

VHP*	VGf	275GL/ATGL
F2895G	F18GL	12V-AT27GL
F2895GL	F18GSI	16V-AT27GL
F2895GSI	H24GL	12V275GL
F3521G	H24GSI	16V275GL
F3521GL	L36GL	12V275GL+
F3521GSI	L36GSI	16V275GL+
F3514/3524GSI	P48GL	
L5790G	P48GSI	
L5790GL		
L5790GSI		
L5794LT		
L5794GSI		
L7042G		
L7042GL		
L7042GSI		
L7044GSI		
P9390GL		
P9390GSI		
P9394GSI		

For more information click on the links below

*You will need to be logged into the portal for the following links to work.*

[Upgrade your Waukesha VHP S2 engine with S4 technology](#)

[Advanced Crankcase Breather Upgrade for Waukesha VHP gas engines](#)

[ESM2 with AFR2 Control Upgrade](#)

[VHP P9394GSI S4 ESM to P9394GSI S5 ESM2](#)

[VHP AFR2 Air-fuel ratio control for Waukesha rich-burn gas engines](#)

[Waukesha emPact Emission Control System Upgrade](#)

[VGf Lean-Burn Cylinder Head Upgrade](#)

[VHP Extender Upgrade](#)

[VHP Series 2 to xCooled Conversion](#)

[VHP Air Cleaner Upgrade](#)

[VGf GL to GSI Conversion](#)

[Upgrade your 275GL+ ESM1 to 275GL+ w/ESM2](#)

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Model ship dates and product scope are approximate. The actual upgrade scope and quotation will depend on engine serial number and current configuration of the engine being converted. Contact Waukesha sales manager for more information.

## F2895G

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 conversions (Click here for more information)</b>							
Stage I reUp	F2895G	1985 - 2000	Series Four upgrade	reUp Series Four cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	Contact Waukesha for BOM
Stage Ix reUp	F2895G	1985 - 2000	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	Contact Waukesha for BOM
Stage Ix	F2895G	1985 - 2000	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	Contact Waukesha for BOM
Stage III Plus <i>model conversion</i>	F2895G	1998 - 2000	F3524GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, intercooler, wastegate, ESM2, AFR2 <i>Requires increasing crankcase cylinder bore</i>	<b>Up to 464 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
Stage IV Plus <i>model conversion</i>	F2895G	1985 - 1998	F3524GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, intercooler, wastegate, ESM2, AFR2, crankshaft, connecting rods <i>Requires increasing crankcase cylinder bore</i>	<b>Up to 464 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>emPact (for engines converted to S4 GSI with ESM2) (Click here for more information)</b>							
Stage I	Converted F3524GSI with AFR2	1985 - 2000	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912B
Stage I	Converted F3524GSI with AFR2	1985 - 2000	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912A

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## F2895G

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Gas Regulator</b>							
	F2895G	1985 - 2000	Fisher S-200 gas regulator replacement	Fisher S-200 gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete S-200 gas regulators	S-200 gas regulator maintenance	(1) G-962-533

## F2895GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 GL to GSI conversions (<a href="#">Click here for more information</a>)</b>							
<b>Stage III Plus</b> <i>model conversion</i>	F2895GL	1998 - 2001	F3524GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, AFR2 <i>Requires increasing crankcase cylinder bore</i>	Up to 20% lifecycle extension, 55% reduction in oil consumption, <b>Up to 233 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage IV Plus</b> <i>model conversion</i>	F2895GL	1985 - 1998	F3524GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, AFR2, crankshaft, connecting rods <i>Requires increasing crankcase cylinder bore</i>	Up to 20% lifecycle extension, 55% reduction in oil consumption, <b>Up to 233 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>GL Extended Life Cylinder Head Rebuild (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b>	F2895GL	1985-2001	S2GL cylinder head rebuild kit	Rebuild kit with new exhaust valve, rotators, seats and springs.	60% longer time between top end interval	Top end overhaul	(6) G-962-1150
<b>emPact (for engines converted to S4 GSI with ESM2) (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b>	Converted F3524GSI with AFR2	1985 - 2001	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912B
<b>Stage I</b>	Converted F3524GSI with AFR2	1985 - 2001	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912A

## F2895GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 conversions (Click here for more information)</b>							
Stage I reUp	F2895GSI	1985 - 2000	Series Four upgrade	reUp Series Four cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	Contact Waukesha for BOM
Stage Ix reUp	F2895GSI	1985 - 2000	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	Contact Waukesha for BOM
Stage Ix	F2895GSI	1985 - 2000	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	Contact Waukesha for BOM
Stage III Plus <i>model conversion</i>	F2895GSI	1998 - 2000	F3524GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, AFR2 <i>Requires increasing crankcase cylinder bore</i>	Up to 20% lifecycle extension, 66% reduction in oil consumption, <b>Up to 233 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
Stage IV Plus <i>model conversion</i>	F2895GSI	1985 - 1998	F3524GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, AFR2, crankshaft, connecting rods <i>Requires increasing crankcase cylinder bore</i>	Up to 20% lifecycle extension, 66% reduction in oil consumption, <b>Up to 233 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>emPact (for engines converted to S4 GSI with ESM2) (Click here for more information)</b>							
Stage I	Converted F3524GSI with AFR2	1985 - 2000	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912B
Stage I	Converted F3524GSI with AFR2	1985 - 2000	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912A

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## F2895GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Gas Regulator</b>							
	F2895GSI	2003 - 2005	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1143

## F3521G

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 conversions (Click here for more information)</b>							
Stage I reUp	F3521G	1985 - 2014	Series Four upgrade	reUp Series Four cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-544
Stage Ix reUp	F3521G	1985 - 2014	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-544X
Stage Ix	F3521G	1985 - 2014	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) G-962-544X
Stage III <i>model conversion</i>	F3521G	1998 - 2014	F3524GSI conversion Series 4 upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, intercooler, wastegate, ESM2, AFR2	<b>Up to 384 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
Stage IV <i>model conversion</i>	F3521G	1985 - 1998	F3524GSI conversion Series 4 upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, intercooler, wastegate, ESM2, AFR2, crankshaft, connecting rods	<b>Up to 384 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>emPact (for engines converted to S4 GSI with ESM2) (Click here for more information)</b>							
Stage I	Converted F3524GSI with AFR2	1985 - 2014	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912B
Stage I	Converted F3524GSI with AFR2	1985 - 2014	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912A

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## F3521G

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Gas Regulator</b>							
	F3521G	1985 - 2014	Fisher S-200 gas regulator replacement	Fisher S-200 gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete S-200 gas regulators	S-200 gas regulator maintenance	(1) G-962-533



## F3521GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
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### S2 to S4 GL to GSI conversions [\(Click here for more information\)](#)

<b>Stage III</b> <i>model conversion</i>	F3521GL	1998 - 2006	F3524GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, AFR2	Up to 20% lifecycle extension, 55% reduction in oil consumption, <b>Up to 233 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage IV</b> <i>model conversion</i>	F3521GL	1985 - 1998	F3524GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, AFR2, crankshaft, connecting rods	Up to 20% lifecycle extension, 55% reduction in oil consumption, <b>Up to 233 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM

### GL Extended Life Cylinder Head Rebuild [\(Click here for more information\)](#)

<b>Stage I</b>	F3521GL	1985-2006	S2GL cylinder head rebuild kit	Rebuild kit with new exhaust valve, rotators, seats and springs.	60% longer time between top end interval	Top end overhaul	(6) G-962-1150
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### emPact (for engines converted to S4 GSI with ESM2) [\(Click here for more information\)](#)

<b>Stage I</b>	Converted F3524GSI with AFR2	1985 - 2006	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912B
<b>Stage I</b>	Converted F3524GSI with AFR2	1985 - 2006	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912A

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## F3521GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Gas Regulator</b>							
	F3521GL	2003 - 2006	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1143

## F3521GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 conversions (Click here for more information)</b>							
<b>Stage I reUp</b>	F3521GSI	1985 - 2005	Series Four upgrade	reUp Series Four cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-544
<b>Stage Ix reUp</b>	F3521GSI	1985 - 2005	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-544X
<b>Stage Ix</b>	F3521GSI	1985 - 2005	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) G-962-544X
<b>Stage II reUp</b>	F3521GSI	1985 - 2005	Series Four upgrade with power cylinders	reUp Series Four cylinder heads and rocker arms, head components, oil header, new piston, rings, liner (PRL) , CEC ignition harness, ignition coils	Up to 60% lifecycle extension, 66% reduction in oil consumption	Top / Bottom End Overhaul	(1) REM-G-962-545
<b>Stage IIx reUp</b>	F3521GSI	1985 - 2005	xCooled upgrade with power cylinders	reUp xCooled cylinder heads and rocker arms, head components, oil header, new piston, rings, liner (PRL) , CEC ignition harness, ignition coils	Up to 60% lifecycle extension, 66% reduction in oil consumption	Top / Bottom End Overhaul	(1) REM-G-962-545X
<b>Stage IIx</b>	F3521GSI	1985 - 2005	xCooled upgrade with power cylinders	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL) , CEC ignition harness, ignition coils	Up to 60% lifecycle extension, 66% reduction in oil consumption	Top / Bottom End Overhaul	(1) G-962-545X
<b>Stage III model conversion</b>	F3521GSI	1998 - 2005	F3524GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, AFR2	Up to 20% lifecycle extension, 66% reduction in oil consumption, <b>Up to 100 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage IV model conversion</b>	F3521GSI	1985 - 1998	F3524GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, AFR2, crankshaft, connecting rods	Up to 20% lifecycle extension, 66% reduction in oil consumption, <b>Up to 100 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI industrial PC	Top / Bottom End Overhaul	Contact Waukesha for BOM

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## F3521GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>emPact (for engines converted to Series Four GSI with ESM2) (<a href="#">Click here for more information</a>)</b>							
Stage I	converted F3524GSI with AFR2	1985 - 2005	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912B
Stage I	converted F3524GSI with AFR2	1985 - 2005	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring.	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495912A
<b>Gas Regulator</b>							
	F3521GSI	2003 - 2005	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1143

## F3514GSI/F3524GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>xCooled Cylinder head upgrade</b>							
	F3514GSI/ F3524GSI	1998 - 2017	xCooled cylinder head upgrade	xCooled cylinder head with enhanced cooling	Enhanced cooling reduces cylinder head component temperatures by up to 40%, reducing thermal stresses to improve cylinder head reliability in harsh conditions operating on high BTU fuels	Top end overhaul	(6) NWC-AA205002H
<b>SPARC Cylinder head conversion (<a href="#">Click here for more information</a>)</b>							
	F3514GSI/ F3524GSI	1998 - 2015	SPARC cylinder head conversion	New spark plug sleeve and spark plug sleeve extension to new SPARC system	Improved spark plug sleeve sealing, better corrosion resistance, new o-ring sealing new design prevents improper sleeve installation	Cylinder head maintenance	(6) G-962-1117
<b>ESM2 with AFR2 conversions (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b>	F3514GSI/ F3524GSI	1998 - 2000	ESM2	ESM2, harnesses and mounting brackets, power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, flywheel, flywheel housing, gear housing, cam timing disc, IPMD2.	<b>ESM2</b> - Increased uptime with knock detection, fault diagnostics, troubleshooting guide, improved engine performance with factory calibrated operating parameters. HMI, advanced diagnostics, remote monitoring capability, integrated exhaust and main bearing thermocouples <b>AFR2</b> - includes AFR2 benefits <b>IPMD2</b> - Extended spark plug life up to 4,000 operating hour	Existing control system maintenance or failure	(1) G-962-1172
<b>Stage II</b>	F3514GSI/ F3524GSI	2000 - 2003	ESM2	ESM2, harnesses and mounting brackets, power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, IPMD2.			(1) G-962-1173
<b>Stage III</b>	F3514GSI/ F3524GSI	2003 - 2010	ESM2	ESM2, harnesses and mounting brackets, power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, new gas regulators, IPMD2.			(1) G-962-1174
<b>Stage IV</b>	F3514GSI/ F3524GSI	2010 - 2016	ESM2	ESM2, harnesses and mounting brackets, power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, IPMD2.			(1) G-962-1173

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## F3514GSI/F3524GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Advanced Breather System (<a href="#">Click here for more information</a>)</b>							
	F3514GSI/ F3524GSI	1998 - 2018	Advanced Breather System	Closed breather system with centrifugal oil separation and automatic regulating valve	No adjustment needed for changes in speed/load. No maintenance until major overhaul	Anytime	(1) G-962-1193
<b>emPact (for engines shipped with or upgraded to ESM2) (<a href="#">Click here for more information</a>)</b>							
	F3514GSI/ F3524GSI	Any model with ESM2	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather and ESM2.</b>	emPact - Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair	(1) 495912B
	F3514GSI/ F3524GSI	Any model with ESM2	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather and ESM2.</b>	emPact - Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair	(1) 495912A
<b>IPMD2 and spark plug upgrade</b>							
	F3524GSI	Any model with ESM2	IPMD2	New Ignition Power Module with Diagnostics (IPMD2) with optimized voltage profile, one new set of non-precious metal spark plugs	Extended spark plug life up to 4,000 operating hours. Improved combustion to reduce cylinder misfire. Simple "plug and play" installation without any software changes	Spark plug replacement	(1) G-962-1235

## L5790G

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 conversions (Click here for more information)</b>							
Stage I reUp	L5790G	1985 - 2014	Series Four upgrade	reUp Series Four cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-551
Stage Ix reUp	L5790G	1985 - 2014	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-551X
Stage Ix	L5790G	1985 - 2014	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) G-962-551X
Stage III <i>model conversion</i>	L5790G	1998 - 2014	L5794GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, intercooler, wastegate, ESM2, advanced breather	<b>Up to 630 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
Stage III Plus <i>model conversion</i>	L5790G	1998 - 2014	L7044GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, intercooler, wastegate, ESM2, advanced breather <i>Requires increasing crankcase cylinder bore</i>	<b>Up to 930 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
Stage IV <i>model conversion</i>	L5790G	1985 - 1998	L5794GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather, crankshaft, connecting rods	<b>Up to 630 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
Stage IV Plus <i>model conversion</i>	L5790G	1985 - 1998	L7044GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather, crankshaft, connecting rods. <i>Requires increasing crankcase cylinder bore</i>	<b>Up to 930 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM

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## L5790G

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>emPact (for engines converted to S4 GSI with ESM2) (<a href="#">Click here for more information</a>)</b>							
Stage I	converted L5794GSI or L7044GSI	1985 - 2005	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911B
Stage I	converted L5794GSI or L7044GSI	1985 - 2005	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911A
<b>Gas Regulator</b>							
	L5790G	1985 - 2014	Fisher S-200 gas regulator replacement	Fisher S-200 gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete S-200 gas regulators	S-200 gas regulator maintenance	(1) G-962-534
<b>Front Gear Housing</b>							
	L5790G	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L5790G	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285



## L5790GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 GL to GSI conversions (<a href="#">Click here for more information</a>)</b>							
<b>Stage III</b> <i>model conversion</i>	L5790GL	1998 - 2005	L5794GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather	Up to 20% lifecycle extension, 55% reduction in oil consumption, <b>Up to 165 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage III Plus</b> <i>model conversion</i>	L5790GL	1998 - 2005	L7044GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather <i>Requires increasing crankcase cylinder bore</i>	Up to 20% lifecycle extension, 55% reduction in oil consumption, <b>Up to 165 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage IV</b> <i>model conversion</i>	L5790GL	1985 - 1998	L5794GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather, crankshaft, connecting rods	Up to 20% lifecycle extension, 55% reduction in oil consumption, <b>Up to 165 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage IV Plus</b> <i>model conversion</i>	L5790GL	1985 - 1998	L7044GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather, crankshaft, connecting rods <i>Requires increasing crankcase cylinder bore</i>	Up to 20% lifecycle extension, 55% reduction in oil consumption, <b>Up to 465 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>S2 to S4 GL to LT conversions (<a href="#">Click here for more information</a>)</b>							
<b>Stage III</b> <i>model conversion</i>	L5790GL	1998 - 2005	L5794LT conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM, advanced breather	Up to 25% lifecycle extension 60% reduction in oil consumption <b>up to 235 more BHP</b> ESM control with knock detection	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage IV</b> <i>model conversion</i>	L5790GL	1985 - 1998	L5794LT conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM, advanced breather, crankshaft, connecting rods	Up to 25% lifecycle extension 60% reduction in oil consumption <b>up to 235 more BHP</b> ESM control with knock detection	Top / Bottom End Overhaul	Contact Waukesha for BOM

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>GL Extended Life Cylinder Head Rebuild (<a href="#">Click here for more information</a>)</b>							
Stage I	L5790GL	1985-2005	S2GL cylinder head rebuild kit	Rebuild kit with new exhaust valve, rotators, seats and springs.	60% longer time between top end interval	Top end overhaul	(12) G-962-1150
<b>emPact (for engines converted to S4 GSI with ESM2) (<a href="#">Click here for more information</a>)</b>							
Stage I	converted L5794GSI or L7044GSI	1985 - 2005	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911B
Stage I	converted L5794GSI or L7044GSI	1985 - 2005	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911A
<b>Advanced Breather System (<a href="#">Click here for more information</a>)</b>							
	L5790GL	1985 - 2005	Advanced Breather System, shallow oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-541
<b>Extender Series (<a href="#">Click here for more information</a>)</b>							
	L5790GL	1985 - 2005	Extender Series for shallow oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration	High efficiency air cleaner with 70% more dirt holding capacity, Microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters.		Contact Waukesha for BOM

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
	L5790GL	1985 - 2005	Extender Series with deep sump oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration, deep sump oil pan	High efficiency air cleaner with 70% more dirt holding capacity, microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters, 2x oil capacity to extend oil change intervals		Contact Waukesha for BOM

### Gas Regulator

	L5790GL	2003 - 2005	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1147
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### Air Cleaner [\(Click here for more information\)](#)

<b>Stage I</b>	L5790GSI	1985 - 2005	Improved air cleaner for standard rain shield applications	Bolted hinge blow-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1153
<b>Stage II</b>	L5790GSI	1985 - 2005	Improved air cleaner for inertia precleaner applications	Bolted hinge blow-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1157
<b>Stage III</b>	L5790GSI	1985 - 2005	Improved air cleaner for remote air inlet applications	Bolted hinge blow-thru air cleaner with inverted 8 inch air inlet connection	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. Inverted 8 inch air inlet connection allows use of piping for external air inlet	Air cleaner maintenance	(1) G-962-1159

### Front Gear Housing

	L5790GL	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L5790GL	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285

## L5790GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 conversions (Click here for more information)</b>							
<b>Stage I reUp</b>	L5790GSI	1985 - 2005	Series Four upgrade	reUp Series Four cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-551
<b>Stage Ix reUp</b>	L5790GSI	1985 - 2005	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-551X
<b>Stage Ix</b>	L5790GSI	1985 - 2005	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) G-962-551X
<b>Stage II reUp</b>	L5790GSI	1985 - 2005	Series Four upgrade	reUp Series Four cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-552
<b>Stage Iix reUp</b>	L5790GSI	1985 - 2005	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-552X
<b>Stage Iix</b>	L5790GSI	1985 - 2005	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) G-962-552X
<b>Stage III</b> <i>model conversion</i>	L5790GSI	1998 - 2005	L5794GSI conversion Series 4 upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather	Up to 20% lifecycle extension, 66% reduction in oil consumption, <b>Up to 165 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage III Plus</b> <i>model conversion</i>	L5790GSI	1998 - 2005	L7044GSI conversion Series 4 upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather <i>Requires increasing crankcase cylinder bore</i>	Up to 20% lifecycle extension, 66% reduction in oil consumption, <b>Up to 465 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage IV</b> <i>model conversion</i>	L5790GSI	1985 - 1998	L5794GSI conversion Series 4 upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather, crankshaft, connecting rods	Up to 20% lifecycle extension, 66% reduction in oil consumption, <b>Up to 165 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage IV Plus</b> <i>model conversion</i>	L5790GSI	1985 - 1998	L7044GSI conversion Series 4 upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather, crankshaft, connecting rods <i>Requires increasing crankcase cylinder bore</i>	Up to 20% lifecycle extension, 66% reduction in oil consumption, <b>Up to 465 more BHP</b> , ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>emPact (for engines converted to S4 GSI with ESM2) (<a href="#">Click here for more information</a>)</b>							
Stage I	converted L5794GSI or L7044GSI	2010 - Present	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911B
Stage I	converted L5794GSI or L7044GSI	2010 - Present	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911A
<b>Advanced Breather System (<a href="#">Click here for more information</a>)</b>							
	L5790GSI	1985 - 2005	Advanced Breather System, shallow oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-541
<b>Extender Series (<a href="#">Click here for more information</a>)</b>							
	L5790GSI	1985 - 2005	Extender Series for shallow oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration	High efficiency air cleaner with 70% more dirt holding capacity, Microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters.		Contact Waukesha for BOM
	L5790GSI	1985 - 2005	Extender Series with deep sump oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration, deep sump oil pan	High efficiency air cleaner with 70% more dirt holding capacity, Microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters, 2x oil capacity to extend oil change intervals		Contact Waukesha for BOM

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## L5790GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Gas Regulator</b>							
	L5790GSI	2003 - 2005	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1146
<b>Air Cleaner <a href="#">(Click here for more information)</a></b>							
<b>Stage I</b>	L5790GSI	1985 - 2005	Improved air cleaner for standard rain shield applications	Bolted hinge blow-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1153
<b>Stage II</b>	L5790GSI	1985 - 2005	Improved air cleaner for inertia precleaner applications	Bolted hinge blow-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1157
<b>Stage III</b>	L5790GSI	1985 - 2005	Improved air cleaner for remote air inlet applications	Bolted hinge blow-thru air cleaner with inverted 5.5 inch air inlet connection	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. Inverted 5.5 inch air inlet connection allows use of piping for external air inlet	Air cleaner maintenance	(1) G-962-1158
<b>Front Gear Housing</b>							
	L5790GSI	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L5790GSI	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285

## L5794LT

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>SPARC Cylinder head conversion (<a href="#">Click here for more information</a>)</b>							
	L5794LT	1998 - 2015	SPARC cylinder head conversion	New spark plug sleeve and spark plug sleeve extension to new SPARC system	Improved spark plug sleeve sealing, better corrosion resistance, new o-ring sealing new design prevents improper sleeve installation	Cylinder head maintenance	(12) G-962-1117
<b>LT to GSI conversion (<a href="#">Click here for more information</a>)</b>							
<b>Stage III</b> <i>model conversion</i>	L5794LT	2004 - current	L5794GSI conversion	reUp Series Four cylinder heads and rocker arms, new piston, rings, liner (PRL), turbocharger, wastegate, ESM calibration, AFR2, advanced breather	Rich-burn fuel flexibility Low emissions capability with emPact AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul, Emissions regulation	Contact Waukesha for BOM
<b>Stage III</b> <i>model conversion</i>	L5794LT	2000 - 2004	L5794GSI conversion with ESM2	reUp Series Four cylinder heads and rocker arms, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather	Rich-burn fuel flexibility Low emissions capability with emPact ESM2 control with knock detection AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul, Emissions regulation	Contact Waukesha for BOM
<b>Stage III Plus</b> <i>model conversion</i>	L5794LT	2004 - current	Conversion to L7044GSI	reUp cylinder heads and rocker arms, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM calibration, advanced breather. <i>Requires increasing crankcase cylinder bore</i>	Up to 10% lifecycle extension, 66% reduction in oil consumption, <b>Up to 230 more BHP,</b> AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
<b>Stage III Plus</b> <i>model conversion</i>	L5794LT	2000 - 2004	Conversion to L7044GSI with ESM2	reUp Series Four cylinder heads and rocker arms, head components, oil header, new piston, rings, liner (PRL), turbocharger, wastegate, ESM2, advanced breather <i>Requires increasing crankcase cylinder bore</i>	Up to 10% lifecycle extension, 66% reduction in oil consumption, <b>Up to 230 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>ESM (Click here for more information)</b>							
Stage II	L5794LT	2000 - 2004	ESM	ESM, Harnesses and mounting brackets	Increased uptime with knock detection, fault diagnostics, troubleshooting guide, extended spark plug life, improved engine performance with factory calibrated operating parameters. Latest harness design simplifies fault troubleshooting and maintenance	Existing control system maintenance or failure	G-962-1206
<b>emPact (for engines converted to S4 GSI with ESM2) (Click here for more information)</b>							
Stage I	converted L5794GSI	engines already upgraded to L5794GSI	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair or replacement of AFR1 stepper motors, harnesses, or gas regulators	(1) 495911B
Stage I	converted L5794GSI	engines already upgraded to L5794GSI	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair or replacement of AFR1 stepper motors, harnesses, or gas regulators	(1) 495911A
<b>ESM harness upgrade (Click here for more information)</b>							
Stage I	L5794LT	2003 - 2007	ESM wireways and power distribution box	New wireway harnesses and mounting brackets, new knock sensors, ECU calibration, new ignition coils with integrated harness, power distribution box and mounting brackets.	Redesigned harness simplifies fault troubleshooting and maintenance. New power distribution box simplifies customer wiring connections and includes circuit fault protection, fault indicators, fault reset functions, enhanced noise suppression, and water protection improvements.	Repair or replacement of harnesses or power distribution box	G-962-1207
Stage III	L5794LT	2007 - 2015	ESM wireways	New wireway harnesses and mounting brackets, new ignition coils with integrated harness		Repair or replacement of harnesses	(1) G-962-1127

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Advanced Breather System (Click here for more information)</b>							
	L5794LT	2000 - 2015	Advanced Breather System for shallow oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-541
	L5794LT	2007 - 2015	Advanced Breather System for deep sump oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-540
<b>Extender Series (Click here for more information)</b>							
	L5794LT	1998 - 2007	Extender Series for shallow oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration	High efficiency air cleaner with 70% more dirt holding capacity, Microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters.		Contact Waukesha for BOM
	L5794LT	1998 - 2007	Extender Series with deep sump oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration, deep sump oil pan	High efficiency air cleaner with 70% more dirt holding capacity, microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters, 2x oil capacity to extend oil change intervals		Contact Waukesha for BOM
<b>Gas Regulator</b>							
	L5794LT	2003 - 2007	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1147

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Air Cleaner (Click here for more information)</b>							
Stage I	L5794LT	1998 - 2015	Improved air cleaner for standard rain shield applications	Bolted hinge blow-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1153
Stage II	L5794LT	1998 - 2015	Improved air cleaner for inertia precleaner applications	Bolted hinge blow-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1157
Stage III	L5794LT	1998 - 2015	Improved air cleaner for remote air inlet applications	Bolted hinge blow-thru air cleaner with inverted 8 inch air inlet connection	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. Inverted 8 inch air inlet connection allows use of piping for external air inlet	Air cleaner maintenance	(1) G-962-1159
Stage I	L5794LTD	1998 - 2015	Improved air cleaner for standard rain shield applications	Bolted hinge draw-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1160
Stage II	L5794LTD	1998 - 2015	Improved air cleaner for inertia precleaner applications	Bolted hinge draw-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1161
<b>Front Gear Housing</b>							
	L5794LT	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L5794LT	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285

## L5794GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>xCooled Cylinder head upgrade</b>							
	L5794GSI	1998 - 2017	xCooled cylinder head upgrade	xCooled cylinder head with enhanced cooling	Enhanced cooling reduces cylinder head component temperatures by up to 40%, reducing thermal stresses to improve cylinder head reliability in harsh conditions operating on high BTU fuels	Top end overhaul	(12) NWC-AA205002H
<b>SPARC Cylinder head conversion (<a href="#">Click here for more information</a>)</b>							
	L5794GSI	1998 - 2015	SPARC cylinder head conversion	New spark plug sleeve and spark plug sleeve extension to new SPARC system	Improved spark plug sleeve sealing, better corrosion resistance, new o-ring sealing new design prevents improper sleeve installation	Cylinder head maintenance	(12) G-962-1117
<b>ESM2 with AFR2 conversions (<a href="#">Click here for more information</a>)</b>							
	L5794GSI	1998 - 2000	ESM2 with AFR2 (for use with shallow sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, flywheel, flywheel housing, gear housing, cam timing disc, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.	<b>ESM2</b> - Increased uptime with knock detection, fault diagnostics, troubleshooting guide, improved engine performance with factory calibrated operating parameters. HMI, advanced diagnostics, remote monitoring capability, integrated exhaust and main bearing thermocouples <b>AFR2</b> - Simplified step-by-step air/fuel ratio setup from HMI screen, automatic adjustments to changes in operating conditions, simplified fuel control valve provides fast response for changes in ambient and operating conditions, redesigned harness simplifies fault troubleshooting and maintenance <b>IPMD2</b> - Extended spark plug life up to 4,000 operating hours		(1) G-962-1185
	L5794GSI	2000 - 2003	ESM2 with AFR2 (for use with shallow sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.		(1) G-962-1187	
	L5794GSI	2003 - 2007	ESM2 with AFR2 (for use with shallow sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, new gas regulators, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.		Existing control system maintenance or failure	(1) G-962-1186
	L5794GSI	2007 - 2010	ESM2 with AFR2 (for use with deep sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, new gas regulators, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.		(1) G-962-1188	
	L5794GSI	2010-2016	ESM2 with AFR2 (for use with deep sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.		(1) G-962-1189	

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## L5794GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>emPact (for engines shipped with or upgraded to ESM2) (<a href="#">Click here for more information</a>)</b>							
	L5794GSI	Any model with ESM2	emPact	emPact for 0.15g Nox, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather and ESM2.</b>	emPact - Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair	(1) 495911B
	L5794GSI	Any model with ESM2	emPact	emPact for 1.0g Nox, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather and ESM2.</b>	emPact - Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair	(1) 495911A
<b>ESM harness upgrade (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b>	L5794GSI	2003 - 2007	ESM wireways and power distribution box	New wireway harnesses and mounting brackets, new knock sensors, new ignition coils with integrated harness, power distribution box and mounting brackets.	Redesigned harness simplifies fault troubleshooting and maintenance. New power distribution box simplifies customer wiring connections and includes circuit fault protection, fault indicators, fault reset functions, enhanced noise suppression, and water protection improvements.	Repair or replacement of harnesses or power distribution box	(1) G-962-1209
<b>Stage III</b>	L5794GSI	2007 - 2015	ESM wireways	New wireway harnesses and mounting brackets, new ignition coils with integrated harness		Repair or replacement of harnesses	(1) G-962-1118
<b>Advanced Breather System (<a href="#">Click here for more information</a>)</b>							
	L5794GSI	1998 - 2015	Advanced Breather System for shallow oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-541
	L5794GSI	2007 - 2015	Advanced Breather System for deep sump oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-540

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
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### IPMD2 and spark plug upgrade

	L5794GSI	Any model with ESM2	IPMD2	New Ignition Power Module with Diagnostics (IPMD2) with optimized voltage profile, one new set of non-precious metal spark plugs	Extended spark plug life up to 4,000 operating hours. Improved combustion to reduce cylinder misfire. Simple "plug and play" installation without any software changes	Spark plug replacement	(1) G-962-1236
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### Extender Series ([Click here for more information](#))

	L5794GSI	1998 - 2007	Extender Series for shallow oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration	High efficiency air cleaner with 70% more dirt holding capacity, Microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters.		Contact Waukesha for BOM
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	L5794GSI	1998 - 2007	Extender Series with deep sump oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration, deep sump oil pan	High efficiency air cleaner with 70% more dirt holding capacity, microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters, 2x oil capacity to extend oil change intervals		Contact Waukesha for BOM
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### Gas Regulator

	L5794GSI	2003 - 2007	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets. For use on engines without ESM.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1146
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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Air Cleaner <a href="#">(Click here for more information)</a></b>							
Stage I	L5794GSI	1998 - 2015	Improved air cleaner for standard rain shield applications	Bolted hinge blow-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1153
Stage II	L5794GSI	1998 - 2015	Improved air cleaner for inertia precleaner applications	Bolted hinge blow-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1157
Stage III	L5794GSI	1998 - 2015	Improved air cleaner for remote air inlet applications	Bolted hinge blow-thru air cleaner with inverted 5.5 inch air inlet connection	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. Inverted 5.5 inch air inlet connection allows use of piping for external air inlet	Air cleaner maintenance	(1) G-962-1158
Stage I	L5794GSID	1998 - 2015	Improved air cleaner for standard rain shield applications	Bolted hinge draw-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1160
Stage II	L5794GSID	1998 - 2015	Improved air cleaner for inertia precleaner applications	Bolted hinge draw-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1161
<b>Front Gear Housing</b>							
	L5794GSI	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L5794GSI	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285

## L7042G

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 conversions (Click here for more information)</b>							
Stage I reUp	L7042G	1985 - 2014	Series Four upgrade	reUp Series Four cylinder heads and rocker arms,, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-536
Stage Ix reUp	L7042G	1985 - 2014	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-536X
Stage Ix	L7042G	1985 - 2014	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) G-962-536X
Stage III <i>model conversion</i>	L7042G	1998 - 2014	L7044GSI conversion Series Four upgrade with power cylinders, power uprate	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, intercooler, wastegate, ESM2, advanced breather	<b>Up to 768 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM
Stage IV <i>model conversion</i>	L7042G	1985 - 1998	L7044GSI conversion Series Four upgrade with power cylinders, power uprate, with crankshaft and connecting rods	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), turbocharger, intercooler, wastegate, ESM2, advanced breather, crankshaft, connecting rods	<b>Up to 768 more BHP,</b> ESM2 control with knock detection, AFR2 air/fuel ratio control with HMI	Top / Bottom End Overhaul	Contact Waukesha for BOM

### emPact (for engines converted to S4 GSI with ESM2) (Click here for more information)

Stage I	converted L7044GSI	2010 - 2015	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911B
Stage I	converted L7044GSI	2010 - 2015	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911A

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## L7042G

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Gas Regulator</b>							
	L7042G	1985 - 2014	Fisher S-200 gas regulator replacement	Fisher S-200 gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete S-200 gas regulators	S-200 gas regulator maintenance	(1) G-962-534
<b>Front Gear Housing</b>							
	L7042G	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L7042G	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285



## L7042GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 model conversions</b>							
reUp	L7042GSI	1988 - 1998	S4 model conversion utilizing reUp	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler, new crankshaft	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) REM-G-962-S5F (1) G-962-S5D (1) G-962-S5E (1) A200411E
reUp	L7042GSI	1998 - 2001	S4 model conversion utilizing reUp	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) REM-G-962-S5F (1) G-962-S5D (1) G-962-S5E
reUp	L7042GSI	2001 - 2007	S4 model conversion utilizing reUp	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) REM-G-962-S5F (1) G-962-S5C (1) G-962-S5E
reUp	L7042GSI	2008 - 2014	S4 model conversion utilizing reUp	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) REM-G-962-S5F (1) G-962-S5E

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## L7042GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 model conversions (continued)</b>							
New	L7042GSI	1988 - 1998	S4 model conversion	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) G-962-S5F (1) G-962-S5D (1) G-962-S5E (1) A200411E
New	L7042GSI	1998 - 2001	S4 model conversion	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) G-962-S5F (1) G-962-S5D (1) G-962-S5E
New	L7042GSI	2001 - 2007	S4 model conversion	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) G-962-S5F (1) G-962-S5C (1) G-962-S5E
New	L7042GSI	2008 - 2014	S4 model conversion	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) G-962-S5F (1) G-962-S5E

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S5 model conversions</b>							
reUp	L7042GL	1988 - 1998	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler, new crankshaft	Up to 28% more power, better fuel flexibility, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) REM-G-962-S5F (1) G-962-S5D (1) G-962-S5E (1) A200411E
reUp	L7042GL	1998 - 2001	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 28% more power, better fuel flexibility, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) REM-G-962-S5F (1) G-962-S5D (1) G-962-S5E
reUp	L7042GL	2001 - 2007	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 28% more power, better fuel flexibility, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) REM-G-962-S5F (1) G-962-S5C (1) G-962-S5E
reUp	L7042GL	2008 - 2014	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 28% more power, better fuel flexibility, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) REM-G-962-S5F (1) G-962-S5E

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S5 model conversions (continued)</b>							
New	L7042GL	1988 - 1998	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 28% more power, better fuel flexibility, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5F (1) G-962-S5D (1) G-962-S5E (1) A200411E
New	L7042GL	1998 - 2001	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 28% more power, better fuel flexibility, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5F (1) G-962-S5D (1) G-962-S5E
New	L7042GL	2001 - 2007	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 28% more power, better fuel flexibility, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5F (1) G-962-S5C (1) G-962-S5E
New	L7042GL	2008 - 2014	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, intake manifolds and fuel system for GSI engines, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 28% more power, better fuel flexibility, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5F (1) G-962-S5E

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## L7042GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>GL Extended Life Cylinder Head Rebuild (<a href="#">Click here for more information</a>)</b>							
Stage I	L7042GL	1985-2015	S2GL cylinder head rebuild kit	Rebuild kit with new exhaust valve, rotators, seats and springs.	60% longer time between top end interval	Top End Overhaul	(12) G-962-1150
<b>ESM (<a href="#">Click here for more information</a>)</b>							
Stage I	L7042GL	1985 - 2000	ESM	ESM, Harnesses and mounting brackets, flywheel, flywheel housing, gear housing, cam timing disc.	<b>ESM</b> - Increased uptime with knock detection, fault diagnostics, troubleshooting guide, extended spark plug life, improved engine performance with factory calibrated operating parameters.	Existing control system maintenance or failure	G-962-1210
Stage II	L7042GL	2000 - 2005	ESM	ESM, Harnesses and mounting brackets		Existing control system maintenance or failure	G-962-1211
<b>emPact (for engines converted to S4 GSI with ESM2) (<a href="#">Click here for more information</a>)</b>							
Stage I	converted L7044GSI	2010 - 2015	emPact	emPact for 0.15g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather.</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911B
Stage I	converted L7044GSI	2010 - 2015	emPact	emPact for 1.0g NOx, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather.</b>	Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.		(1) 495911A
<b>ESM harness upgrade (<a href="#">Click here for more information</a>)</b>							
Stage I	L7042GL	2005 - 2007	ESM wireways and power distribution box	New wireway harnesses and mounting brackets, new knock sensors, ECU calibration, power distribution box and mounting brackets, and ignition coil harnesses.	Redesigned harness simplifies fault troubleshooting and maintenance. New power distribution box simplifies customer wiring connections and includes circuit fault protection, fault indicators, fault reset functions, enhanced noise suppression, and water protection improvements.	Repair or replacement of harnesses or power distribution box	(1) G-962-1212

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
Stage III	L7042GL	2007 - 2015	ESM wireways	New wireway harnesses and mounting brackets, and ignition coil harnesses.		Repair or replacement of harnesses	(1) G-962-1128
<b>Advanced Breather System (Click here for more information)</b>							
	L7042GL	1985 - 2015	Advanced Breather System for shallow oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-541
	L7042GL	2007 - 2015	Advanced Breather System for deep sump oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-540
<b>Extender Series (Click here for more information)</b>							
	L7042GL	1985 - 2007	Extender Series for shallow oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration	High efficiency air cleaner with 70% more dirt holding capacity, Microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters.		Contact Waukesha for BOM
	L7042GL	1985 - 2007	Extender Series with deep sump oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration, deep sump oil pan	High efficiency air cleaner with 70% more dirt holding capacity, microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters, 2x oil capacity to extend oil change intervals		Contact Waukesha for BOM
<b>Gas Regulator</b>							
	L7042GL	2003 - 2010	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1147

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Air Cleaner (<a href="#">Click here for more information</a>)</b>							
Stage I	L7042GL	1985 - 2015	Improved air cleaner for standard rain shield applications	Bolted hinge blow-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1153
Stage II	L7042GL	1985 - 2015	Improved air cleaner for inertia precleaner applications	Bolted hinge blow-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1157
Stage III	L7042GL	1985 - 2015	Improved air cleaner for remote air inlet applications	Bolted hinge blow-thru air cleaner with inverted 8 inch air inlet connection	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. Inverted 8 inch air inlet connection allows use of piping for external air inlet	Air cleaner maintenance	(1) G-962-1159
Stage I	L7042GLD	1985 - 2015	Improved air cleaner for standard rain shield applications	Bolted hinge draw-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1160
Stage II	L7042GLD	1985 - 2015	Improved air cleaner for inertia precleaner applications	Bolted hinge draw-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1161
<b>Front Gear Housing</b>							
	L7042GL	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L7042GL	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285

## L7042GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 conversions (Click here for more information)</b>							
Stage I reUp	L7042GSI	1985 - 2014	Series Four upgrade	reUp Series Four cylinder heads and rocker arms,, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-536
Stage Ix reUp	L7042GSI	1985 - 2014	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-536X
Stage Ix	L7042GSI	1985 - 2014	xCooled upgrade	New xCooled cylinder heads, head components, oil header, CEC ignition harness, ignition coils	Up to 60% lifecycle extension	Top End Overhaul	(1) G-962-536X
Stage II reUp	L7042GSI	1985 - 2014	Series Four upgrade with power cylinders	reUp Series Four cylinder heads and rocker arms, head components, oil header, new piston, rings, liner (PRL), CEC ignition harness, ignition coils	Up to 60% lifecycle extension, 66% reduction in oil consumption	Top / Bottom End Overhaul	(1) REM-G-962-543
Stage Iix reUp	L7042GSI	1985 - 2014	xCooled upgrade with power cylinders	reUp xCooled cylinder heads and rocker arms, head components, oil header, new piston, rings, liner (PRL), CEC ignition harness, ignition coils	Up to 60% lifecycle extension, 66% reduction in oil consumption	Top / Bottom End Overhaul	(1) REM-G-962-543X
Stage Iix	L7042GSI	1985 - 2014	xCooled upgrade with power cylinders	New xCooled cylinder heads, head components, oil header, new piston, rings, liner (PRL), CEC ignition harness, ignition coils	Up to 60% lifecycle extension, 66% reduction in oil consumption	Top / Bottom End Overhaul	(1) G-962-543X

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## L7042GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 model conversions</b>							
reUp	L7042GSI	1988 - 1998	S4 model conversion utilizing reUp	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler, new crankshaft	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) REM-G-962-S5F (1) G-962-S5D (1) A200411E
reUp	L7042GSI	1998 - 2001	S4 model conversion utilizing reUp	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) REM-G-962-S5F (1) G-962-S5D
reUp	L7042GSI	2001 - 2007	S4 model conversion utilizing reUp	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) REM-G-962-S5F (1) G-962-S5C
reUp	L7042GSI	2008 - 2014	S4 model conversion utilizing reUp	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) REM-G-962-S5F

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## L7042GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S4 model conversions (continued)</b>							
New	L7042GSI	1988 - 1998	S4 model conversion	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) G-962-S5F (1) G-962-S5D (1) A200411E
New	L7042GSI	1998 - 2001	S4 model conversion	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) G-962-S5F (1) G-962-S5D
New	L7042GSI	2001 - 2007	S4 model conversion	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) G-962-S5F (1) G-962-S5C
New	L7042GSI	2008 - 2014	S4 model conversion	Full model conversion to L7044GSI capable of up to 1680 BHP @ 1200 RPM. Includes xCooled cylinder heads, S4 pistons, rings, and liner (PRL), S4 turbocharger, wastegate, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 13% more power, up to 60% lifecycle extension on cylinder heads, up to 66% less oil consumption	Bottom End Overhaul	(1) G-962-S4 (1) G-962-S5F

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## L7042GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S5 model conversions</b>							
reUp	L7042GSI	1988 - 1998	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler, new crankshaft	Up to 28% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) REM-G-962-S5F (1) G-962-S5D (1) A200411E
reUp	L7042GSI	1998 - 2001	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 28% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) REM-G-962-S5F (1) G-962-S5D
reUp	L7042GSI	2001 - 2007	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 28% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) REM-G-962-S5F (1) G-962-S5C
reUp	L7042GSI	2008 - 2014	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 28% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) REM-G-962-S5F

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to S5 model conversions (continued)</b>							
New	L7042GSI	1988 - 1998	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 28% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5F (1) G-962-S5D (1) A200411E
New	L7042GSI	1998 - 2001	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 28% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5F (1) G-962-S5D
New	L7042GSI	2001 - 2007	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 28% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5F (1) G-962-S5C
New	L7042GSI	2008 - 2014	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, S2 conversion components, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 28% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5F

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## L7042GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>ESM harness upgrade (Click here for more information)</b>							
Stage I	L7042GSI	2005 - 2007	ESM wireways and power distribution box	New wireway harnesses and mounting brackets, new knock sensors, ECU calibration, power distribution box and mounting brackets, and ignition coil harnesses.	Redesigned harness simplifies fault troubleshooting and maintenance. New power distribution box simplifies customer wiring connections and includes circuit fault protection, fault indicators, fault reset functions, enhanced noise suppression, and water protection improvements.	Repair or replacement of harnesses or power distribution box	(1) G-962-1209
Stage III	L7042GSI	2007 - 2014	ESM wireways	New wireway harnesses, mounting brackets, and ignition coil harnesses.		Repair or replacement of harnesses	(1) G-962-1118
<b>Advanced Breather System (Click here for more information)</b>							
	L7042GSI	1985 - 2014	Advanced Breather System for shallow oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-541
	L7042GSI	2007 - 2014	Advanced Breather System for deep sump oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-540

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## L7042GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Extender Series (Click here for more information)</b>							
	L7042GSI	1985 - 2007	Extender Series for shallow oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration	High efficiency air cleaner with 70% more dirt holding capacity, Microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters.		Contact Waukesha for BOM
	L7042GSI	1985 - 2007	Extender Series with deep sump oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration, deep sump oil pan	High efficiency air cleaner with 70% more dirt holding capacity, microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters, 2x oil capacity to extend oil change intervals		Contact Waukesha for BOM
<b>Gas Regulator</b>							
	L7042GSI	2003 - 2007	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets. For use on engines without ESM.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1146

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Air Cleaner (<a href="#">Click here for more information</a>)</b>							
Stage I	L7042GSI	1985 - 2014	Improved air cleaner for standard rain shield applications	Bolted hinge blow-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1153
Stage II	L7042GSI	1985 - 2014	Improved air cleaner for inertia precleaner applications	Bolted hinge blow-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1157
Stage III	L7042GSI	1985 - 2014	Improved air cleaner for remote air inlet applications	Bolted hinge blow-thru air cleaner with inverted 5.5 inch air inlet connection	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. Inverted 5.5 inch air inlet connection allows use of piping for external air inlet	Air cleaner maintenance	(1) G-962-1158
Stage I	L7042GSID	1985 - 2014	Improved air cleaner for standard rain shield applications	Bolted hinge draw-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1160
Stage II	L7042GSID	1985 - 2014	Improved air cleaner for inertia precleaner applications	Bolted hinge draw-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1161
<b>Front Gear Housing</b>							
	L7042GSI	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L7042GSI	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285

## L7044GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>xCooled Cylinder head upgrade</b>							
	L7044GSI	1998 - 2017	xCooled cylinder head upgrade	xCooled cylinder head with enhanced cooling	Enhanced cooling reduces cylinder head component temperatures by up to 40%, reducing thermal stresses to improve cylinder head reliability in harsh conditions operating on high BTU fuels	Top end overhaul	(12) NWC-AA205002H
<b>SPARC Cylinder head conversion (<a href="#">Click here for more information</a>)</b>							
	L7044GSI	1998 - 2015	SPARC cylinder head conversion	New spark plug sleeve and spark plug sleeve extension to new SPARC system	Improved spark plug sleeve sealing, better corrosion resistance, new o-ring sealing new design prevents improper sleeve installation	Cylinder head maintenance	(12) G-962-1117
<b>S4 to S5 model conversions</b>							
reUp	L7044GSI	2008 - 2014	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 13% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) REM-G-962-S5
reUp	L7044GSI	2001 - 2007	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 13% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) REM-G-962-S5 (1) G-962-S5C

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S4 to S5 model conversions (continued)</b>							
reUp	L7044GSI	1998 - 2001	S5 model conversion utilizing reUp	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 13% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) REM-G-962-S5 (1) G-962-S5D
New	L7044GSI	2008 - 2014	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system	Up to 13% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5
New	L7044GSI	2001 - 2007	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing	Up to 13% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5C
New	L7044GSI	1998 - 2001	S5 model conversion	Full model conversion to L7044GSI S5 capable of up to 1900 BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, ESM2 control system, IPMD2 with 4,000 hour spark plugs, advanced breather system, spin on oil filters and gear housing, ESM2 flywheel, front engine mounted oil cooler	Up to 13% more power, better fuel flexibility, up to 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals	Bottom End Overhaul	(1) G-962-S5 (1) G-962-S5D

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## L7044GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>ESM2 with AFR2 conversions (Click here for more information)</b>							
	L7044GSI	1998 - 2000	ESM2 with AFR2 (for use with shallow sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, flywheel, flywheel housing, gear housing, cam timing disc, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.			(1) G-962-1185
	L7044GSI	2000 - 2003	ESM2 with AFR2 (for use with shallow sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.	<b>ESM2</b> - Increased uptime with knock detection, fault diagnostics, troubleshooting guide, improved engine performance with factory calibrated operating parameters. HMI, advanced diagnostics, remote monitoring capability, integrated exhaust and main bearing thermocouples		(1) G-962-1187
	L7044GSI	2003 - 2007	ESM2 with AFR2 (for use with shallow sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, new gas regulators, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.	<b>AFR2</b> - Simplified step-by-step air/fuel ratio setup from HMI screen, automatic adjustments to changes in operating conditions, simplified fuel control valve provides fast response for changes in ambient and operating conditions, redesigned harness simplifies fault troubleshooting and maintenance	Existing control system maintenance or failure	(1) G-962-1186
	L7044GSI	2007 - 2010	ESM2 with AFR2 (for use with deep sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, new gas regulators, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.	<b>IPMD2</b> - Extended spark plug life up to 4,000 operating hours		(1) G-962-1188
	L7044GSI	2010-2016	ESM2 with AFR2 (for use with deep sump oil pan)	ESM2, Harnesses and mounting brackets, Power distribution box, AFR2, exhaust & main bearing thermocouples, HMI industrial PC, engine remote monitoring capability utilizing Waukesha's Asset Performance Management (APM) system, IPMD2.			(1) G-962-1189

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## L7044GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>ESM harness upgrade (Click here for more information)</b>							
Stage I	L7044GSI	2003 - 2007	ESM wireways and power distribution box	New wireway harnesses and mounting brackets, new knock sensors, ECU calibration, new ignition coils with integrated harness, power distribution box and mounting brackets.	Redesigned harness simplifies fault troubleshooting and maintenance. New power distribution box simplifies customer wiring connections and includes circuit fault protection, fault indicators, fault reset functions, enhanced noise suppression, and water protection improvements.	Repair or replacement of harnesses or power distribution box	G-962-1209
Stage III	L7044GSI	2007 - 2016	ESM wireways	New wireway harnesses and mounting brackets, new ignition coils with integrated harness.		Repair or replacement of harnesses	(1) G-962-1118
<b>Advanced Breather System (Click here for more information)</b>							
	L7044GSI	1998 - 2015	Advanced Breather System for shallow oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-541
	L7044GSI	2007 - 2015	Advanced Breather System for deep sump oil pan	Closed breather system with advanced filter and automatic regulating valve	No adjustment needed for changes in speed/load. Up to 50% extended service intervals.	Anytime	(1) G-962-540
<b>emPact (for engines shipped with or upgraded to ESM2) (Click here for more information)</b>							
	L7044GSI	Any model with ESM2	emPact	emPact for 0.15g Nox, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather and ESM2.</b>	emPact - Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair	(1) 495911B
	L7044GSI	Any model with ESM2	emPact	emPact for 1.0g Nox, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather and ESM2.</b>	emPact - Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair	(1) 495911A

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## L7044GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>IPMD2 and spark plug upgrade</b>							
	L7044GSI	Any model with ESM2	IPMD2	New Ignition Power Module with Diagnostics (IPMD2) with optimized voltage profile, one new set of non-precious metal spark plugs	Extended spark plug life up to 4,000 operating hours. Improved combustion to reduce cylinder misfire. Simple "plug and play" installation without any software changes	Spark plug replacement	(1) G-962-1236
<b>Extender Series (<a href="#">Click here for more information</a>)</b>							
	L7044GSI	1998 - 2007	Extender Series for shallow oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration	High efficiency air cleaner with 70% more dirt holding capacity, Microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters.		Contact Waukesha for BOM
	L7044GSI	1998 - 2007	Extender Series with deep sump oil pan	Advanced air cleaner, spin on oil filters, mounted oil cooler, turbine air starter, Microspin oil filtration, deep sump oil pan	High efficiency air cleaner with 70% more dirt holding capacity, microspin oil filtration system to extend oil change intervals, lubrication free air/gas turbine starters, 2x oil capacity to extend oil change intervals		Contact Waukesha for BOM
<b>Gas Regulator</b>							
	L7044GSI	2003 - 2007	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets. For use on engines without ESM.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1146

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## L7044GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Air Cleaner (<a href="#">Click here for more information</a>)</b>							
Stage I	L7044GSI	1998 - 2015	Improved air cleaner for standard rain shield applications	Bolted hinge blow-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1153
Stage II	L7044GSI	1998 - 2015	Improved air cleaner for inertia precleaner applications	Bolted hinge blow-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1157
Stage III	L7044GSI	1998 - 2015	Improved air cleaner for remote air inlet applications	Bolted hinge blow-thru air cleaner with inverted 5.5 inch air inlet connection	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. Inverted 5.5 inch air inlet connection allows use of piping for external air inlet	Air cleaner maintenance	(1) G-962-1158
Stage I	L7044GSID	1998 - 2015	Improved air cleaner for standard rain shield applications	Bolted hinge draw-thru air cleaner with standard rain shield and foam pre-filter element	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance. New rain shield design allows use of cleanable foam pre-filter element.	Air cleaner maintenance	(1) G-962-1160
Stage II	L7044GSID	1998 - 2015	Improved air cleaner for inertia precleaner applications	Bolted hinge draw-thru air cleaner with inertia precleaners	Improved hinge design replaces latches with bolted hinge provides enhanced air filter gasket sealing and simplifies air filter maintenance.	Air cleaner maintenance	(1) G-962-1161
<b>Front Gear Housing</b>							
	L7044GSI	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1282 (1) REM-G-962-1282
	L7044GSI	2006-2022	Front Gear Housing Upgrade	Improved design of front gear housing and cover assembly, includes gear housing, O-rings, gaskets, and installation hardware. Spanner Tool (p/n 474066A) required for installation is sold separately. Applies to all VHP Extender Series engines having engine mounted spin-on oil filters. To be used with extender bottom end gasket kit G-900-1066.	Reduced oil leakage around the front gear housing and cover assembly		(1) G-962-1285 (1) REM-G-962-1285

## P9390GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>GL Extended Life Cylinder Head Rebuild (<a href="#">Click here for more information</a>)</b>							
Stage I	P9390GL	1985-2015	S2GL cylinder head rebuild kit	Rebuild kit with new exhaust valve, rotators, seats and springs.	60% longer time between top end interval	Top end overhaul	(16) G-962-1150
<b>Gas Regulator</b>							
	P9390GL	2003 - 2010	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1149
<b>Crankcase Upgrade</b>							
	P9390GL	1985 - 2009	One piece crankcase upgrade	One piece crankcase, additional oil sump parts for conversion	One piece crankcase provides rigidity and simplified mounting and installation to oil pan	Major overhaul	G-962-1155

## P9390GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>S2 to xCooled conversions</b>							
Stage Ix reUp	P9390GSI	1981 - 2014	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, ignition coils, oil pump, CEC ignition harness <b>(for engines with non-CSA ignition system)</b>	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-1243X
Stage Ix reUp	P9390GSI	1981 - 2014	xCooled upgrade	reUp xCooled cylinder heads and rocker arms, head components, oil header, ignition coils, oil pump, CEC ignition coil jumper harnesses <b>(for engines with CSA ignition system)</b>	Up to 60% lifecycle extension	Top End Overhaul	(1) REM-G-962-1242X
Stage IIx reUp	P9390GSI	1981 - 2014	xCooled upgrade with power cylinders	reUp xCooled cylinder heads and rocker arms, head components, oil header, new piston, ring, liner (PRL), ignition coils, oil pump, CEC ignition harness <b>(for engines with non-CSA ignition system)</b>	Up to 60% lifecycle extension, 66% reduction in oil consumption	Top/Bottom End Overhaul	(1) REM-G-962-1240X
Stage IIx reUp	P9390GSI	1981 - 2014	xCooled upgrade with power cylinders	reUp xCooled cylinder heads and rocker arms, head components, oil header, new piston, ring, liner (PRL), ignition coils, oil pump, CEC ignition coil jumper harnesses <b>(for engines with CSA ignition system)</b>	Up to 60% lifecycle extension, 66% reduction in oil consumption	Top/Bottom End Overhaul	(1) REM-G-962-1239X
<b>Gas Regulator</b>							
	P9390GSI	2003 - 2010	Mooney gas regulator replacement	Mooney gas regulator conversion including new gas regulators, piping, and brackets.	Simplified gas regulator operation and maintenance, removes obsolete Mooney gas regulators	Mooney gas regulator maintenance	(1) G-962-1148
<b>Crankcase Upgrade</b>							
	P9390GSI	1985 - 2009	One piece crankcase upgrade	One piece crankcase, additional oil sump parts for conversion	One piece crankcase provides rigidity and simplified mounting and installation to oil pan	Major overhaul	G-962-1155

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## P9390GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Turbocharger Upgrade</b>							
	P9390GSI	1985 - 2016	Turbocharger upgrade	New turbocharger, mounting brackets, water and oil tubing, air and exhaust connections. For use with low speed applications 700 – 1000 RPM	New turbocharger replaces obsolete turbocharger	Turbocharger maintenance	(1) G-962-1162
	P9390GSI	1985 - 2016	Turbocharger upgrade	New turbocharger, mounting brackets, water and oil tubing, air and exhaust connections. For use with high speed applications 1001 – 1200 RPM	New turbocharger replaces obsolete turbocharger	Turbocharger maintenance	(1) G-962-1280



## P9394GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Series Four to Series Five conversions</b>							
New	P9394GSI	2013-2019	S5 Model Conversion	Full model conversion to P9394GSI S5 with ESM2 capable of up to 2500BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, ESM2 control system, IPMD2 with 4,000 hour spark plugs	Up to 250BHP more power, improved fuel flexibility, ESM2 with a full-color touch screen display panel, up to 4,000 hour longer oil change life and enhanced cylinder head design	Top End/ Bottom End Overhaul	(1) G-962-1255A (16) G-932-300 (16) DA205002H
reUp	P9394GSI	2013-2019	S5 Model Conversion utilizing reUp	Full model conversion to P9394GSI S5 with ESM2 capable of up to 2500BHP @ 1200 RPM. Includes S5 xCooled cylinder heads, S5 pistons, rings, and liner (PRL), S5 turbocharger, wastegate, and intercooler, S5 camshaft utilizing Miller cycle combustion, ESM2 control system, IPMD2 with 4,000 hour spark plugs	Up to 250BHP more power, improved fuel flexibility, ESM2 with a full-color touch screen display panel, up to 4,000 hour longer oil change life and enhanced cylinder head design	Top End/ Bottom End Overhaul	(1) G-962-1255A (16) G-932-300 (16) NWC-DA205002H

### Advanced Breather System

New	P9394GSI	2013-2014	Advanced Breather System	Closed breather system with centrifugal oil separation and automatic regulating valve	No adjustment needed for changes in speed/load. No maintenance until major overhaul	Anytime	(1) G-962-1255C
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### emPact (for engines shipped with or upgraded to ESM2) [\(Click here for more information\)](#)

	P9394GSI	Any model with ESM2	emPact	emPact for 0.15g Nox, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather and ESM2.</b>	emPact - Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair	(1) 495923B
	P9394GSI	Any model with ESM2	emPact	emPact for 1.0g Nox, post catalyst O2 sensors with catalyst health monitoring. <b>Requires advanced breather and ESM2.</b>	emPact - Factory designed and calibrated system reduces maintenance time for system adjustments to maintain compliance. Post catalyst O2 sensor validates adjustments needed to maintain emissions compliance. Catalyst health monitoring system provides differential pressure and temperature to indicate catalyst maintenance intervals.	Emissions regulations, repair	(1) 495923A

## F18GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>GL Extended Life Cylinder Head Upgrade (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b> (pinned intake valve)	F18GL	1987 – 2016	F18GL cylinder head upgrade	New cylinder head components including intake/exhaust valve rotators, valves, valve seats and valve retainers	Up to 50% longer intervals between top end overhauls, reduced valve recession rates, reduced wear provided by optimized material and dimensions	Top end Overhaul	(6) G-962-558 (current version pinned intake valve, see Service Bulletin 7-2953)
<b>Stage I</b> (non-pinned intake valve)	F18GL	1987 – 2016	F18GL cylinder head upgrade	New cylinder head components including intake/exhaust valve rotators, valves, valve seats and valve retainers	Up to 50% longer intervals between top end overhauls, reduced valve recession rates, reduced wear provided by optimized material and dimensions	Top end Overhaul	(6) G-962-559 (non-pinned intake valve, see Service Bulletin 7-2953)
<b>GL to GSI Conversion (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b> <i>model conversion</i>	F18GL	1987-Current	F18 GL to GSI conversion	Cylinder head assembly, turbocharger, wastegate, cylinder sleeves, damper, jacket water pump repair kit, camshaft bearings and main bearings	Reduces NOx emissions and increases fuel range tolerances	Top / Bottom End Overhaul	(1) G-962-542 (6) REM-AG300302C
<b>High Capacity Oil Pan Extension</b>							
<b>Stage I</b>	F18GL	1987 – Apr 2003	High Cap Oil Pan Extender Kit	New oil pan doubles oil capacity	Extends oil change intervals by doubling the capacity of the oil pan	Top / Bottom End Overhaul	(1) G-962-1083

## F18GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>High Capacity Oil Pan Extension</b>							
Stage I	F18GSI	1987 – Apr 2003	High Cap Oil Pan Extender Kit	New oil pan doubles oil capacity	Extends oil change intervals by doubling the capacity of the oil pan	Top / Bottom End Overhaul	(1) G-962-1083

## H24GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>GL Extended Life Cylinder Head Upgrade (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b> (pinned intake valve)	H24GL	1987 – 2016	H24GL cylinder head upgrade	New cylinder head components including intake/exhaust valve rotators, valves, valve seats and valve retainers	Up to 50% longer intervals between top end overhauls, reduced valve recession rates, reduced wear provided by optimized material and dimensions	Top end Overhaul	(8) G-962-558 (current version pinned intake valve, see Service Bulletin 7-2953)
<b>Stage I</b> (non-pinned intake valve)	H24GL	1987 – 2016	H24GL cylinder head upgrade	New cylinder head components including intake/exhaust valve rotators, valves, valve seats and valve retainers	Up to 50% longer intervals between top end overhauls, reduced valve recession rates, reduced wear provided by optimized material and dimensions	Top end Overhaul	(8) G-962-559 (non-pinned intake valve, see Service Bulletin 7-2953)
<b>GL to GSI Conversion (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b> <i>model conversion</i>	H24GL	1987-Current	H24 GL to GSI conversion	Cylinder head assembly, turbocharger, wastegate, cylinder sleeves, damper, jacket water pump repair kit, camshaft bearings and main bearings	Reduces NOx emissions and increases fuel range tolerances	Top / Bottom End Overhaul	(1) G-962-553 (8) REM-AG300302C
<b>High Capacity Oil Pan Extension</b>							
<b>Stage I</b>	H24GL	1987 – Apr 2003	High Cap Oil Pan Extender Kit	New oil pan doubles oil capacity	Extends oil change intervals by doubling the capacity of the oil pan	Top / Bottom End Overhaul	(1) G-962-1082

## H24GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>High Capacity Oil Pan Extension</b>							
Stage I	H24GSI	1987 – Apr 2003	High Cap Oil Pan Extender Kit	New oil pan doubles oil capacity	Extends oil change intervals by doubling the capacity of the oil pan	Top / Bottom End Overhaul	(1) G-962-1082

## L36GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>GL Extended Life Cylinder Head Upgrade (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b> (pinned intake valve)	L36GL	1987 – 2016	L36GL cylinder head upgrade	New cylinder head components including intake/exhaust valve rotators, valves, valve seats and valve retainers	Up to 50% longer intervals between top end overhauls, reduced valve recession rates, reduced wear provided by optimized material and dimensions	Top end Overhaul	(12) G-962-558 (current version pinned intake valve, see Service Bulletin 7-2953)
<b>Stage I</b> (non-pinned intake valve)	L36GL	1987 – 2016	L36GL cylinder head upgrade	New cylinder head components including intake/exhaust valve rotators, valves, valve seats and valve retainers	Up to 50% longer intervals between top end overhauls, reduced valve recession rates, reduced wear provided by optimized material and dimensions	Top end Overhaul	(12) G-962-559 (non-pinned intake valve, see Service Bulletin 7-2953)
<b>Spin-on Oil Filter Upgrade</b>							
<b>Stage I</b>	L36GL	1987 - 2016	Spin-on Filters	Includes new housing assembly, spin-on filters, gaskets and mounting hardware	Simple spin-on oil filter change eliminates messy disassembly of internal oil filters and reduces oil change time.	Oil Change Interval	(1) G-962-487
<b>High Capacity Oil Pan Extension</b>							
<b>Stage I</b>	L36GL	1987 – Apr 2003	High Cap Oil Pan Extender Kit	Converts the standard oil pan to a high capacity pan by raising the dipstick location and oil level controller	Extends oil change intervals by doubling the capacity of the oil pan	Top / Bottom End Overhaul	(1) G-962-1087 [Requires pre-lube pump]

## L36GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Spin-on Oil Filter Upgrade</b>							
Stage I	L36GSI	1987 - 2016	Spin-on Filters	Includes new housing assembly, spin-on filters, gaskets and mounting hardware	Simple spin-on oil filter change eliminates messy disassembly of internal oil filters and reduces oil change time.	Oil Change Interval	(1) G-962-487
<b>High Capacity Oil Pan Extension</b>							
Stage I	L36GSI	1987 – Apr 2003	High Cap Oil Pan Extender Kit	Converts the standard oil pan to a high capacity pan by raising the dipstick location and oil level controller	Extends oil change intervals by doubling the capacity of the oil pan	Top / Bottom End Overhaul	(1) G-962-1087 [Requires pre-lube pump]

## P48GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>GL Extended Life Cylinder Head Upgrade (<a href="#">Click here for more information</a>)</b>							
<b>Stage I</b> (pinned intake valve)	P48GL	1987 – 2016	P48GL cylinder head upgrade	New cylinder head components including intake/exhaust valve rotators, valves, valve seats and valve retainers	Up to 50% longer intervals between top end overhauls, reduced valve recession rates, reduced wear provided by optimized material and dimensions	Top end Overhaul	(16) G-962-558 (current version pinned intake valve, see Service Bulletin 7-2953)
<b>Stage I</b> (non-pinned intake valve)	P48GL	1987 – 2016	P48GL cylinder head upgrade	New cylinder head components including intake/exhaust valve rotators, valves, valve seats and valve retainers	Up to 50% longer intervals between top end overhauls, reduced valve recession rates, reduced wear provided by optimized material and dimensions	Top end Overhaul	(16) G-962-559 (non-pinned intake valve, see Service Bulletin 7-2953)
<b>Spin-on Oil Filter Upgrade</b>							
<b>Stage I</b>	P48GL	1987 - 2016	Spin-on Filters	Includes new housing assembly, spin-on filters, gaskets and mounting hardware	Simple spin-on oil filter change eliminates messy disassembly of internal oil filters and reduces oil change time.	Oil Change Interval	(1) G-962-487
<b>High Capacity Oil Pan Extension</b>							
<b>Stage I</b>	P48GL	1987 – Apr 2003	High Cap Oil Pan Extender Kit	Converts the standard oil pan to a high capacity pan by raising the dipstick location and oil level controller	Extends oil change intervals by doubling the capacity of the oil pan	Top / Bottom End Overhaul	(1) G-962-1087 [Requires pre-lube pump]



## P48GSI

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>Spin-on Oil Filter Upgrade</b>							
Stage I	P48GSI	1987 - 2016	Spin-on Filters	Includes new housing assembly, spin-on filters, gaskets and mounting hardware	Simple spin-on oil filter change eliminates messy disassembly of internal oil filters and reduces oil change time.	Oil Change Interval	(1) G-962-487
<b>High Capacity Oil Pan Extension</b>							
Stage I	P48GSI	1987 – Apr 2003	High Cap Oil Pan Extender Kit	Converts the standard oil pan to a high capacity pan by raising the dipstick location and oil level controller	Extends oil change intervals by doubling the capacity of the oil pan	Top / Bottom End Overhaul	(1) G-962-1087 [Requires pre-lube pump]

## 12V-AT27GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
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### 12V-AT27GL to 275GL+ with ESM2 Upgrade (HCR)

New	12V-AT27GL	1994-2011	12VAT27GL to 275GL+ with ESM2 Upgrade Kit - HCR 9:1	Upgrade to 275GL+ with ESM2 capable of up to 3750 BHP. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power distribution box (PDB), Cylinder head prechambers, turbo connections, intercooler, exhaust manifolds, air inlet connections, thermostat housing, gas regulator, carburetor, fuel manifold, flywheel, governor, and dual starters. Calibrations: 3130, 3375, 3625, and 3750 BHP	Up to 600 BHP more power - Additional BHP is Crankshaft dependent and not in Kit , ESM2 Controls with a full-color touch screen display panel, High Compression Ratio (HCR) Turbocharger, Lower Prechamber volume, Fuel Derate begins at 70 WKI, Low BTU Fuels from 600-900 range, Efficient fuel consumption, 0.5 NOx (g/BHP-hr.), Reliability, Uptime, No more wastegate learning, improved startup - automatic lean out after starting, e-Stop to minimize fuel in the engine at shutdown, NOx emissions read directly from exhaust stream; no calculations required, and reduction in unplanned shutdowns	Top / Bottom End Overhaul	(1) G-962-1266
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### 12V-AT27GL to 275GL+ with ESM2 Upgrade (LCR)

New	12V-AT27GL	1994-2011	12VAT27GL to 275GL+ with ESM2 Upgrade Kit - LCR Fuel Flex 8:1	Upgrade to 275GL+ with ESM2 and low compression ratio 8:1 piston and turbocharger capable of up to 3750 BHP. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power distribution box (PDB), Cylinder head prechambers, turbo connections, intercooler, exhaust manifolds, air inlet connections, thermostat housing, gas regulator, carburetor, fuel manifold, flywheel, governor, and dual starters. Calibrations: 3130, 3375, 3625, and 3750 BHP	Up to 600 BHP more power- Additional BHP is Crankshaft dependent and not in Kit, ESM2 Controls with a full-color touch screen display panel, Fuel Flex Low Compression Ratio (LCR): 8:1 LCR Pistons and turbocharger, Fuel Derate begins at 50 WKI, Lower derate than HCR option, Lower emissions 0.3 NOx (g/BHP-hr.), Lower Prechamber volume, Wide BTU Fuels from 900-2300 range, Efficient fuel consumption, Reliability, Uptime, No more wastegate learning, improved startup - automatic lean out after starting, e-Stop to minimize fuel in the engine at shutdown, NOx emissions read directly from exhaust stream; no calculations required, and reduction in unplanned shutdowns	Top / Bottom End Overhaul	(1) G-962-1269
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### AT27GL Diesel Crankcase Plate Cover Kit

New	12V-AT27GL	1994-2008	Diesel Crankcase Plate Cover	Add on Kit to AT27GL Diesel Crankcase Engines for 275GL+ ESM2 Conversions. Plates cover holes for any AT27GL engines that have Diesel crankcase. Not all engines are applicable.	Allows for ESM2 conversion for AT27GL engines with Diesel crankcases.	Top / Bottom End Overhaul	CMU-495896T
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## 16V-AT27GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
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### 16V-AT27GL to 275GL+ with ESM2 Upgrade (HCR)

New	16V-AT27GL	1997-2009	16VAT27GL to 275GL+ with ESM2 Upgrade Kit - 9:1 HCR	Upgrade to 275GL+ with ESM2 and High Compression Ratio Turbocharger capable of up to 5000 BHP. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power distribution box (PDB), Cylinder head prechambers, turbo connections, intercooler, exhaust manifolds, air inlet connections, thermostat housing, gas regulator, carburetor, fuel manifold, flywheel, governor, and dual starters. Calibrations: 4100, 4500, 4825, and 5000 BHP	Up to 900 BHP more power- Additional BHP is Crankshaft dependent and not in Kit, ESM2 Controls with a full-color touch screen display panel, High Compression Ratio (HCR) Turbocharger, Lower Prechamber volume, Fuel Derate begins at 60 WKI, Low BTU Fuels from 600-900 range, Efficient fuel consumption, 0.5 NOx (g/BHP-hr.), Reliability, Uptime, No more wastegate learning, improved startup - automatic lean out after starting, e-Stop to minimize fuel in the engine at shutdown, NOx emissions read directly from exhaust stream; no calculations required, and reduction in unplanned shutdowns	Top / Bottom End Overhaul	(1) G-962-1271
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### 16V-AT27GL to 275GL+ with ESM2 Upgrade (LCR)

New	16V-AT27GL	1997-2009	16VAT27GL to 275GL+ with ESM2 Upgrade - LCR Fuel Flex 8:1	Upgrade to 275GL+ with ESM2 and Low Compression Ratio 8:1 pistons and turbocharger capable of up to 5000 BHP. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power distribution box (PDB), Cylinder head prechambers, turbo connections, intercooler, exhaust manifolds, air inlet connections, thermostat housing, gas regulator, carburetor, fuel manifold, flywheel, governor, and dual starters. Calibrations: 4100, 4500, 4825, and 5000 BHP	Up to 900 BHP more power- Additional BHP is Crankshaft dependent and not in Kit, ESM2 Controls with a full-color touch screen display panel, Fuel Flex Low Compression Ratio (LCR): 8:1 LCR Pistons and turbocharger, Fuel Derate begins at 50 WKI, Lower derate than HCR option, Lower emissions 0.3 NOx (g/BHP-hr.), Lower Prechamber volume, Wide BTU Fuels from 900-2300 range, Efficient fuel consumption, Reliability, Uptime, No more wastegate learning, improved startup - automatic lean out after starting, e-Stop to minimize fuel in the engine at shutdown, NOx emissions read directly from exhaust stream; no calculations required, and reduction in unplanned shutdowns	Top / Bottom End Overhaul	(1) G-962-1274
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### AT27GL Diesel Crankcase Plate Cover Kit

New	16V-AT27GL	1994-2008	Diesel Crankcase Plate Cover	Add on Kit to AT27GL Diesel Crankcase Engines for 275GL+ ESM2 Conversions. Plates cover holes for any AT27GL engines that have Diesel crankcase. Not all engines are applicable.	Allows for ESM2 conversion for AT27GL engines with Diesel crankcases.	Top / Bottom End Overhaul	CMU-495897T
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## 12V275GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>12V275GL to 275GL+ with ESM2 Upgrade (HCR)</b>							
New	12V275GL	2010-2012	12V275GL to 275GL+ with ESM2 Upgrade Kit - HCR 9:1	Upgrade to 275GL+ with ESM2 and High Compression Ratio Turbocharger capable of up to 3750 BHP. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power Distribution Box (PDB). Calibrations: 3130, 3375, 3625, and 3750 BHP	Up to 375 BHP more power- Additional BHP is Crankshaft dependent and not in Kit, ESM2 Controls with a full-color touch screen display panel, High Compression Ratio (HCR) Turbocharger, Fuel Derate begins at 70 WKI, Low BTU Fuels from 600-900 range, Efficient fuel consumption, 0.5 NOx (g/BHP-hr.), Reliability, Uptime, No more wastegate learning, improved startup - automatic lean out after starting, e-Stop to minimize fuel in the engine at shutdown, NOx emissions read directly from exhaust stream; no calculations required, and reduction in unplanned shutdowns	Top / Bottom End Overhaul	(1) G-962-1267
<b>12V275GL to 275GL+ with ESM2 Upgrade (LCR)</b>							
New	12V275GL	2010-2012	12V275GL to 275GL+ with ESM2 Upgrade Kit - LCR Fuel Flex 8:1	Upgrade to 275GL+ with ESM2 and Low Compression Ratio 8:1 Pistons and Turbocharger capable of up to 3750 BHP. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power Distribution Box (PDB). Calibrations: 3130, 3375, 3625, and 3750 BHP	Up to 375 BHP more power- Additional BHP is Crankshaft dependent and not in Kit, ESM2 Controls with a full-color touch screen display panel, Fuel Flex Low Compression Ratio (LCR): 8:1 LCR Pistons and turbocharger, Fuel Derate begins at 50 WKI, Lower derate than HCR option, Lower emissions 0.3 NOx (g/BHP-hr.), Wide BTU Fuels from 900-2300 range, Efficient fuel consumption, Reliability, Uptime, No more wastegate learning, improved startup - automatic lean out after starting, e-Stop to minimize fuel in the engine at shutdown, NOx emissions read directly from exhaust stream; no calculations required, and reduction in unplanned shutdowns	Top / Bottom End Overhaul	(1) G-962-1270

## 16V275GL

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>16V275GL to 275GL+ with ESM2 Upgrade (HCR)</b>							
New	16V275GL	2009-2011	16V275GL to 275GL+ with ESM2 Upgrade Kit - HCR 9:1	Upgrade to 275GL+ with ESM2 and High Compression Ratio turbocharger capable of up to 5000 BHP. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power Distribution Box (PDB). Calibrations: 4100, 4500, 4825, and 5000 BHP	Up to 500 BHP more power- Additional BHP is Crankshaft dependent and not in Kit, ESM2 Controls with a full-color touch screen display panel, High Compression Ratio (HCR) Turbocharger, Fuel Derate begins at 60 WKI, Low BTU Fuels from 600-900 range, Efficient fuel consumption, 0.5 NOx (g/BHP-hr.), Reliability, Uptime, No more wastegate learning, improved startup - automatic lean out after starting, e-Stop to minimize fuel in the engine at shutdown, NOx emissions read directly from exhaust stream; no calculations required, and reduction in unplanned shutdowns	Top / Bottom End Overhaul	(1) G-962-1272
<b>16V275GL to 275GL+ with ESM2 Upgrade (LCR)</b>							
New	16V275GL	2009-2011	16V275GL to 275GL+ with ESM2 Upgrade Kit - LCR Fuel Flex 8:1	Upgrade to 275GL+ with ESM2 and Low Compression Ratio 8:1 Pistons and Turbocharger capable of up to 5000 BHP. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power Distribution Box (PDB). Calibrations: 4100, 4500, 4825, and 5000 BHP	Up to 500 BHP more power- Additional BHP is Crankshaft dependent and not in Kit, ESM2 Controls with a full-color touch screen display panel, Fuel Flex Low Compression Ratio (LCR): 8:1 LCR Pistons and turbocharger, Fuel Derate begins at 50 WKI, Lower derate than HCR option, Lower emissions 0.3 NOx (g/BHP-hr.), Wide BTU Fuels from 900-2300 range, Efficient fuel consumption, Reliability, Uptime, No more wastegate learning, improved startup - automatic lean out after starting, e-Stop to minimize fuel in the engine at shutdown, NOx emissions read directly from exhaust stream; no calculations required, and reduction in unplanned shutdowns	Top / Bottom End Overhaul	(1) G-962-1275

## 12V275GL+

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>12V275GL+ to 275GL+ with ESM2 Upgrade (HCR)</b>							
New	12V275GL+	2013-2020	12V275GL+ to 275GL+ with ESM2 Upgrade Kit - HCR 9:1	Upgrade to 275GL+ with ESM2. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power Distribution Box (PDB), Wastegates. Calibrations: 3130, 3375, 3625, and 3750 BHP	ESM2 Controls with a full-color touch screen display panel, Fuel Derate begins at 70 WKI, Low BTU Fuels from 600-900 range, Efficient fuel consumption, 0.5 NOx (g/BHP-hr.), Reliability, Uptime, Transient Capability, Starting/Shutdown: Full adjustability, automatic lean out after starting	Top/Bottom End Overhaul	(1) G-962-1261
<b>12V275GL+ to 275GL+ with ESM2 Upgrade (LCR)</b>							
New	12V275GL+	2013-2020	12V275GL+ to 275GL+ with ESM2 Upgrade Kit - LCR Fuel Flex 8:1	Upgrade to 275GL+ with ESM2 and Low Compression Ratio 8:1 Pistons and Turbocharger. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power Distribution Box (PDB), Wastegates. Calibrations: 3130, 3375, 3625, and 3750 BHP	ESM2 Controls with a full-color touch screen display panel, Fuel Flex Low Compression Ratio (LCR): 8:1 LCR Pistons and Turbocharger, Fuel Derate begins at 50 WKI, Lower derate than HCR option, Lower emissions 0.3 NOx (g/BHP-hr.), Wide BTU Fuels from 900-2300 range, Efficient fuel consumption, Reliability, Uptime, Transient Capability, Starting/Shutdown: Full adjustability, automatic lean out after starting	Top / Bottom End Overhaul	(1) G-962-1268

## 16V275GL+

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Category	Model	Model ship dates	Product	Description	Customer Benefit	Timing	Kit Bill of Materials
<b>16V275GL+ to 275GL+ with ESM2 Upgrade (HCR)</b>							
New	16V275GL+	2013-2020	16V275GL+ to 275GL+ with ESM2 Upgrade Kit - HCR 9:1	Upgrade to 275GL+ with ESM2 . Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power Distribution Box (PDB), Wastegates. Calibrations: 4100, 4500, 4825, and 5000 BHP	ESM2 Controls with a full-color touch screen display panel, Fuel Derate begins at 60 WKI, Low BTU Fuels from 600-900 range, Efficient fuel consumption, 0.5 NOx (g/BHP-hr.), Reliability, Uptime, Transient Capability, Starting/Shutdown: Full adjustability, automatic lean out after starting	Top/Bottom End Overhaul	(1) G-962-1262
<b>16V275GL+ to 275GL+ with ESM2 Upgrade (LCR)</b>							
New	16V275GL+	2013-2020	16V275GL+ to 275GL+ with ESM2 Upgrade Kit - LCR Fuel Flex 8:1	Upgrade to 275GL+ with ESM2 and Low Compression Ratio 8:1 Pistons and Turbocharger. Includes IPMD2 , Smart Thermocouple Modules (STU), New high temperature harnessing for actuators, sensors near exhaust, Air handling control actuators, Power Distribution Box (PDB), Wastegates. Calibrations: 4100, 4500, 4825, and 5000 BHP	ESM2 Controls with a full-color touch screen display panel, Fuel Flex Low Compression Ratio (LCR): 8:1 LCR Pistons and Turbocharger, Fuel Derate begins at 50 WKI, Lower derate than HCR option, Lower emissions 0.3 NOx (g/BHP-hr.), Wide BTU Fuels from 900-2300 range, Efficient fuel consumption, Reliability, Uptime, Transient Capability, Starting/Shutdown: Full adjustability, automatic lean out after starting	Top / Bottom End Overhaul	(1) G-962-1273