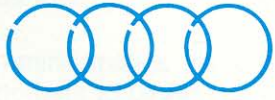




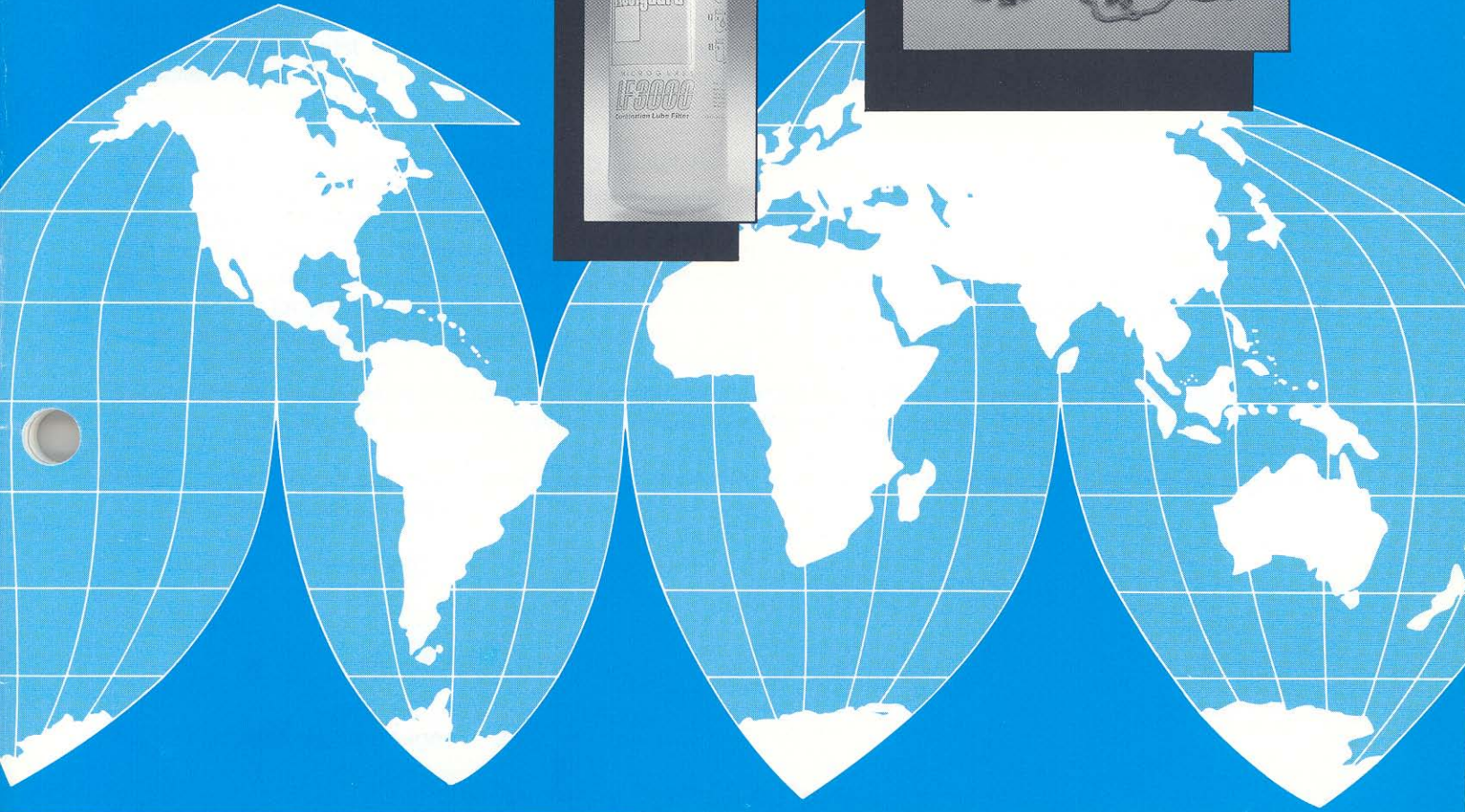
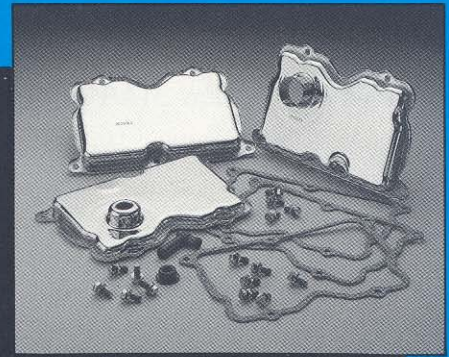
PARTS PRO CLASSIC

CLASSIC EDITION #9

Parts Pro Classic is provided as a historical reference. Special offers, prizes and awards no longer apply to this edition. Current Parts Pro issues along with all Parts Pro Classics may be found at [click\) qsol.cummins.com](http://qsol.cummins.com).



Cummins
Parts Professional



**parts
professional**

9

INVEST IN THE BEST

Letter from the Editors

Welcome to Parts Professional 9! This issue is an UPRATE Update. It is designed to be a revision of the silver UPRATE book. We have included the latest part numbers and designs as well as tips on how to make associated sales when your customer wants to UPRATE his Cummins engine.

Cummins makes the latest technology available by offering a variety of UPRATE options. Encourage your customers to UPRATE and take advantage of these benefits:

- Increased Fuel Economy
- Higher Performance
- Greater Resale Value

The key to using this new UPRATE manual is knowing the Control Parts List (CPL) number printed on the dataplate of your engine. Refer to Parts Professional 8 to review locating the dataplate on the engine. The UPRATE expert must know the CPL number in order to recommend the appropriate kits. The CPL number identifies the group of parts which were certified by the Environmental Protection Agency (EPA) or California Air Resource Board (CARB).

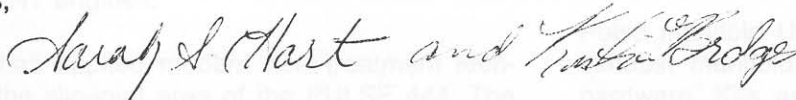
At the back of this issue, you will find a quiz, a survey, an order form, and a Parts Professional patch. You will notice that answers are included with the quiz. This is so you can test your UPRATE knowledge and get immediate feedback as to how much you know. The patch is designed for your Parts Professional jackets and is our way of thanking you for taking a few minutes to complete the survey. The information you give us will help us provide you with a Parts Professional program that is truly designed for your needs. Use the order form to order more patches for your uniforms so you will stand out as a Parts Professional every day of the week. You can also order Parts Professional caps which proudly display the Parts Professional patch.

We would like to thank Mike McCarty, Mark Chapple, and our team of technical experts who contributed their time and talent to review the material presented. They are true Parts Professionals!

Please contact Sarah or Kristin if your Cummins distributor is unable to answer any of your questions regarding the Parts Professional Program.

Good luck and good selling!

The Editors,



Sarah Hart and Kristin Bridges

Corrections to Parts Professional 8

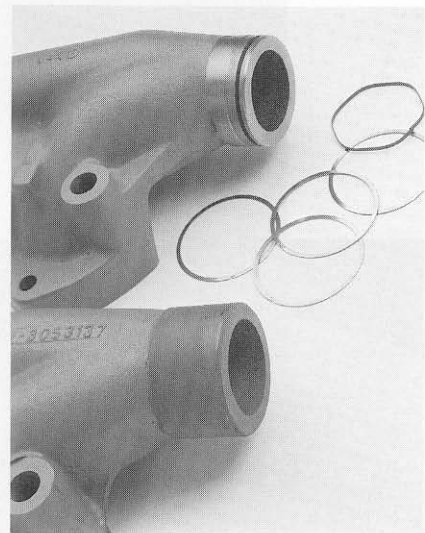
Page 6

- The caption below the 3rd picture in the first column should read "K19 Series Construction".
- The caption below the first picture in the 2nd column should read, "V28 Series".
- The Second sentence in the last paragraph of the 2nd column should read, "The Two-step system was first used for engines built after **January 1, 1984.**"
- The fourth sentence of the same paragraph should read, "The first card type is the Engine Serial Number Index, and the second is the OEPL Parts List card."

Page 15

- The price listed for the complete B and C Series Cummins filmcard system should be **\$125.**

NOTE: Due to the error in the date on page 6, credit will be given for either answer for question #1 in the quiz of #8. The correct answer is "True".



PULSE 444

Genuine Cummins Pulse Exhaust Manifolds are specially designed to guarantee improved engine performance and durability. The uniquely contoured structure provides a more direct path for exhaust gasses to flow from the combustion chamber to the turbo-charger and reduces back pressure in the cylinder. This is an improvement over the old log style manifold and actually increases fuel economy up to 1.5%.

And now, Cummins introduces the PULSE 444 - the latest and greatest design option for Pulse Manifold UPRATES. The PULSE 444 can be used for ALL CUMMINS NT engines.

Cummins has applied modern heat-treatment technology to the slip-joint area of the PULSE 444. The new slip-joint has a lengthened sealing surface protected by a special wear-coating. In addition, tighter machining tolerances have been applied to the slip-joint for closer fit and to eliminate the need for sealing rings to prevent leakage. The result is a slip-joint that is more durable and seals better. In fact, the new wear-coated slip-joint actually reduces wear by up to 50%!

HEAT TREATMENT TECHNOLOGY

- Improves durability
- Prevents slip-joint galling
- Eliminates leakage problems
- Eliminates sealing rings
- Eliminates ring grooves

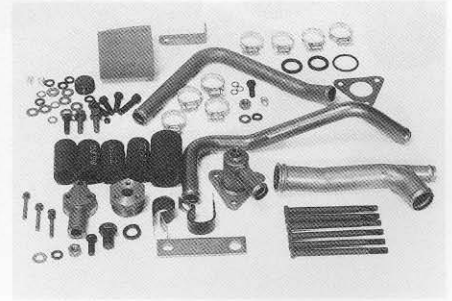
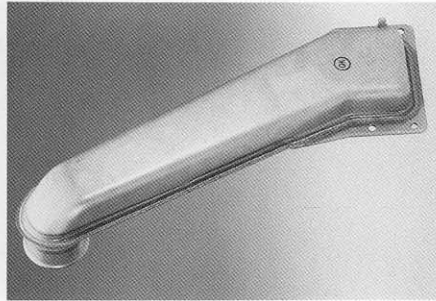
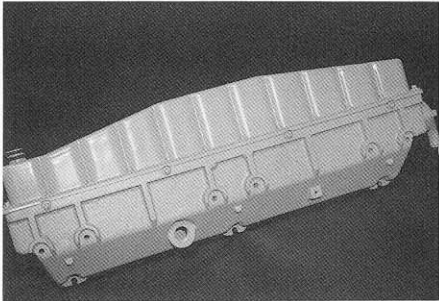
The new PULSE 444 means improved performance,

reduced maintenance costs, and extended component life for your engine. Best of all, our own engine tests indicate that a Cummins Pulse 444 exhaust manifold can improve fuel economy better than major competitive manifolds. You can now even purchase the PULSE 444 at prices 20% lower than older models. Encourage your customers to UPRATE with the PULSE 444, and invest in Cummins latest technology and ongoing commitment to improve engine performance.

Pulse 444 UPRATE Kits:

Pulse manifold UPRATE Kits contain the complete exhaust manifold and all the necessary mounting hardware. Kits are now packaged in specially designed PULSE 444 boxes. Remember, the PULSE 444 offers 444 technology for ALL CUMMINS NT engines! The chart on page 18 lists the current Pulse Manifold Kit Part Numbers and applications. Remember, a field fix number must be stamped on the engine data plate if the engine did not come standard with a Pulse manifold.

THE RECON ALTERNATIVE: If you are not ready to invest in the new PULSE 444, Diesel ReCon offers a totally remanufactured Pulse Exhaust Manifold at about 60% of the cost of the Pulse 444. ReCon Pulse Exhaust Manifolds are available for exchange on a part number for part number basis.



AFTERCOOLER KITS

Aftercooler kits are available for UPRATING non-aftercooled NT engines. The aftercooler UPRATE requires a change to an aftercooled CPL number. For best results, your customers should also UPRATE with a PULSE 444 exhaust manifold, DFC lube pump, HT3B turbocharger, Premium or Premium Plus Cylinder Kit, and a Super Single air compressor. This will further improve horsepower, fuel economy, and engine life.

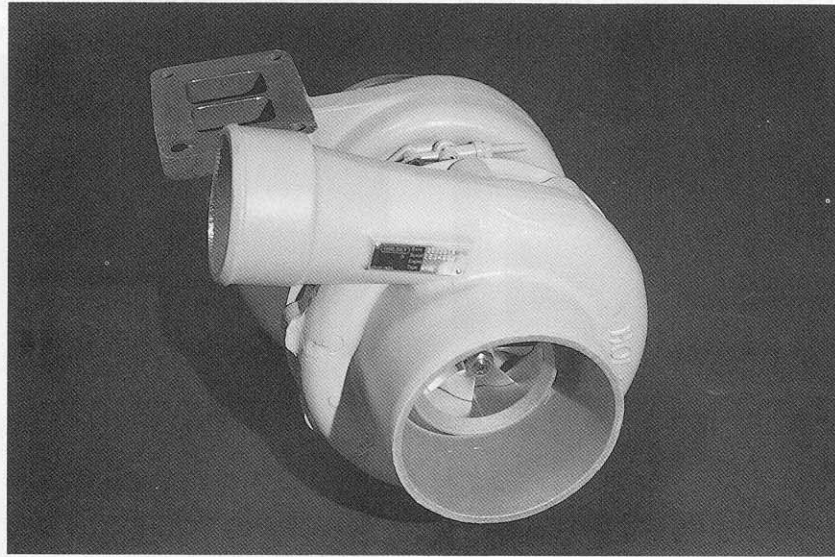
Aftercooler designs have improved significantly since the flanged design was released for use on Small Cam, Big Cam I and earlier Big Cam II engines. The core of the old design bolted directly to the housing requiring the use of two gaskets for sealing, one above the core flange and one below. This design also used a 1-pass coolant flow path.

In 1981, a much improved crossbolt design was introduced on Big Cam III engine models. This design only requires one gasket for sealing. Another design change is the four pairs of mounting capscrews which go through the wall on either side of the intake manifold housing and into the steel struts of the core itself. This adds much needed support to the aftercooler assembly. The crossbolt design helps extend the life of the aftercooler by eliminating cracking or breakage caused by engine vibration.

Other design improvements include a 3-pass coolant flow path and a higher core density which uses more air fins for greater air contact. The result is cooler intake air and lower pumping work for the engine. The dense, cooler intake air produces more efficient combustion resulting in more engine power and better fuel economy. Cooler intake air also lowers peak combustion and exhaust temperatures for improved engine life and durability.

UPRATING earlier non-aftercooled NH 855 engines with the Big Cam III Crossbolt Aftercooler assembly requires the assembly, an aftercooler mounting kit, and a new air crossover tube. These kits make the UPRATE easy and contain all the necessary parts for a specific chassis manufacturer application. Some short nose conventional tractors will not accept an aftercooler due to interference problems with the fire wall and/or chassis.

Before selling an Aftercooler UPRATE to your customer, make certain the fan and cooling system, air cleaner and piping, exhaust system, and fuel plumbing are adequate for the UPRATED engine. Also, check the clutch, transmission, drive shafts, and axles specifications to be certain they can handle the increased torque and horsepower output of the UPRATED engine.



HT3B TURBOCHARGER

The HT3B turbocharger was originally designed to improve responsiveness and durability of the Big Cam III 855 engine. Now the HT3B is an ideal UPRATE option for most Small Cam, Big Cam I, Big Cam II, some earlier Big Cam III, and Big Cam IV engines.

The HT3B is now equipped with a twin entry turbine casing, rather than the single entry found on the T-46. The twin-entry casing provides much higher air flow at lower engine speeds than previous designs. The higher air flow reduces combustion and exhaust temperatures which means engines parts will run cooler. Parts that run cooler, last longer!

The HT3B design incorporates full floating shaft bearings for minimum shaft drag. The smaller, low inertia compressor wheel combined with the low drag bearings provide outstanding engine acceleration. This means the engine can respond instantly when the throttle lever is opened.

Encourage your customers to UPRATE to an HT3B, and take advantage of these features and benefits:

POWER AND ECONOMY: Cummins pairs maximum power with fuel economy in the HT3B. Tests indicate the HT3B improves engine throttle response up to 95% and saves up to 2 1/2% on fuel costs depending on the engine model. Both power and economy together insure a top-quality turbocharger.

BUILT TO MATCH CPL EXACTLY: HT3B turbochargers are specifically engineered to correctly match the performance needs of your Cummins engine. This also helps provide maximum power and fuel economy. It's important to match the CPL exactly because even a slight mismatch can cost hundreds of dollars in wasted fuel each year. The competition offers only limited part numbers so they cannot adequately match all the CPL applications Cummins can. You are guaranteed a

correct match with Genuine HT3B turbochargers. Please refer to Service Parts Topic 85T10-4 to match your CPL to the correct turbocharger.

T46B TO HT3B UPGRADE CHARGE: Effective immediately, Diesel ReCon Company is eliminating the upgrade charge for customers trading in a T46B turbocharger. With this program, the next generation of turbochargers, the HT3B, can be enjoyed for just the standard exchange price and a minimal charge for a plumbing kit. Any T46B core can be exchanged if it is in "off engine condition" and is not damaged by non-operational causes such as rust, rough handling, or fire. This is an on-going ReCon program.

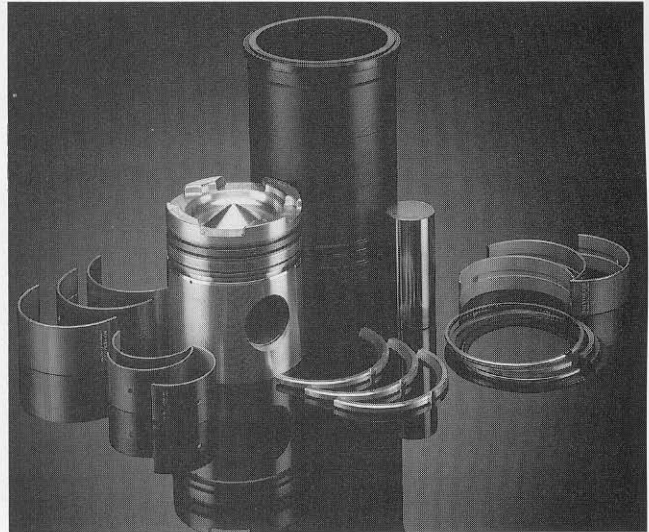
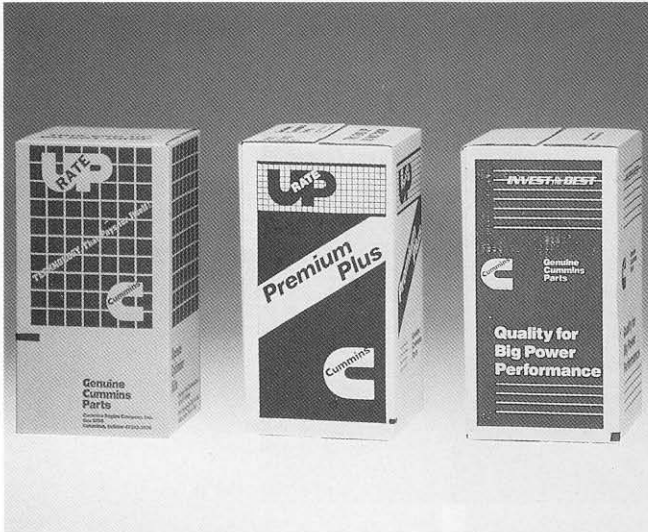
Diesel ReCon turbochargers are backed by a 1 year/100,000 mile warranty covering all parts, labor, and progressive damage.

UPRATE Kits:

The HT3B Turbocharger Kit contains the turbocharger and mounting gaskets. Turbocharger plumbing kit, P/N 3801486, is required to adapt the new HT3B turbocharger oil inlet and drain to the standard oil plumbing. The HT3B also requires use of the longer mounting studs, P/N 3042353.

When you UPRATE to the HT3B, a field fix number must be stamped on the engine dataplate. (See Service Parts Topic 85T10-4).

SERVICE TIPS: If the HT3B is installed on an engine equipped with a Jacobs Brake, the brake must be equipped with Jacobs "TT" Auto Lash screw P/N 13369. Jacobs Kit number 013343 contains six (6) adjusting screws and installation instructions. Some Jacobs housings require minor machining to upfit the brake. See Service Parts Topic 85T20-1 for details.



PISTON AND CYLINDER KITS

Cummins offers your customers many options at overhaul time. Some of these are Dual Ni-resist pistons, Piston Kits, Liner Kits, Premium Cylinder kits, Premium Plus Cylinder kits, and Premium Plus Over-size Lower-Press-Fit Cylinder kits.

Let us review the design changes which have occurred since we last discussed these kits in Parts Professional #6.

Dual Ni-Resist Pistons

Dual Ni-resist pistons feature new, premium aluminum material which improves resistance to pin bore cracks. The wider dual Ni-resist insert reduces wear, or "beat-out", of the second ring groove better than the single Ni-resist piston in the same application. These pistons are part of the NOW Plan 5 overhaul.

Piston Kits

As of January 1, 1988, most piston kits do not contain the piston pin. This allows the customer to re-use the pin he has. The kits contain the new pistons and new retaining rings only. They are available with both the single Ni-resist pistons and the dual Ni-resist pistons. The warranty coverage for these kits is 1 year/100,000 miles.

Liner Kits

The Liner Kit contains the liner and the sealing rings. It is available in three different sizes:

- P/N 3801826 - Standard Lower-press-fit
- P/N 3801812 - Oversize Lower-press-fit
- P/N 3801387 - Oversize Upper-press-fit

The warranty coverage for all Liner Kits is 1 year/100,000 miles.

Premium Cylinder Kits

The Premium Cylinder Kits include the new lower-press-fit liner for improved reliability and the sled runner design piston. However, Premium Cylinder Kits for non piston-cooled engines do not contain the sled runner design piston. This kit also features a ring pack which is specifically designed for normal load/high rpm operation to achieve maximum performance and fuel economy. In this ring pack, the top ring has a chrome-plated face and is the major factor in controlling blowby. The second ring is designed to help control oil consumption. The Premium ring set is not recommended for use on Fleet engines (1600 to 1800 RPM rated) or engines which are equipped with compression brakes. Premium Kits have a 1 year/100,000 mile warranty.

Premium Plus Cylinder Kits

The major difference between Premium and Premium Plus Cylinder Kits is the ring pack. The Premium Plus ring pack has a top ring with an inlaid chrome face and a second ring that is chrome plated. In the Premium Plus Kit, the top ring offers improved sealing

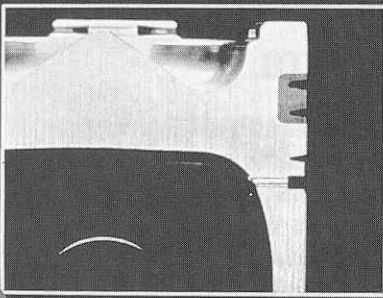
and resistance to wear, and the second ring reduces ring and groove wear.

The kit also contains the sled-runner design piston and the new lower-press-fit liner. These UPRATE kits are the best choice for heavy haulers running between 50 and 300 rpm above peak torque. It is recommended that Premium Plus Kits be used on engines that are equipped with compression brakes. These units come with a 2 year/200,000 mile warranty. Premium Plus Cylinder Kits offer your customer Plus protection, technology, economy, and durability.

Premium Plus Oversize Lower-Press-Fit Cylinder Kits

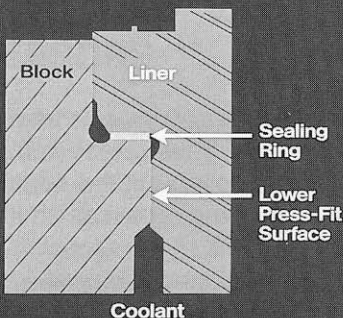
The Premium Plus oversize cylinder kits are the same as the Premium Plus Kits but contain the lower-press-fit oversize liner. The warranty coverage for these kits is also the same as the Premium Plus Kit, 2 years/200,000 miles.

See Cylinder Repair Kit Reference, Bulletin #3624176 for specific applications and part numbers.



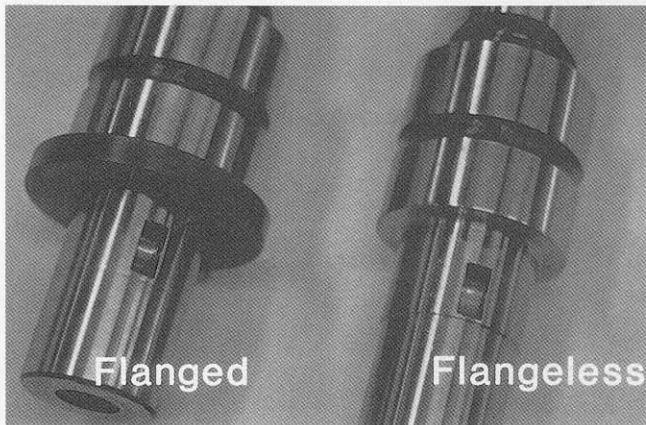
Dual Ni-Resist Piston Inserts

- Extended piston and ring life



Lower Press-Fit Liners

- Improved liner stability
- Reduced block stresses
- Eliminates counterbore leaks

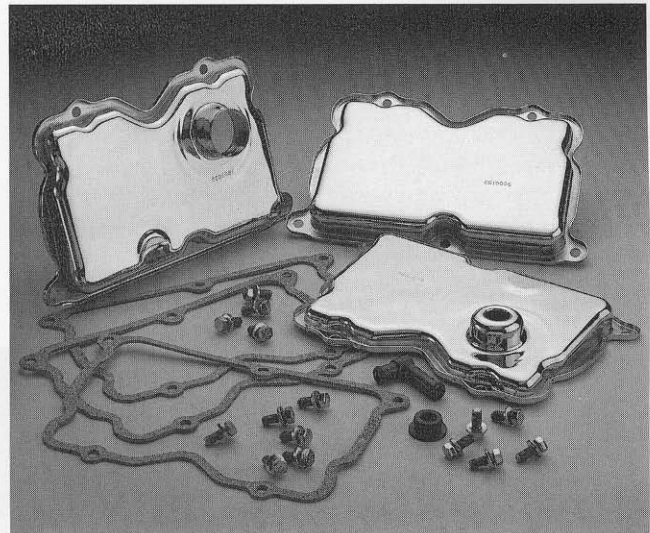


CAMSHAFTS

When it is time for your customers to overhaul, encourage them to UPRATE to the flangeless camshaft and crowned camfollower rollers or the latest design flanged camshaft. The flangeless camshaft was originally introduced in 1980. It is especially recommended if both the cam and cam gear require replacement. This design reduces stress on the camshaft nose as well as fretting between the camshaft and cam gear. Stress is further reduced when the flangeless camshaft is installed with the crowned camfollower rollers. The new roller design provides even loading on the cam lobes and reduces contact stress on the roller edge. These design improvements greatly extend camshaft life and help provide optimum engine performance.

When uprating to the flangeless camshaft installed with crowned rollers, a 3 year/300,000 miles/10,800 hours extended coverage warranty applies to the new camshaft. Some camshaft UPRATES require a field fix number be stamped on the engine data plate.

Three tables on page 19 list the part numbers you will need to UPRATE to the flangeless camshaft with crowned cam follower rollers or the latest design flanged camshaft. The first table matches current camshaft and component part numbers with the part numbers they replace and their applications. The second table lists cam gears and front supports. The third table lists the current crowned cam follower roller part numbers with the part numbers they replace and their applications.



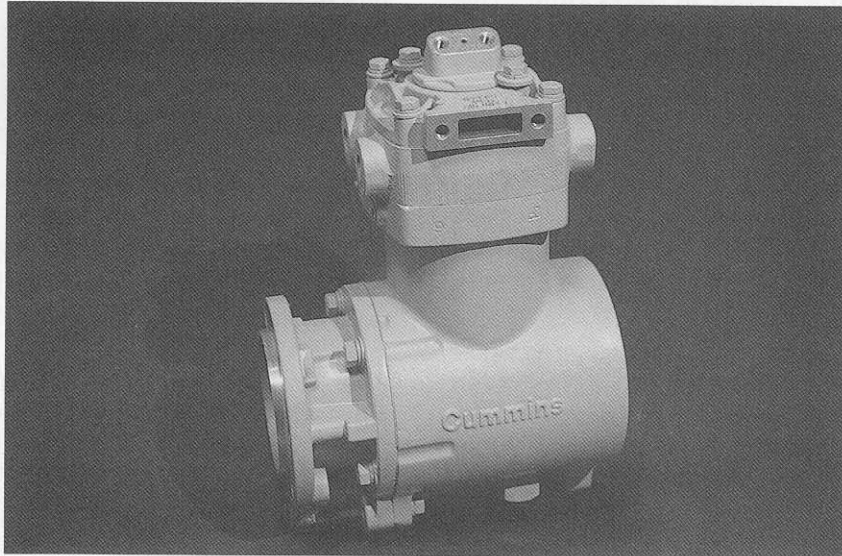
CHROME KITS

Turn your "Beast into a Beauty" at UPRATE time with Cummins new Chrome Kits! Cummins now has two kits which will make your engine shine!

The Rocker Lever Cover Kit contains 3 chrome-plated covers and all the necessary mounting hardware. The covers are identical to those used on many pre-88NT engines. These highly polished covers are first coated with a rust and corrosion resistant primer and then chrome-plated with a special process. The finished covers are then carefully inspected to meet Cummins' high standards of quality.

Cummins also offers a kit which includes a chrome-plated aftercooler cover, air crossover tube, and all necessary mounting hardware. This kit will add a touch of class to your Small Cam, Big Cam I, Big Cam II, or Big Cam III engine. These chrome kits will make your customers proud to show off their Cummins engine. Try displaying a kit on your parts counter next to a Cummins Chrome Kit Poster (Bulletin No. 3385598) to attract your customers' attention!

The components of the 2 new kits and their equivalent non-plated part numbers are listed on page 23. These tables should help you recommend the correct kit for your customer.



AIR COMPRESSORS

Holset Engineering Company, a wholly-owned subsidiary of Cummins Engine Company, manufactures Cummins single cylinder, twin cylinder, and the new KV "Tilted" twin air compressors. Holset air compressors have a compact and simple design, yet have earned the reputation for high performance and reliability.

The Holset SS 296 Single Cylinder air compressor has a 13.2 CFM rating at 1250 RPM. The single cylinder has 52% fewer parts than competitive air compressors, yet provides more air at lower temperatures. These features allow your customers to benefit from proven reliability, easy servicing, reduced maintenance costs, and longer air compressor life.

Most air compressors built after November 15, 1985 incorporate major design improvements. The single cylinder air compressor has a new cylinder head with a cast in water passage. This eliminates leaks between the high pressure air passage and the coolant passage. This provides three times more coolant flowing next to the compression chamber to reduce the air discharge temperature by up to 30 degrees fahrenheit. This helps decrease carboning in the compressor head and leads to even longer compressor life.

The Holset ST 676 is the twin cylinder air compressor and has a 30 CFM rating at 1250 RPM. The twin

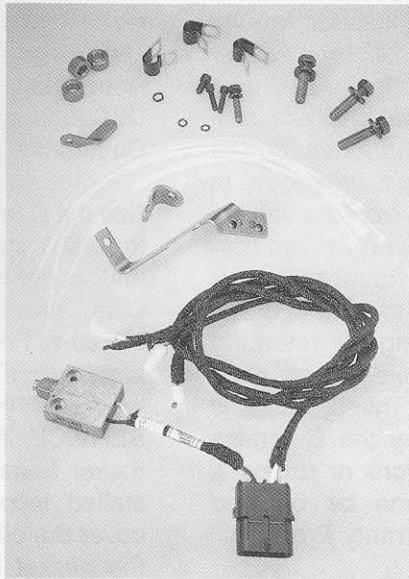
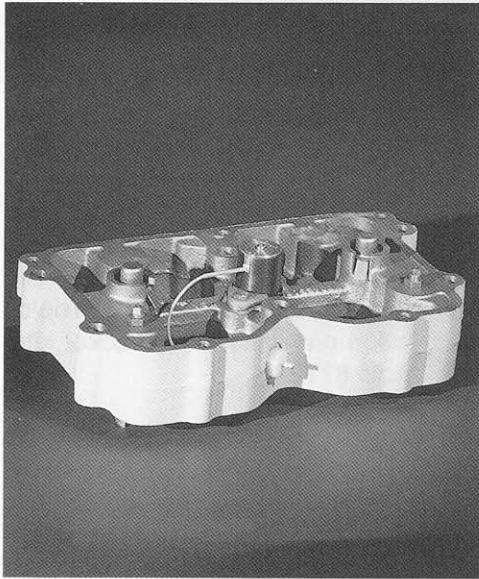
cylinder air compressor is recommended for engines which have increased pump-up time or longer air requirements.

Both the single cylinder and the twin cylinder air compressor have a new skirted piston and a new exhaust valve seat. The skirted piston provides better piston stability for increased ring and cylinder bore life and reduced oil consumption. This design also cools the piston for less carboning and decreases piston slap.

The new exhaust valve seat has a 9-hole design for better air flow and faster pump-up times. This design also doubles the discharge area in and out of the cylinder and increases air delivery up to 6%.

Cummins offers a Super Single Air Compressor Head and Valve Kit to UPRATE your current 13.2 CFM single cylinder air compressor. The table found on page 20 lists the latest part numbers, components and applications. No field fix number is required when you UPRATE with the Super Single Air Compressor Head and Valve Kit.

Make sure your customers do not use the same exhaust valve seat in both the SS 296 and ST 676 air compressors. Using the wrong valve seat can result in rapid wear of the rectangular ring seal or an increased rate of carboning in the air discharge plumbing. Please refer to the chart on page 20 for all the new part numbers and applications.



C BRAKE

A result of many years of development and testing, the C Brake was first used in production in the Big Cam IV NTC engines in late 1985. You read about C Brakes in Parts Professional #3. We will review key points of C Brake operation and its features and benefits.

In the past, trucks were not designed to be as fuel efficient as today so they had their own natural retarding capabilities. They only needed extra retarding power on steep grades. Today's vehicles, however, are aerodynamically designed to reduce air resistance and fuel consumption. In addition, equipment such as radial tires and clutching fans have been added to help reduce the natural retarding capabilities. These improvements required the development of a device that would aid in retarding the engine in any driving situation while not reducing fuel efficiency. This device is the C Brake.

The C Brake uses a hydraulic circuit to change the exhaust valve events during braking. The C Brake opens the exhaust valves near the end of the compression stroke, allowing the energy of the compressed air to escape from the cylinder head. This converts the engine into a large air compressor obtaining power from the momentum of the vehicle. This power is then diverted to C-Brake operation. Remember, the actual braking power created varies among

engines depending on the turbo boost pressure, engine rpm, compression ratio and injector timing.

Some of the important selling points of the C Brake are:

- The C-Brake is designed for easy installation and easy operation.
- There are many design features which make it weather and heat resistant and help prevent leaks and loose connections. These help maximize brake life and continued efficient operation. For example:
 - The fuel pump switch and the clutch switch are sealed to resist contamination, such as salt spray and dirt, and to ensure long life.
 - The solenoid valve undergoes extensive durability testing under extreme conditions to ensure its efficiency and reliability.
- The C Brake can reduce trip time by increasing braking power on steep grades and allowing quicker completion of downhill travel.

- The C-Brake reduces wear on the service brake. In some cases, it has extended the life by 100%!
- In many driving conditions, the C-Brake provides better vehicle control and extended tire life because there is less tire hop, or lock-up. In addition, the C Brake will help slow the vehicle when stopping or decelerating on flat roads.

These unique features enable the Cummins C Brake to be a superior performer in meeting the retarding power needs of today's vehicles while not affecting engine fuel economy or durability. The C Brake is covered for 1 year/100,000 miles by the Cummins Parts Warranty. When installed before or during a N.O.W. Overhaul, the C Brake can be covered through the Cummins Extended Warranty Program.

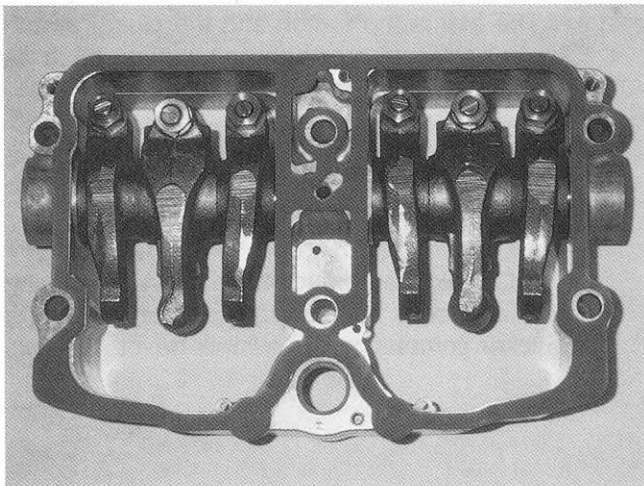
The Cummins C Brake can pay for itself by extending the life of the vehicle's service brakes. When your customers are considering an UPRATE, take the opportunity to sell them on the Cummins C Brake by explaining to them its features and benefits or by performing a "Take-a-Brake" analysis available at

any of Cummins 2500 distributor or dealer locations in North America.

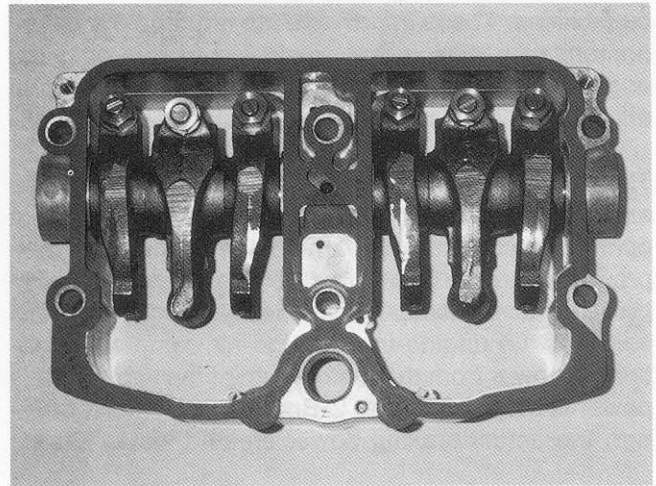
Remember, it is important your customers have the DFC lube system installed in order to UPRATE to the Cummins C Brake.

See the C Brake Reference Guide, Bulletin #3385584, for a kits cross reference and a C Brake component matrix. For information about adjusting screws for Big Cam 300 HP engines, see Service Parts Topics 87T20-1. For information on switch and bracket kits, see Service Parts Topic 87T20-4.

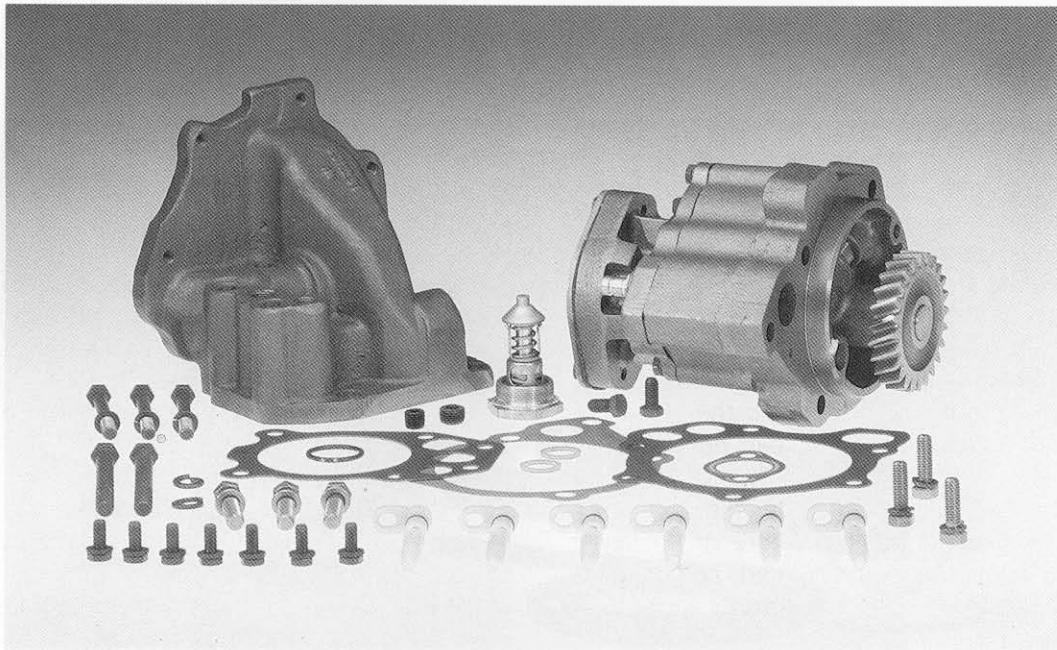
SERVICE TIP: It is easy to incorrectly install the rocker housing gasket upside-down. Even when installed incorrectly, the gasket will not completely cover the oil hole on the rocker cover housing. When the gasket is correctly placed on top of the rocker cover housing, you should be able to read the part number in the upper right-hand corner. The word "top" is also stamped in the center section next to the oil hole. The oil hole on the brake housing will be covered by the gasket.



Wrong



Right



DEMAND FLOW COOLING

The Demand Flow Cooling (DFC) lube system was first introduced with Big Cam II 855 engine models in 1981. We will cover the design changes which have occurred since we last discussed Demand Flow Cooling in Parts Professional #3.

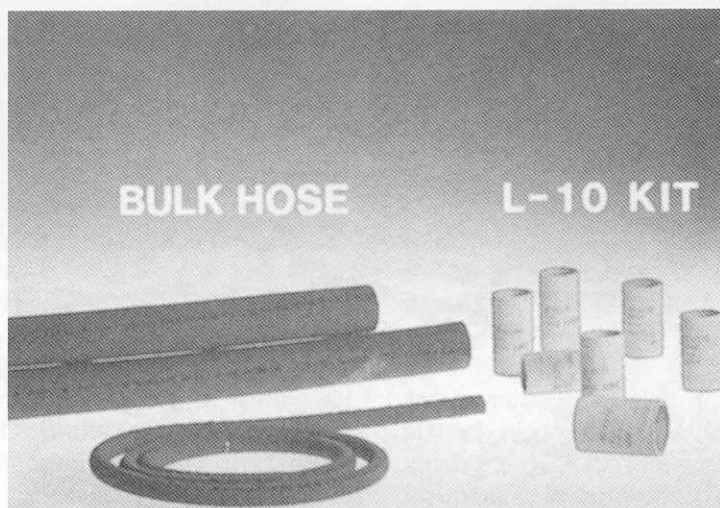
The DFC lube system has three features which account for improved fuel economy when you UPRATE. First, the normal engine oil pressure is reduced from 60 to 40 psi (pounds per square inch). Second, the oil flow rate is reduced from 60 to 40 gallons per minute. These two features are important because in the past, more oil and pressure were supplied to the engine than was needed. This wasted horsepower. The DFC system reduces the lube pump power requirement to improve fuel economy.

The third feature of the DFC system that increases fuel economy is the thermostatically controlled oil cooler. Oil that is too cold increases friction at all bearings in the engine thus increasing fuel consumption. The DFC oil cooler is designed to warm the oil faster from cold start up and maintain optimum oil temperature during operation thus reducing engine friction power loss. Reducing these power losses means more power goes to the flywheel at a given fuel rate. The DFC system improves durability, provides more power to the flywheel and gives your UPRATE customer up to 2.5% better fuel economy.

The DFC lube system can easily be installed on any Small Cam or Big Cam I 855 engine model except for NON-FFC Small Cam engines. Since all changes are external, the Cummins UPRATE Conversion Kit will make the UPRATE simple and convenient. The kit contains the oil pump, new piston cooling nozzles, new oil cooler front support, and the necessary mounting hardware. There are two (2) plumbing kits available, one for front sump and one for rear sump oil pans. No engine CPL or field fix number change is required. See page 19 for appropriate part numbers and applications.

Service Tips: For details about the changes in the sensing line and fittings for the pump and cylinder block, please see SPT 84T7-7. The changes have resulted in yet another benefit for your UPRATE customer. The fittings are 50% stronger and there is less chance of leakage due to overtorque. When using the DFC sensing tube, the elbows in the pump and block must be changed. The P/N for the elbow is 3044854.

Keep in mind that if your UPRATE customer has an engine that is equipped with Jacobs Brakes, the brakes require a Jacobs master piston return spring (Small Cam P/N 011841, Big Cam P/N 007447) and a new inner control valve spring (P/N 007500).



SILICONE HOSE

Coolant hoses are a cost effective way to transport engine coolant from one assembly to another on a diesel engine. However, the hose can become a costly item if it results in continual maintenance, catastrophic failures during engine operation, or replacement after assembly repair and maintenance. Realizing the importance of a more reliable and durable coolant hose, the Cummins Polymer engineering group developed a silicone rubber hose with glass reinforcement.

The life span of a coolant hose is based on two things: the ability of the hose to withstand fluid pressures (burst strength) and the ability of the hose to resist unusual swelling due to exposure to common engine cleaning fluids.

The importance of burst strength is well understood. The failure of a hose during engine operation can cause immediate engine shut down. Unusual swelling can mean the hose is unable to withstand pressures. Therefore, the end user would be tempted to change the hose often which shortens its service life.

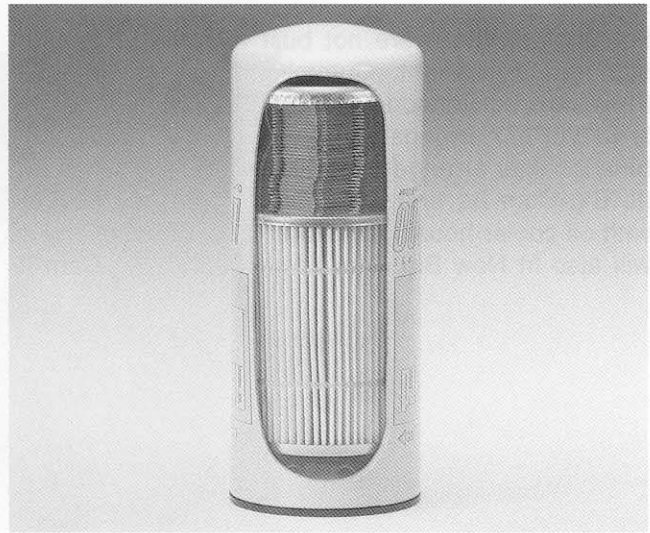
Coolant hose leakage is a critical problem in today's diesel industry. Leakage results in frequent maintenance programs to replenish lost coolant and to tighten hose clamps. These clamps help provide a good seal throughout the life of the hose, which is especially important for operation at sub-zero temperatures.

The serviceability of a coolant hose is judged by its ability to be removed without damage and to be

reinstalled without leakage or any noticeable difference in performance. Since re-installed hoses are not as reliable as new hoses, users normally replace them regardless of actual condition.

Cummins Silicone Rubber Hose, however, will outperform all other types of hoses found on the market today. The silicone hose is reinforced with glass fiber and polyester cord to increase burst strength and resistance to cold temperature leakage and swelling due to engine cleaning fluids. When the polyester cord is heated, it shrinks and grabs the pipe or tube and controls leakage without special hose clamps. Also, the silicone hose can be removed and reinstalled without any noticeable difference in performance. These benefits will optimize service life. This means added savings for your customers when they UPRATE to the Cummins Silicone Rubber Hose. This is the same hose that is now used on Cummins production-built engines.

Cummins offers three specific silicone hose kits for service: One each for Big Cam IV engines, L-10's with conventional cooling and L-10's with optimized aftercooling. The hoses contained in these kits are red in color and are the same as those used in production. The silicone hose is also available in 15 other kits, each containing a hose 72 inches in length. The hose in these kits is blue in color. Since the same material is used in the construction of both the red and the blue hose, there is no quality difference between them. Refer to the tables on pages 22 and 23 for the content of each kit.



LF3000 CONVERSION KITS

Cummins now offers a single combination oil filter as standard equipment on the New Big Cam IV 855 engines. This new filter, the LF3000, is also an excellent UPRATE option. The LF3000 allows the combination of a full flow filter (LF670) and a bypass filter (LF777) into a single unit. In fact, lab tests indicate that an LF3000 combination filter can provide up to 20% faster engine oil cleaning than other filters. The LF3000 carries U.S. Patent number 4238776 to protect its innovative design.

Originally, some diesel engine manufacturers used only oil bypass filters on their engines. It is called a bypass filter because the oil bypasses the bearings and flows directly back to the pan or sump. The bypass filter is pressure controlled so that oil flows very slowly to provide better filtration of fine wear particles.

In the 1960's, some diesel engine manufacturers began to use full flow filters. The full flow filter is placed between the oil pump and bearings. A full flow filter guards against engine deterioration by removing large wear particles only.

Until recently, Cummins has nearly always installed a full flow filter along side a bypass filter for better oil filtration. The full flow and "stacked-disc" bypass filter arrangement protects the engine from catastrophic wear problems by filtering all oil through the full flow filter to remove larger particles and then routing a portion of oil through the bypass filter to remove finer particles. Lab tests prove that up to 91%

less engine wear occurs when a full flow filter is combined with a stacked disc filter.

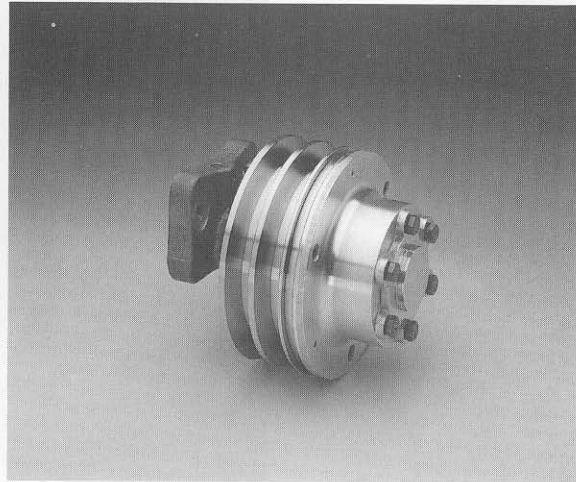
In October of 1986, Cummins began offering the LF3000 combination lube oil filter. The filter contains a microglass media full flow section and a stacked disc bypass section in a single canister. The microglass media section is a product of aerospace technology. For several years this industry has used microglass media to maintain aircraft systems in top condition. The microglass media is 25% less restrictive to flow than cellulose media. It provides finer filtration, especially during cold weather start-up. The stacked disc section is made of layers of felt-like material which provides particle filtration as fine as 3 microns in size.

The shell of the LF3000 has a rolled seam construction rather than the conventional double seam construction. This feature eliminates leaks since no pressure differential exists across the seam. An 'L' shaped gasket, designed especially for the LF3000, helps make the filter leakproof at lower installation torque requirements. This gasket also makes removal easier at high torque requirements.

UPRATE Kits

Modern oil filtration technology is now affordable for diesel engines. The LF3000 filter saves your customers money because they buy only one filter instead of two, but change it at the same intervals. Encourage your customers to UPRATE to the LF3000 single combination filter. The savings will increase over the long haul by reducing both maintenance and oil

Seventeen new and revised parts catalogs have been released since the last Parts Professional. Also significant progress has been made in updating the master parts book. Four major groups and over 3500 pages of new and revised parts catalogs (Q1, Q2, Q3 and Q4) have been published with updates for other...



CUMMINS ADC ELECTROMAGNETIC ON-OFF FAN CLUTCHES

Cummins Distributors now offer electromagnetic on-off fan clutches designed and manufactured by ADC, a wholly owned subsidiary of Cummins Engine Company. The Cummins ADC Fan Clutch provides a wide range of benefits to your customer including on-off operation, electromagnetic technology, and superior warranty. What's so great about an on-off fan clutch? In most operations, an on-off fan clutch will be on only 5% of the time and off the other 95% of the time. That means big advantages for your customer including:

- Reduced fuel consumption
- Less noise
- Faster warm-up, reducing engine wear and exhaust emissions
- More uniform control of engine temperature for longer engine life

Unlike most on-off fan clutches, the Cummins ADC Fan Clutch is electromagnetic. The Cummins design operates using electricity rather than air or oil lines. When the engine coolant reaches a preset tempera-

ture, electric current is allowed to flow through the coil in the magnet body. This flow of current magnetically attracts the armature to the inner body and brings the fan up to full hub speed. When the engine coolant has cooled sufficiently, the electric current is stopped and springs pull the armature away from the inner body allowing the fan to coast down to an idle or off condition. The advantages to your customer when he chooses ADC's electromagnetic design are:

- No air leaks, no oil leaks, no oil rings
- No preventative maintenance needed for at least five years
- Dependability
- Premium Quality

Not only does Cummins offer your customer the advantages of on-off design and electromagnetic technology, but the Cummins Distributor will also stand behind the Cummins ADC Fan Clutch with a 5 year/500,000 mile warranty. Put that all together and you get an excellent value for your customer.



NEW PRODUCTS

L10 All-in-One Kit

The L10 All-In-One Kit (P/N 3803074) packages all the parts required to perform a base overhaul on your customers L10. The kit contains 6 Cylinder Kits, standard rod and main bearings, upper engine gasket set, and a pan gasket. In addition, these parts are packaged in a distinctive container designed for easy carry out.

Other benefits include simplified ordering and convenient storage. Now it is no longer necessary for a mechanic to make several trips to retrieve the necessary parts. The customer, too, can be sure he has all the parts he needs when he walks out the door to do his own overhaul. You can be confident that you have ALL the right parts the first time!

RECON NEWS

Accessory Drives

Diesel ReCon has expanded their product line to include Accessory Drives for the NT engine family.

The accessory drive, an integral part of the engine, drives the air compressor and fuel pump. Failure, or excessive wear of gear shafts or bearings will cause the accessory drive to malfunction and eventually shut down the engine. Diesel ReCon replaces bushings and thrust bearing with 100% New Cummins Parts. They measure all running clearances with precision instruments and remanufacture the entire product to exacting specifications. In most cases, it is more cost efficient to exchange a failed or worn accessory drive for a Cummins ReCon drive than to have it repaired.

Core exchange is simple: core will be accepted on a part-number-by-part-number basis if the core is com-

plete and not disassembled, and the core casting is not cracked or broken. At this time, there is no Cx program for accessory drives. Gears or shafts that are cracked or broken will be accepted as good Rx core.

Accessory drives are now available for order through the Cummins authorized distribution network. Quality is backed by a 1 year/100,000 mile warranty covering all parts, labor, and progressive damage.

For more information on either product above, contact:

Marketing Department
 Diesel ReCon Company
 5765 Summer Trees Drive
 Memphis, TN 38134
 (901) 320-3300

Or, contact your Cummins Distributor.

LATEST PARTS CATALOGS

Seventeen new and eight revised Parts Catalogs have been released since the last Parts Professional. Also significant progress has been made in updating the master parts book. Four major groups and over 3500 pages of information on Turbochargers (XT), 4B (Y), 6B (T), and 6C (Z) have been published with updates for other sections scheduled yet this year.

Application	Bulletin Number
<u>Revised</u>	
KT, KTA19 Marine	3379568-02
KTA38 Generator Drive	3379578-01
KTA50 Marine	3379595-02
LTA10 Automotive Conventional Aftercooling	3379630-03
88LTA10 Automotive	3884213-01
88 Big Cam IV Fixed Time Automotive	3884211-01
88 Big Cam IV Step Time Automotive	3884212-01
88 Big Cam IV 444 Automotive	3884210-01
<u>New</u>	
KT, KTA38 Construction	3884249-00
KTA50 Construction	3884255-00
LT, LTA10 Agriculture	3884246-00
NTA855 Big Cam III Construction	3884235-00
4BT Automotive	3884252-00
6CT, CTA8.3 Generator Drive	3884253-00
6C, CT, CTA8.3 Construction	3884236-00
<u>Customized</u>	
4B3.9 Onan Generator DGBA	3884231-00
6BT5.9 Onan Generator DGDA	3884237-00
6BT5.9 Onan Generator DGDB	3884238-00
6BT5.9 Chrysler 250/350 1989 Pickkup	3884256-00
6CT8.3 Onan Generator DGEA	3884248-00
6CTA8.3 Onan Generator DGFA	3884247-00
6CTA8.3 Peterbilt Model 376	3884230-00
LTA10 Case Model 9150	3884239-00
NTA855 Big Cam III Case Model 9170	3884233-00
NTA855 Big Cam III Case Model 9180	3884234-00

Pulse 444

PULSE 444 P/N	OLD P/N	APPLICATIONS
3801915	3801322	Ford CL, GMC Astro, GMC General, Navistar, Vovlo-White, Peterbilt, Kenworth, Freightliner, Mack
3801916	3801223	All Ford except Ford CL
3801917	3801224	All GMC except Astro and General

Aftercoolers

PART NUMBER	DESCRIPTION	APPLICATIONS
Adding Aftercooling to non-Aftercooled engines		
3036798	BC III Aftercooler Assembly	Standard (Ford CL, L, LT, IHC, KW, Freight liner, GMC, and Mack)
3041280	BC III Aftercooler Assembly	Ford LN, LNT
3043984	Crossover	Ford CL, Freightliner, IHC, Kenworth, Mack, GMC Astro, GMC General
3006296	Crossover	GMC Brigadier
211012	Crossover	Ford L & LT
215755	Crossover	Ford LN & LNT
3801418	Plumbing Kit	Ford CL, Freightliner, IHC, Kenworth, Mack
3801419	Plumbing Kit	GMC Astro, GMC Brigadier
3801420	Plumbing Kit	Ford L & LT
3801421	Plumbing Kit	Ford LN & LNT
Front Plumbing Kit (for UPRATING earlier Aftercooled engines to BC III Aftercooling)		
3801409	Plumbing Kit	Standard except Ford
3801415	Plumbing Kit	Ford L, LT, & LTL
3801416	Plumbing Kit	Ford LN & LNT

Camshaft Tables

Current Uprate Camshafts and Components				Replaced Camshafts		
Assembly P/N	Bare Cam P/N	Description	Applications	Assembly P/N	BareCam P/N	Description
3801763*	3049023	Flanged Camshaft	BCI Early BCII	3801047 3801063	3021588 3000850 3020914	Flanged Cam Flanged Cam Flanged Cam
3049024	3042568	Flangeless Camshaft	BC1 BCII BCIII BCIV 350 and below	3801036 3026955 3026975	3006677 3022365 3025518	Flangeless Cam Flangeless Cam Flangeless Cam
3801448	3036697	Flangeless Cam	BCIV400 - High Lift			
3801426	3025524	MVT Flangeless	BCIII MVT			
3026972	3025517	MVT Flangeless Cam	BCII MVT	3801038	3021589 3019124	MVT Flanged Cam MVT Flanged Cam

*If both cam and cam gear require replacement, the 3049024 flangeless camshaft is recommended instead of 3801763.

Cam Gears and Front Supports

215566 608124	302954 3025517	Cam Gear Front Cam Support	Flanged Camshaft
3002901 3008530		Cam Gear Front Cam Support	Flangeless Camshaft

Cam Follower Rollers

Current P/N	Superseded P/N	Applications
3036933	3005919	All NH Big Cam Series
3036934	3005920	Series Engines

DFC Lube Pump Kits

PART NUMBER	DESCRIPTION	APPLICATIONS
3801228	DFC Lube Pump Conversion Kit	All NT applications except non-FFC Small Cam engines
These kits contain the lube suction hose, remote pressure sensing lines and mounting hardware.		
3801226	DFC Lube Plumbing	All OEM's, Rear Sump Oil Pan
3801227	DFC Lube Plumbing	All OEM's, Front Sump Oil Pan

Air Compressor Design Improvements: New Part Numbers

COMPONENT	NEW P/N	OLD P/N	SS296	ST676
Compressor Head	3044389	218793	X	
Piston	3045670	165430	X	X
Exhaust Valve Seat	3043945	144714	X	
Exhaust Valve Seat	3043947	144714		X

Super Single Air Compressor Head And Valve Uprate Kit

P/N	DESCRIPTION	REPLACES HEADS
3801792 (Supercedes 3801607)	13.2 Head and Valve Kit	218793 179122 153965
CONTAINS:		
AR12719	Repair Kit Valve	
145028	Intake Valve Seat	
3043945	Exhaust Valve Seat	
3044389	Compressor Head	
3046298	Unloading Valve Body	
3047159	Air Compressor Gasket	
3201386	Connection Gasket	

Tilted Twin UPRATE Kit

P/N	Description	Quantity
3803104	Air Compressor Conversion Kit	1
S 610	Lock Washer	4
S 1002	Male Connector	1
S 1005	Male Elbow	1
199358	Spine Sleeve	1
204994	Male Connector	1
206326	Capscrew	4
3006559	Clip	1
3049688	Air Compressor Gasket	1
3056615	Air Compressor	1
3178583	Water Outlet Tube	1
3178585	Water Inlet Tube	1

Bulk hose kits: (Blue, 72 inches long)

Part Number	Inner Diameter
3801863	0.38
3801889	0.50
3801862	0.62
3801852	0.75
3801853	0.88
3801854	1.00
3801855	1.12
3801856	1.25
3801864	1.50
3801857	1.62
3801858	1.75
3801859	2.00
3801860	2.25
3801890	2.38
3801861	2.50

Hose Kit Contents (Red)

Big Cam IV - 3801865

Part Number	Qty.	ID x Length (inches)	Where Used
3054354	2	1.12 x 2.25	Aftercooler to Transfer Tube
3054355	1	1.00 x 2.25	Air Compressor
3054859	1	1.75 x 3.25	Water Manifold
3818268	1	0.88 x 3.00	Air Compressor
3818271	2	1.25 x 3.00	Transfer Tube to Thermostat Hsg

L10 Conventional - 3801866

Part Number	Qty.	ID x Length (inches)	Where Used
3818270	1	1.25 x 2.75	Lube Oil Cooler
3818271	5	1.25 x 3.00	Aftercooler (4) & Lube Oil Cooler (1)
3818272	1	1.66 x 2.75	Thermostat Hsg

L10 OAC - 3801891

Part Number	Qty.	ID x Length (inches)	Where Used
3818267	2	1.00 x 3.00	Aftercooler to Transfer Tube
3818268	1	0.88 x 3.00	Thermostat Hsg
3818269	1	0.50 x 2.50	Water Bypass Tube
3818270	1	1.25 x 2.75	Lube Oil Cooler
3818271	1	1.25 x 3.00	Lube Oil Cooler

Coolant Hoses Unique to:

Big Cam III

Hose P/N	ID x Length (inches)	Bulk Kit P/N
179906	0.38 x 6.00	3801863
179912	0.38 x 6.00	3801863
102522	1.50 x 3.00	3801864
155789	1.00 x 2.50	3801854
200517	1.00 x 3.00	3801854

Big Cam II and Big Cam II/III 475

Hose P/N	ID x Length (inches)	Bulk Kit P/N
3818269	0.50 x 2.50	3818269
102522	1.50 x 3.00	3801864
179906	0.38 x 6.00	3801863
179912	0.38 x 12.00	3801863
3056138	1.00 x 2.50	3054355
155789	1.00 x 2.50	3054355

The LF3000 conversion kit part numbers and applications are as follows:

P/N	APPLICATION
3803052	New Big Cam IV
3803053	88NT Big Cam IV
3803054	Big Cam III, Big Cam IV, and some Small Cam 855 with oil cooler housing p/n 3052210.

Note 1: Oil cooler housing p/n 3052210 was phased in on all Big Cam III, Big Cam IV, and New Big Cam IV engines in October, 1986 (REF: SPT87T-2 Look for this part number stamped on the outside of the housing for identification.

Note 2: Kit P/N 3803054 contains elbow fitting P/N 3062599 and hex nipple P/N 3175828 so you can re-use wrap-around bypass tube P/N 3037052. Make sure this tube is re-clipped at the time of installation to prevent vibration of the tube and possible breakage.

Chrome Rocker Lever Cover Kit - P/N 3803036 For Pre-88NT Engines

Contains:			
P/N	Description	Qty.	Reference P/N
3042401	Grommet Seal	1	Same
3047134	Breather Tube	1	Same
3054841	Rocker Lever Cover Gasket	3	Same
3062178	Captive Washer Capscrew	15	3038076
3803033	Rocker Lever Cover (Plain)	1	3006138
3803034	Rocker Lever Cover (Breather)	1	3049257
3803035	Rocker Lever Cover (Filter)	1	3006187

Chrome Aftercooler Cover/Air Crossover Kit P/N 3803152 For Small Cam, Big Cam, Big Cam II, and Big Cam III Engines

Contains:			
P/N	Description	Qty.	Reference P/N
S 679	Plain Washer	4	Same
216486	Aftercooler Housing Gasket	1	Same
216487	Connector Gasket	1	Same
3065026	Air Crossover Connection	1	3043984
3065028	Aftercooler Cover	1	3046170
3065029	Hexagon Flange Head Capscrew	24	3005508
3065030	Hexagon Head Capscrew	4	S-103-D

Part Professional Test #9

1. The life span of a coolant hose is based on:
 - A. Its burst strength and its color
 - B. Its color
 - C. Its burst strength and its ability to resist unusual swelling due to exposure to common engine cleaning fluids
 - D. None of the above
2. The Pulse 444 Exhaust Manifold:
 - A. Improves durability
 - B. Prevents slip-joint galling
 - C. Eliminates leakage problems
 - D. Eliminates sealing rings
 - E. Eliminates ring grooves
 - F. All of the above
3. The serviceability of a coolant hose is judged by its ability to be removed without damage and to be re-installed without leakage or any noticeable difference in performance.
 - A. True
 - B. False
4. One of the three features of the DFC lube system which gives your customers improved fuel economy is:
 - A. Normal engine oil pressure is increased from 60 to 80 psi
 - B. Normal engine oil pressure is reduced from 60 to 40 psi
 - C. The oil flow rate is increased from 60 to 90 gallons per minute
 - D. None of the above
5. The ST773 Air Compressor is called the "Tilted" Twin because it has a crankcase with cylinder bores tilted 33°.
 - A. True
 - B. False
6. C Brakes can extend the life of service brakes by up to:
 - A. 2%
 - B. 50%
 - C. 100%
 - D. 1%
7. The LF3000 combination oil filter carries a U.S. Patent number to protect its innovative design.
 - A. True
 - B. False
8. The Premium Plus Cylinder Kits are recommended for:
 - A. Engines that are equipped with engine brakes
 - B. Normal load/high RPM operation
 - C. Heavy haulers running between 50 and 300 RPM above peak torque
 - D. Both A and C are correct.
9. The HT3B turbocharger has been proven to save up to 2-1/2% on fuel costs depending on the engine model.
 - A. True
 - B. False

10. The two new Cummins Chrome Kits are:
- A. The Rocker Lever Cover Kit and the Aftercooler Cover/Air Crossover Kit
 - B. The Turbocharger Kit and the Air Crossover Kit
 - C. The Flywheel Housing Kit and the Turbocharger Kit
 - D None of the above
11. The cylinder head of the Tilted Twin Air Compressor cannot be removed without removing the compressor.
- A. () True
 - B. () False
12. The flangeless camshaft design reduces stress on the camshaft nose as well as fretting between the camshaft and cam gear.
- A. () True
 - B. () False
13. The LF3000 oil filter is the combination of a full flow filter and a bypass filter into a single unit.
- A. () True
 - B. () False
14. The Pulse 444 features:
- A. Sealing rings
 - B. Sealing ring grooves
 - C. Wear-coated slip-joints
 - D. None of the above
15. The aftercooler UPRATE requires a change to an aftercooled CPL.
- A. () True
 - B. () False

15. A
 14. C
 13. A
 12. A
 11. B
 10. A
 9. A
 8. D
 7. A
 6. C
 5. A
 4. B
 3. A
 2. F
 1. C
 Answers

Parts Professional Patches and Caps

Parts Professional Patches:

Now you can display your pride and accomplishments as a Cummins Parts Professional. These handsome 2-3/4 inch square patches display the distinctive Cummins Parts Professional logo on a navy blue background with red and silver graphics. They are designed to be either ironed or sewn on uniform shirts, jackets, caps, shop coats, coveralls, etc. A package of four costs only \$1.60. Order enough so that all your Cummins Parts Professionals can show their true colors.

Parts Professional Cap:

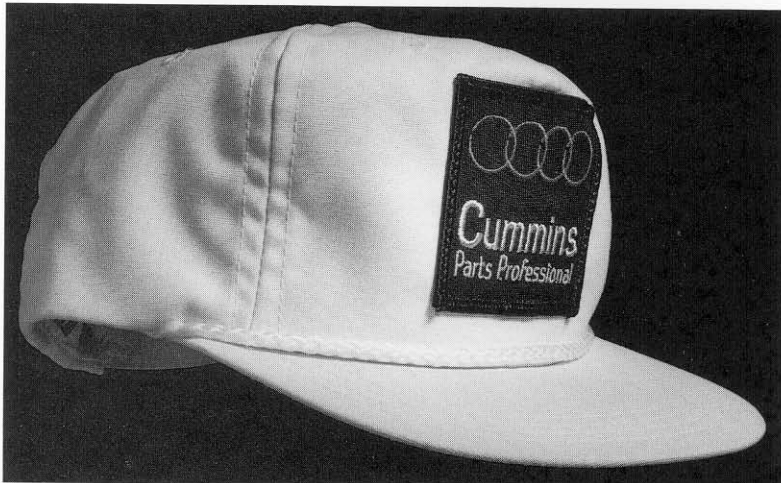
Designed specially to complement the Parts Professional jacket, these U.S. made poplin golf style caps are silver grey with the Cummins Parts Professional patch attached to the front panel. The cap features fully adjustable sizing strap with buckle, woven eyelets and a matching cord. These rugged handsome caps are only \$4.75 each.

How to order:

- TOSS orders to Winters, Assoc., Attention Fulfillment Department.
- Send mail orders and inquiries to Winters Associates, Inc., P.O. Box 3007, Columbus, IN 47202-3007; Attention Fulfillment Department.
- Dial telephone orders to (812) 372-8133. Ask for Sales Department.
- Orders billed to Cummins Engine Company must have department, account, and entity codes as well as the telephone extension and mail code of the person ordering.
- Distributors should provide shipping address, billing address, and purchase order number.
- Cummins and distributor employees may order by mail or in person at our Columbus warehouse. Payment may be made by cash, check, or money order. We also accept Visa or Mastercard. For cash orders transportation, insurance and handling charges may be computed from the following table:

Up to \$30.00	\$3.50	\$120.00-\$149.99	\$ 6.75
\$31.00-\$59.99	4.00	\$150.00-\$179.99	\$ 7.75
\$60.00-\$89.99	4.50	\$180.00-\$199.99	9.50
\$90.00-\$119.99	6.00	\$200.00-up	10.00

- Shipments are made by UPS wherever possible.
- Several orders may be combined to reduce shipping charges.



Prepaid Order Form Parts Professional Patches and Caps



Shipping Address:

Name: _____

Address: _____

Payment Terms:

Check No. _____

Money Order No. _____

Credit Card No. _____

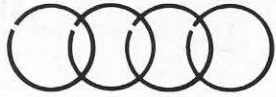
Credit Card Type _____

<u>Qty.</u>	<u>Item</u>	<u>Cost Ea.</u>	<u>Total Cost</u>
_____	Parts Professional Patches, Pkg. of 4	\$1.60	_____
_____	Parts Professional Cap, Ea.	\$4.75	_____
	Sub-total		_____
	Trans., Ins. & Handling		_____
	Total Remitted		_____

Signed: _____



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Cummins

Parts Professional

P.O. Box 34470
Louisville, Kentucky
40232-4470

Bulk Rate
U.S. Postage
PAID
Louisville, Ky.
Permit #354

Prepaid Order Form
Parts Professional Patches and Caps

Name _____		Address _____	
City _____		State _____	
Zip _____		Country _____	
Phone _____		Fax _____	
E-mail _____		Company Name _____	
Product _____		Part No. _____	
Quantity _____		Unit Price _____	
Total _____		Tax _____	
Subtotal _____		Shipping _____	
Total _____		Total _____	

Customer Label _____