



Product Sheet Catalogue

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INNOVATION. PERFORMANCE. OEM QUALITY



WE KEEP YOUR GSE MOVING

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Drivetrain

Axles and Transmissions

Sage has teamed up with an industry leading supplier for Quality Remanufactured Transmissions to provide the best remanufactured C6 transmissions in the GSE industry. The C6 has been the mainstay of the baggage tractors and other GSE for years.

Though they may all look alike on the outside, there are actually several standard C6 transmissions available for use in tractor applications. The same basic units were used in tractors manufactured by Clark, Harlan, Kalamazoo, Northwestern, Tiger, Tug, and United Tractor. In addition, the same basic units were used in belt loaders manufactured by companies such as Nordco, Tiger, Tug, and Wollard.

The following is intended to help you establish the correct transmission:

What is the Standard?

In most standard applications gas powered units used two speed transmissions and diesel powered units used three speed transmissions. However, due to a lack of availability of the two speed valve bodies, some customers (and suppliers) began using nothing but three speed units in all applications. Sage Parts worked with the supplier to overcome the valve body issue and as a result we will be able to meet your needs regardless of which valve body the choose to use.



Typical Short Shaft C6 Transmission

There are three basic criteria to identify the correct unit for your application.

1. Gas or Diesel engine
2. 2 or 3 speed
3. With or W/O E-Brake (Emergency Brake)) package

The following are various configurations:

Gas Engine	Diesel Engine	2 Speed	3 Speed	W/E-Brake	W/O E-Brake	Sage Part Number With Core	Sage Part Number Without Core	Core Part Number
●		●			●	C6SBB2	C6SBB2X	C6SSBCORE
●		●		●		C6SBB2BC	6SBB2BX	C6WBCORE
●			●		●	C6SBB3	C6SBB3X	C6SSBCORE
●			●	●		C6SBB3BC	6SBB3BX	C6WBCORE
	●	●			●	C6SBB2DC	6SBB2DX	C6SSBCORE
	●	●		●		C6SBB2DB	C6SBB2DBX	C6WBCORE
	●		●		●	C6SBB3DC	6SBB3DX	C6SSBCORE
	●		●	●		C6SBB3DB	C6SBB3DBX	C6WBCORE

Core Credit Policy

- All cores are to be returned completely assembled as removed from tractor

- Cores returned in a disassembled state will be subject to vendor approval and are generally not accepted
- Please return all cores

- Even cores with cracked cases may have some value

- Cores returned with cracked cases will be subject to partial core credit
- All units are shipped with a torque converter, therefore all units must be returned with the torque converter intact

- Units returned without torque converter will be subject to partial credit
- Units sold with E-Brake, must be returned with E-Brake to receive full credit

- Cores returned missing all or part of the E-Brake will be subject to partial core credit

The following calls out the various deductions that will be accessed to problem cores:

Core Charge Deductions		
Missing Torque Converter	Cracked Case	Missing E-Brake (all or any part of)
\$75.00	\$200.00	\$200.00
Prices are subject to change without notice		

Core Documentation

All units are shipped with core return documentation. As part of the core return process, this documentation must be applied to the core when it is returned. The core return tags are bar coded to match the serial number of the original unit. This assures that the correct customer is issued the correct credit for their core.

CORE RETURN TAG
THIS TAG MUST BE ATTACHED TO CORE
TO RECEIVE CORRECT CORE CREDIT!

C6SBB2
TRA-C6 SMALL BLOCK BOLT
ON-2 SPEED TUG-AIRPORT

Location: I14
Builder ID#: C6
Date Produced: 11/02/04

1. Unit is clean & presentable

2. Bolts and case fittings are tight and fit.

3. Pan is straight without dents

4. All installation bolts are present

5. Unit has no cracks

6. All openings are plugged

Painter # _____
Dyno Operator # _____
Warehouse # _____
Customer Phone # _____

316531



CORE

-THIS TAG MUST BE-
-ATTACHED TO CORE-
-- FOR CREDIT!! --

Customer name and store number (if applicable) _____

Street address _____

City _____ State _____ Zip _____

SEE REVERSE SIDE FOR CORE RETURN INSTRUCTIONS

Typical Core Return Documentation

CORE RETURN INSTRUCTIONS

☒ The core returned must be the same as the transmission you purchased.

☒ The core must be complete including the torque converter, oil pan, tail housing, etc. **INCOMPLETE CORES WILL NOT RECEIVE FULL CORE CREDIT!**

☒ The core must be free of any external damage such as cracked or broken cases or tail housings. **CRACKED OR BROKEN CASES WILL NOT RECEIVE FULL CORE CREDIT!**

☒ Please drain as much fluid as possible from the transmission and converter.

☒ If your transmission was shipped in a plastic pod, the core must be returned in the pod to receive full core credit.

Thank you for following all the above core return instructions.

Shipping Containers

- Most units ship to our customers in plastic clamshell. These cases not only contain spill of fluids but they help prevent shipping damage to both the unit and the return core.
- All units shipped in Clamshells will be subject to a \$150.00 deposit for the return of the clamshell
 - The customer will not be held responsible for condition of the clamshell
 - All cores returned in clamshells will be issued full credit for the clamshell, regardless of its condition



Typical C6 Clamshell Shipping Container

Transmission warranty

24 MO/50,000 MILES FOR INDUSTRIAL 2 & 3 SPEED C6 NON LOCKUP TRANSMISSIONS

INSTALLER, call the number below for warranty validation and helpful installation advice!

WARRANTY VALIDATION AND INSTALLATION HOTLINE
USA AND CANADA +1-877-SAGE-877
OUTSIDE USA AND CANADA +1-631-501-1300

The serial number of the transmission will be required.

Let us help you to ensure a successfull installation and prevent unit failure.

MAKE THE CALL SO YOU DO NOT VOID THE WARRANTY!!

Sage Parts warrants that it will replace, repair, or refund at its sole option, any remanufactured transmission or part supplied by Sage Parts, which is defective in material or workmanship, for 24 months or 50,000 miles whichever comes first. This warranty is limited to the first retail purchaser of the remanufactured transmission ("the Purchaser"). This warranty is limited to defects in workmanship and material furnished by Sage Parts and is not an unconditional guarantee against all hazards or failures (see Exclusions and Limitations to Limited Warranty).

If it is determined that a remanufactured transmission or part furnished by Sage Parts is defective in workmanship or material, Sage Parts will allow a labor allowance (some restrictions apply, see Warranty Labor Allowance). The labor allowance shall be credited to Purchaser only upon a determination that a remanufactured transmission or a part supplied by Sage Parts is defective in material or workmanship. The limited warranty period begins on the original date of sale to the retail Purchaser. In the event a replacement-remanufactured transmission is provided to the Purchaser, the warranty period does not start over on the date the Purchaser is supplied with the replacement. The warranty period runs from the original date of sale to the Purchaser and is not extended by supply of a replacement.

There are no warranties that extend beyond the description herein. All other warranties express or implied, including but not limited to, all warranties of merchantability and fitness for a particular purpose are hereby disclaimed and excluded by Sage Parts. Sage Parts transfers only such title or rights as it has on the goods it sells. No statement or undertaking whether a condition, warranty or otherwise, is given by Sage Parts that the goods do not comprise or include patented, and registered or protected designs inventions or equipment or trademark or copyright material. The above limited warranty is void and will not apply in the event the Purchaser does not follow the vehicle manufacturer's instruction or in any way abuses the vehicle. The above warranty does not apply to goods supplied to vehicles used for racing or any type of vehicular competition.

In the event that any provision of this warranty should be or become invalid or unenforceable because of any laws or court action, the remaining terms and conditions hereof shall remain in full force and effect.

Exclusions and limitations to limited warranty

This Limited Warranty does not warrant against and does not cover damage or loss due to the following:

1. Misuse, maintenance neglect, abuse, vandalism, abnormal operation, commercial snow removal or accidents.
2. Defective or improper installation.
3. Environmental conditions, overheating or freeze cracks.
4. Lack of lubricants or fluids.
5. Improper cooling system flushing.
6. Failures to components or parts not furnished by sage parts or otherwise approved by sage parts for installation, or components or parts unsuitable for use with a warranted remanufactured transmission or part.
7. Abnormal wear and tear or use of a remanufactured transmission or part from which it was originally intended or a change from original application.
8. Internal modification with aftermarket performance parts

This Limited Warranty does not cover or provide credit for the following: Replacement fluids or other substances; towing charges, vehicle rental, or other substitute transportation; diagnostic time, labor (except as set forth herein) or service call; gaskets or other parts or items associated with but not included with this limited warranty; transportation charges or lodging; loss of time, income, sales or profits; loss of the use of vehicle; telephone calls or communication expense; lift, truck or storage fees; tune-ups or replacement of hoses or maintenance items; routine or regularly required maintenance; injury or death to persons or damage or destruction of property; or, consequential, incidental or punitive damages.

Conditions to coverage

This Limited Warranty is subject to the conditions set forth below. Failure to comply with these conditions will void this Limited Warranty.

1. The Purchaser must follow the claims procedure described when making a claim or this warranty will be void and of no force and effect.
2. A remanufactured transmission or part that is furnished as a replacement under this Limited Warranty for a remanufactured transmission or part found to be defective is warranted only for the unexpired warranty period remaining on the original defective remanufactured transmission or part.
3. This warranty is limited to one replacement transmission during the warranty period.

This Limited Warranty is of no force or effect while any payments for remanufactured transmission or parts remain outstanding. Claims for transmission parts must be made at the initial delivery to the Purchaser of the remanufactured transmission.

Sage Parts
Warranty Claims Procedure

Procedure:

- Whenever a warranty situation arises, it is essential that the customer contact Sage Parts Customer Service Department @ 631-719-1300
- At the onset of the call the Customer Service Representative will ask for the following mandatory information
 - Customer Name
 - Contact Name
 - Contact Phone Number
 - Original Sales Order, Date of Purchase or Date of Install (one of the three)
 - Mileage or Hours Since Install
 - Unit Serial Number
 - Description of Complaint
- During the collection of this information the Customer Service Representative will be creating a
- Warranty Claim Document
- On completion a Warranty Claim Number will be issued
- At this point the call will be forwarded to the Sage Parts Warranty Administrative team
 - If a warranty representative is not available, the customer should expect a call back by the end of the current business day
 - Calls after 3pm may not be returned till the following morning Friday afternoon calls may not be returned till Monday morning
- In many cases, our technical support personnel will be able to analyze the problem and recommend adjustments that will eliminate the need for a replacement transmission
- If our technician is unable to resolve the problem, you will be issued a RMA for the return of the unit
- It is essential that an RMA number be obtained in order for any labor credit to be allowed or approved
- At any point in the process the customer may place an order for a replacement unit at this time
 - Replacement unit will be invoiced to the customer at time of shipment
 - Offsetting credit will be issued if the unit is in fact determined to be a valid warranty claim

Documentation

- When returning a defective transmission to Sage Parts, the Printed RMA, with the serial number of the unit, must be used as the packing list for the shipment
- Units returned without proper documentation will NOT BE PROCESSED AS A WARRANTY, instead, the unit will be processed as a core and core credit only will be issued to the customer

- In addition, the defective transmission should be fully assembled and include the torque converter for full credit to be issued

Prior to Shipping:

- Drain ALL transmission fluid from the unit, and install the torque converter retaining brackets and other protective plugs and caps provided with your remanufactured transmission.
- Following our Core Return Procedure, carefully repackage the transmission as it was originally shipped to you. If it was shipped to you in a plastic POD, carefully place the transmission in the POD and tighten the internal straps to hold the transmission in place. If it was shipped to you on a wooden pallet, place the transmission in the plastic bag, place the bagged transmission on the pallet and secure the transmission to the pallet.
- When shipment is ready for pickup, call our Logistics department, give them the RMA number and they will arrange for pick up of the unit

Failure to follow this procedure may void your warranty

Warranty unit labor allowance

- A labor allowance may be issued upon request at Sage Parts discretion
- A labor allowance is limited to the first year of the applicable warranty period
- In the second year of an applicable warranty period, Sage Parts will supply the Purchaser with a replacement, remanufactured transmission, only with no consideration for labor costs
- In order to receive a labor allowance, the Purchaser must have first contacted Sage Parts as called out in the Warranty Procedure later in this document
- The Purchaser must receive a claim reference number for the transmission
- Sage Parts must have been contacted prior to the removal of the transmission that is allegedly defective
- Upon receiving the allegedly defective transmission, Sage Parts will thoroughly inspect, analyze and determine the reason for failure
- Valid reasons for a labor allowance to be issued include remanufacturing error, part failure, and torque converter failure
- Installer, vehicle, wrong application or other (no problem found) claims will not receive labor allowance
- In addition Sage Parts reserves the right to bill the purchaser for any installation damage, abuse and damage due to improper cooling system flushing
- Labor allowance credits will be given pursuant to the following schedule:

Automatic transmission labor allowance

- The labor allowance credit shall be provided by Sage Parts at \$50 per hour pursuant to the Mitchell Warranty Book Time for the work to be conducted

- Only labor charges paid to a professional installer will qualify as refundable, provided, however, no more than \$350.00 shall be credited as a labor allowance hereunder
- No other labor allowance credit shall be provided by Sage Parts other than as specified above

**If you have questions, please call our
Sage Parts Customer Service Department**
631-501-1300
Business hours Monday – Friday 7:00am to 6:00pm (Eastern)

Core credit requirements

- Reference of a core charge is required.
- To receive full credit the core must be complete and useable or the following charges will be assessed
 - Torque converter is not returned -\$50
 - Case damaged or cracked -\$150
 - If core does not match the transmission and converter sold, NO CREDIT will be given without prior authorization

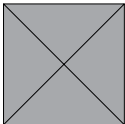
Core return instructions

Attach the following to the core before shipping

- RMA for return of core must be used as packing list for shipment(included with the documents you received)
- Include the Reverse Bill of Lading (included with the documents you received)
- If documentation is not available you MUST call Sage Parts for replacement documentation
- Units shipped with no documentation will no receive core or warranty consideration



Drivetrain Engines - Diesel



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eSage.SageParts.com

RAMPTECH® Caterpillar® 3208 Diesel Engine

Engine overview

Caterpillar 3208 engines are used in many GSE applications such as mid-sized Aircraft Push Back Tractors, Ground Power Units, PCA Units, Air-Start Units, High Lift Cabin Service and Catering Trucks, Snow Removal Equipment and Passenger Buses.

Caterpillar 3208 engines are available in both naturally aspirated and turbo charged versions with horse power ratings between 210 – 450bhp.

To place an order

Before calling to request price and availability, please gather the following information from the data tag located on the valve cover:

- Serial number
- Turbocharged or naturally aspirated
- Arrangement number (AR Number)



Caterpillar 3208 Turbo

- Vehicle/equipment make and model
- Sump location (front, rear, center)
- California model with EGR (if applicable)

RampTech offers two options for the Caterpillar 3208 engine

Complete drop-in includes:

Consisting of remanufactured Long Block assembly, as noted above, plus the following additional items

- | | | |
|---------------------|------------------------|------------------------|
| • Dipstick and tube | • Fuel filter assembly | • Front cover and seal |
| • Water pump | • Intake manifold | • Complete fuel system |
| • Oil cooler | • EGR assembly* | • Front damper |
| • Turbocharger* | • Flywheel housing | • Exhaust manifolds |
| • Valve covers | • Oil pan | • Oil filter |

**Where applicable*

Basic long block engine

Base engine consisting of a complete remanufactured block fitted with remanufactured cylinder heads. No bolt on items or accessories. No tin wear. No mani-folds.

RAMPTECH® Cummins® 4B/3.9L Diesel Engine

Engine overview

The 4B/3.9L Cummins is a popular engine used in various GSE applications, most popular of which are Baggage Tractors and Belt Loaders. You will also see step van applications and other mid-sized commercial vehicles using this model engine.

RAMPTECH's engine builders utilize torque plating methods for boring and honing to ensure block straightness, which reduces break-in time. In addition, our builders use OEM or equivalent pistons, rings, bearings, valves and gaskets, making sure that this engine will stand the test of time.

To place an order

Before calling to request price and availability, please gather the following information:

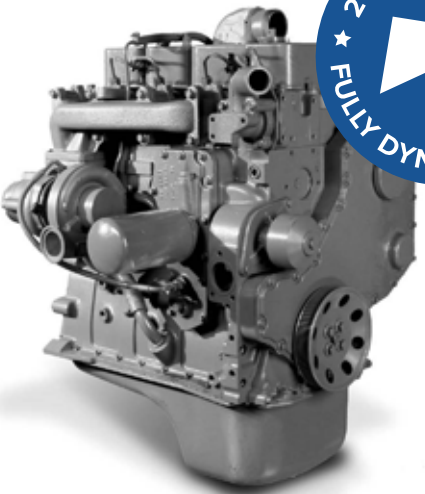
- The original engine serial number
- The original engine CPL number
- The equipment make and model

The CPL and serial numbers are located on the injection pump side of the engine on the front gear cover.

Dynomometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each engine dyno test is conducted under standard, repeatable settings.

During this process every engine is run through a warm up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak detection test with dyed oil, coolant, and fuel.

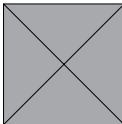


4B Complete Drop-In

Complete drop-in includes:

Complete long block assembly consisting of block and heads fitted with the following bolt on items

- | | |
|------------------------|----------------------------------|
| • Front gear housing | • Oil filter assembly |
| • Oil cooler | • Water pump |
| • Valve cover(s) | • Crankcase breather |
| • Gasket set | • Thermostat housing |
| • Gear cover and seal | • Complete fuel system |
| • Thermostat | • Damper pulley |
| • Fuel filter assembly | • Intake cover and connection |
| • Turbocharger | • Air crossover tube if required |
| • Exhaust manifold | |
| • Oil pan | |
| • Rear cover and seal | |



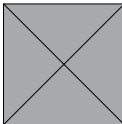
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Engine overview

The 6B/5.9L Cummins is used in many GSE applications including heavy Cargo Tow Tractors, Aircraft Tow Tractors, Loaders, GPUs, PCA Units, and various commercial ramp service vehicles.

RAMPTECH's engine builders utilize torque plating methods for boring and honing to ensure block straightness, which reduces break-in time. In addition, our engine builders use OEM or equivalent pistons, rings, bearings, valves and gaskets, making sure that this engine will stand the test of time.

To place an order

- Before calling to request price and availability, please gather the following information:
- The original engine serial number
 - The original engine CPL number
 - The equipment make and model

The CPL and serial numbers are located on the injection pump side of the engine on the front gear cover.

Dynamometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable settings. Every engine is run through a warm-up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak detection test with dyed oil, coolant, and fuel.



6B Complete Drop-In

Complete drop-in includes:

Complete long block assembly consisting of block and heads fitted with the following bolt on items

- | | |
|------------------------|----------------------------------|
| • Front gear housing | • Oil filter assembly |
| • Oil cooler | • Water pump |
| • Valve cover(s) | • Crankcase breather |
| • Gasket set | • Thermostat housing |
| • Gear cover and seal | • Complete fuel system |
| • Thermostat | • Damper pulley |
| • Fuel filter assembly | • Intake cover and connection |
| • Turbocharger | • Air crossover tube if required |
| • Exhaust manifold | |
| • Oil pan | |
| • Rear cover and seal | |

Basic long engine:

Base engine consists of a complete remanufactured block fitted with remanufactured cylinder heads. No bolt on items or accessories. No tin wear. No manifolds.

Engine overview

The ISB02 Cummins is used in many GSE applications such as Tow Tractors, GPUs, PCA Units and various airport maintenance and service vehicles.

The QSB series engines are tier II stage 2 compliant and come in various horsepower ratings and configurations. RampTech has recently added this product offering for CPL 8136 model years 2002-2006.

RAMPTECH engine builders utilize torque plating methods for boring and honing to ensure block straightness, which reduces break-in time. In addition, RAMPTECH® engine builders use OEM or equivalent pistons, rings, bearings, valves and gaskets, making sure that this engine will stand the test of time.



ISB02 Complete Drop-In

To place an order

- Before calling to request price and availability, please gather the following information:
- The original engine serial number
 - The original engine CPL number
 - The equipment make and model

The CPL and serial numbers are located on the injection pump side of the engine on the front gear cover.

Dynamometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable settings. Every engine is run through a warm up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak detection test with dyed oil, coolant, and fuel.

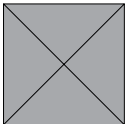
Complete drop-in includes:

Complete long block assembly consisting of block and heads fitted with the following bolt on items

- | | |
|------------------------|----------------------------------|
| • Front gear housing | • Oil filter assembly |
| • Oil cooler | • Water pump |
| • Valve cover(s) | • Crankcase breather |
| • Gasket set | • Thermostat housing |
| • Gear cover and seal | • Complete fuel system |
| • Thermostat | • Damper pulley |
| • Fuel filter assembly | • Intake cover and connection |
| • Turbocharger | • Air crossover tube if required |
| • Exhaust manifold | |
| • Oil pan | |
| • Rear cover and seal | |

Basic long block engine:

Base engine consists of a complete remanufactured block fitted with remanufactured cylinder heads. No bolt on items or accessories. No tin wear. No manifolds.



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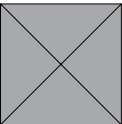
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We make it easy to order online at **eSage.SageParts.com**

Engine overview

Injectors: 100% new improved Bosch nozzles and ball seat assemblies used on all injectors. This feature mitigates drivability issues with the original engine.

Minimize downtime: RAMPTECH® offers the most comprehensive build level of this engine, focusing on your specific application through utilizing the exact CPL and serial number. This process has virtually eliminated all guesswork and reconfiguration issues.

No hassel core: Core is evaluated based on a visual external inspection. We evaluate the core within 48 hours of receipt and issue the credit back the next business day.

To place an order

Before calling to request price and availability, please gather the following information:

- The original engine serial number
- The original engine CPL number
- The equipment make and model

The CPL and serial numbers are located on the injection pump side of the engine on the front gear cover.

Dynomometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable settings. Every engine is run through a warm up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak detection test with dyed oil, coolant, and fuel.



ISB02 Complete Drop-In

Complete drop-in includes:
(ISB02 only)

Complete long block assembly consisting of block and heads fitted with the following bolt on items

- | | |
|-----------------------|----------------------------------|
| • Front gear housing | • Complete fuel system |
| • Rear cover and seal | • Fuel filter assembly |
| • Oil cooler | • Damper pulley |
| • Oil filter assembly | • Turbocharger |
| • Valve cover(s) | • Intake cover and connection |
| • Water pump | • Exhaust manifold |
| • Gasket set | • Air crossover tube if required |
| • Crankcase breather | • Oil pan |
| • Gear cover and seal | • Sensors and switches |
| • Thermostat housing | |
| • Thermostat | |

Basic long block engine

Base engine consist of a complete remanufactured block fitted with remanufactured cylinder heads. No bolt on items or accessories. No tin wear. No manifolds.

Engine overview

The ISB Cummins is used in many GSE applications including Tow Tractors, Loaders and various service vehicles.

RAMPTECH's engine builders utilize torque plating methods for boring and honing to ensure block straightness, which reduces break-in time. In addition, RampTech engine builders use OEM or equivalent pistons, rings, bearings, valves and gaskets, to assure that this engine will stand the test of time.

To place an order

Before calling to request price and availability, please gather the following information:

- The original engine serial number
- The original engine CPL number
- The equipment make and model

The CPL and serial numbers are located on the injection pump side of the engine on the front gear cover.

Dynomometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable settings. Every engine is run through a warm up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak detection test with dyed oil, coolant, and fuel.



ISB QSB Complete Drop-In

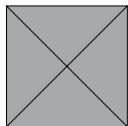
Complete drop-in includes:

Complete long block assembly consisting of block and heads fitted with the following bolt on items

- | | |
|------------------------|----------------------------------|
| • Front gear housing | • Oil filter assembly |
| • Oil cooler | • Water pump |
| • Valve cover(s) | • Crankcase breather |
| • Gasket set | • Thermostat housing |
| • Gear cover and seal | • Complete fuel system |
| • Thermostat | • Damper pulley |
| • Fuel filter assembly | • Intake cover and connection |
| • Turbocharger | • Air crossover tube if required |
| • Exhaust manifold | • Sensors and switches |
| • Oil pan | |
| • Rear cover and seal | |

Long block supreme includes:

Base engine consist of a complete remanufactured block fitted with remanufactured cylinder heads. No bolt on items or accessories. No tin wear. No manifolds.



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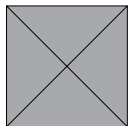
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Engine overview

The 6.6L and 7.8L diesel engines are available for various GSE applications built on Ford chassis made from 1987 through 1993.

Features

- Each cylinder block is ultrasonically tested
- Cylinders are bored and diamond plateau honed
- Blocks are aligned bored as needed
- Crankshaft and camshaft are ground to OEM specifications
- Head deck is resurfaced to OEM specifications

Dynomometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each engine dyno test is conducted under standard, repeatable settings. Every engine is run through a warm up cycle; three separate segments simulating light, medium and heavy throttle conditions; maximum torque and horsepower tests; both high and low idle tests; and a black light leak detection test with dyed oil, coolant and fuel. RampTech engine builders also test oil and coolant temperature; monitor crankcase pressure, oil and turbo boost pressures; and tests fuel consumption.



Ford New Holland

Complete drop-in includes:

Complete long block assembly as listed above and the following additional items

- | | |
|------------------------|----------------------------------|
| • Front gear housing | • Oil filter assembly |
| • Oil cooler | • Water pump |
| • Valve cover(s) | • Crankcase breather |
| • Gasket set | • Thermostat housing |
| • Gear cover and seal | • Complete fuel system |
| • Thermostat | • Damper pulley |
| • Fuel filter assembly | • Intake cover and connection |
| • Turbocharger | • Air crossover tube if required |
| • Exhaust manifold | |
| • Oil pan | |
| • Rear cover and seal | |

Basic long block engine:

Base engine consist of a complete remanufactured block fitted with remanufactured cylinder heads. No bolt on items or accessories. No tin wear. No manifolds.

Engine overview

The DI/T444E 7.3L turbo is the most popular diesel engine on the road today. RampTech 7.3L Turbo Engines are available for Ford and International T444E Series applications. Our Powerstroke engines are built specifically to your application specification. The Powerstroke T444E is primarily used in the following applications:

- E 350-450 from 1994 to end of OE 7.3 L production
- F 250-550 from 1994 to end of OE 7.3 L production
- International T444E from 1994 up production

Dynomometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable settings. Every engine is run through a warm up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak detection test with dyed oil, coolant, and fuel.

With new OEM HEUI injectors

Remanufactured injectors are one of the most common causes for fuel system failures in Powerstroke replacement engines. As a preventative measure and quality enhancement, RampTech's engine builders always install new injectors on all 7.3L engines. These new injectors are purchased from the OE manufacturer and are improved with tungsten coated plungers, which is an improvement over versions used by the original OEM.



Ford Powerstroke®
T444E 7.3 DI

Complete drop-in includes:

All parts on the long block plus

- | | |
|---------------------------|-------------------------------|
| • Turbo pedestal | plumbing |
| • Front cover and seal | • EBP valve* |
| • Turbocharger | • Damper pulley |
| • Low pressure fuel lines | • Fuel filter/heater assembly |
| • Lift pump* | • Water pump |
| • Intake manifold | • Exhaust manifolds |
| • Oil cooler | |
| • Turbo exhaust | |

Long block supreme includes:

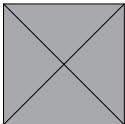
All parts on the long block plus

- | | |
|--|---------------------|
| • Oil pan and pick-up tube | • Water pump |
| • Camshaft positioning sensor | • Exhaust manifolds |
| • High pressure oil pump, regulator, and lines | • Vibration damper |
| | • Oil filter |
| | • New OEM injectors |
| | • Valve covers |

Long block includes:

All parts on the long block plus

- | | |
|------------------------|---------------------|
| • Block | • Crankshaft |
| • Camshaft | • Pistons/rings |
| • Timing gears | • Connecting rods |
| • Complete valve train | • Main/rod bearings |
| • Piston cooling tubes | • Cam bearings |
| • Rear seal | • Heads |
| • Rear cover and seal | • Glow plugs |
| • Oil pumps | |



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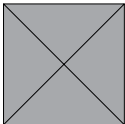
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PRODUCT SHEET

**RAMPTECH® Ford
Powerstroke® International
VT365 6.0L Diesel Engine**

Engine overview

- Blocks, heads, crankshafts, and connecting rods are 100% magnaflux-tested
- Crankshafts and camshafts are reground, as required, and crankshafts are micro-polished to OEM specifications
- Both the large and small end of all connecting rods are re-machined to OEM specifications, demagnetized, and have new bushings installed
- All heads get new valves
- All heads are pressure-tested
- Core plugs are 100% stainless steel to avoid corrosion
- RampTech's engine builders always replace 100% of pistons, rings, bearings, bushings, gaskets, and seals

Dynamometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno-tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable settings. Every engine is run through a warm-up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak-detection test with dyed oil, coolant, and fuel.



6.0L/VT365
Long Block Supreme

Long block includes:

- | | |
|-------------------------------|-------------------------|
| • Block | • Oil Filter Canister |
| • Camshaft | • Crankshaft |
| • Timing gears | • Pistons/rings |
| • Lifters | • Connecting rods |
| • Piston cooling tubes | • Main/rod bearings |
| • Valve train | • Cam bearings |
| • Oil pan and pick-up tube | • Cylinder heads/valves |
| • Oil Cooler | • Oil pump |
| • Rear Cover - Ford | • Front Cover |
| • Rear Cover/Flywheel Housing | • Water Pump |
| | • Valve Covers |

Long block supreme includes:

all parts on the long block plus

- | | |
|--|---|
| • Injectors | • High pressure oil rails |
| • Glow plugs | • Camshaft position sensor |
| • High pressure oil pump and regulator | • Crankshaft position sensor |
| • Injection pressure regulator valve | • Engine oil pressure sensor |
| • EOT - Engine oil temperature sensor | • ICP Injection control pressure sensor |
| • Vibration damper | |

PRODUCT SHEET

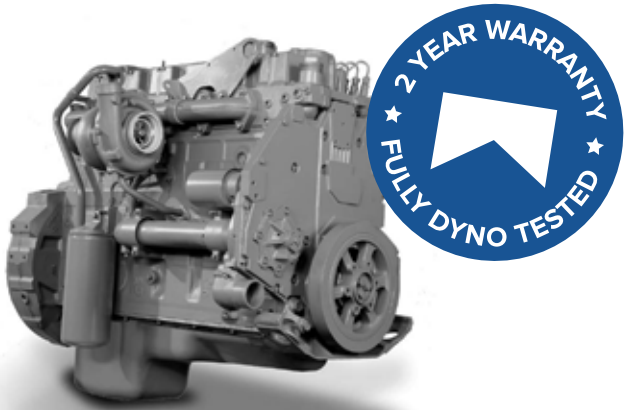
**RAMPTECH® International®
DT-466 Diesel Engine C & P
Series**

Engine overview

- RAMPTECH® engine builders always replace 100% of the pistons, rings, bearings, bushings, gaskets, and seals
- All heads get new valves and are vacuum-tested to ensure the quality of the valve job
- All heads are pressure-tested and upgraded to the latest style valve seal
- RAMPTECH® engine builders always grind 100% of the camshafts' lobes
- All connecting rods are demagnetized
- OEM components are used in all injection pumps
- Core plugs are 100% stainless steel to avoid corrosion
- Blocks, heads and crankshafts are 100% magnaflux- tested to avoid cracked components
- Blocks are resurfaced and have counter bores
- machined to ensure proper sleeve protrusion and head gasket sealing
- Connecting rods have new bushings installed, and both large and small ends are re-machined to OEM specifications
- Crankshaft is checked for size, reground, as required, and polished to OEM specifications

Dynamometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard repeatable settings. Every engine is run through a warm- up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak-detection test with dyed oil, coolant, and fuel.



DT-466 P Series

Long block supreme includes:

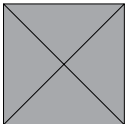
- | | |
|--------------------------------------|-------------------------------|
| • Block | • Crankshaft |
| • Rods | • Oil pan |
| • Oil cooler | • Oil pump |
| • Valve cover | • Pickup tube |
| • Water pump (no pulley) | • Valve train |
| • Piston/sleeve assemblies | • Camshaft |
| • Timing gears | • Head |
| • Front cover and seal | • Oil filter |
| • Flywheel housing (not on P models) | • Gasket set |
| • Thermostat housing | • Thermostat |
| • Damper and pulley assembly | • Water Filter (P only) |
| | • Front Engine Mount (P only) |

Complete drop-in includes:

all parts on the Long Block Supreme plus

- | | |
|--|------------------------------|
| • Air crossover tube* | • Engine oil pressure sensor |
| • Intake manifold** | • Turbocharger |
| • Dipstick guide | • Exhaust manifolds |
| • Complete fuel system (injectors, high and low pressure lines, injection pump and fuel filter assembly) | • Camshaft Position Sensor |
| • Crankshaft position sensor | |

*Where required
**Part of the valve cover on the P series



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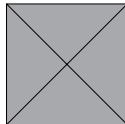
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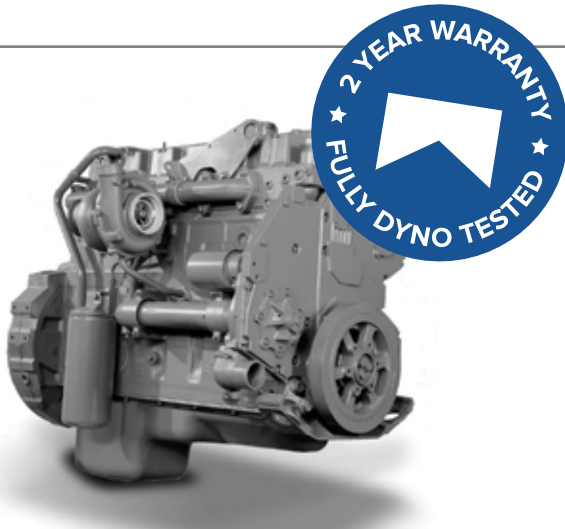
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Engine overview

- RAMPTECH[®] engine builders always replace 100% of the pistons, rings, bearings, bushings, gaskets, and seals
- All heads get new valves and are vacuum- tested to ensure the quality of the valve job
- All heads are pressure- tested and upgraded to the latest style valve seal
- RAMPTECH[®] engine builders always grind 100% of the camshafts' lobes
- All connecting rods are demagnetized
- OEM components are used in all injection pumps
- Core plugs are 100% stainless steel to avoid corrosion
- Blocks, heads and crankshafts are 100% magnaflux- tested to avoid cracked components
- Blocks are resurfaced and have counter bores machined to ensure proper sleeve protrusion and head gasket sealing
- Connecting rods have new bushings installed, and both large and small ends are re-machined to OEM specifications
- Crankshaft is checked for size, reground and polished as required, to OEM specifications

Dynamometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable settings. Every engine is run through a warm up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak detection test with dyed oil, coolant, and fuel.



DT-466 E Series

With new OEM HEUI injectors

Complete drop-in includes:

- all parts on the Long Block Supreme plus
- | | |
|--|--|
| • Air crossover tube* | • Turbocharger |
| • Intake manifold** | • Exhaust manifolds |
| • Dipstick guide | • Camshaft Position Sensor |
| • Complete fuel system (injectors, high and low pressure lines, injection pump and fuel filter assembly) | <i>*Where required</i> |
| | <i>**Part of the valve cover on the P series</i> |

Long block supreme includes:

- | | |
|------------------------------|----------------------|
| • Block | • Crankshaft |
| • Rods | • Oil pan |
| • Oil cooler | • Oil pump |
| • Valve cover | • Pickup tube |
| • Water pump (no pulley) | • Valve train |
| • Piston/sleeve assemblies | • Camshaft |
| • Timing gears | • Head |
| • Front cover and seal | • Oil filter |
| • Gasket set | • Thermostat |
| • Thermostat housing | • Water Filter |
| • Damper and pulley assembly | • Front Engine Mount |



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Navistar DI 7.3L turbo applications

The Navistar DI 7.3L turbo is the most popular diesel engine on the road today. RampTech's 7.3L Turbo Engines, which are available for Ford and International T444E Series applications, are configured specifically to your application.

Engine Overview

- RAMPTECH[®] engine builders replaces all pistons, rings, bearings, bushings, gaskets, and seals
- All heads get new valves and are vacuum tested to ensure the quality of the valve job
- All heads are pressure tested
- Cylinder blocks are 100% bored and decked on CNC machining centers
- Cylinder blocks are 100% pressure tested and cylinder bores are CNC diamond plateau honed
- All connecting rods are de-magnetized and controlled for length
- Core plugs are 100% replaced
- RAMPTECH[®] engine builders install new OEM HEUI injectors on all Navistar 7.3L DI

Dynamometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each engine dyno test is conducted under standard, repeatable settings. Every engine is run through a warm up cycle; three separate cruise segments simulating light, medium and heavy

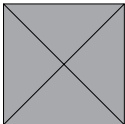


Navistar 7.3L DI

throttle conditions; maximum torque and horsepower tests; both high and low idle tests; and a black light leak detection test with dyed oil, coolant, and fuel.

With new OEM HEUI injectors

Remanufactured injectors are one of the most common causes for fuel system failures in this engine throughout the industry. As a quality enhancement, RAMPTECH[®] engine builders install new HEUI injectors on all 7.3L DI Long Block Supreme and Complete Drop-In engines. These new injectors, from the OE manufacturer, have tungsten coated plungers, which is an improvement over some earlier OE injectors.



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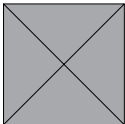
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Engine overview

RAMPTECH® is a premier supplier of remanufactured Navistar IDI diesel engines. Our premier product in this group is the dyno-tested complete Drop-In configuration.

Navistar IDI 6.9L/7.3L engine applications

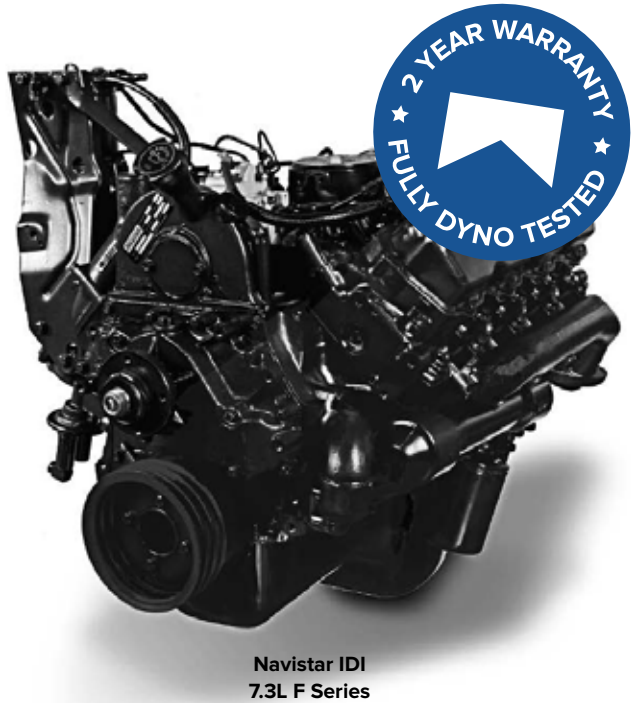
RAMPTECH's IDI 6.9L/7.3L diesel engines are configured specifically to you application

- Navistar IDI 6.9L Naturally Aspirated
- Navistar IDI 7.3L Naturally Aspirated
- Navistar IDI 7.3L OE Turbo

RAMPTECH® offers this engine in Long Block and Complete Drop-In configurations to support all needs.

Dynamometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno-tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable settings. Every engine is run through a warm-up cycle, three separate loading segments simulating light, medium and heavy throttle conditions, maximum torque and horsepower tests, both high and low idle tests, and a black light leak-detection test with dyed oil, coolant, and fuel.



Navistar IDI
7.3L F Series

Complete drop-in includes:

- Long Block as listed above plus the following items
- Oil pan and pickup tube
 - Lift pump
 - Damper pulleys
 - Fuel filter assembly
 - Water pump
 - Dipstick and guides
 - Oil Filter
 - Complete fuel system
 - Oil cooler assembly
 - Intake and exhaust manifolds

Long block supreme includes:

- Short block
- Heads
- Cover seals
- Valve train (lifters, pushrods, and rocker arms)
- Rear cover
- Front cover
- Glow plugs

**We've got the power.
Remanufactured power.
Diesels for GSE.**

Like all RAMPTECH® products, Sage's RAMPTECH® Remanufactured GSE Engines are built to exacting specifications which not only meet but exceed the requirements for today's ramp applications.

When you purchase a RAMPTECH® GSE Engine you be can rest assured it's made to do the job like no other.

Sage offers RAMPTECH® GSE Engines in various configurations including:

- Basic Long Blocks (block and head only)
- Long Block Supremes tinwear and manifolds included
- Fully Dressed Drop-In engines that are ready to rumble

All Fully Dressed engines are Dyno tested prior to shipping, making them a true plug-and-play option.

RAMPTECH® GSE Engines are built for most GSE configurations including: Air Start Units, Aircraft Tow Tractors, Baggage Tractors, Belt Loaders, Busses,



FORD POWERSTROKE
International T444E



CUMMINS ISB02
Complete Drop-In

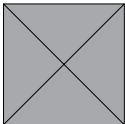


CATERPILLAR
3208 Turbo



INTERNATIONAL
DT-466 P Series

Cabin Service Vehicles, Cargo Loaders, Catering Trucks, Fueling Vehicles, Ground Power Units, Heaters, Hydrant Trucks and Towbarless Tractors. If it's on the ramp, RAMPTECH® has you covered.



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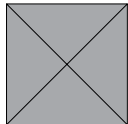
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PRODUCT SHEET
RAMPTECH® Perkins®
Diesel Engines

Engine overview

Perkins engines is available for various GSE applications Perkins Engine Models:

- 4.108
- 4.154
- 1004.4T
- 4.236
- 104.19
- 104.22
- 1004.4

Other models available on request

To place an order

Before calling to request price and availability, please gather the following information:

- The original engine serial number
- The original engine CPL number
- The equipment make and model

The CPL and serial numbers are located on the injection pump side of the engine on the front gear cover.

Dynamometer testing

All of RAMPTECH's Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each engine dyno test is conducted under standard repeatable settings. Every engine is run through a warm up cycle; three separate cruise segments simulating light, medium and heavy throttle conditions; maximum torque and horsepower tests; both high and low idle tests; and a black light leak detection test with dyed oil, coolant, and fuel.



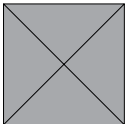
Navistar IDI
7.3L F Series

Parts includes:

- Block
- Camshaft
- Pistons and Rings
- Gaskets
- Injection Pump
- Water Pump
- Manifolds, glow plugs, and electric shut off are provided on certain models
- Cylinder Head
- Crankshaft
- Bearings
- Valve train
- Injectors
- Lines
- Oil Pan
- Fuel Filter

Will not include: turbo, starter, muffler, or flywheel

Drivetrain Engines - Gas



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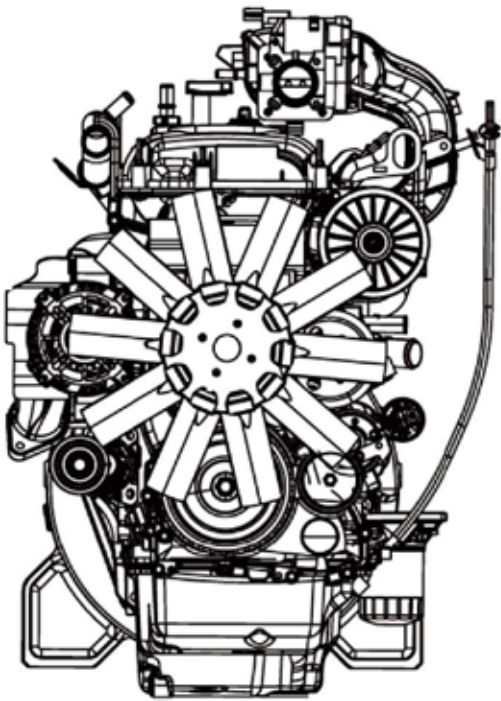
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Standard features and benefits

- Set-for-life valve train
- Deep skirted ribbed cylinder block casting for rigidity
- Aluminum AA319 cylinder block
 - Cast with the Cosworth process
 - Cast-in-place iron cylinder liners
- Chain driven dual camshafts with automatic tensioning system
- Structural front cover and oil pan
- Alternate fuel ready valve train components
- Individual coil on plug electronic ignition
- Cast aluminum camshaft cover to ensure warp-free sealing
- Sintered metal connecting rods
- Nodular iron crankshaft, featuring
 - Five main bearings
 - Eight counterweights
- Broadband knock sensor, calibrated for individual cylinder use
- Gasoline Sequential Port Fuel Injection
- Closed loop fuel control for all fuels
- Electronic engine management system
 - Built-in engine protection against
 - › Detonation
 - › High coolant temperature
 - › Low oil pressure
 - › Over speed shutdown
 - › Starter lockout
 - Next generation governing
 - › Discrete speeds
 - › Variable speeds
 - Drive by wire



Ford MSG-425 EFI

2.5 Liter
4-Cylinder

Emissions information

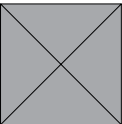
California Air Resources Board (CARB)
Environmental Protection Agency (EPA)
Emission Certified Packages Available

Specifications	
Engine Type	I-4
Bore and Stroke	3.5"x 3.93" (89mm x 100mm)
Displacement	2.5L Liter (152.5 CID)
Compression Ratio	9.7:1
Oil Capacity	7 qts. including filter
Net Weight	351 Lbs. with accessories (159 Kgs.)
Dimensions	L 30.3" x W 23.3" x H 32.6" (769 mm x 589 mm x 828 mm)

Gasoline (corrected per SAE J1349)		
Unleaded 87 or 89 octane		
Intermittent Power	84 [HP] @ 3200rpm	(62 [kW] @ 3200rpm)
Continuous power	75 [HP] @ 3200rpm	(56 [kW] @ 3200rpm)
Intermittent Torque	137 [ft-lbs] @3200rpm	(185 [N-m] @ 3200rpm)
Continuous Torque	123 [ft-lbs] @3200rpm	(166 [N-m] @ 3200rpm)

Natural Gas (corrected per SAE J1349)		
Fuel Specification	1050 BTU/FT3	
Intermittent Power	76 [HP] @ 3200rpm	(56 [kW] @ 3200rpm)
Continuous power	68 [HP] @ 3200rpm	(50 [kW] @ 3200rpm)
Intermittent Torque	125 [ft-lbs] @3200rpm	(169 [N-m] @ 3200rpm)
Continuous Torque	113 [ft-lbs] @3200rpm	(153 [N-m] @ 3200rpm)

Liquefied Petroleum Gas (corrected per SAE J1349)		
Fuel Specification	HD-5	
Intermittent Power	80 [HP] @ 3200rpm	(59 [kW] @ 3200rpm)
Continuous power	72 [HP] @ 3200rpm	(53 [kW] @ 3200rpm)
Intermittent Torque	131 [ft-lbs] @3200rpm	(177 [N-m] @ 3200rpm)
Continuous Torque	118 [ft-lbs] @3200rpm	(160 [N-m] @ 3200rpm)



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PRODUCT SHEET
**RAMPTECH® Ford® 6.8L
Triton V10 Gas Engine**

Revving up quality,
performance, and value.

Engine overview

The Ford 6.8L engine is used in various GSE applications, the most common being cabin service and refueling vehicles. You can also find this engine in step van applications and other mid-sized commercial vehicles based on Ford chassis.

Applications include (but not limited to):

- Ford E250-E450
- Ford F250-F650 (including super duty models)
- Ford Excursion
- Ford F53 and F59 chassis
- Blue Diamond chassis

About the engine

- Minimize downtime by choosing a fully dressed engine. No need to waste time swapping components from the failed engine.
- Completely dyno tested based on OEM Ford specifications.
- Engine includes standard LTL freight and return core shipping.

Dynamometer testing

All RAMPTECH Complete Drop-In engines are 100% dyno tested prior to shipment. Computer controls ensure that each dyno test is conducted under standard, repeatable conditions. Every engine is run through a warm up cycle. Then the engine is subjected to various loads at light, medium, and heavy throttle conditions. Maximum torque and horsepower



tests are conducted to ensure maximum performance. Once completed, a leak detection test is performed using a black light with dyed oil, dyed coolant, and dyed fuel.

Engine identification

To determine the correct fitment please supply vehicle identification number (VIN).

Warranty

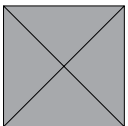
This engine is backed by a 2 year, unlimited mileage warranty.

PRODUCT SHEET
**RAMPTECH® Ford® 6.8L
Triton V10 Gas Engine**



Complete drop-in includes:

- Block
- Cam bearings - align bore
- Connecting Rods
- Coolant crossover
- Crankshaft and Camshafts
- Cylinder heads - New OE
- ECT and knock sensor harness - New OE
- Exhaust manifolds - New OE
- Flexplate - New OE
- Front cover and seal
- Fuel rail
- Head bolts - New OE
- Heater pipe
- Ignition coils - New OE
- Injectors - New OE
- Intake manifold
- Keepers - New OE
- Lifters - New OE
- Main/rod bearings - New OE
- Motor mounts - New OE
- Oil adapter/manifold
- Oil cooler
- Oil filter and gaskets - New OE
- Oil pan
- Oil pump and pickup - New Melling
- PCV valve, hoses, and seals - New OE
- Pistons and rings - New OE
- Push rods
- Rear cover and seal
- Retainers - New OE
- Rod bolts and main bolts - New OE
- Sensor - Cam - New OE
- Sensor - Crank - New OE
- Sensor - ECT - New OE
- Sensor - EOP - New OE
- Sensor - Knock - New OE
- Spark plugs - New OE
- Springs - New OE
- Thermostat and housing - New OE
- Throttle body - New OE
- Timing chains and gear
- Torque plate honed cylinders
- Valve covers
- Valves - Rechrome or new
- Vapor management valve - New OE
- Vibration damper
- Water pump - New OE



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Revving up quality, Performance and value.

Not all remanufactured engines are created equal. And some are recreated better than the original. Such is the case with the RAMPTECH[®] Ford 300 (4.9L) Engine. Sage engineers have taken one of the finest engines ever made, analyzed every aspect of the engine to optimize quality and performance, and remanufactured the Ford 300 for the highly demanding environment of an airport ramp. The end result is a durable, top quality GSE engine that not only exceeds the expectations of ground support operations... it also delivers incomparable value and return on investment.

Among the many enhancements to the RAMPTECH[®] Ford 300 is a specification that requires the use of all high quality, name brand internal replacement parts:

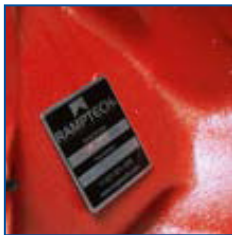
- All new hypereutectic pistons (8:1 ratio)
- All chrome moly rings
- All steel industrial timing gears
- All aluminum silicon alloy
- All Felpro[®] rear main seals
- All new hydraulic lifters
- All Viton[®] valve stem seals
- All new high volume

To ensure maximum performance in GSE, our team of engineers take the RAMPTECH[®] Ford 300 engine through rigorous quality checks, tests and processes, including:



- 100% magnafluxed and checked for cracks
- 100% heads surfaced
- 100% blocks surfaced
- 100% oil galleys cleaned and flushed
- 100% threaded holes tap chased
- 100% valve seats are machined to “Triple Angle” precision for best performance and valve/seat life
- 100% of all cylinder walls are plateau diamond honed
- 100% of the cylinders are bored to standard oversize and measured at three locations, assuring uniformity and straightness
- 100% of the crankshafts are maximum 0.020/0.020
- 100% of our crankshafts are reground and micro-polished to an 8-12 micro-inch finish
- 100% of our cam shafts are new or reground to closer than an OEM tolerance
- 100% of our valve guides are replaced or machined to better than OEM tolerances
- 100% of the tolerances used are custom engineered to improve reliability and durability, decrease wear and improve longevity

[See all configurations inside](#)



On your mark, get set. Go.

Immediate uptime, big savings in labor. And the confidence in knowing you're getting a Ford 300 engine that's not only been remanufactured better than the original, but is also thoroughly tested to assure the most reliable performance. These are all reasons why the Complete Dressed Drop-In version of the RAMPTECH[®] Ford 300 Engine is a very smart choice.

- Totally turn-key. Just drop it in, hook it up, start the engine, and go.
- 100% Dyno tested. Sage engineers utilize state-of-the-art analytics and comprehensive processes to ensure that all engine components and systems are working perfectly.
- All necessary adjustments to ignition timing and fuel system are completed for you, eliminating break-in time when you receive the engine and reducing your labor expenses.



Photographed 300F3

- Each variation on the RAMPTECH[®] Ford 300 Drop-In Engine is carefully engineered for both customer-specific and equipment-specific applications.
- Packages can be custom built to your requirements.
- Choice of gasoline, LPG and CNG configurations.

Configurations

Complete Dressed (Drop-in) Ford 300 (4.9L) Engines for Gasoline Applications

Complete Dressed Engines Come with New Carburetor, New Governor, New Fuel Pump, New Distributor, Moroso[®] Long Life Plug Wires, Spark Plugs, New Water Pump, New Water Outlet, Harmonic Balancer, Timing Cover, Valve Cover, Oil Filler Cap, PCV, Oil Pan, Dipstick and Tube, Side Cover, Oil Filter

Complete Early Applications with 3-5/8" Water Pump Height

300F1	Ford 300, 2 Groove Balancer, Carburetor, Governor, 3-5/8 WP Height
300F3	Ford 300, 2 Groove Balancer, Carburetor, Governor, 3-5/8 WP Height

Early Applications with 3-5/8" Water Pump, Same as Above, NO Carburetor

300F2	Ford 300, 2 Groove Balancer, No Carburetor, No Governor, 3-5/8 WP Height
300F7	Ford 300, 2 Groove Balancer, No Carburetor, With Governor, 3-5/8 WP Height

Complete Late Applications with 4-1/4" Water Pump Height, Including High Mount Fan Applications

300F4	Ford 300, 2 Groove Balancer, Carburetor, Governor, 4-1/4 WP Height
300F5	Ford 300, 3 Groove Balancer, Carburetor, Governor, 4-1/4 WP Height
300F6	Ford 300, 2 Groove Balancer, Carburetor, Governor, 4-1/4 WP Height

Late Applications with 4-1/4" Water Pump Height, NO Carburetor

300F8	Ford 300, 2 Groove Balancer, No Carburetor, Governor, 4-1/4 WP Height
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Dry Fuel (LPG, CNG) Application Engines, NO Carburetor or Governor

300F10	Ford 300, 2 Groove Balancer, No Carburetor or Governor 4-1/4 WP Height
300F10B	Ford 300, 2 Groove Balancer, No Carburetor or Governor, 4-1/4 WP Height
300F11	Ford 300, 3 Groove Balancer, No Carburetor or Governor, 4-1/4 WP Height



Advanced technology, solid peace of mind.

Tamper-proof engineering makes this engine as close to failsafe as failsafe gets. The Drive By Wire Electronic Fuel Injected version of the RAMPTECH® Ford 300 Engine offers many technologically superior controls and features that are not available on standard carbureted engines, including the fact that all adjustments are electronically set for optimal performance and software protected – eliminating the need or opportunity for costly tinkering by operators and mechanics.



- 100% Dyno tested. Sage engineers utilize state-of-the-art analytics and comprehensive processes to ensure that all engine components and systems are working perfectly.
- Throttle body injected utilizing drive by wire technology.
- Electronic governance to eliminate governor tampering; low oil pressure shut down; high temperature shut down; electronic data collection.



Configurations



Photographed 300F12CTH

Application Based Complete Drive by Wire Electronic Fuel Injected Engines

Complete DBW EFI Engines Come with Complete DBW EFI System, New Electric Fuel Pump, New Hall Effect Distributor, Moroso® Long Life Plug Wires, Spark Plugs, New Water Pump, New Water Outlet, Harmonic Balancer, Timing Cover, Valve Cover, Oil Filler Cap, PCV, Oil Pan, Dipstick and Tube, Side Cover, Oil Filter, and Application Installation Kit

300F1DBW	Ford 300, 2 Groove Balancer, EFI DBW, 3-5/8 WP Height
300F12660	Ford 300, 3 Groove Balancer, EFI DBW, 4-1/4 WP Height, 660 TUG™
300F12CTH	Ford 300, 3 Groove Balancer, EFI DBW, 3-5/8 WP Height, CLARK™, TUG™, HARLAN™
300F12MA	Ford 300, 3 Groove Balancer, EFI DBW, 3-5/8 WP Height, TUG™ MA
300F12MH	Ford 300, 3 Groove Balancer, EFI DBW, 4-1/4 WP Height, TUG™ MH

Configurations are subject to change. Please contact Sage Parts for the latest specifications.

Ramp-exceeding specs, versatile savings opportunities.

Depend on it, day after day. Year after year. Like all other RAMPTECH® Ford 300 Engines, RAMPTECH® Ford 300 Long Block Engines for Gasoline or Dry Fuel Applications are engineered to exceed the highly demanding performance and dependability expectations of ground support operations. Furthermore, this version of the Ford 300 offers you the opportunity to re-use your existing components for added savings and value.

- Sim tested for oil flow and compression; compression checked on each cylinder.
- Comes dressed with all tin wear.
- Includes a harmonic balancer.
- Both gasoline and dry fuel versions are available with or without manifolds.



Photographed 300FLB3G

Configurations

Ford 300 (4.9L) Long Block Engines for Gasoline Applications

Gasoline Long Blocks Come With Head, Harmonic Balancer, Valve Cover, Timing Cover, Oil Pan and Side Cover

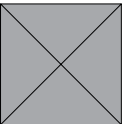
300LB2G	Ford 300 Long Block, 2 Groove Balancer
300LB3G	Ford 300 Long Block, 3 Groove Balancer
Gasoline Long Blocks, With Intake and Exhaust Manifolds	
300LB2GWM	Ford 300 Long Block, 2 Groove Balancer, With Manifolds
300LB3GWM	Ford 300 Long Block, 3 Groove Balancer, With Manifolds

Ford 300 (4.9L) Long Block Engines for Dry Fuel Applications (LPG, CNG)

Dry Fuel Long Blocks come with Dry Fuel Head, Harmonis Balancer, Valve Cover, Timing Cover, Oil Pan and Side Cover

300LB2GDF	Ford 300 Long Block, 2 Groove Balancer, Dry Fuel
300LB3GDF	Ford 300 Long Block, 3 Groove Balancer, Dry Fuel
Dry Fuel Long Blocks, With Intake and Exhaust Manifolds	
300LB2GWMDF	Ford 300 Long Block, 2 Groove Balancer, With Manifolds, Dry Fuel
300LB3GWMDF	Ford 300 Long Block, 3 Groove Balancer, With Manifolds, Dry Fuel

Configurations are subject to change. Please contact Sage Parts for the latest specifications.



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Features

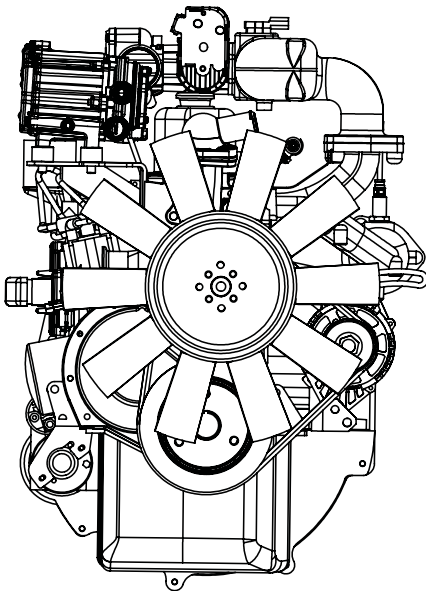
- Fuel-flexible: gasoline, LP, or NG
- High silicon content pistons for improved durability and noise reduction
- Sintered powdered-metal exhaust valve seat inserts for enhanced durability
- World-class engine sealing system for superior leak protection
- Integral harmonic balancer and crankshaft pulley for easier accessory drive dress
- High Energy Ignition (HEI) distributor and coil standard
- Intake and exhaust manifolds standard
- Common rear face to GM Powertrain industrial engines for easy hookup with housing

General motors 3.0L

30-35 kWe
40-47 HP
Power and Performance
Emission Certified
Fuel Flexible

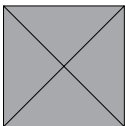
Engine specifications

Displacement	181 cid (2966.59 cc)
Bore X Stroke	4.00 in X 3.60 in 101.6mm X 91.44mm
Compression Ratio	8.2:1, 9.25:1, or 10.5:1
Fuel Types	NG, LP, Gasoline
KW/HP	35/47 @ 1,800 RPM 30/40 @ 1,500 RPM



Options

- Sequential Electronic Fuel Injection (SEFI) for gasoline
- Fuel and emission control system that meets Tier II EPA and CARB emission regulations for LSI engines
- SAE flywheel housings and flywheels
- Additional crankshaft pulleys
- Instrument panel with auto shutdown devices
- Sheet metal enclosures
- Cooling fans
- Radiator
- Electronic governors
- Dry-type industrial air cleaners (safety element air cleaners available)



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PRODUCT SHEET

RAMPTECH[®]
Vacuum Power Assist
Brake Booster

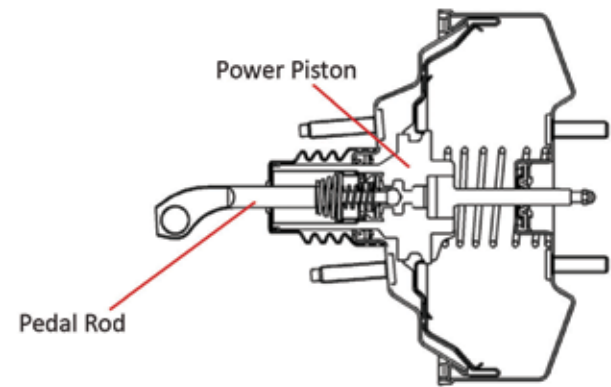
Description

The RAMPTECH[®] Brake Booster recognizes a new standard for quality. We listened to users in the field and engineered a new and improved version of the original design Brake Booster.

The original Brake Booster design was made for lighter-weight automotive vehicles. Airport ramp equipment utilizing the brake booster under even minimal loads is of a much higher weight than the vehicles originally targeted for this booster application. To accommodate the higher weights and meet ramp requirements, the pedal rod and the power piston components of the brake booster were both redesigned and tested to perform under higher amounts of stress.

It has been shown through both Finite Element Analysis (FEA) and physical tests that if force is not applied along the same axis as the pedal rod centerline and/or excessive force is used past the design limits, the original designed pedal rod will fail in the GSE environment.

To overcome these design limits, a new pedal rod and power piston design was created to better stand up to the rigors of the GSE environment. This new design has been shown to have a significant advantage in structural strength, both through FEA and physical tests. This will allow the new design to compensate for minor variations in brake booster installations, as well as accommodating increased force from the operator.



Overall the new RAMPTECH[®] Brake Booster designed for the ramp will last longer than the original. Added strength, optimized geometry, and improved materials were developed for enhanced performance.

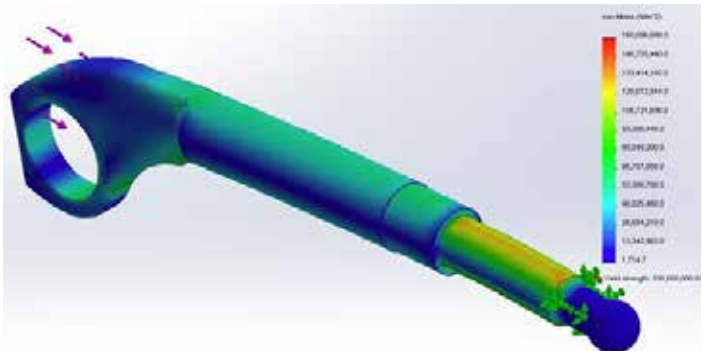
Improvements

- Redesigned pedal rod displacement axis to accommodate installation alignment issues
- Finite element analysis for optimized pedal rod geometry
- Power piston material and design was improved to accommodate higher stopping loads
- Batch control with date code and order number
- This is a new unit -- NO CORE REQUIRED

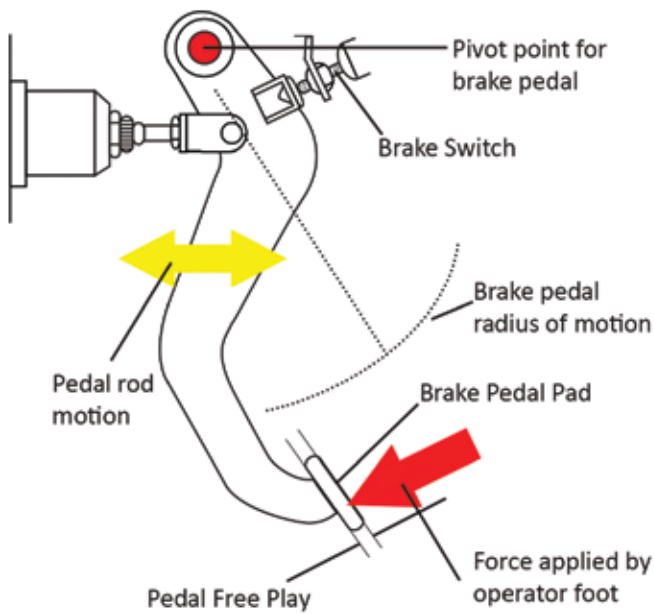
Replaces

- TUG - T6-8007-101
- TIGER - TIG-8007-101
- A1 CORDONE - 54-74000

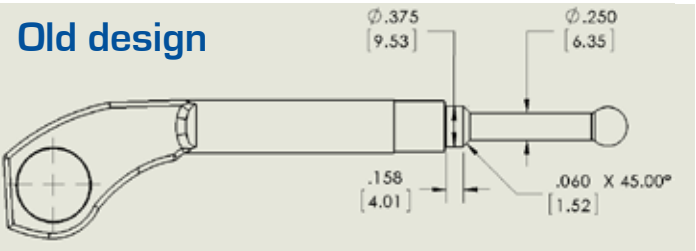
The pedal rod design was changed to increase the Factor of Safety (FOS). This increase will allow for minor variations in the geometry of the vehicle firewall, which may cause the booster pedal rod to not be completely perpendicular to the firewall when the brakes are applied.



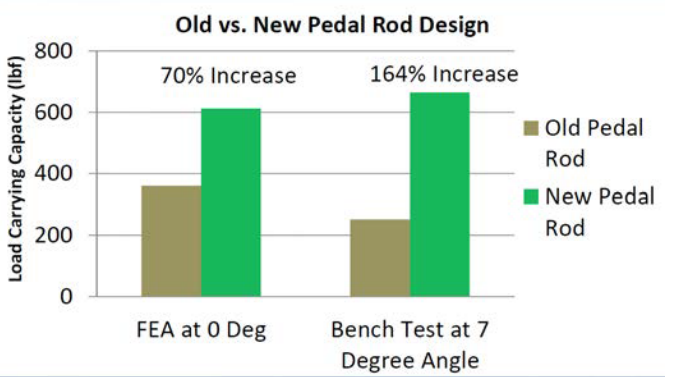
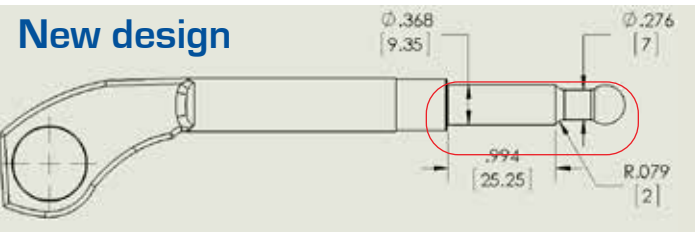
Stress Behavior and Factor Of Safety Test
New Design - 800N applied at 0 degrees



Brake booster/Brake pedal system operation



The new pedal rod has a more robust design through several added features. The weakest point of the pedal rod where it commonly fails was moved closer to the ball end of the pedal rod. This greatly reduces the shearing force at that location since it's pivot point is now closer to the ball end. Also, the chamfer at that location has been replaced by a fillet which helps reduce the stress concentration factor at that location. These changes was accompanied by an overall increase in the pedal rod's diameter at key locations to increase its ability to withstand forces that may be encountered in a GSE environment.



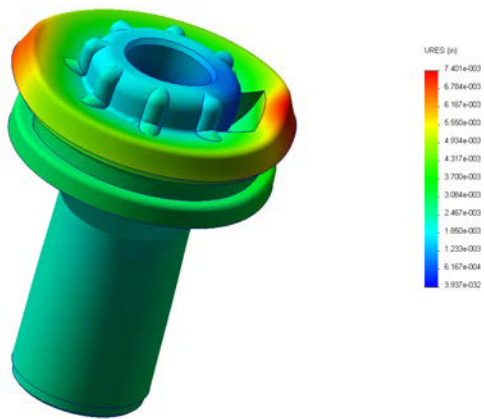
Comparison of Maximum Load Carrying Capacity of the old and new pedal rod designs from both the FEA and bench testing.

Heavy Duty Power Piston

The power piston is an integral part of the vacuum assisted booster assembly. Primarily, it serves as a displacement link between the vehicle's brake pedal and the master-cylinder piston. As such, this component is exposed to high mechanical forces generated by the vehicle operator.

Historically, this booster design was originally intended to be used on passenger vehicles, which had specific braking requirements. In the GSE industry, a typical ramp tractor can have a GVW from 3,750 lb. to 7,500 lb. with a drawbar pull capacity of range of 3000 lb. to 6,000 lb. As a reference, the curb weight of a 1979 Ford Mustang was roughly 2,700 lbs. The braking forces for GSE vehicles are significantly higher than commercial vehicles, as a result of the higher loads. With the increased braking force requirements comes additional stresses and internal forces, which act on the booster elements.

Based on this understanding, we set out to explore the possibility of enhancing the robustness of the power piston [among other components]. Our goal was to ensure that this product will be able to safely accommodate the braking requirements for the GSE industry, while maintaining the original design integrity. That is – we did not want to reinvent the wheel, but rather reshape it to meet customer's needs.

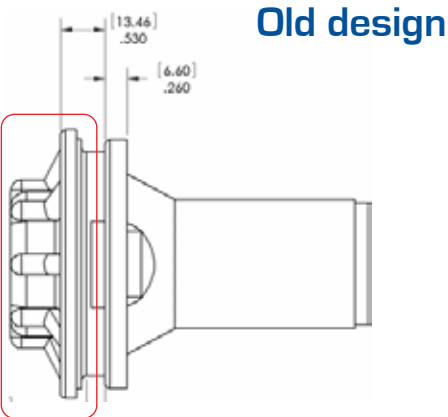


FEA - Displacement Distribution at 2,000lb load

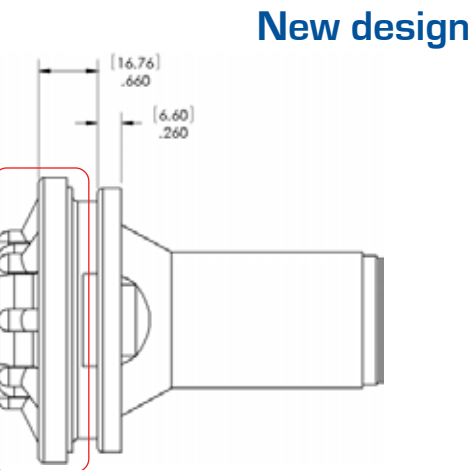
PRODUCT SHEET
RAMPTECH® Vacuum Power Assist Brake Booster

A numerical simulation study was completed to explore the material and dimensional parameters of the power piston. During the first phase, we evaluated the performance of the current material and piston design as a function of braking load requirements. These results helped us pinpoint the exact area of concern and the proper material specifications. For example, by increasing the diaphragm retaining flange of the power piston by 3 mm we were able to increase the yield load capacity by 72%. Furthermore, we were able to identify a proprietary material with special fill reinforcement that would minimize the displacement and stress concentration acting on the flange, thus adding additional robustness.

These modifications and enhancements are not visible to the naked eye, but rather work behind the scenes to produce a more robust and industry specific product.



Old design



New design

A better way to keep your cool.

Advanced engineering in...a better product out. That's the design approach behind the RAMPTECH® High Efficiency Copper Brass Radiator. Besides providing the most efficient and effective cooling possible, this robust radiator includes many enhancements resulting in a superior level of overall durability and long lasting

The filler neck is reinforced with brazing both internally and externally. The inlet/outlet tubes have been substantially strengthened by securing two anchor points welded to both sides of the tank and by an enhanced brazing process. The durability of the drain valve and the transmission coolant ports have been improved by a 25% increase in tank wall thickness and enhanced brazing. Also, reinforced "cradle" mounting brackets have been added, and the sealing bead on all ports has been improved to increase reliability and performance even further.

Features

- Fits the Tug MA and MH Series Tractors with gas engine
- Fits the Tug Belt Loader with gas engine
- Heavy duty durability and long life

Replaces

Four Seasons Radiator - 154700
TUG - T6-4055-203

RAMPTECH® Copper Brass High Efficiency Radiator



Sage Part Number 825203

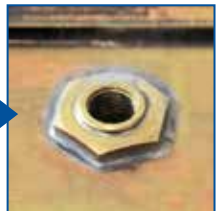
Improvements

- Redesigned bracket configuration for a longer, reliable life
- Tank wall thickness increased by 25%
- Increase brazing material around all ports and filler neck

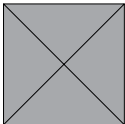


The filler neck is reinforced with internal and external brazing.

Transmission coolant ports have been improved by a 25% increase in tank wall thickness.



The inlet/outlet tubes have strengthened by securing two anchor points welded to both sides by an enhanced brazing process.



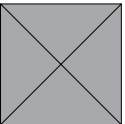
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PRODUCT SHEET

RAMPTECH®
Dolly Casters

Engineered for the long haul.

Constructed of steel with a diamond base plate, RAMPTECH® Dolly Casters are specifically engineered to provide high impact strength and deliver incredible durability. Want even more reasons why these casters are built to last? They are also water and chemical resistant, and they feature a sturdy 3.5 mm fork, double ball race and sealed wheel bearing.

These high quality casters feature rugged, smooth-rolling nylon wheels. In addition, cost-effective RAMPTECH® Dolly Casters are used on an extensive range of WASP, Clyde, and Lewellyn dollies.

Features

- High impact strength
- Water and chemical resistant
- Light weight
- Low cost



Replaces

Sage P/N	GSP CORP.	FAULTLESS	WASP
503026	401-N	—	H004836
5030261	325-N	—	—
503022	—	25696	H001155
503021	—	25675	H1143

PRODUCT SHEET

RAMPTECH® Dolly Casters

RAMPTECH® Dolly Caster - (4.01 2-Hole)

Sage P/N 503026 Replaces 401N and WASP H004836

Overall Height	4.01 in (102mm)
Load Capacity	700 lbs (317.5kg)
Wheel Diameter	3 in (76.1mm)
Wheel Type	Nylon
Wheel Bearing	Ball
Base Plate	Diamond



RAMPTECH® Dolly Caster - (3-25/32 2-Hole)

Sage P/N 5030261 Replaces 325N

Overall Height	3.83 in (97.2mm)
Load Capacity	700 lbs (317.5kg)
Wheel Diameter	2.5 in (63.5mm)
Wheel Type	Nylon
Wheel Bearing	Ball
Base Plate	Diamond



RAMPTECH® Dolly Caster - (3-25/32 2-Hole)

Sage P/N 503022 Replaces Faultless 25696 and WASP H001155

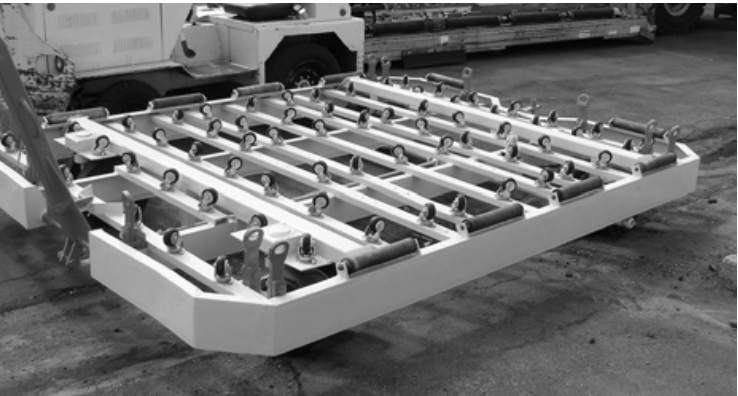
Overall Height	3.92 in (99.7mm)
Load Capacity	700 lbs (317.5kg)
Wheel Diameter	3 in (76.1mm)
Wheel Type	Nylon
Wheel Bearing	Ball
Base Plate	Diamond



RAMPTECH® Dolly Caster - (3-25/32 4-Hole)

Sage P/N 503021 Replaces Faultless 25675 and WASP H1143

Overall Height	3.70 in (94.1mm)
Load Capacity	700 lbs (317.5kg)
Wheel Diameter	3 in (76.1mm)
Wheel Type	Nylon
Wheel Bearing	Ball
Base Plate	Diamond



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RAMPTECH® New And Improved Carburetor For The Ford 300 (4.9L) Engine

Advanced engineering, full throttle quality.

The RAMPTECH® Ford 300 (4.9L) Carburetor advances the art and science of product development and manufacturing to create a vastly improved version of the old Motorcraft model. Engineering enhancements include throttle shaft bushings for longer life, as well as improved float design, needle and seat, and accelerator pump diaphragm.



Features

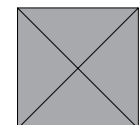
- ✓ These RAMPTECH® Carburetors are new without a core charge
- ✓ Fitted and tuned for the Ford 300 (4.9L) engines
- ✓ 1 barrel carb with hot air choke
- ✓ Goes through an extensive QC on engine check and fully adjusted prior to shipment

Improvements

- ✓ Throttle shaft bushings for longer life
- ✓ Improved float design, needle and seat, and accelerator pump diaphragm
- ✓ Performance enhanced for GSE and industrial use
- ✓ All gaskets included

Replaces

- Motorcraft - D5TZ-9510AG, D4PZ-9510AC
- Tug - T6-1001-107
- Clark - 919111
- Uremco - 7-7523



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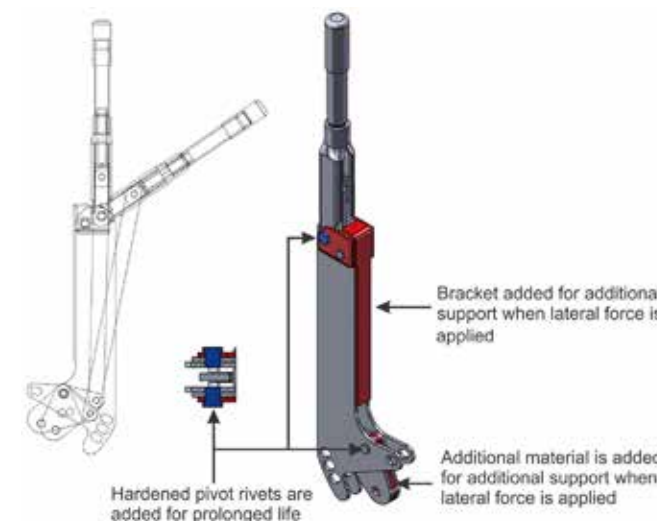
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RAMPTECH® Heavy Duty GSE E-Brake Lever

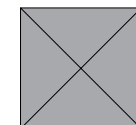


The RampTech E-Brake Lever recognizes a new standard for quality. We listened to users in the field and engineered a new and improved version of the Orscheln type lever originally used on the Tug MA. This new RampTech lever is designed for GSE and the ramp and will last longer than the original. Added strength was developed for enhanced improvement and performance.

The new RampTech E-Brake Lever includes design improvements that focused on stress areas to enhance product life and performance with no change to its form, fit, or function, and is a direct replacement with no modifications needed.

- ✓ A reinforcing bracket was added for additional lateral support
- ✓ A mounting anchor spacer was added for durability
- ✓ Improved riveting was added to endure the most aggressive environment
- ✓ Improved overall design for longevity and reduced product life cycle cost

Part Number 96688. This part replaces Tug T6-8005-101, Harlan 27002, or Orscheln 1041805 and 02182900, and many other OEM part numbers. Contact Sage Parts for additional application and cross reference information. Why settle for less?



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RAMPTECH® High Performance LED GSE Headlamp



Part Number 334010

Endurance. Built for the Ramp - This light is made of die-cast, powder-coated, black, aluminum alloy housing, and air-tight internal compartments. The lens is made of impact and UV-resistant acrylic plastic that will stand up to the harshest environmental ramp conditions. All mounting brackets and hardware are stainless steel.

Fully Lab and Ramp Tested

- **Vibration Tested** - The light was run for 8 continuous hours while affixed to an air-powered vibration bench without a single failure. The vibration was extreme compared to a typical vehicle application.
- **Cycle Tested** - The light was continuously cycled on and off for 50 times per minute for a total of 160

hours at 30 volts. This lamp was cycled 480,000 times without a single failure.

- **Age Tested** - The light was tested with current flow by leaving the LED light continuously on for 48 hours at 24 volts during continuous cycles.
- **Water Tested** - The light was continuously run for over 400 hours while submerged below 1 foot of water. The seal and light intensity remained stable.
- **Field Tested** - The light was field-tested on various types of ramp equipment for over 1 year without a single failure.

Halogens, on average, will last between 400 to 500 hours. HID's will last up to 3,000 hours. LEDs will last up to 40,000 hours.

Features and Benefits

- 6 super bright Light Emitting Diodes (LEDs)
- Durable impact-resistant acrylic lens that will stand up to the harshest environmental ramp conditions
- Rugged solid state LEDs can withstand shock and vibration
- Life Rating is approximately 40,000 hours
- Long-life LEDs means never having to replace another bulb
- LED light is whiter and brighter creating better visibility
- LEDs have less current draw which results in increased battery and alternator life
- Die-cast aluminum alloy fin style housing provides maximum protection
- Stainless Steel mounting brackets and hardware
- Fully ramp tested and proven

RAMPTECH® High Performance LED GSE Headlamp

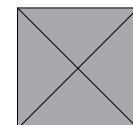


Light kit includes mounting hardware

Specifications

- **Lens Pattern:** Flood for maximum effectiveness
- **Lens Material:** High impact acrylic plastic
- **Warranty:** 1-year limited warranty
- **Housing Material:** Die-cast aluminum alloy
- **Mounting:** Stainless steel pedestal mount
- **Range:** 9 to 24 Volts
1.170 Amps @ 12V DC
0.567 Amps @ 24V DC
- **Lumen Output:** 1080

*This lamp is for ramp vehicles only and is not DOT approved for use on public roads.



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PRODUCT SHEET

RAMPTECH® Replacement
Toyota Hub & Rotor

Ramptech replacement Toyota hubs and rotors are built to the most stringent of automotive standards. The rotor is built utilizing SAE-J431 Automotive SAE grade G3500 gray cast iron. The hub is built utilizing AISI 4140 chrome moly high tensile steel. Both parts are precision machined within exacting tolerances of +/- 0.005. All specifications meet or exceed OEM.

Application:

Toyota TD 15, 20, 25, 30, 40, 50 series tow tractors with front disc brakes.

Hub

Sage Item Number: 432134363071AFT
OEM Part Number: 432134363071



Hub and Rotor Assembly

Comes fully assembled: Includes hub with bearing cups and wheel studs installed, rotor with attaching hardware, wheel seal and bearing cones included in package. **Sage Item Number: 30607ASSY**



Hub Assembly

Comes fully assembled: Consists of hub, bearing cups and wheel studs installed, wheel seal and bearing cones included in package. **Sage Item Number: 432134363071ASSY**



Rotor

Sage Item Number: 432144363071AFT
OEM Part Number: 432144363071



PRODUCT SHEET

RAMPTECH® Seat

Engineered for all GSE
ramp use

The RampTech® seat is a superior option to the standard seats available today. With ingress and egress kept in mind, as well as diverse climate and weather conditions, RampTech® engineered this seat to stand up to all GSE conditions.

Where most seats used on GSE have re-purposed from other industries, RampTech® is **Engineered for the Ramp** and for **GSE**.



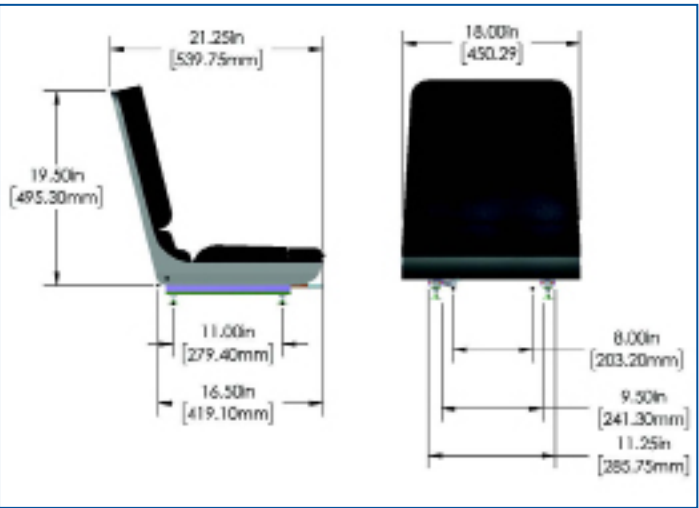
RampTech® seat
Part Number 4100101ASAGE

Features include

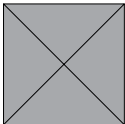
- Enhanced vinyl to withstand friction wear
- Rounded edges for ease of ingress and egress
- Weather and UV resistant construction
- Better price, better design, and the BEST VALUE

Replaces

SPP00236465



RampTech® seats feature all necessary mounting configurations.



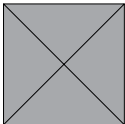
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PRODUCT SHEET

RAMPTECH® New And Improved Speed Governor

Completely redesigned, fully tested. Uniquely efficient.

The RAMPTECH® Governor is the result of innovative advancements in engineering, providing vast improvements on the Hoof model to help the engine achieve equilibrium – enabling GSE to run at a relatively constant and highly efficient speed.

Beware of the many imitations of this governor. Only the RAMPTECH® Governor is entirely redesigned and fully tested as well as 100% quality-controlled to assure the best possible performance and unmatched reliability. They might look the same on the outside, but they are not on the inside. Engineering enhancements include simplified interval adjustment mechanism, redesigned and enhanced leaf spring, stainless steel adjustment screw and hardened steel e-clip.

Features

- These RAMPTECH® Governors are new without a core charge
- Robust product with high reliability
- Range: 2,400-2,500 RPM
- Fitted for the Ford 300 (4.9L) engine
- Goes through an extensive QC check



Sage
Part Number 732001

Improvements

- Simplified interval adjustment mechanism
- Enhanced leaf spring design and material
- Stainless steel adjustment screw
- Hardened steel e-clip
- All gaskets included



Replaces

Motorcraft - D7JL12450M, D7JL12480A
Tug - T6-1001-105
Clark - 993610
Tiger - TIG1001105

PRODUCT SHEET

RAMPTECH® Copper Brass Toyota Radiator Replacement

At its best when the heat is on.

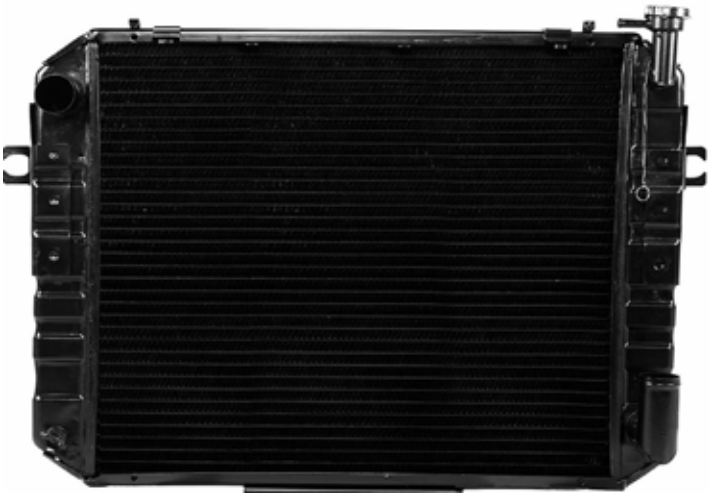
Superior performance, solid value. With its copper and brass engineering, this radiator is the perfect replacement for Toyota TD Series Tractors. The RampTech radiator is an exact Toyota replacement, providing equal quality, form, fit, and function, all at a fraction of the cost.

Features

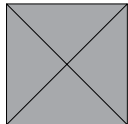
- Fit the Toyota TD Series Tractors
- It is an exact Toyota replacement, equal in quality, but at a fraction of the cost
- Heavy duty durability and long life

Replaces

TOYOTA- 16410-43630-71
TOYOTA- 16410-43631-71
TOYOTA- 16410-43632-71
TOYOTA- 16410-43633-71
TOYOTA- 16410-43634-71



Sage
Part Number 821071



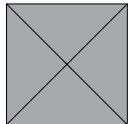
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Single caliper fits both left and right applications

How did we do it

The caliper has simply been redesigned making the bleed screw and inlet ports identical. This makes the two ports universal, therefore making the caliper ambidextrous.

Ease of Installation

In a brake system, pockets of air always make their way to the end of the line.

Fluid always enters the caliper at the lowest point and the bleed screw is always placed at the highest point or the top of the fluid chamber on the caliper, the end of the line.

Having the inlet and bleed screw ports identical allows you to switch back and forth always placing the bleed screw on top and the inlet hose on the bottom regardless of left or right installation.

Advantages

- Calipers are brand new
- The Delco caliper used on Clark, Harlan, Tug, Northwestern Motors, United Tractor, and Tiger have been out of production for several years.
- All the replacement calipers supplied today are rebuilt



Sage Parts
Item Number 420809



- Due to the fact that these calipers have been out of production so long, the average rebuilt caliper could be rebuilt 10 or more times in it's lifetime
 - For the same reason the cores are becoming hard to find
 - There is a higher likelihood that sub-standard cores will be reused rather than being discarded
- With a New caliper, built to the original OEM specifications these issues go away
- Nothing else to buy.
 - Calipers come loaded with mounting hardware.
 - Calipers come loaded with quality non-asbestos, low silicate semi metallic Raybestos brake pads.
- NO CORES TO RETURN

Precision optimized for the most demanding ramps.

Dollies and trailers are among the most-utilized of all ground support equipment...and they demand intelligently engineered parts that can perform to the highest standards in a multitude of applications as well as withstand continual use in all kinds of weather conditions. RAMPTECH® Wheel Hubs are specifically designed for superior durability and overall optimal performance on the ramp.

Among the outstanding features and benefits are precision machined castings along with top quality, heavy duty bearings and seals for smooth operation and extra long life. Durability is further enhanced by Grade-8 lug nuts and bolts. RAMPTECH® Wheel Hub bearings are pre-packed with grease, and they also have hydraulic SAE grease fittings for fast and highly efficient maintenance.

Features

- High quality precision machined casting
- Heavy duty bearings and seals for smooth operation and longer life
- Grade-8 lug nuts and lugs
- Bearings are pre-packed with grease
- Includes hydraulic SAE grease fittings for fast and highly efficient maintenance



Sage
Part Number 324140



Sage
Part Number 324062

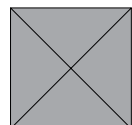


Sage
Part Number 324066



Sage
Part Number 324061

See all types on the
reverse side



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Dolly / Trailer Wheel Hub

Sage Part Number: 324060
Fits GSE Make: WASP and
Pearless
Replaces Part Numbers:
P01595A, P1595A, P8363A, H1091,
501041



Dolly / Trailer Wheel Hub

Sage Part Number: 324064
Fits GSE Make: Abby-MFG and
Clyde Machine
Replaces Part Numbers: 1212-2G,
1504668, 1504665



Dolly / Trailer Wheel Hub

Sage Part Number: 324061
Fits GSE Make: Moody
Replaces Part Numbers:
BM31338, M31338



Dolly / Trailer Wheel Hub

Sage Part Number: 324066
Fits GSE Make: Clyde Machines,
FMC/JBT, Bentz Mobile Products
Replaces Part Numbers: 1504492,
1503779, 232-9091, 26147



Dolly / Trailer Wheel Hub

Sage Part Number: 324062
Fits GSE Make: Moody
Replaces Part Numbers: BM8663,
BM18866, M18866



Dolly / Trailer Wheel Hub

Sage Part Number: 324068
Fits GSE Make: WASP
Replaces Part Numbers: H1035,
P1624A



Dolly / Trailer Wheel Hub

Sage Part Number: 324063
Fits GSE Make: Tri-Tech
Replaces Part Numbers:
499-02-361A, 49902-361B

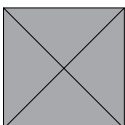


**Baggage Tractor Front
Wheel Hub**

Sage Part Number: 324140
Fits GSE Make: TUG and TLD
Replaces Part Numbers:
T6-3001- 600-40, T6-3001-600-
25, 1004649-P4, 1004649-1



Ground Service Parts



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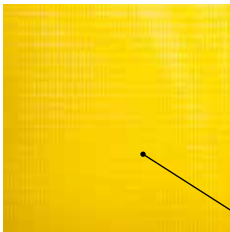
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PRODUCT SHEET

RAMPTECH® Economy PCA Layflat Ducting

PRODUCT SHEET

RAMPTECH® Economy PCA Layflat Ducting



Designed to exceed your expectations. Not your budget.

Superior engineering meets extraordinary value. RAMPTECH® Economy PCA layflat ducting from Sage Parts is designed to meet the demands of positive pressure applications while also delivering a budget-friendly price tag.

High-quality and highly-flexible sewn construction collapsible blower tubing provides dependable performance, including exceptional resistance to external abrasion...dramatically reducing deterioration and fatigue. Durability is further enhanced by excellent UV stabilization, as well as mold and mildew inhibitors for long-lasting outdoor use under virtually all kinds of weather conditions.

Outer shell

The outer layer is comprised of 18 oz/yd² (610 g/m²) polyester fabric, specially coated with a mildew and UV resistant finish. Its rugged design gives Economy PCA layflat ducting superior tear strength, and the ability to withstand high amounts of abrasion.



Insulation layer

The middle layer is comprised of Astro Eco White reflective insulation that is metalized with reflective aluminized mylar material on one side for superb radiant heat insulation. Its lightweight design adds flexibility to the ducting while maintaining its insulating attributes and reducing cost. The Astro Eco White reflective insulation features a Class A/Class 1 fire rating and is constructed with recycled materials.

Inner liner

The high-strength inner liner consists of a tightly woven, rip-resistant, coated nylon material, which is designed to withstand the heavy wear associated with the airline industry.

Specifications: RAMPTECH economy layflat

Temperature	-20° to +180° F (-29° to +82° C)
Diameter	8 in, 12 in, and 14 in (203.2 mm, 304.8 mm, 355.6 mm) Other diameters available upon request
Length	10 ft, 20 ft, 25 ft, 35 ft, 45 ft (3.04 m, 6.09 m, 7.62 m, 10.66 m, 13.71 m) Custom lengths available upon request
Color	Yellow
Optional ends	Fold Over Velcro® Cuff, Soft Cuff, or Zipper Cuff

Accessories available

Reducers

Diameters of
12 to 8 inches
14 to 8 inches

Starter Sections

Diameters of
8, 12, and 14 inches
Lengths at
3, 5, and 8 feet

Custom available upon request

Elbows

Diameters of
8, 12, and 14 inches
Angles of 45 and 90 degrees

Transition Sections

Diameters of 12 and 14 inches
Cuff combinations are Zipper to Velcro, Velcro to Zipper, Soft Cuff to Velcro, and Soft Cuff to Zipper

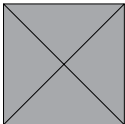
Reducing Elbows

14 to 8 inches at 90 degrees
14 to 8 inches at 45 degrees

Wye

8x8x8 inches
12x12x12 inches
of any cuff combination
Clamps

8 inch - Part Number 501197
12 inch - Part Number 501198
14 inch - Part Number 501199



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PRODUCT SHEET

RAMPTECH® Premium
PCA Layflat Ducting



Above. And beyond.

There simply is no better PCA layflat ducting available on the market today. RAMPTECH® Premium PCA layflat ducting from Sage Parts features the finest engineering... assuring the highest level of performance for the most demanding positive pressure applications.

Heat-sealed (welded) design, high resistance to external abrasion and ultra-durable overall construction combine with flexibility to deliver everything you want in a top quality PCA layflat ducting product that meets UL94VTM-O standards. But that's not all. Unique spiral construction enables the addition of a military-spec scuff strip that protects the entire duct – reducing fatigue and resulting in incredibly long service life. Other vital advantages include an extended inner liner, and elastic seals at connection points to minimize air loss, as well as excellent UV stabilization, and mold and mildew inhibitors.



Outer shell

The outer shell is comprised of VentaTex® 20XHDMW 3-ply, 20 ounce/ square yard (678 g/m²) high-strength PVC fabric and black wearstrip that meets military specifications. To improve abrasion resistance, nine millimeters of high-density molecular weight PVC is added to the external wear surface. The custom laminate is produced by compressing high strength, multi-denier, uni-directional Ripstop polyester yarns between PVC films. Finished material thickness is 0.029 inches (0.737 mm).

Insulation layer

The middle layer consists of stitch-bonded polyester insulation similar to the high performance material found in cold weather clothing and camping products.

Inner liner

The inner sleeve is made of VentaTex® 11-1812 high-strength material, and 11 ounce/square yard (373 g/ m²), 3-ply PVC fabric VentaTex® 11-1812 is specially designed to eliminate delamination, which is commonly found in other inner liners. It is constructed by compressing high tenacity, high density polyester yarn between PVC films. Finished material thickness is 0.017 inches (0.432 mm).

PRODUCT SHEET

RAMPTECH® Premium
PCA Layflat Ducting



Specifications: RAMPTECH premium layflat

Temperature	-20° to +180° F (-29° to +82° C)
Diameter	8 in, 12 in, and 14 in (203.2 mm, 304.8 mm, 355.6 mm) Other diameters available upon request
Length	10 ft, 20 ft, 25 ft, 50 ft (3.04 m, 6.09 m, 7.62 m, 15.24 m) Custom lengths available upon request
Wearstrip	Heavy-Duty Military Specification, Abrasion Resistant
Color	Yellow with black wearstrip
Optional ends	Fold Over Velcro® Cuff, Soft Cuff, or Zipper Cuff

Accessories available

Reducers

Diameters of
12 to 8 inches
14 to 8 inches

Starter Sections

Diameters of
8, 12, and 14 inches
Lengths at
3, 5, and 8 feet
Custom available upon request

Elbows

Diameters of
8, 12, and 14 inches
Angles of 45 and 90 degrees

Transition Sections

Diameters of 12 and 14 inches
Cuff combinations are Zipper to Velcro, Velcro to Zipper, Soft Cuff to Velcro, and Soft Cuff to Zipper

Reducing Elbows

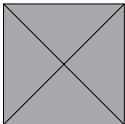
14 to 8 inches at 90 degrees
14 to 8 inches at 45 degrees

Wye

8x8x8 inches
12x12x12 inches
of any cuff combination

Clamps

8 inch - Part Number 501197
12 inch - Part Number 501198
14 inch - Part Number 501199



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RAMPTECH® Spiral Reinforced Insulated Ducting

Stronger, smarter. Better.

When it comes to ducting for pre-conditioned air (positive pressure) applications, strength is imperative. And so is smart engineering. RAMPTECH® spiral reinforced insulated ducting from Sage Parts is intelligently designed in and out – built to perform better than any other brand.

All three layers of RAMPTECH® spiral reinforced insulated ducting...outer layer, insulation layer and inner layer...are constructed of the finest materials to provide incomparable durability no matter how challenging the ramp demands are. Plus, welded construction and flame resistance combine with top-notch UV stabilization and mold and mildew inhibitor to elevate performance and durability even higher.



Outer shell

The outer shell is comprised of VentaTex® 20XHDMW 3-ply, 20 ounce/ square yard (678 g/m²) high strength PVC fabric and black wearstrip that meets military specifications. To improve abrasion resistance, nine millimeters of high density molecular weight PVC



is added to the external wear surface. The custom laminate is produced by compressing highstrength, multi- denier, uni-directional Ripstop polyester yarns between PVC films. Finished material thickness is 0.029 inches (0.737 mm).

Insulation layer

The middle layer consists of stitch-bonded polyester insulation similar to the high performance material found in cold weather clothing and camping products.

Inner liner

The inner sleeve is made of VentaTex® 11-1812 high strength material, and 11 ounce/square yard (373 g/m²), 3-ply PVC fabric VentaTex® 11-1812 is specially designed to eliminate delamination commonly found in other inner liners. It is constructed by compressing high tenacity, high density polyester yarn between PVC films. Finished material thickness is 0.017 inches (0.432 mm).

RAMPTECH® Triflo PCA Layflat Ducting

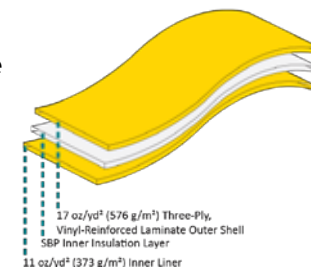


Designed to exceed your expectations. Not your budget.

With TriFlo PCA ducting from Sage Parts, more is less. More quality, more durability. Less cost. It all adds up to the kind of superior value you expect from Sage Parts.

High Performance Features

Innovatively engineered linear-welded construction and flexible design combine to provide highly reliable and efficient transport of pre-conditioned air – even under the harshest weather conditions on the busiest, most demanding ramps.



Outer shell

The 17 oz/yd² (576 g/m²) three-ply, vinyl-reinforced laminate outer shell is designed for durable wear and high abrasion resistance. The outer shell features mold and mildew inhibitors and is UV stabilized for protection against harmful sun degradation.

Inner insulation layer

The inner insulation layer consists of stitch-bonded polyester insulation similar to the high performance material found in high-end cold weather clothing and camping products.

Inner liner

The inner sleeve is made of VentaTex® 11-1812, an 11 oz/yd² (373 g/m²), high-strength, three-ply PVC fabric manufactured by ABC Industries, Inc. VentaTex® 11-1812 is specially designed to eliminate delamination commonly found in other inner liners. It is constructed by compressing high-tenacity, high-density polyester yarn between PVC films.



Safety



EPDM Rubber Wheel Chocks

Heavy-duty EPDM rubber wheel chocks are designed specifically for use with aircraft and ground support equipment. The wheel chocks are attached by high strength polypropylene rope for easy handling.

Wheel chocks are constructed of highly durable, ribbed rubber that is infused with UV inhibitors to prevent color fade. High visibility vinyl 3M™ reflective strips are on all three sides on the chocks.

Chocks are available as individuals or pairs and a variety of sizes; see table below.



Part Number	Chock Length		Chock Size		Weight		Color Available	Number of Chocks
	in	mm	in	mm	lbs	kg		
102018-01	12	305	6	152	12.5	6	Black	2
102018-02	12	305	6	152	12.5	6	Black	1
102018-05	8	203	5	127	4.8	2	Black	2
102018-09	24	610	6	152	25	11	Black	1
102018-11	20	508	6	152	21	10	Black	1



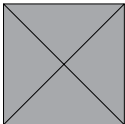
Sage Parts offers customizable wheel chocks to fit your company's visual branding needs. Contact your sales or customer service representative for available styles and colors, product details, and special offers.



Other RAMPTECH® Safety Items Available:

Sage part number	Quantity	Part description
257002	2	Multiple Storage Pockets Safety Cone Caddy
RS75040SRED	2	Red Cone with Reflective Strip *Logo Customization Available
256002	2	RAMPTECH® LED Safety Wand
256003	2	Highly Reflective Signal Wand
113001	2	Highly Reflective Traffic Cone "DO NOT ENTER" Sign Customization Available
252002	1	Adjustable Traffic Cone Bar
FC2000CONEASSY	1	Traffic Delineator Post with Reflective Bands with Base
RS75040SREDKIT	12	Complete Cone Caddy Kit

*All parts listed can be ordered as a kit or by part to add on to existing safety assemblies.



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Mirage™

- Dual, Wraparound 9.75 Base Polycarbonate Lens
- Sleek, Lightweight Design
- Complies with ANSI Z87.1 standards

MR0110ID	Clear Lens	MR0160ID	Silver Mirror Lens
MR0111ID	Clear Anti-Fog Lens	MR0190ID	Indoor/Outdoor Lens
MR0120ID	Smoke Lens	MR0191ID	I/O Anti-Fog Lens
MR0121ID	Smoke Anti-Fog Lens	MR01B0ID	Light Blue Lens
MR0140ID	Amber Lens	MR01R0ID	Rainbow Mirror Lens

Rad-sequel™

- Soft, Rubber Tipped Temples and Nosepiece
- Lightweight Design with Polycarbonate Lens
- Complies with ANSI Z87.1 standards

RS1-10	Clear Lens	RS1-60	Silver Mirror Lens
RS1-11	Clear Anti-Fog Lens	RS1-70	Blue Mirror Lens
RS1-20	Smoke Lens	RS1-90	Indoor/Outdoor Lens
RS1-21	Smoke Anti-Fog Lens	RS1-B	Light Blue Lens

Rad-apocalypse™

- Soft, Rubber Temples and Nosepiece
- Includes Neck Cord
- Complies with ANSI Z87.1 standards

AP1-10	Clear Lens	AP1-60	Silver Mirror Lens
AP1-11	Clear Anti-Fog Lens	AP1-90	Indoor/Outdoor Lens
AP1-20	Smoke Lens	AP1-B	Light Blue Lens
AP1-40	Amber Lens		

Rad-Atac™

- Lightweight Frame with One-Piece Polycarbonate Lens
- Soft, Rubber Temples
- Complies with ANSI Z87.1 standards

AT1-10	Clear Lens	AT1-70	Blue Mirror Lens
AT1-11	Clear Anti-Fog Lens	AT1-90	Indoor/Outdoor Lens
AT1-20	Smoke Lens	AT1-B	Light Blue Lens
AT1-21	Smoke Anti-Fog Lens	AT1-B11	Light Blue Anti-Fog Lens
AT1-40	Amber Lens	AT1-W2	Low IR Lens
AT1-60	Silver Mirror Lens		

TOP 4
PLANO STYLES



ES5™

- Rubber Nosepiece for all day comfort
- Dual Mold Rubber Temple Grips for better stability
- Complies with ANSI Z87.1 standards

291113	Crystal Brown Frame	HD Brown Polarized Lens
2968	Shiny Black Frame	Blue Mirror Lens
29117	Crystal Brown Frame	HD Brown Mirror Lens
2964	Shiny Pearl Gray Frame	Clear Lens
29215	Matte Black Frame	Indoor/Outdoor Lens
2961	Shiny Pearl Gray Frame	Smoke Lens

Chief™

- Integrated Molded Brow Guard and Reinforced Side Shields
- One Piece Lens Design Fits Over Most Prescription Glasses
- Complies with ANSI Z87.1 standards

360-C	Clear Lens	360-A	Amber Lens
360-S	Smoke Lens	360-C USA	Clear Lens (Made In USA)

Concealer™

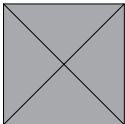
- Dual Injected Rubber Comfort Seal
- Built-in Ventilation Channel
- Complies with ANSI Z87.1 standards

DPG82-11	Clear Anti-Fog Lens	DPG82-21	Smoke Anti-Fog Lens
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Cheaters™

- Magnification Diopter Molded into Polycarbonate Lens
- Adjustable Temples with Rubber Pads and Nosepiece
- Complies with ANSI Z87.1 standards

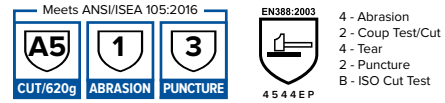
CH1-110	Clear 1.0 Diopter Lens	CH1-215	Smoke 1.5 Diopter Lens
CH1-115	Clear 1.5 Diopter Lens	CH1-220	Smoke 2.0 Diopter Lens
CH1-120	Clear 2.0 Diopter Lens	CH1-225	Smoke 2.5 Diopter Lens
CH1-125	Clear 2.5 Diopter Lens	CH1-915	Indoor/Outdoor 1.5 Diopter Lens
CH1-130	Clear 3.0 Diopter Lens	CH1-920	Indoor/Outdoor 2.0 Diopter Lens
		CH1-925	Indoor/Outdoor 2.5 Diopter Lens



Cut Protection

RWG550 XS – 2XL

- 13 Ga White HPPE Shell
- Polyurethane Dip



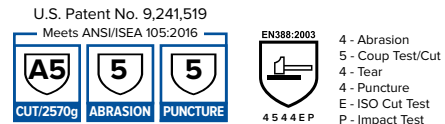
RWG564 S – 2XL

- Hi-Viz Green HPPE w/Fiberglass
- Foam Nitrile Palm Coating



RWG603 S – 2XL

- 13 Ga Pepper HPPE Shell W/ Fiberglass
- Sandy Foam Nitrile Palm Coating
- TPR Overlays



RWG558 XS – 2XL

- 13 Ga Hi-Viz Green HPPE w/ Fiberglass and Stainless Steel
- Black PU Palm Coating



Leather Driver

RWG4120 S – 2XL

- Economy Grain Cowhide Leather Driver
- Straight Thumb
- Shirred Wrist



RWG4420 S – 2XL

- Premium Grain Cowhide Leather Driver
- Keystone Thumb
- Shirred Wrist, Cloth Hem



Leather Palm

RWG3200 S – 2XL

- Regular Shoulder Gray Split Cowhide
- Gunn Cut w/Wing Thumb
- Leather Knuckle Strap
- Rubberized Safety Cuff



RWG3200HV L – XL

- Regular Shoulder Split Cowhide Leather Palm w/Hi-Vis Nylon Back
- Gunn Cut w/ Wing Thumb
- Reflective Knuckle Strap
- Rubberized Safety Cuff



Coated

DPG72 XS – 2XL

- 13 Ga Nylon Shell
- Double Dipped Flexible Durable Grip Coating
- Water and Oil Resistant



RWG32 M – XL

- 13 Ga Nylon Shell
- FDG® Palm Coating
- Waterproof Nitrile Coating



Permormance

DPG20 M – XL

- ToughGrip™ Thumb Saddle
- Padded Palm & Knuckle
- Elastic Wrist Strap



RWG100 M – 2XL

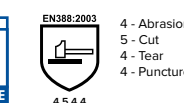
- Padded Double Layer Synthetic Palm
- Reinforced and Reflective Fingertips
- Easy Fit Open Cuff Design
- Silver Reflective Tape
- Reflective Pull Strap



Winter

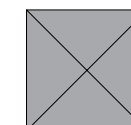
RWG605 S – 2XL

- 2 Ply 13 Ga Blue and White HPPE Outer Shell
- 7 Ga Acrylic Terry Liner
- Waterproof Blue Smooth Latex Coating
- Black Foam Latex Palm Coating



RWG4225 S – 2XL

- Standard Grain Cowhide Leather Driver
- Keystone Thumb
- Red Fleece Lined
- Shirred Wrist, Cloth Hem



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Hard Hats

Granite™ cap style hard hat

- Pillowed Brow Pad
- Nylon Crown Strap Suspensions
- Vertical Height Adjustment
- High Density Polyethylene Construction
- Universal Accessory Slots
- Meets ANSI Z89.1-2009 Type 1 – Class G & E Standards

COLORS:		
Yellow	Gray	Orange Hi-Viz
White	Green	Tan
Red	Blue	Dark Gray*
Orange	Green Hi-Viz	
*Only available in 6pt Ratchet Option		
GHP4	4 Point Pinlock	
GHR4	4 Point Ratchet	
GHP6	6 Point Pinlock	
GHR6	6 Point Ratchet	



Quartz™ Full Brim Hard Hat

- Pillowed Brow Pad
- Nylon Crown Strap Suspensions
- Vertical Height Adjustment
- High Density Polyethylene Construction
- Full Profile, Full Brim
- Meets ANSI Z89.1-2009 Type 1 – Class G & E Standards

COLORS:		
Yellow	Gray	Orange Hi-Viz
White	Green	Tan
Red	Blue	Dark Gray*
Orange	Green Hi-Viz	
*Only available in 6pt Ratchet Option		
QHP4	4 Point Pinlock	
QHR4	4 Point Ratchet	
QHP6	6 Point Pinlock	
QHR6	6 Point Ratchet	



Granite™ Vented Cap Style Hard Hat

- Venting To Promote Cooling Circulation
- Pillowed Brow Pad
- Nylon Crown Strap Suspensions
- Four Point Ratchet Suspension
- Vertical Height Adjustment
- High Density Polyethylene Construction
- Universal Accessory Slots
- Meets ANSI Z89.1-2009 Type 1 – Class G & E Standards



Ratchet Suspension

GHR4V-WHITE
GHR4V-YELLOW

Granite™ Vented Cap Style Hard Hat

- Venting To Promote Cooling Circulation
- Pillowed Brow Pad
- Nylon Crown Strap Suspensions
- Four Point Ratchet Suspension
- Vertical Height Adjustment
- High Density Polyethylene Construction
- Full Profile, Full Brim
- Meets ANSI Z89.1-2009 Type 1 – Class G & E Standards

QHR4V-WHITE
QHR4V-YELLOW



NEW! Venting promotes circulation & cooler temperatures



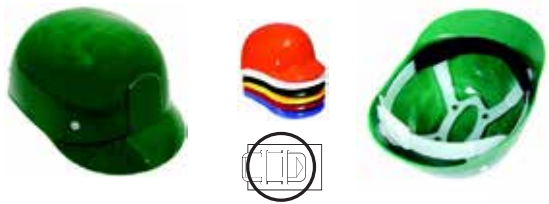
Replacement suspensions

HHSP4	4 Point Pinlock
HHSR4	4 Point Ratchet
HHSP6	6 Point Pinlock
HHSP6	6 Point Ratchet

Bump caps/headgear/faceshields

Diamond™ bump cap

- 4-Point molded suspension
- Easy size adjustments
- Perforated sides
- Headband sizes 6 5/8 in. - 7 5/8 in.



302-Orange	Orange Bump Cap	302-Yellow	Yellow Bump Cap
302-White	White Bump Cap	302-Red	Red Bump Cap
302-Green	Green Bump Cap	302-Blue	Blue Bump Cap

CAUTION: Bump caps are not designed to protect against impact from falling or glancing objects. **Does NOT meet ANSI Z89.1-2009 requirements.**

Headgear



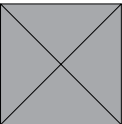
HG-400	Ratchet Suspension - Face shield NOT Included
HG-410A4	Universal Cap Adapter -Bracket
HG-410A4N	Cap Adapter for Granite™ Hard Hat - Aluminum Bracket
HG-410-A4F	Full Brim Cap Adapter - Aluminum Bracket
HG-410BWM	Cap Adapter - Wire Mesh Visor & Cap Mount Earmuff

Faceshields

All headgear and cap adapters have universal pegs that will accommodate a wide variety of faceshields and fit most hard hats.



V40812-PM	0.040 x 8x12	Plastic Mesh	V40915-C	0.040 x 9 x 15 1/2	Clear Acetate
V40812-WM	0.040 x 8 x 12	Wire Mesh	V40915-CP	0.040 x 9 x 15 1/2	Clear PETG
V40815-WM	0.040 x 8 x 15	Wire Mesh	V40919-CP	0.040 x 9 3/4 x 19	Clear PETG
V40815-C	0.040 x 8 x 15 1/2	Clear PC	V40815-S	0.060 x 8 x 15 1/2	Smoke PC
V40815-CP	0.040 x 8 x 15 1/2	Clear PETG	V40815-5.0	0.060 x 8 x 15 1/2	IRUV 5.0 PETG



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Resistor

Style: Disposable
NRR: 32
Shape: Tapered Bullet
Color: Orange
Dielectric: Yes
Material: Polyurethane Foam
Size: Regular



FP70	Uncorded	200 Box / 2000 Case
FP71	Corded	100 Box / 1000 Case
FP70BG50	Uncorded	50pr Bag
FP70-B250	Bulk Uncorded	250 Box
FP70-B500	Bulk Uncorded	500 Box

DETOUR DETERRENT

Style: Disposable
NRR: 32
Shape: Wing
Color: Yellow and Green
Dielectric: Yes
Material: Polyurethane Foam
Size: Regular



FP34	Uncorded	200 Box / 2000 Case
FP35	Corded	100 Box / 1000 Case
FP34BG50	Uncorded	50pr Bag
FP34-B250	Bulk Uncorded	250 Box
FP34-B500	Bulk Uncorded	500 Box

Resistor II

Style: Reusable
NRR: 27
Shape: 4 Flange Tapered
Color: Blue
Dielectric: Yes
Size: Regular



FP42	Uncorded - 100 Box / 1000 Case
FP43	Corded - 100 Box / 1000 Case

Custom molded earplugs

- Molds in 10 minutes
- Soft, Permanent, Custom Fit
- All Day Comfort
- Easy to Follow Instructions
- Safe, Non-toxic
- Hypo-allergenic
- Environmentally Friendly
- Long Lasting and Washable



CEP001-T	Tan Polybag
CEP001-B	Blue Polybag
CEP001-O	Orange Polybag
CEP001-R	Red Polybag
CEP001-P	Pink Polybag



CEP032-MX 32 Count Jar 8 of each (Tan, Blue, Orange, Red)



CEPNC-R Red Lanyard
CEPNC-B Black Lanyard



CEPCASE PLASTIC CASE

Foam earplug dispensers

- Removable Plastic Top
- Mounting Bracket
- Counter Top Base
- Rotating Dispenser
- Concave Plug Holding Base



FPD250	Dispenser - Holds 250 Pair - 1 Box / 4 Case
FPD500	Dispenser - Holds 500 Pair - 1 Box / 4 Case

**Product Sold Separately*

TRPX™ HI-VIZ



Individually Packed In A Box

- Reflective material on headband
- Padded moisture wicking headband
- Soft, foam padded earcups
- Compact folding feature for easy storage

TR0HVO-BX	TRPX™ Earmuff Hi-Viz Orange
TR0HVG-BX	TRPX™ Earmuff Hi-Viz Yellow

TRPX™



Individually Packed In A Box

- Padded moisture wicking headband
- Soft, foam padded earcups
- Adjustable, reinforced headband with side wire guides
- Compact folding feature for easy storage

TR29-BX	TRPX™ Earmuff - Black and Grey
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Hearing Protection

Bluetooth hearing protector



- Bluetooth® Wireless Technology
- High Fidelity Speakers for Premium Sound
- Rechargeable Lithium Ion Battery (Micro-USB Connector Cable Included)
- Integrated Microphone for Phone Calls



DPG17	NRR 25 Bluetooth
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DEF-GUARD™

- Economical hearing protection
- Ultra lightweight, weighing less than 5 oz.
- Fully dielectric construction



DF0310HC	Def-Guard™ Red
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RADBAND 2
BANDED HEARING PROTECTION

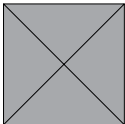


RB2120



Style: Reusable
NRR: 25
Shape: Pronged
Color: Orange
Dielectric: Yes
Material: Polyurethane Foam
Size: Regular

RB2100	Orange Band / Orange Pods
RB2120	Yellow Band / Orange Pods
FP-PODBAG	Replacement Pods / 1 pr



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Type R Class 2 & 3



SV22 S - 5XL

Economy vest with zipper

- Zipper Closure
- 2" Silver Reflective Material Tape
- 1 Horizontal Stripe
- 2 Pockets
- 100% Mesh Polyester Knit or
- 100% Solid Polyester Knit
- High-Visibility Green & Orange
- Meets ANSI/ISEA 107-2015 Standards



SV6 S - 5XL

Surveyor two-tone trim solid front - mesh backr

- Zipper Closure
- 2" Silver Reflective Material Tape
- 1" Contrasting Trim Detail
- Dual Mic Tabs
- 8 Pockets
- Large Cell/Radio Pocket with Clear ID Badge Holder
- Meets ANSI/ISEA 107-2015 Standards



SV59Z S - 5XL

Heavy duty surveyor with zipper

- Heavy Webbing Reinforced Edging
- Zipper Closure
- 2" Glass Bead Reflective Tape
- Mic Tab
- Grommets at Neck for Tool Tethers
- Large Cell/Radio Pocket with Clear ID Badge Holder, Plan Pocket
- 100% Polyester Mesh with Solid Knit Pockets
- High-Visibility Green & Orange
- Meets ANSI/ISEA 107-2015 Standards



ST11-2 & ST21-3 S - 5XL

MAX-DRI™ moisture wicking t-shirt

- 2" Premium Heat Transferred, Stretchable Reflective Tape
- 1 Horizontal Stripe
- Pockets: Left Chest
- 100% Wicking Polyester Mesh
- ANSI / ISEA 107-2015
- High-Visibility Green & Orange
- Meets ANSI/ISEA 107-2015 Standards



SV272-3 M - 5X

Multi-purpose surveyor vest

- Zipper Closure
- 2" Silver Tape Reflective Material
- Contrasting Trim
- 1 Horizontal Stripe
- Mic Tabs on Both Shoulders
- 4 Pockets
- 100% Polyester Mesh
- High-Visibility Green & Orange
- Meets ANSI/ISEA 107-2015 Standards



SV59Z-3 S - 5X

Heavy duty class 3 vest/zipper

- Heavy Webbing Reinforced Edging
- Zipper Closure
- 2" Glass Bead Reflective Tape
- Mic Tab
- Grommets at Neck for Tool Tethers
- Large Cell/Radio Pocket with Clear ID Badge Holder, Plan Pocket
- 100% Polyester Mesh with Solid Knit Pockets
- High-Visibility Green & Orange
- Meets ANSI/ISEA 107-2015 Standards

Type R Class 3 Jackets

SJ210B M - 5XL

Deluxe 3-in-1 bomber jacket

- Zip Out Removable Fleece Jacket
- Fleece Jacket Sleeves are lined for easy on/off
- PU Coated Oxford Polyester Weather Proof Shell
- Clear, Chest Badge Holder
- Concealed Attached Hood
- Dual Mic Tabs
- Elasticized Waistband and Wrist Cuffs with Closure
- 2" Silver Reflective Material Tape
- Covered Fleece Line Slash Pockets
- Cell Phone/Radio Chest Pocket
- Two Left Sleeve Pencil Pockets
- High-Visibility Green & Orange
- Meets ANSI/ISEA 107-2015 Standards



RW32-3Z1Y

Heavy duty ripstop waterproof rain jacket

SIZES: M, L, XL, 2X, 3X, 4X, 5X

- 300 Denier Ripstop Oxford with Waterproof & Breathable PU Coating
- Waterproof per ANSI/ISEA 107-2105 (AATCC 127 2008)
- Breathable per ANSI/ISEA 107-2015 (ASTME96-05)
- 3M® 8906 2" Silver Reflective Tape
- Vented Back Cape with D-Ring Pass Through
- Adjustable Elastic Sleeve Cuffs w/ Hook & Loop Closure
- Attached Stowable Hood
- Mic Tabs on Both Shoulders
- Zipper Front Closure w/ Snap Closure Storm Flap
- Two Lower Front Pockets, Flap Covered Chest
- Pocket, Chest Pocket, Fleece Lined Inside Pocket
- Meets ANSI/ISEA 107-2015 Standards



Ripstop material
Waterproof coating



RW32-EZ1Y

Heavy duty ripstop waterproof BIB rain pants



Vest/type R class E pants

SV22-1ZBM S - 5XL

Economy two-tone vest

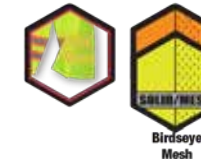
- Zipper Closure
- 2" Silver Reflective Tape
- 1 Horizontal Stripe
- Contrasting Trim Detail
- 2 Pockets
- 100% Polyester Mesh
- Black, Red or Blue
- Meets ANSI/ISEA 107-2015 Standards



SP61 M/L - 5X/6X

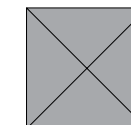
Class E surveyor pants

- 100% Polyester Mesh Bottom and 100% Polyester Solid Top
- 2" Silver Reflective Material Tape with Two-Tone Contrasting Trim
- 2 Upper Slash Through Pockets, 2 Back Pockets
- Full Length Zipper on Both Legs
- High-Visibility Green & Orange
- Meets ANSI/ISEA 107-2015 Standards



ANTI-STATIC PRODUCTS ARE AVAILABLE All High Visibility wear can be customized to meet your company's specifications

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PRODUCT SHEET
**RAMPTECH® LED
Safety Wand**

**Powerful illumination,
versatile design. Serious
durability.**

Safety, in all kinds of weather conditions, is among the most important demands on the ramp. The RAMPTECH® LED Safety Wand features 7 super-bright LEDs to create a 56 lumen 5mm output with the added benefit of a polycarbonate optical reflector. Plus, the magenta safety cone has an anodized aluminum ring to resist corrosion and also assure a strong hold even under the most rigorous use.

Powered by two D-cell batteries, the versatile RAMPTECH® LED Safety Wand can be used with or without the screw-off safety cone. There's also a soft push-button momentary on/off switch. The anti-skid design adds to the quality craftsmanship while unrivaled durability is provided by water/weather-resistant engineering along with an extra rugged shock-resistant ABS and aircraft grade hardened aluminum case.



7 powerful LEDs for a
bright lumen output

Anodized aluminum ring
for a stronger hold

Sold Separately:

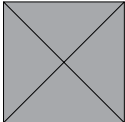
Industrial D-Cell Batteries (12 Pack)
Sage Part Number 132412

Sage
Part Number 256002



Features

- Water/Weather resistant and anti-skid
- 7 Powerful LEDs create a 56 lumen 5mm output with a polycarbonate optical reflector
- Magenta safety cone screws on/off with a machined aluminum ring for a stronger hold
- Anodized for corrosion resistance and durability
- Rugged shock resistant ABS and aircraft grade hardened aluminum case
- Soft push-button momentary on/off switch
- Powered by two (2) D-Cell batteries (not included)



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Solidgold® and Solidgold®+ 4.00x8 Solid Tire and Wheel Assemblies

Designed for superior performance

- Built to resist the harshest airport ramp conditions
- Exceptional service life
- Maximum stability and dependability

Sage parts engineered the **SOLIDGOLD® GSE** tire and wheel assemblies to deliver exceptional service life, dependability, and value for even the most demanding ground support operations.

Demanding GSE operations require the most reliable tires on the market and the **SOLIDGOLD®** and **SOLIDGOLD®+ 4.00X8** solid tire and wheel assemblies are constructed to meet every day operational demands with maximum stability, enhanced performance, and increased service life.

The **SOLIDGOLD®** series tires are designed as a low-rolling resist tire providing GSE operations with high durability and cost savings through less tire changes, better fuel consumption, and reduced equipment damage. The tread layers are made from proprietary formulated natural rubber compounds and cure times to provide long life and eliminate rubber chunking found in other brands.



Features

- Manufactured with only the highest-grade components
- Tread cap is produced with premium natural rubber compounds to provide a long and trouble-free life
- Friction base layer ensures maximum torque dispersion, proper stability, and handling
- Solid fabric base construction with soft, specialized outer layers
- Built with the finest quality two-piece rims, torqued to industry standards
- Recessed lug holes are designed for a snug and secure fit

ALL SOLIDGOLD® SERIES TIRES ARE SPECIALTY FORMULATED FOR ALL GSE OPERATIONS

