST 257 Valve Seat Insert Tool and/or ST 685 Valve Seat Grinder.

Ref. No.	Part No.	Description
	ST 663	Valve Guide Arbor Set (N855, V28, V903)
1	ST 663-1	Valve Guide Arbor (²⁹ / ₆₄) Std.
2	ST 663-2	Valve Guide Arbor (Std. .001)
3	ST 663-3	Valve Guide Arbor (Std. .002)
4	ST 663-4	Valve Guide Arbor (Std. .003)
	ST 687	Valve Guide Arbor Set (N743)
1	ST 687-1	Valve Guide Arbor (¹ / ₂) Std.
2	ST 687-2	Valve Guide Arbor (Std. .001)
3	ST 687-3	Valve Guide Arbor (Std. .002)
4	ST 687-4	Valve Guide Arbor (Std. .003)
	ST 804	Valve Guide Arbor Set (V504, L10)
1	ST 804-1	Valve Guide Arbor (³ / ₈ .006)
2	ST 804-2	Valve Guide Arbor (³ / ₈ .007)
3	ST 804-3	Valve Guide Arbor (³ / ₈ .008)
4	ST 804-4	Valve Guide Arbor (³ / ₈ .009)
	3375946	Valve Guide Arbor Set (K19, K38, K50)
1	3375950	Valve Guide Arbor (¹ / ₂ - .001)
2	3375949	Valve Guide Arbor (¹ / ₂ - .002)
3	3375948	Valve Guide Arbor (¹ / ₂ - .003)
4	3375947	Valve Guide Arbor (¹ / ₂ - .004)
	3377220	Valve Guide Arbor Set (B Series)
1	3377221	Valve Guide Arbor (.3160)
2	3377222	Valve Guide Arbor (.3170)
3	3377223	Valve Guide Arbor (.3180)
1	3823186	Valve Guide Arbor (8.019 mm) B Engine
1	3823187	Valve Guide Arbor (9.549 mm) C Engine



ST 873

Valve Guide Seal Installer

Engine Series: NH, NT, V28, V378, V555, V903, V504

These tools are used to push the valve guide seals onto the valve and valve guide when assembled in the head.

Part No.	Description
ST 873	Valve Guide Seal Installer (V378, V504, V555)
ST 874	Valve Guide Seal Installer (NT, V903, V28)
ST 875	Valve Guide Seal Installer (H, NH, V12 (4 ⁷ / ₈ & 5 ¹ / ₈ bore))

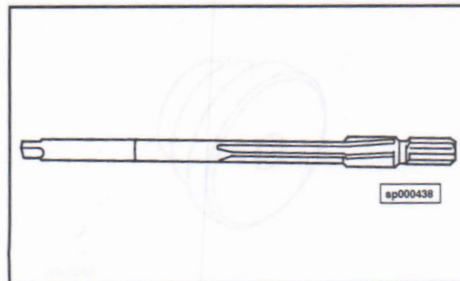
ST 1187

Valve Guide Reamer - Oversize

Engine Series: K19, K38, K50, NT, V378, V555, V903, V504, L10

These special reamers are required to ream the cylinder head to accept oversize (outside diameter) valve guides.

Part No.	Description
ST 1187	Valve Guide Reamer - Oversize (.015 Oversize NH, NT, V903)
ST 1188	Valve Guide Reamer - Oversize (.010 Oversize NH, NT, V903)
3376333	Valve Guide Reamer - Oversize (.010 Oversize V378, V504, V555)
3376334	Valve Guide Reamer - Oversize (.015 Oversize V378, V504, V555)
3377145	Valve Guide Reamer - Oversize (.020 Oversize L10)
3376754	Valve Guide Reamer - Oversize (.010 Oversize K19, K38, K50)
3376755	Valve Guide Reamer - Oversize (.015 Oversize K19, K38, K50)



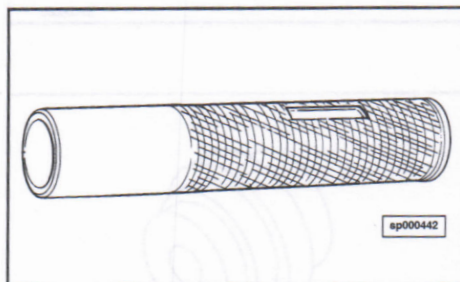
ST 1211

Valve Guide Driver

Engine Series: All Except L10, B and C Series

These drivers are used to press the valve guides into the cylinder head to the proper assembled height. Correct height is important to prevent valve damage and to properly pilot the valve.

Part No.	Description
ST 1211	Valve Guide Driver (H 45 degree (2 valve head))
ST 1212	Valve Guide Driver (NH, V12 5 1/8 bore seal type & GV 12 5 1/2 bore)
ST 1217	Valve Guide Driver (NH, V12 5 1/8 Gas)
3375282	Valve Guide Driver (NT, V28 5 1/2 bore)
3376255	Valve Guide Driver (V903, V8 265)
3376779	Valve Guide Driver (K19, K38, K50)
3376149	Valve Guide Driver (K Locomotive engine (Guide p/n 3018818))
3376332	Valve Guide Driver (V378, V504, V555)
3823909	Valve Guide Driver (N14, NT)
3824918	Valve Guide Driver (QST 30 Series)

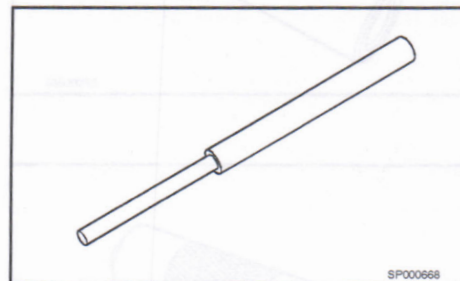


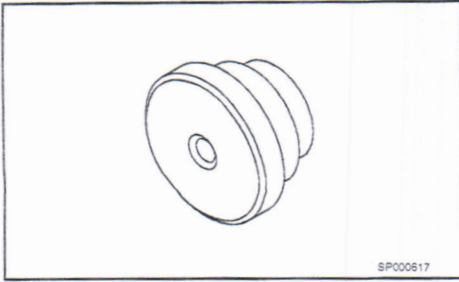
3162406

Valve Guide Remover

Engine Series: Onan, CCK, LK, B, N, T, P

This special arbor assures correct removal of valve guides for all CCK, LK, B, N, T and P series.

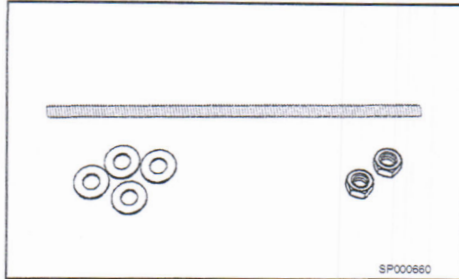




3162407
Valve Guide Pilot

Engine Series: Onan CCK, LK, B, P

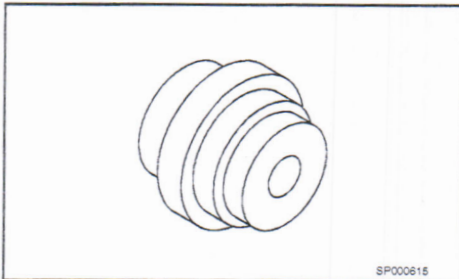
Use this tool with 3162413 Valve Guide Installer to install valve guides and valve seats for all CCK, LK, B & P series. Also included in 3162417.



3162413
Valve Guide Installer

Engine Series: Onan

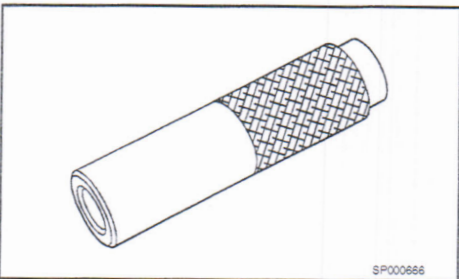
This tool is used with 3162407 Valve Seat Pilot to install valve guides. Also included in 3162417.



3162416
Valve Seat Pilot

Engine Series: Onan

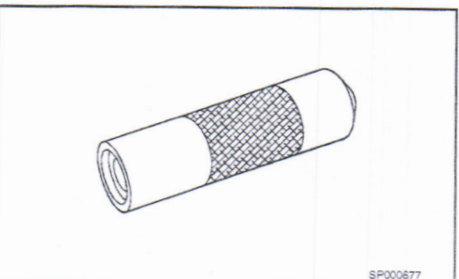
This Adapter is used with 3162413 Installer to install valve guides. It may also be used with 3162406 Driver to install new valve seats on N & T series. Also included in 3162417.



3163041
Valve Guide Installer

Engine Series: QSK19/45/60

This tool is used to install & press the valve guide into the cylinder heads. It also controls the required height from the cylinder head machined face.



3163100
Valve Guide Installer

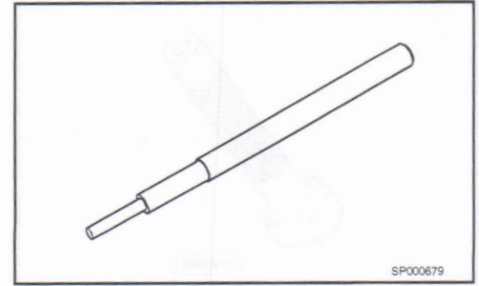
Engine Series: ISC

Used for installing valve guide in ISC engine. A press must be used for proper installation.

3163101
Valve Guide Remover

Engine Series: ISC

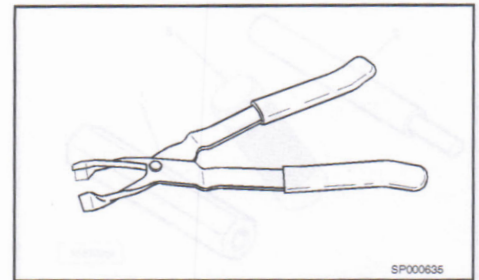
Used for removing valve guide in ISC engine. A press must be used for proper removal.



3163293
Boot Pliers

Engine Series: All

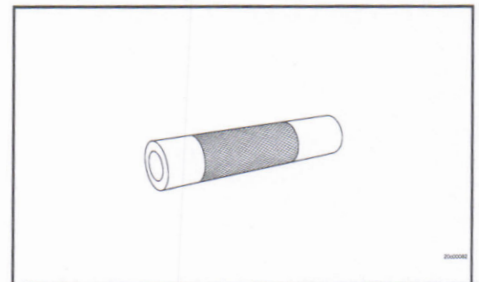
Used to remove valve stem seals. The twist and pull action frees the boot and the serrated jaws provide a secure grip.



3163294
Valve Seal Installer

Engine Series: Signature/ISX

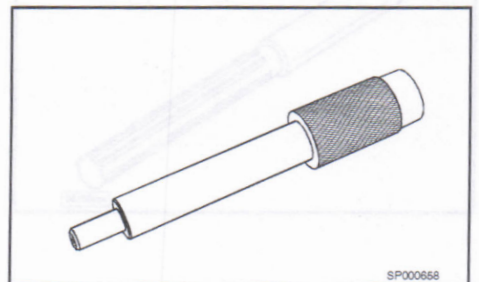
This tool locates the seal at the proper height and squares it to the guide when it stops against the cylinder head surface. Used with the intake and exhaust valves still in the cylinder head. Requires boot pliers, 3163293.



3163399
Valve Guide/Seal R&I Tool

Engine Series: QSK19/45/60

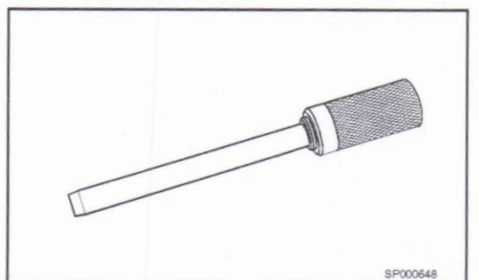
This tool is used to install valve stem seal over the valve guide without causing damage to the seal lip of face of the valve guide. It can also be used to remove the valve guide from cylinder head.



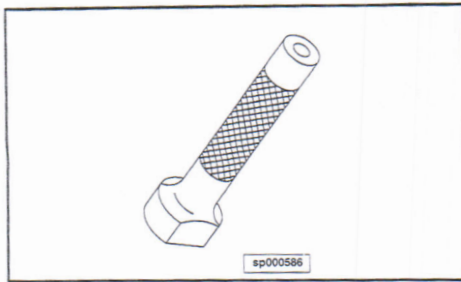
3163499
Valve Guide Drop Gauge

Engine Series: K

An inspection tool for checking the valve guide bore, after it is pressed into the cylinder head. This item consists of gauge (listed below) and o'ring seal.



Ref. No.	Part No.	Description
	3162840	Valve guide drop gauge



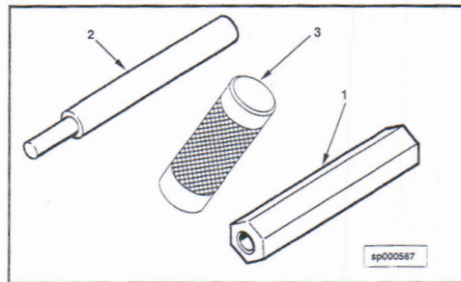
3163602
Valve Seal Installer

Engine Series: M11

Used to install valve seals to specified height.

3163602 - Valve Seal Installer (used to install 4003965 seals on 1.828 high guides)

3163603 - Valve Seal Installer (used to install 4003965 seals on 1.079 high guides)

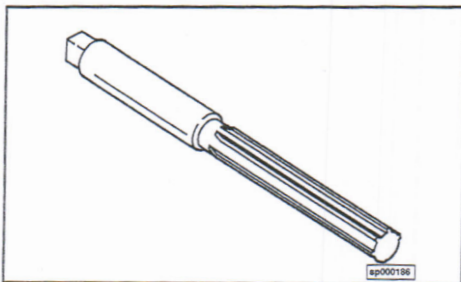


3376061
Valve Guide Drivers/Remover

Engine Series: See Below

The above illustration shows valve guide driver and valve guide remover. The valve guide driver assures that the valve guide is assembled to the proper installation height. The remover is a special sized mandrel used to push the valve guide out of the cylinder head during rebuild as required.

Ref. No.	Part No.	Description
1	3376061	Valve Guide Driver (L10)
3	3823947	Valve Guide Driver (L10 Drives Valve Guide to 1.074/1.084 Height)
3	3163601	Valve Guide Installer - M11 (used to install 1.823 high guides on engines manufactured 12/97 and later)
	3823272	Valve Guide Driver Kit (C Series)
3	3823269	Intake Valve Guide Driver (C Series)
3	3823270	Exhaust Valve Guide Driver (C Series)
2	3823271	Valve Guide Remover (C Series)



3376463
Valve Guide Reamer - Oversize

Engine Series: All

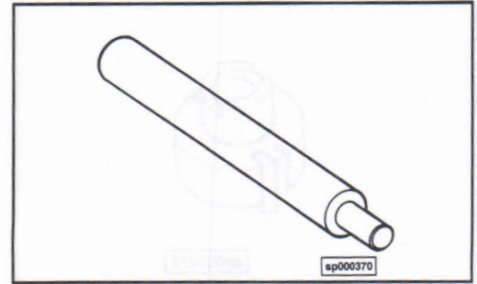
These reamers are used to ream the i.d. of valve guides as required to assure that the valves will have proper clearance. The reamers have straight shank with starting taper to allow easy entry. Rotate these with a tap wrench or equivalent to allow the reamer to follow the guide bore.

Part No.	Description
3376463	Valve Guide Reamer (H)
3376465	Valve Guide Reamer (J (2 valve head), NH, V12 4 7/8 & 5 1/8 bore)
3376466	Valve Guide Reamer (J (4 valve head) & C)
3376464	Valve Guide Reamer (NT, V28, V903)
3376462	Valve Guide Reamer (V378, V504, V555)
3377146	Valve Guide Reamer (L10)
3377445	Valve Guide Reamer (B)
3822226	Valve Guide Reamer (B (Morse Taper Top))
3822490	Valve Guide Reamer (C)

3823946
Valve Guide Seal Installer

Engine Series: L10

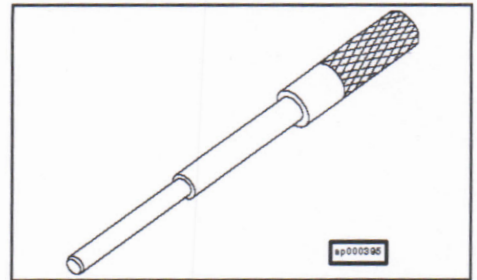
This material is used to install valve seals onto the valve guides when valves are not installed in the head.



3824919
Valve Guide Remover

Engine Series: QST 30

This is a special sized mandrel for removing the valve guides from the cylinder head during engine rebuild.



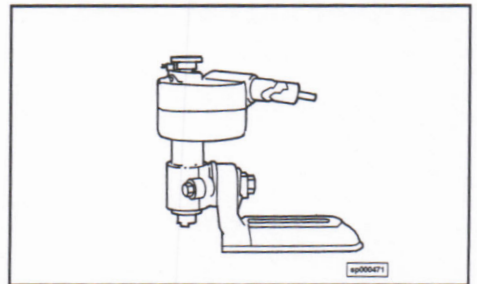
Valve Seat Tools

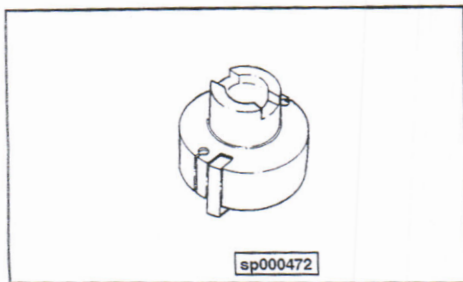
ST 257
Valve Seat Insert Tool

Engine Series: All Except B Series

This kit is used with appropriate cutters to counterbore cylinder heads for installation of valve seat inserts. A valve stem guide arbor must also be used to align the cutter with the counterbore. This tool is designed to be driven with a 1/2 inch electric drill.

NOTE: To update this tool for L10 and M11, part number 3376105 **Valve Seat Driver** must be ordered separately. This tool is used with the adapter sleeve and seat driver found in this kit.





ST 258
Valve Seat Insert Cutters

Engine Series: See Below

Valve seat cutters are used with ST 257 Valve Seat Insert Tool Kit to cut cylinder head to accept oversize valve seat inserts.

Part No.	Description
ST 258	Valve Seat Insert Cutters (V378, V504, V555 and J (1.700 in.))
ST 259	Valve Seat Insert Cutters (H (2.1275 in.))
ST 260	Valve Seat Insert Cutters (NH, V28, 4 7/8 and 5 1/8 (1.847 in.))
ST 662	Valve Seat Insert Cutters (*N855, V28, V903 5 1/2 (2.003 in.))
ST 1310	Valve Seat Insert Cutters (KT/KTA)
ST 484	Valve Seat Insert Cutters (J & C 4-Valve Head)

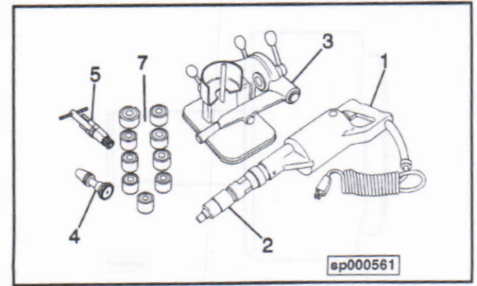
***3375368 Cutter** is standard size cutter used to convert naturally aspirated heads to turbocharged heads.

3376595	Valve Seat Insert Cutters (L10)
3376596	Valve Seat Insert Cutters (.010 O.S.)
3376597	Valve Seat Insert Cutters (.020 O.S.)
3376599	Valve Seat Insert Cutters (.040 O.S.)
3824062	Valve Seat Insert Cutters (C Series)
3377444	Valve Seat Insert Cutters (B Series Exhaust)

ST 685
Valve Seat Grinding Machine

Engine Series: See Below

The Valve Seat Grinding Machine is used to reface the valve seats in the cylinder head. Various grinding wheels are included. Valve Guide Arbors must be ordered separately. Refer to ST 663 and others listed. When ordering Valve Seat Grinder, specify -A or -C for 110 volt or 220 volt motor.

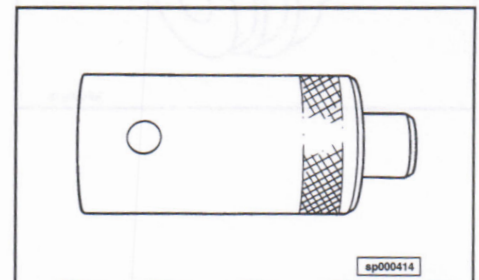


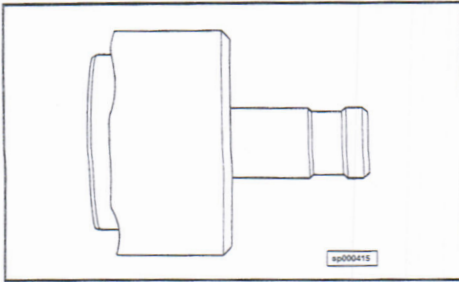
Ref. No.	Part No.	Description
	ST 685-A	110 Volt 50/60 hz
	ST 685-C	220 Volt 50/60 hz
1	ST 685-1	Motor Assembly (110 volt)
1	3376030	Motor Assembly (220 volt)
2	ST 685-2	Grinder/coupling Unit (with stabilizer)
3	ST 685-3	Wheel Dresser
4	ST 685-4	Eccentrimeter
5	ST 685-5	Arbor Puller
	ST 685-6	Carrying Case
	3376302	Diamond Holder
Grinding Wheels Reference 7 Above		
	ST 685-7	Grinding Wheels (1 5/8 in. x 30 deg.)
	ST 685-8	Grinding Wheels (1 7/8 in. x 30 deg. (B))
	ST 685-9	Grinding Wheels (2 1/4 in. x 30 deg.)
	ST 685-10	Grinding Wheels (2 1/2 in. x 30 deg.)
	ST 685-11	Grinding Wheels (3 in. x 30 deg.)
	ST 685-12	Grinding Wheels (1 5/8 in. x 15 deg.)
	ST 685-13	Grinding Wheels (1 7/8 in. x 15 deg. (B & C))
	ST 685-15	Grinding Wheels (2 1/2 in. x 15 deg.)
	ST 685-16	Grinding Wheels (3 in. x 15 deg.)
	3375051	Grinding Wheels (2 3/8 in. x 15 deg.)
	3376077	Grinding Wheels (1 3/4 in. x 30 deg.)
	3376884	Grinding Wheels (2 in. x 45 deg. (Optional))
	3376885	Grinding Wheels (2 in. x 30 deg. (Optional))
	3823178	Grinding Wheels (1 3/4 in. x 15 deg. (B))
	3823179	Grinding Wheels (2 1/4 in. x 15 deg. (C))
	3823180	Grinding Wheels (2 1/8 in. x 30 deg. (C))
	3823181	Grinding Wheels (1 3/4 in. x 45 deg. (B))
	3823182	Grinding Wheels (1 7/8 in. x 45 deg. (C))
	3823183	Grinding Wheels (1 5/8 in. x 60 deg. (B))
	3823184	Grinding Wheels (1 3/4 in. x 60 deg. (B & C))
	3823185	Grinding Wheels (2 in. x 60 deg. (C))

ST 1122
Valve Seat Staking Driver

Engine Series: All Except L10, B and C Series

This driver handle is used as a universal handle and used with the valve seat insert staking tools.



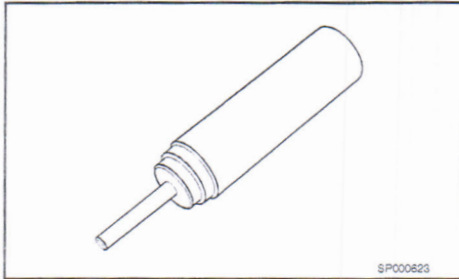


ST 1123
Valve Seat Staking Tool

Engine Series: All except L10, M11, B and C Series

These tools are required to properly stake the valve seat inserts in the cylinder head. This insures that the inserts are securely seated in the head.

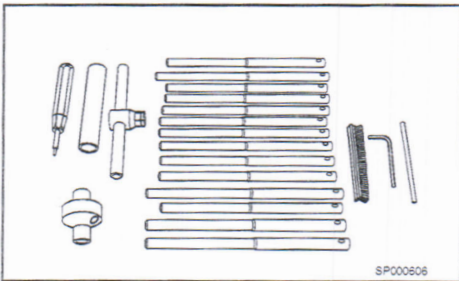
Part No.	Description
ST 1123	Valve Seat Staking Tool (NH (4 7/8 & 5 1/8 bore))
ST 1124	Valve Seat Staking Tool (NT, V903, V28)
ST 1125	Valve Seat Staking Tool (H (2 Valve Head))
ST 1127	Valve Seat Staking Tool (C & J (4 Valve Head))
ST 1128	Valve Seat Staking Tool (V378, V504, V555)
3377309	Valve Seat Staking Tool (K19, K38, K50 (Exhaust))
3376808	Valve Seat Staking Tool (K19, K38, K50 (Intake))



3162373
Valve Seat Driver

Engine Series: Onan J

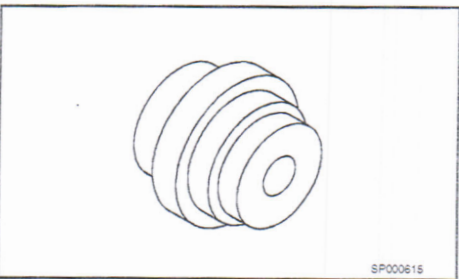
This special mandrel simplifies installation of valve seats on all J series engines.



3162385
Valve Seat Cutter Kit

Engine Series: Onan

Kit includes tapered arbors and cutter head. Cutters are easy to operate and recommended in the small engine market. For replacement carbide cutter blade, order 3162386. Plastic case is included.



3162416
Valve Seat Pilot

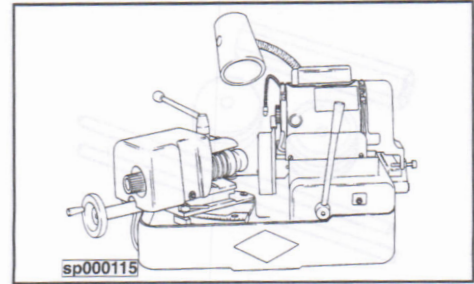
Engine Series: Onan

This Adapter is used with 3162413 Installer to install valve guides. It may also be used with 3162406 Driver to install new valve seats on N & T series. Also included in 3162417.

3376256
Valve Facing Machine

Engine Series: All

The Valve Facing Machine is a two wheel grinding machine used for facing cylinder head valves and squaring the valve stems. A separate drive motor turns the hand actuated chuck for the valve facing operation. A portable cabinet, Part No. 3376261 is offered as an option for the Valve Facing Machines and must be ordered separately.

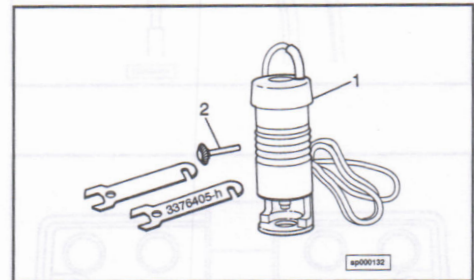


Part No.	Description
3376256	Valve Facing Machine (110 V 60 Hz)
3376257	Valve Facing Machine (110 V 50 Hz)
3376258	Valve Facing Machine (220 V 60 Hz)
3376259	Valve Facing Machine (220 V 50 Hz)
3376260	Chuck, Hand Operated (1 ³ / ₃₂ in. - ³ / ₄ in. Capacity)
3376342	Grinding Wheel (Valve Face)
3376343	Grinding Wheel (Valve Stem)

3376405
Valve Seat Grooving Tool

Engine Series: All Except B Series

This grooving tool contains a high speed motor and a special cutter to cut a groove in valve seats i.d. prior to removal. The groove is sometimes required to allow the valve seat extractors a suitable area to grip. This tool will extend the life of the valve seat extractor.

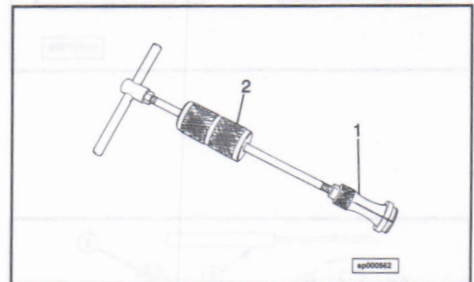


Ref. No.	Part No.	Description
1	3376406	Motor
2	3376407	Cutter

3376617
Valve Seat Extractors

Engine Series: See Below

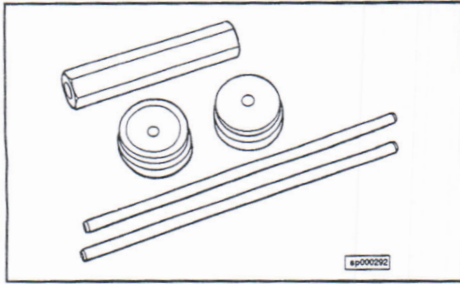
These valve seat extractors are used to remove valve seats from the cylinder head without damage to the cylinder head and the valve seat. This is the safest method of removing valve seats.



Ref. No.	Part No.	Description
2	3376617	Slide Hammer/Shaft Ass'y

Note: Use 3376617 for any of the below pullers. Order 3376617 and selected pullers as desired.

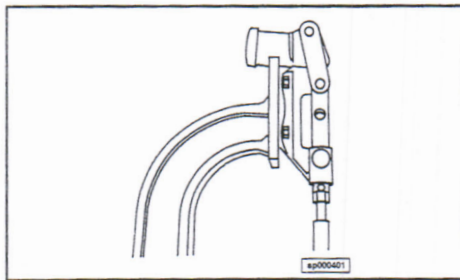
1	ST 1276-1	Puller (NH 5 1/8, Sig 600 Exhaust)
1	ST 1277-1	Puller (V378, V504, V555)
1	ST 1278-1	Puller (C & J)
1	ST 1279-1	Puller (V903, V28, N855, Sig 600 In-take)
1	ST 1323-1	Puller (K19, K38, K50)
1	3376146	Puller (L10)
1	3376799	Puller (K19, K38, K50) (3026296 Insert)
1	3377396	Puller (6C(T)8.3)
1	3824781	Puller (M11/L10) 1995 and later



3823031
Valve Seat Insert Tool

Engine Series: All B Series

This tool is used to install the valve seat in the cylinder head and also stakes the valve seat in the cylinder head.

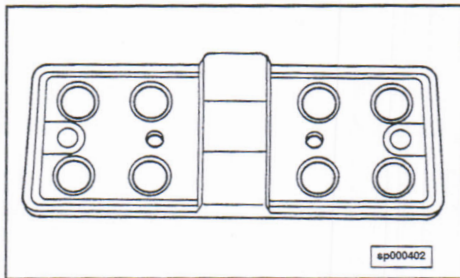


Valve Spring Tools

ST 1022
Valve Spring Compressor Stand

Engine Series: C & J, K19, K38, K50, NT, V28, V378, V555, V903, V504

This light weight sturdy compressor stand is used in conjunction with the compressor plates to compress all the valve springs at once. The handle locks in the downward (compressed) position so that both hands are free to remove the collets, retainers and springs. Use this for assembly or disassembly of cylinder heads final assembly.

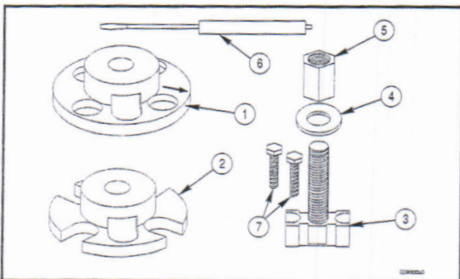


ST 1026
Valve Spring Compressor Plate

Engine Series: K19, K38, K50, NT, V28, V378, V555, V903, V504

These plates are light weight and are used with ST 1022 Compressor Stand to compress all the valve springs at the same time. This is a time saver if lots of heads are being rebuilt.

Part No.	Description
ST 1026	Valve Spring Compressor Plate (NT (5 1/2 bore))
ST 1028	Valve Spring Compressor Plate (V903)
ST 1098	Valve Spring Compressor Plate (V378, V504, V555)
ST 1117	Valve Spring Compressor Plate (V28 (5 1/2 bore))
3375043	Valve Spring Compressor Plate (K19, K38, K50)



3162226
Valve Spring Compressor Kit

Engine Series: ISB, ISC

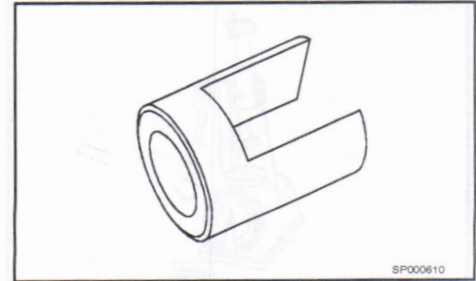
This kit compresses all 4 valve springs for any cylinder at the same time and can do this while the injector is in place.

Ref. No.	Part No.	Description
1	3825169	Valve Spg. Comp. Plate (ISB)
2	3825199	Valve Spg. Comp. Plate (ISC)
3	3825166	Mounting Assembly
4	3825167	Plain Washer
5	3825168	Forcing Nut, 9/16-18
6	3825170	Pocket Screwdriver
7		Capscrew

3162369
Valve Spring Compressor Adapter

Engine Series: Onan J

Simplifies removal of valve locks. Use with an arbor press or other valve spring compressor. Use on all J series diesels.

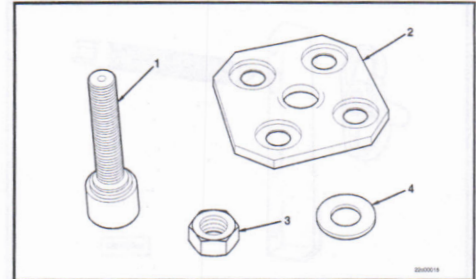


3162986
4-Valve Spring Compressor

Engine Series: Signature/ISX

This tool uses the injector bore and hold-down clamp as a base to compress all four valve springs at once. The valve retainer collets may then be removed easily.

Ref. No.	Part No.	Description
2	3162987	Compressor Plate
1	3162988	Compressor Shaft
4	3163061	Zinc Plated Flat Washer
3		Forcing Nut



3163175
4-Valve Spring Compressor Base Kit

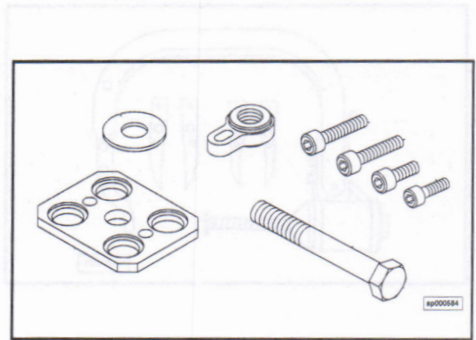
Engine Series: N14, K/KV & Q/QV

The simpler design on this kit will facilitate easy removal and installation of four springs at once resulting in a time savings.

NOTE: Use above base kit with one of the following plates:

3163177 - 4-Valve Spring Cpr. Plate for K/KV, Q, QV engines

3163178 - 4-Valve Spring Cpr. Plate for N14 engines.

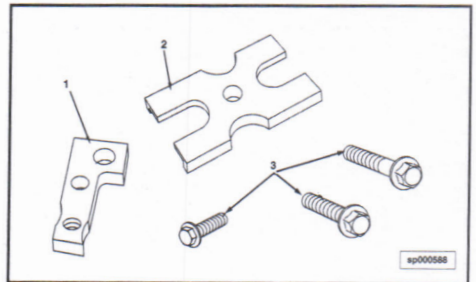


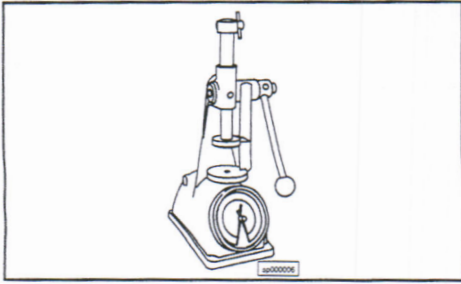
3163292
Valve Spring Compressor

Engine Series: B/C

This tool compresses the valve spring to allow removal and/or installation of valve stem keepers while reducing the chance of damage to the valve stem.

Ref. No.	Part No.	Description
1	3163291	Mounting Plate
2	3163317	Compressor Plate
3		Hex Flange Head Capscrews

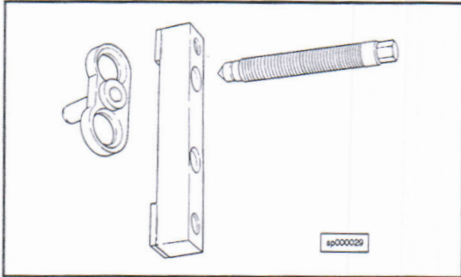




3375182
Valve Spring Tester

Engine Series: All

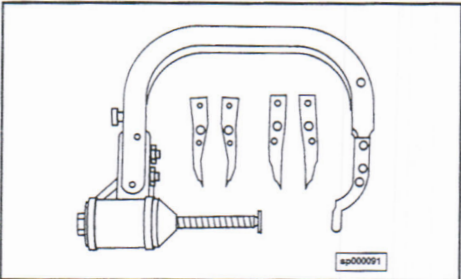
The tester is used to compress the valve spring to the proper height and then check the pressure tension on the scale face. This is used to check valve spring tension.



3375269
Valve Spring Compressor

Engine Series: NT

This special compressor arrangement permits the removal of 2 valve springs, wear plates, and valve spring retainers without removal of the cylinder head or rocker lever housing from the engine.



3375960
Valve Spring Compressor

Engine Series: All

This is an air operated valve spring compressor which is much more efficient and faster than other compressors. The tool is also more economical than the large press type. 3 different size jaws are included to make the tool work on all Cummins engines as well as other engine models.

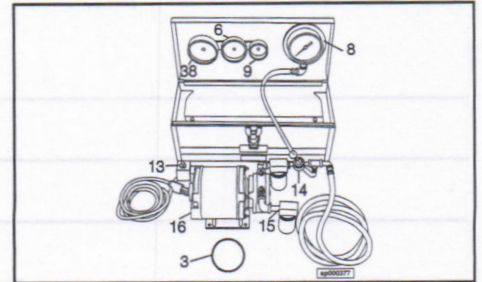
Valve Vacuum Tester

3824277

Valve Vacuum Tester - 115 vac, 50/60 hz.

Engine Series: All

This valve vacuum tester provides all the necessary vacuum cups and seals to determine if valves are properly seated in the cylinder head using vacuum to provide a positive test. Above kits do not include cups and seals for B and C Series.



Ref. No.	Part No.	Description
3	ST 1257-3	Seal (NH, V903, V28)
6	ST 1257-6	Cup (NH, V903, V28)
8	ST 1257-8	Vacuum Gauge
9	ST 1257-9	Cup (C & J, Small V)
3	ST 1257-35	Seal (C & J, Small V)
13	ST 1257-13	Toggle Switch
14	ST 1257-14	Dump Valve
15	ST 1257-15	Filter Muffler
16	ST 1257-16	Pump/Motor 115V 50/60 hz
16	3376195	Pump/Motor 220V 50/60 hz
38	3376100	Cup (L10)
3	3823922	Seal (L10)
38	3823852	Cup (all K Series)
3	3823853	Seal (all K Series)
38	3823847	Cup (N14)
3	3823848	Seal (N14)

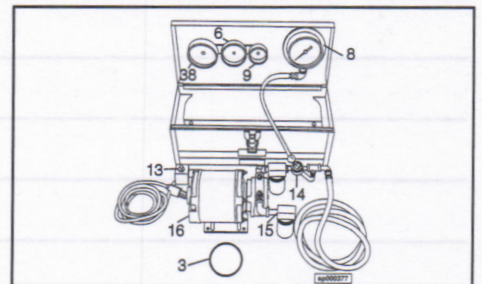
ST 1257-5000 Seal Kit Includes ST 1257-3, ST 1257-35, 3823853, 3823922 and 3823848, Qty. 2 each.

3824278

Valve Vacuum Tester - 220 vac, 50/60 hz.

Engine Series: All

This valve vacuum tester provides all the necessary vacuum cups and seals to determine if valves are properly seated in the cylinder head using vacuum to provide a positive test. Above kits do not include cups and seals for B and C Series.



Ref. No.	Part No.	Description
3	ST 1257-3	Seal (NH, V903, V28)
6	ST 1257-6	Cup (NH, V903, V28)
8	ST 1257-8	Vacuum Gauge
9	ST 1257-9	Cup (C & J, Small V)
3	ST 1257-35	Seal (C & J, Small V)
13	ST 1257-13	Toggle Switch
14	ST 1257-14	Dump Valve
15	ST 1257-15	Filter Muffler
16	ST 1257-16	Pump/Motor 115V 50/60 hz
16	3376195	Pump/Motor 220V 50/60 hz
38	3376100	Cup (L10)
3	3823922	Seal (L10)
38	3823852	Cup (all K Series)
3	3823853	Seal (all K Series)
38	3823847	Cup (N14)
3	3823848	Seal (N14)

ST 1257-5000 Seal Kit Includes ST 1257-3, ST 1257-35, 3823853, 3823922 and 3823848, Qty. 2 each.