



PARTS PRO CLASSIC

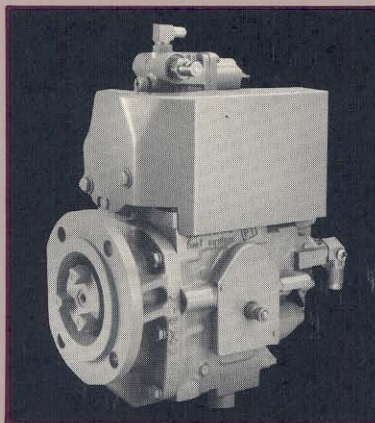
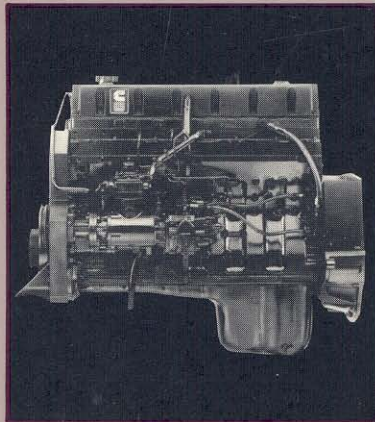
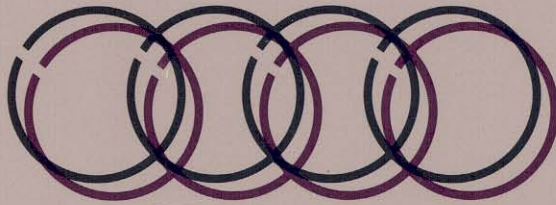
CLASSIC EDITION #14

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Cummins

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Welcome to Parts Professional #14!


In this issue, we will cover the PT® PACER™, the integrated electronic road speed governor from Cummins which is now available as a Genuine Cummins Parts Retrofit kit. We will also cover the new L10 COMMAND engine. In addition, we have the latest Tips from our Professionals.

Beginning with our last issue, we have a new look for the 1990s! Each issue will have a different set of colors on the front, but the design will remain the same. We will be changing the format inside occasionally, too, based on your input as to what you would like to see in this publication.

Please notice the new type of label on the back of this issue. In the upper right-hand corner is your own personal Professional Identification Number. If you send in a reply card, please peel the label off your book and place it on the reply card where indicated. This will help us keep track of our participants and prevent confusion. It is especially helpful when you send us an address change. Anyone who signs up for the program will also be assigned their own number.

We will continue to adjust this program to make sure you get the information you need based on your input. Please use the reply card to let us know how we are doing. It would be helpful if you would use your new Professional Identification Number on any correspondence.

Good Luck and good selling!



Kristin G. Bridges
Editor

TIPS

from the Professionals

We received several Tips from our readers since the last issue. One was from Daniel J. Frank of Delta Truck Sales in Sacramento, CA . He says that at his shop, they keep a ReCon engine on the floor in the service department at all times. When a customer enters the shop, he sees the engine and in many cases decides to put in a ReCon instead of putting more money into an engine that has already cost him time and money. Having a ReCon engine in their shop makes good business sense for Delta Truck Sales and Daniel Frank.

T. Silvester (Sil) at Inland Kenworth Williams Lake in Williams Lake, British Columbia has come up with some kits for convenience. They are finding that their shop is re-sealing STC valves for the 444 with some regularity. To help the customers, the mechanic, and the parts department, he has come up with a kit for this type of repair. His kit includes one each of the following parts:

8078	Washer, plain
3034408	Seal, o ring
3042542	Seal, o ring
3045986	Seal, o ring
3054405	Retainer, diaphragm
3054406	Disc, valve
3054407	Diaphragm
3066914	Seal, o ring

Editor's note: In May of 1989, Cummins released an STC valve repair kit that is very similar to this one that might make your job even easier! It is part number 3803282 and contains the following:

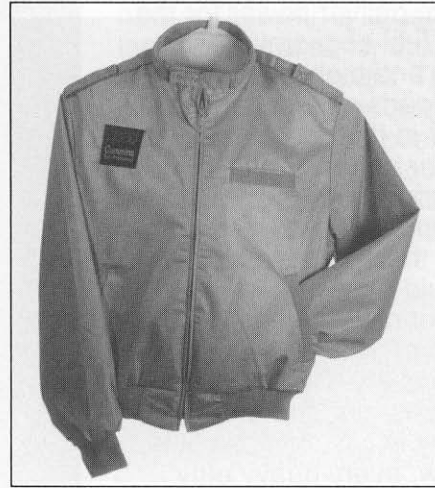
(2)	8078	Washer, plain
(1)	3034408	Seal, o ring
(2)	3042542	Seal, o ring
(1)	3045986	Seal, o ring
(1)	3051069	Spring, compression
(1)	3054384	Screw, filter head cap
(1)	3054406	Disc, valve
(1)	3054407	Diaphragm
(1)	3056073	Spring, compression
(1)	3066914	Seal, o ring

In order to promote faster service at Cummins Diesel Sales in Fargo, North Dakota, Steve Dahlin says they try to keep associated parts together in one bin. For example, they would keep air compressor parts in one bin and turbocharger parts would go together in another bin. This speeds up service since Partsman don't have to go from one end of the department to the other to collect all the parts needed for a certain type of repair. This can also help increase sales since it may remind the Partsman of possible associated parts that could be sold to the customer.

Our Big Tipper in this issue is Bill Burnett of Dalton Truck Sales, Inc. in Dalton, GA. When a customer comes in wanting to buy an overhaul on an older 855 engine, he suggests that the customer spend a few dollars more and purchase the .020/.040 oversize cylinder kits. With these cylinder kits the customer can take advantage of the lower press fit liners. Bill tells the customer that by machining his block approximately .020 in the lower press fit area, his block will have less stress on the top deck and a more stable liner. The benefit is more miles between overhaul. Bill has then made an upgraded sale and has generated additional work for the shop. Best yet, Bill will have a more satis-

fied customer over the long haul! Looks like Bill has been paying close attention to what we have been talking about in the Parts Professional program. Thanks for the great tip!

Bill will be receiving a personalized jacket with the Parts Professional patch on it, as well as five Parts Professional patches for his uniforms and a Parts Professional cap. In addition, our other three Tipsters this time will receive the Parts Professional cap and the patches. Send in your suggestions now for your chance to win prizes and to see your Tip printed in the next Parts Professional!



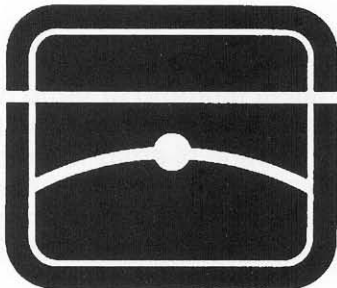
Send your Tips to:

Kristin G. Bridges
Editor - Parts Professional M/C 60011
Cummins Engine Company, Inc.
Box 3005
Columbus, IN 47202-3005

Rules: *The Tips must be compatible with Cummins standard practices. They must relate to the sale of New or ReCon Genuine Cummins Parts or Premium Blue Oil.*

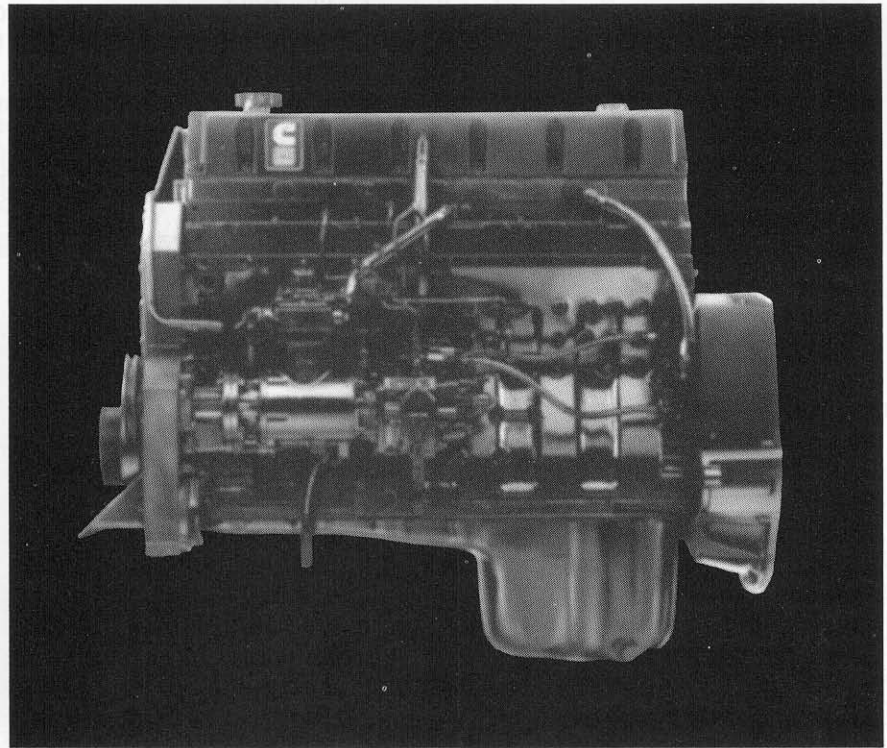
L10 Command

The L10 COMMAND is the first of the new family of Cummins engines designed around a totally new concept. The COMMAND concept is designed to deliver power for the drivers, fuel economy for the owners, and high torque to pull the big loads . . . all coming together in the operating range like never before. Until now, maximum power and maximum fuel economy have been far apart in the operating range. You could have one or the other, but not together at the same rpm! Now, for the first time in history, Cummins has done something that only a company like Cummins could do. Now, every heavy duty truck in the new product line, not just one engine or one series, but every engine is so advanced that drivers can command maximum horsepower and owners can command maximum fuel efficiency . . . together at the same point. The torque curve also hangs in there down to the lower rpms providing torque to conquer the big loads and to command the longest, steepest grades. That's the Cummins COMMAND concept, maximum horsepower and maximum fuel efficiency together at the Command point . . . where most of the driving gets done.



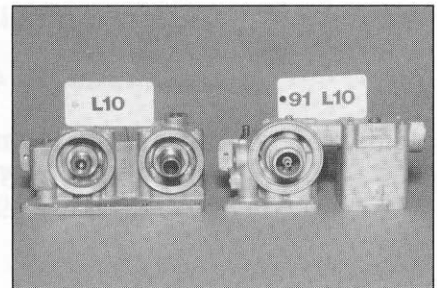
Now let's see what has changed in the L10 from the parts perspective.

In Parts Professional 12, we mentioned the release of a



new, reduced noise L10 for construction applications. One of the main things we talked about on this engine is that the oil pan is bigger. It had been upgraded from a 7 to a 9 gallon capacity pan by extending the pan rail. The benefit to your customer comes in the form of durability . . . it is estimated that average engine life is improved by 50,000 to 100,000 miles. An important point for our Parts Professionals is that the system oil capacity on this engine is now up to 10 gallons . . . so make sure you sell your customers enough Premium Blue when they are changing their oil!

The noise reduction on this engine was achieved primarily by the use of a stamped steel gear housing and cover. This drastically reduced the amount of noise coming from that end of the engine. The overall noise reduction from this design feature means that fewer applications will require noise panels. That means less weight and less cost to your customers, not to mention the quieter-running engine.

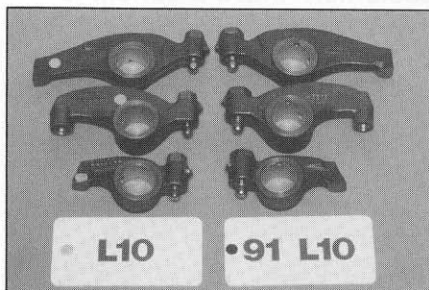


This design also incorporated a new filter head which is now compatible with the LF3000 oil filter. We have talked about the benefits of this combination full-flow and bypass oil filter before in conjunction with the NT Series of engines (see Parts Professional #9). The main benefit to your customer is that only one oil filter needs to be purchased and replaced at oil change time instead of two filters. However, this particular filter head is not capable of being retrofitted as in the case of the 88NT, which had a retrofit kit. Along with the LF3000 feature, this filter head incorporates thermostatic control of the oil temperature. The oil now bypasses the oil cooler when the oil is cold. This improves the cold weather efficiency of the lube system.

Some of the other parts that changed with the reduced noise design were the block, the water pump, the front cover and housing and the crankshaft with a new, external vibration damper.

For the 1991 Automotive L10, the design changes in the reduced noise engines for construction applications were added to in order to reduce the emissions to the 1991 legal levels. All the features we just talked about are present in the L10 COMMAND engine, but there were quite a few additional changes made to accommodate the higher cylinder and injection pressures needed to meet the 1991 emissions levels while improving torque and horsepower in the most fuel efficient operating speed range.

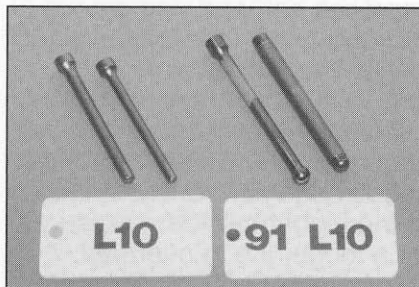
The L10s will be offered with both STC fuel systems and the new CELECT™ electronic fuel system. The new injectors will have longer strokes than the current PT fuel system injector and higher injection pressures. The CELECT feature allows precise timing and metering control for lower particulates and acceleration smoke. These engines also have higher low end torque. From the parts perspective, this means that most of the parts that are part of, or work with, the fuel system had to change.



The STC injector has a step plunger cup for carboning control. The injector rocker levers have been changed as well for both types of fuel systems. The adjusting screw has been modified from 1/2" to

9/16" and the ball and socket has been changed to create increased socket contact. This gives the customer an increased load capacity and less overhead wear in addition to helping to meet the 1991 emissions levels.

To accommodate a taller injection train, the rocker hous-



ing has increased in height and the rocker cover has been changed. Push tubes have replaced the original solid intake and exhaust valve push rods. The injector push rod is still solid. The push tubes and rods are 3/4 inch longer than before. The part numbers of the new intake and exhaust push tubes are identical, and are therefore interchangeable. More capscrew holes have been added to the rocker cover to improve loading on the gasket, making the joint highly resistant to leaks.

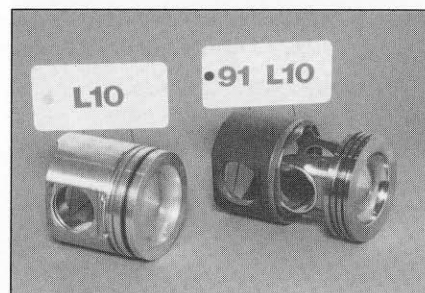
Also, a new cylinder head is used on these engines which has larger injector hold down holes and extra push tube clearance. The new head uses longer valve guides and valve stems along with new, longer valve springs and new spring retainers. Stemless cross heads with improved strength are used with the new head. While the bare head will work on earlier model engines, the valves, valve guides, springs, and retainers will **not** work on pre-STC and pre-CELECT engines.

There are now two different camshaft designs for this engine, one each for the STC engine and the CELECT en-

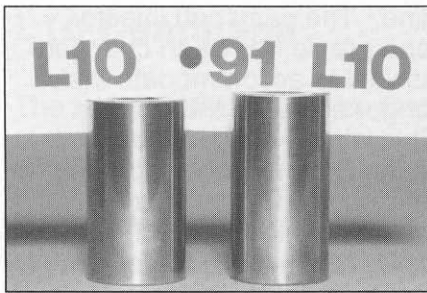
gine. The camshaft injector lobe profile has been changed as well to accommodate the longer stroke of the injector. This lobe gives your customers better performance and fuel efficiency. The valve and injector cam followers have a new socket with a larger contact surface area for the push tubes and push rods. The injector follower has additional material around the push rod socket. The deeper socket design reduces the possibility of the push rod dropping out of position.



Several other changes were needed to endure the high cylinder pressures without a loss of performance or durability. One of the most obvious



changes is in the piston. The L10 330E (330 horsepower with CELECT electronically controlled injection) has a new articulated piston. This piston has a forged steel crown and a separate aluminum skirt. The piston pin has been lengthened to accommodate the articulated piston design. The new pin is now 4mm longer for both the articulated pistons and the single-piece pistons for the lower horsepower L10s, a feature which makes the piston pin common between the two pistons.



Please note: New style and old style piston pins must not be interchanged!

There is a special system of cooling built right into the articulated piston. A channel from the skirt to the crown keeps oil splashing up behind the ring area in order to keep that area cool despite the higher cylinder temperatures in this engine. This new piston design, "gallery cooling," helps to improve life to overhaul despite the higher demands this engine puts on the cylinder with higher pressures and temperatures. Another design feature that helps to keep the parts of the cylinder cooled is the improved water flow created by reducing the liner press fit length so that water comes up to the same



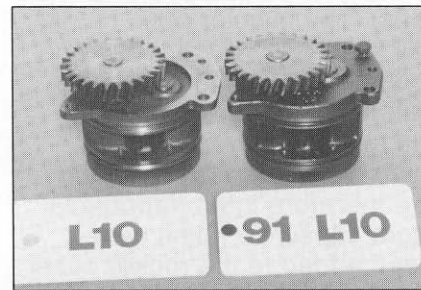
point on the outside of the liner as the top ring does on the inside. This keeps the rings cooler and reduces bore distortion for longer life and reduced oil consumption. The new liners **must not** be used in earlier style L10 blocks!

The durable, cast aluminum pistons with dual Ni-resist inserts that we have talked about for the NT in past issues (see #10) come standard on all L10 COMMAND engines except the 330Es. As we have



said before, the Ni-resist insert improves ring and ring groove life, giving your customers a longer life to overhaul. The top ring is specially lapped to hold extra oil to prevent scuffing and the crown of the piston is anodized to control the stresses of the higher cylinder pressures for a longer life to overhaul.

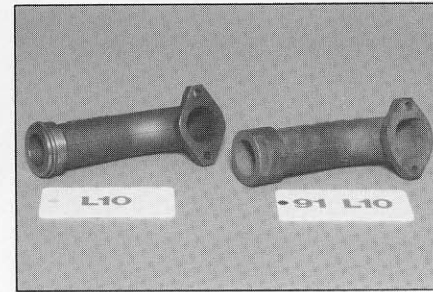
Higher cylinder pressures mean higher temperatures and the need for efficient cooling of the cylinder components. One



way to achieve this is by increasing the lube pump flow. By changing the length of the lube pump gear, the flow capacity is increased by over 40%. This means more oil for piston cooling, which means longer life to overhaul for your customers. Please note that some important changes have been made to the oil cooler. On the outside, these coolers will look the same as those for previous L10 models, but the internal changes mean it now has increased cooling capacity and is therefore **not** interchangeable with other oil coolers.

The exhaust manifold has been redesigned for improved flow and performance. It now has the same slip-joint design as we introduced on the Pulse 444 for

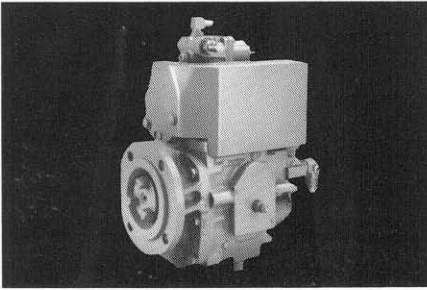
NT engines. The new slip-joint has a lengthened sealing



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.

You'll also notice that the Holset H2E turbochargers on this engine have a divided entry turbine casing to promote fuel economy. These turbos have been redesigned along with the intake manifold to accommodate the charge air cooling on this engine. A new elbow from the turbo to the charge air cooler tubing connection had to be designed as well. A new intake manifold was also required with this system of cooling. The charge air cooling is part of the reason these engines are able to achieve one of the lowest emissions ratings in the industry. That's more than just a benefit for your customer: that's a benefit to everyone who breathes the air in this world!

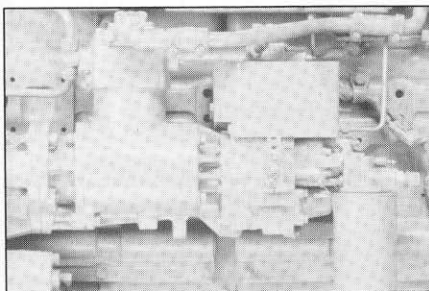
Overall, this engine is an exciting new concept for Cummins: the COMMAND concept. Your customers will have a more owner- and driver-friendly truck. The parts are designed with increased durability in mind. With the new power and quality demands from this engine, your customer will have more reasons than ever to buy Genuine Cummins Parts.



PT® PACER

PT PACER is a foot-down road speed governor engineered to make your customers' NT and L10 engines even more fuel efficient and easier to drive. It increases fuel efficiency by controlling road speed which is the prime factor in fuel consumption. For every 1 mph of reduced road speed, it reduces fuel consumption by approximately 1/10 mpg. Also, PT PACER allows the "gear fast/run slow" drivetrain configuration to keep the engine operating within its most fuel efficient range, instead of up against the governor. In the recent Cummins coast-to-coast comparison, the added benefit of PT PACER increased fuel economy by 1.6% over an identical, ungoverned Cummins Fleet 300 attempting to maintain the same road speed.

The PT PACER is an integral part of the PT fuel system. There are no cables, springs, or fittings. It is a neat, "clean"

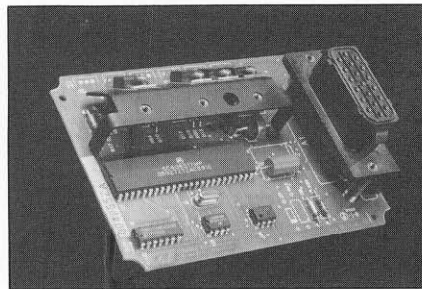


package that is difficult to tamper with. This means your customers can rest assured that drivers are not going to change settings on this device ... at least not without leaving a

tell-tale sign. PT PACER can tell you when something has gone wrong and, with the Compulink™ diagnostic tool, direct you to the problem, whether it was caused by a component failure or by tampering.

A "constant bypass" feature offers another important benefit. In the unlikely event of a PT PACER electronic failure, the fuel bypass enables the engine to continue delivering about 50 horsepower. This mechanical bypass, unique to the PT PACER, allows the driver to pull the vehicle off the road.

The key element of the PT PACER is the electronic fuel control valve, which offers unusually smooth control of road speed. This is the same valve



used with the Cummins PACE™, which is a more comprehensive electronic product. The PT PACER consists of a PACER control unit (PCU) which activates an electronic fuel control valve (EFC) in a hydraulic module. These are mounted on a PT pump and protected by a tamper-resistant shield. The PCU receives input from an engine speed sensor mounted in the transmission housing or speedometer cable line.

The PT PACER is available as a factory-installed product preset at the factory for the maximum road speed specified with the customer's new engine order. Now, it is also available to your customers as a retrofit kit! The completed PT PACER Retrofit installation will be

identical to the Factory installed versions. There is a table at the back of this booklet showing which PT PACER parts are needed for 88NT and 88L10 engines for which it is applicable.



There are two different kit part numbers: 3803291 for the 88NT, and 3803335 for the 88L10. In addition, there are some other parts which may or may not be needed based on the table in this book: 3803334 (Air ASA Kit), 3071321 (Fuel Pump hsg/AFC Assembly), 3068108 (Fuel Pump Body), as well as several different fuel tubes (see bottom of table).

Sell your customers on the benefits of adding a PT PACER Retrofit kit to their 88NT and 88L10 engines. They will get better fuel economy and improved driveability: two important benefits for today's truck owners and drivers.

L10 Command Ratings

Engine Model	Hp @ the Command Point	Command Range	Command Torque @1200 rpm
<u>Line Haul</u>			
L10-330E	330	1200-1800 rpm	1250 lb-ft
L10-310E	310	1200-1800 rpm	1150 lb-ft
L10-310	310	1200-1800 rpm	1150 lb-ft
L10-280	280	1200-1800 rpm	1050 lb-ft
L10-260	260	1200-1800 rpm	975 lb-ft
<u>Vocational</u>			
L10-330E	330	1200-2000 rpm	1250 lb-ft
L10-310E	310	1200-2000 rpm	1150 lb-ft
L10-300	300	1200-1950 rpm	1150 lb-ft
L10-280	280	1200-1950 rpm	1050 lb-ft
L10-260	260	1200-1950 rpm	975 lb-ft

Fact Sheet

5/90

Product	Feature	Advantage	Benefit
L10 COMMAND Engines	COMMAND Concept	Maximum power and fuel economy in the same operating range	Drivers and owners meet their needs with the same engine rating
		Peak torque range increased	Improved driveability
	Larger oil pan	Increases system oil capacity	Improved engine durability
	Stamped steel gear housing and cover	Reduces engine noise levels	Lower installed weight and cost of engine
	New filter head	Uses the LF3000 combination oil filter	Lower costs and time for changing oil filter
		Thermostatic control of oil temperature	Improved cold weather efficiency
	CELECT electronic fuel system	Controls timing and metering precisely	Lower particulates and acceleration smoke
	PT/STC injector	Step plunger cup	Controls carboning
	Injector rocker levers	Modified adjusting screw and ball-and-socket contact	Reduced overhead wear
	Camshaft injector lobe	Works with longer stroke of the injector	Improved performance and fuel efficiency
	Additional material around the injector cam follower push rod socket	Reduces the possibility of the push rod dropping	Improved reliability
	Dual Ni-resist pistons	Reduces ring and groove wear	Longer life to overhaul
	Specially lapped top ring	Holds extra oil to prevent scuffing	Longer life to overhaul
	Anodized piston crown	Controls stresses of higher cylinder pressures	Longer life to overhaul
Articulated piston (330E only)	Withstands the higher cylinder temperatures and pressures at this rating	Longer life to overhaul	
Gallery Cooling on articulated piston	Keeps the ring area cooler	Longer life to overhaul	
Reduced press fit length on liner	Water keeps rings cooler	Longer life to overhaul and reduced oil consumption	
Increased lube pump flow	Increases piston cooling capability	Longer life to overhaul	

Fact Sheet (Continued)

Product	Feature	Advantage	Benefit
PT® PACER	Slip-joints on exhaust manifold	Provides closer fit and eliminates the need for sealing rings	Improved durability and sealing
	H2E turbocharger	Divided entry turbine casting	Improved fuel economy
	Charge air cooling	Helps to reduce the engine's emissions	Improved air quality for everyone
	Road Speed Governor	Controls road speed	Increased fuel efficiency
	Integral part of PT® fuel system	No cables, springs, or fittings	Tamper resistant
	Constant bypass	Continues delivering 50hp during electronic failure	Increased safety since driver can pull off the road
	Electronic fuel control valve	Smooth control of road speed	Improved driveability
	Retrofit kit	Identical to factory installed version	All of the above benefits

PT® PACER Kit Cross Reference

Engine Identification			PT PACER Components and Specifications				
CPL	Engine Rating	Fuel Pump Code	PT PACER Kit	Required Fuel Pump Hsg/AFC Assembly	Required ASA Kit	Optional Pre-drilled Fuel Pump Housing	PT PACER Fuel Pump Code
838	315HP @2100 RPM	4501	3803291	-	-	3068108	6100
838	315HP @1900 RPM	4494	3803291	-	-	3068108	6131
838	315HP @1800 RPM	4500	3803291	-	-	3068108	6110
838	300HP @2100 RPM	4504	3803291	-	-	3068108	6141
838	300HP @1900 RPM	4498	3803291	-	-	3068108	6132
838	300HP @1800 RPM	4492	3803291	-	-	3068108	6115
840	350HP @2100 RPM	4312	3803291	3071321	3803334	-	6124
840	350HP @1900 RPM	4463	3803291	3071321	3803334	-	6127
840	350HP @1800 RPM	4334	3803291	3071321	3803334	-	6112
840	350HP @1700 RPM	4490	3803291	3071321	3803334	-	6114
840	325HP @1800 RPM	4576	3803291	3071321	3803334	-	6116
840	320HP @1800 RPM	4552	3803291	3071321	3803334	-	6133
910	444HP @2100 RPM	4438	3803291	-	-	3068108	6135
1185	400HP @2100 RPM	4480	3803291	3071321	3803334	-	6140
1185	400HP @1900 RPM	4481	3803291	3071321	3803334	-	6145
1185	400HP @1800 RPM	4482	3803291	3071321	3803334	-	6139
1185	365HP @2100 RPM	4483	3803291	3071321	3803334	-	6138
1185	365HP @1900 RPM	4484	3803291	3071321	3803334	-	6144
1185	365HP @1800 RPM	4485	3803291	3071321	3803334	-	6137
1187	300HP @1700 RPM	4536	3803291	-	-	3068108	6128
1187	285HP @1700 RPM	4517	3803291	-	-	3068108	6143
1187	285HP @1600 RPM	4519	3803291	-	-	3068108	6142
1187	285HP @1750 RPM	4543	3803291	-	-	3068108	6109
1188	350HP @1700 RPM	4537	3803291	3071321	-	-	6113

PT® PACER Kit Cross Reference (continued)

Engine Identification			PT PACER Components and Specifications				
CPL	Engine Rating	Fuel Pump Code	PT PACER Kit	Required Fuel Pump Hsg/AFC Assembly	Required ASA Kit	Optional Pre-drilled Fuel Pump Housing	PT PACER Fuel Pump Code
1210	444HP @2100 RPM	4512	3803291	-	-	3068108	6136
1211	400HP @2100 RPM	4515	3803291	3071321	3803334	-	6129
1211	400HP @1900 RPM	4513	3803291	3071321	3803334	-	6134
1211	400HP @1800 RPM	4525	3803291	3071321	3803334	-	6123
1211	365HP @2100 RPM	4516	3803291	3071321	3803334	-	6125
1211	365HP @1900 RPM	4514	3803291	3071321	3803334	-	6126
1211	365HP @1800 RPM	4520	3803291	3071321	3803334	-	6106
1223	300HP @2100 RPM	X230	3803335	3071321	-	-	X279
1223	300HP @1900 RPM	X224	3803335	3071321	-	-	X261
1223	270HP @2100 RPM	X231	3803335	3071321	-	-	X278
1224	270HP @1900 RPM	X238	3803335	3071321	-	-	X280
1256	444HP @2100 RPM	4521	3803291	-	-	3068108	6146
1280	444HP @2100 RPM	4556	3803291	-	-	3068108	6121
1280	424HP @1900 RPM	4557	3803291	-	-	3068108	6122
1346	300HP @2100 RPM	X230	3803335	3071321	-	-	X279
1346	300HP @1900 RPM	X224	3803335	3071321	-	-	X261
1352	300HP @1700 RPM	4582	3803291	-	-	3068108	6148
1352	285HP @1700 RPM	4586	3803291	-	-	3068108	6149
1352	285HP @1600 RPM	4583	3803291	-	-	3068108	6150
1352	275HP @1750 RPM	4585	3803291	-	-	3068108	6147

Latest Parts Catalogs

Application	Bulletin Number
Revised	
NT855 Automotive Fleet 285/300	3884260-01
6BT, BTA5.9 Generator Drive	3884220-01
6B, BT, BTA5.9 Construction	3884222-01
6C, CT, CTA8.3 Construction	3884236-01
KTA38-G1, G2 Generator Drive	3379578-02
New	
3A1.7 Generator Drive (high speed)	3884349
3A1.7 Generator Drive (low speed)	3884350
4A2.3 Generator Drive (high speed)	3884343
4A2.3 Generator Drive (low speed)	3884344
3A1.7 Marine (high speed)	3884346
4A2.3 Marine (high speed)	3884352
LTA10 Automotive (reduced noise design)	3884307
L10 Automotive 280/310	3884338
L10 Automotive CELECT	3884315
KTTA38 Construction	3822102
VTA903-T600 Military	3884310
KTTA50 Construction (side mount aftercoolers)	3884347
KTA50 Power Unit	3884348
VTA28 Construction	3884345
PT PACER	3884310
KTTA50-G2 Generator Drive	3884355

Test Your Professional Knowledge

(Answers will appear in Parts Professional #15)

1. The feature which allows maximum horsepower and maximum fuel efficiency at the same rpm and a torque curve that covers a larger range is called:
 - A. Magic
 - B. The COMMAND Concept
 - C. The Formula Concept
 - D. The Fleet Concept
2. The diagnostic tool used for PT[®] PACER is
 - A. PACE[™]
 - B. Compulink[™]
 - C. Compuchek[®]
 - D. Ohm meter
3. The new filter head for both the reduced noise L10 and the L10 COMMAND is compatible with the LF3000 oil filter.
 - A. True
 - B. False
4. The push tubes on the L10 COMMAND
 - A. are 3/4 inch longer than before
 - B. are identical for both intake and exhaust
 - C. have replaced the solid intake and exhaust valve push rods
 - D. All of the above are true
5. Two benefits of PT[®] PACER are
 - A. improved fuel economy and improved durability
 - B. improved driveability and improved durability
 - C. improved driveability and improved fuel economy
 - D. none of the above
6. The cast aluminum pistons with dual Ni-resist inserts are used on
 - A. vocational applications only
 - B. the L10-330E only
 - C. the L10-260 only
 - D. all L10 COMMAND engines except the 330E
7. The special lapping on the top piston ring of the L10 COMMAND
 - A. makes it look nicer
 - B. holds extra oil to prevent scuffing
 - C. lets extra oil into the combustion area
 - D. controls the stresses of the higher cylinder pressures

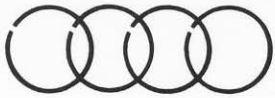
8. The new lube pump gear on the L10 increases flow capacity by
- A. over 40%
 - B. 10%
 - C. 100%
 - D. over 75%
9. When there is an electronic failure, the PT[®] PACER immediately shuts the engine completely off.
- A. True
 - B. False
10. The new L10 oil coolers look completely different from the previous models, but are fully interchangeable with them.
- A. True
 - B. False
11. The exhaust manifold for the L10 COMMAND engine now has
- A. no joints
 - B. a shortened sealing surface
 - C. more sealing rings
 - D. the same slip joint design as that on the Pulse 444
12. The PT[®] PACER is designed only for the L10 COMMAND engines.
- A. True
 - B. False
13. The oil system capacity of the reduced noise L10 and the L10 COMMAND is:
- A. 12 gallons
 - B. 8 gallons
 - C. 10 gallons
 - D. 11.5 gallons
14. The key element of the PT[®] PACER is the electronic fuel control valve.
- A. True
 - B. False
15. The PT[®] PACER is available only as a factory-installed product.
- A. True
 - B. False
16. The new fully assembled head for the L10 COMMAND can be used on earlier model engines.
- A. True
 - B. False

17. "Gallery Cooling" is a feature of
- A. the dual Ni-resist pistons
 - B. the charge air cooling
 - C. all L10 COMMAND ratings
 - D. the articulated piston
18. The new filter head on the reduced noise L10 and the L10 COMMAND now has
- A. capability for two filters: a full flow and a bypass
 - B. thermostatic control of the oil temperature
 - C. a retrofit kit
 - D. a chrome cover
19. The L10 COMMAND engines incorporate the design changes from the reduced noise L10's.
- A. True
 - B. False
20. The advantage to using a step plunger cup on the STC injector is
- A. fuel economy
 - B. carboning control
 - C. reduced white smoke
 - D. none of the above

Answers to Parts Professional #13

- | | | | |
|------|-------|-------|-------|
| 1. C | 6. D | 11. B | 16. B |
| 2. B | 7. A | 12. A | 17. B |
| 3. B | 8. B | 13. B | 18. C |
| 4. B | 9. D | 14. B | 19. B |
| 5. C | 10. C | 15. D | 20. C |

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