

# WARHAWK 15° ALUMINUM CYLINDER HEADS

Clearly the industry's most efficient replacement for the LS1 cylinder head, World's 15° Warhawk casting deliver more power than other aftermarket heads in its category.

A number of important features set the Warhawk 15° apart from others, including having the same 15° valve centerline and rocker arm attachment angles to ensure correct valve train geometry when longer valves are employed. The highly efficient 235cc intake (2.080" valve) and 87cc exhaust ports (1.600" valve) provide outstanding flow. You have a choice of 64cc or 72cc combustion chambers.

*Valve and rocker arm attachment angles both 15° to allow for proper geometry with longer valves*

*Valve Cover rails raised .300" for aftermarket valvetrain*

*Highly efficient exhaust ports*

*Manley stainless steel valves*

*High flowing intake ports*

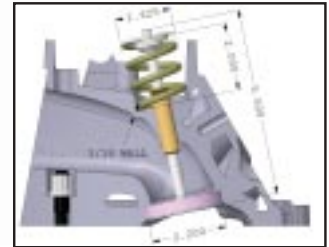
*Stock accessory bolt holes*

*Manufactured to QS-9000 standards*

*Deck .750" thick*

*Exclusive Rightcast® technology assures optimum port accuracy*

*Accepts a 5.300" overall length valve and 1.625" valve springs*



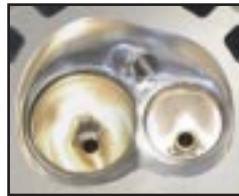
## CNC-PORTED HEADS FOR EXTRA POWER!



**CNC-ported exhaust port designed by Kuntz & Co.**



**255cc "cathedral" CNC intake port**



**CNC-machined chamber and bowl work**

| Casting ID Number: WOR-075                                |  | Material: 355-T6 alloy high density aluminum              |  | Technical Data:                                 |  |
|---|--|---|--|---|--|
| <b>Valve Seats:</b> Intake (hardened), exhaust (hardened) | <b>Valve Guides:</b> Manganese bronze                                      | <b>Spring Seats:</b> Machined for 1.560"                  | <b>Valves:</b> Manley stainless steel valves in assemblies       | <b>Rocker Arms:</b> Stock LS1 with stock stands | <b>Intake Runner:</b> Standard port location |
| <b>Exhaust Ports:</b> Standard location                   | <b>Spark Plug:</b> 14mm .750" reach gasket style                           | <b>Valve Job:</b> Multi-angle intake and radiused exhaust | <b>Valve Cover Rail:</b> Raised .300" for aftermarket valvetrain | <b>Valve Angle:</b> Stock 15°                   | <b>Accessory Bolt Holes:</b> Stock           |
|   | <b>Flow Numbers:</b> Log on to worldcastings.com for detailed information. |   |  |   |  |

| Part #  | Type     | Runners      | Chamber | Valves           | Plug | Spring  | Spring Spec                            | Max Lift | Notes |
|---|----------|--------------|---------|------------------|------|---------|--|----------|-------|
| 025150  | Bare     | 235 In/87 Ex | 64      | 2.080/1.600 5/16 | Std  |         |  |          |       |
| 025150-2  | Assembly | 235 In/87 Ex | 64      | 2.080/1.600 5/16 | Std  | 1.437 D | 125lb @ 1.810 340lb @ 1.210 CB @ 1.160 | .600"    | E     |
| 025150-3  | Assembly | 235 In/87 Ex | 64      | 2.080/1.600 5/16 | Std  | 1.550 D | 200lb @ 1.900 480lb @ 1.200 CB @ 1.150 | .700"    | E     |
| 025250  | Bare     | 235 In/87 Ex | 72      | 2.080/1.600 5/16 | Std  |         |  |          |       |
| 025250-2  | Assembly | 235 In/87 Ex | 72      | 2.080/1.600 5/16 | Std  | 1.437 D | 125lb @ 1.810 340lb @ 1.210 CB @ 1.160 | .600"    | E     |
| 025250-3  | Assembly | 235 In/87 Ex | 72      | 2.080/1.600 5/16 | Std  | 1.550 D | 200lb @ 1.900 480lb @ 1.200 CB @ 1.150 | .700"    | E     |
| <b>CNC-Ported (Ports designed by Kuntz &amp; Co.)</b> |          |              |         |                  |      |         |  |          |       |
| 025150C   | Bare     | 255 In/90 Ex | 72      | 2.100/1.600 5/16 | Std  |         |  |          |       |
| 025150C-2   | Assembly | 255 In/90 Ex | 72      | 2.100/1.600 5/16 | Std  | 1.437 D | 125lb @ 1.810 340lb @ 1.210 CB @ 1.160 | .600"    | E     |
| 025150C-3   | Assembly | 255 In/90 Ex | 72      | 2.100/1.600 5/16 | Std  | 1.550 D | 200lb @ 1.900 480lb @ 1.200 CB @ 1.150 | .700"    | E     |

**Assembly Includes:** Head, valves, seals, springs, retainers, locks and rocker studs and Manley Severe Duty valves

E = 10" machined steel valve locks, Manley 4140 chrome-moly retainers, Teflon seals

|  |  |
|--|--|
| <p><b>Recommended Installation Items:</b><br/>                 Head Gaskets: Felpro #1185<br/>                 Intake Gasket: Felpro # stock GM O-ring for manifold<br/>                 Exhaust Gasket: Fel-Pro<br/>                 Spark Plugs: 14mm .708" reach tapered seat (Accel 526)</p> | <p><b>Available options:</b><br/>                 Polishing (6 to 8 weeks lead time)<br/>                 Contact your World sales representative for details.</p> |
| <p><b>Accessories:</b><br/>                 832560 Head stud kit for Warhawk 9.240/9.800" LS engine block (standard bolt pattern)</p>  |  |

# WARHAWK 12° ALUMINUM CYLINDER HEADS

LS CHEVROLET

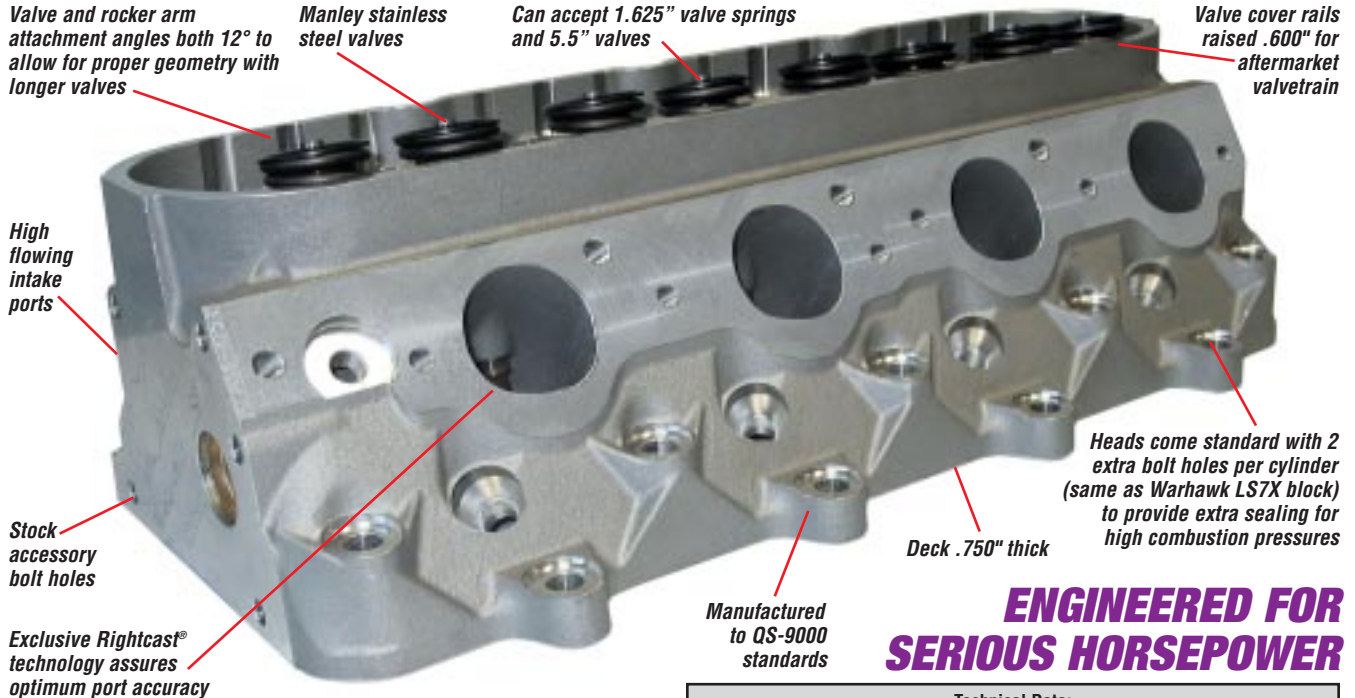
For maximum performance from an LS-series engine World's Warhawk 12° heads are the answer. As a result of superior port design and exclusive RightCast® technology, the Warhawk 12° has 285cc intake and 106cc exhaust runners that flow incredible numbers.

If even more flow is desired, World offers CNC-ported versions of this head that boast 296cc intake and 110cc exhaust runners. The ports were designed by noted LS specialist Kuntz & Co. and they're dyno-proven to crank out the power!

Available as bare castings, or in race-ready assemblies that have a multi-angle

intake valve job and radiused exhaust, are equipped with Manley 2.200" diameter intake and 1.600" exhaust stainless steel valves, high performance springs and Manley chrome moly retainers. Compatible with stock LS7 rocker arms and integral stands. The heads can accommodate 1.625" diameter valve springs and valves with an overall length of 5.500".

An important feature of the Warhawk 12° head is that it comes with two extra bolt holes per cylinder (same as Warhawk LS7X blocks) to provide extra sealing for power adder-boosted high combustion pressure applications.



**ENGINEERED FOR SERIOUS HORSEPOWER**

## CNC-PORTED FOR MORE FLOW!



**CNC-ported combustion chamber and bowl**



**CNC-ported 296cc intake runner**



**Kuntz & Co designed CNC exhaust port**

### Technical Data:

**Casting ID Number:** WOR-076

**Material:** 355-T6 alloy high density aluminum

**Valve Seats:** Intake (hardened), exhaust (hardened)

**Valve Guides:** Manganese bronze

**Spring Seats:** Machined for 1.560" (can be machined for 1.625")

**Valves:** Manley stainless steel valves in assemblies

**Rocker Arms:** Stock LS7 rockers and integral stands

**Intake Runner:** Standard port location

**Exhaust Ports:** Standard location

**Spark Plug:** 14mm .750" reach gasket style

**Valve Job:** Multi-angle intake and radiused exhaust

**Valve Cover Rail:** Raised .600" for aftermarket valvetrain

**Valve Angle:** Stock 12°

**Accessory Bolt Holes:** Stock

**Flow Numbers:** Log on to worldcastings.com for detailed information.

| Part #  | Type     | Runners       | Chamber | Valves           | Plug | Spring  | Spring Spec                            | Max Lift | Notes |
|---|----------|---------------|---------|------------------|------|---------|--|----------|-------|
| 025350  | Bare     | 285 In/106 Ex | 64      | No Valve Job     | Std  |         |  |          |       |
| 025350-2  | Assembly | 285 In/106 Ex | 64      | 2.200/1.600 5/16 | Std  | 1.437 D | 125lb @ 1.810 340lb @ 1.210 CB @ 1.160 | .600"    | E     |
| 025350-3  | Assembly | 285 In/106 Ex | 64      | 2.200/1.600 5/16 | Std  | 1.550 D | 200lb @ 1.900 480lb @ 1.200 CB @ 1.150 | .700"    | E     |
| 025400  | Bare     | 285 In/106 Ex | 72      | No Valve Job     | Std  |         |  |          |       |
| 025400-2  | Assembly | 285 In/106 Ex | 72      | 2.200/1.600 5/16 | Std  | 1.437 D | 125lb @ 1.810 340lb @ 1.210 CB @ 1.160 | .600"    | E     |
| 025400-3  | Assembly | 285 In/106 Ex | 72      | 2.200/1.600 5/16 | Std  | 1.550 D | 200lb @ 1.900 480lb @ 1.200 CB @ 1.150 | .700"    | E     |
| <b>CNC Ported (Ports designed by Kuntz &amp; Co.)</b> |          |               |         |                  |      |         |  |          |       |
| 025350C   | Bare     | 296 In/110 Ex | 72      | 2.200/1.600 5/16 | Std  |         |  |          |       |
| 025350C-2   | Assembly | 296 In/110 Ex | 72      | 2.200/1.600 5/16 | Std  | 1.437 D | 125lb @ 1.810 340lb @ 1.210 CB @ 1.160 | .600"    | E     |
| 025350C-3   | Assembly | 296 In/110 Ex | 72      | 2.200/1.600 5/16 | Std  | 1.550 D | 200lb @ 1.900 480lb @ 1.200 CB @ 1.150 | .700"    | E     |

**Assembly Includes:** Head, valves, seals, springs, retainers, locks and rocker studs

**Notes:**

E = 10° machined steel valve locks, Manley 4140 chrome-moly retainers, Teflon seals and Manley Severe Duty valves

Assembled heads have a 50° multi-angle intake and a 50° radius exhaust valve job

|  |   |
|--|---|
| <p><b>Available OPTIONS:</b><br/>Polishing (6 to 8 weeks lead time)<br/>Contact your World sales representative for details.</p> <p><b>Accessories:</b><br/>832560 Head stud kit for Warhawk 9.240/9.800" LS engine block (standard bolt pattern)<br/>832561 Head stud kit for Warhawk 9.240" LS engine block (extra bolts for Pro bolt pattern)</p> | <p>832564 Head stud kit for Warhawk 9.800" LS engine block (extra bolts for Pro bolt pattern)</p> <p><b>Recommended Installation Items:</b><br/>Head Gaskets: Felpro #1185<br/>Intake Gasket: Felpro #12082<br/>Exhaust Gasket: Felpro #<br/>Spark Plugs: 14mm .708" reach tapered seat (Accel 526)</p> |
|--|---|

# WARHAWK ALUMINUM ENGINE BLOCK

Made of 357-T6 aluminum (absolute strongest available)

100% compatible with OEM accessories

Indexed lifter bores

Provisions for two extra head studs per cylinder (optional use)

Blind tapped head bolt holes

Siamese bores

Uses stock cam bearings. Can be bored for 60mm

Priority main oiling system for optimum reliability

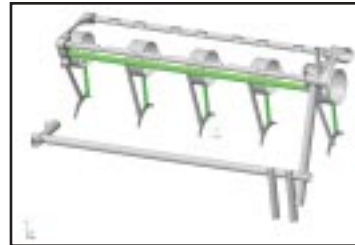
1045 billet steel main caps utilized on Race blocks (unlike competitors' softer 1020)

Precision CNC-machined in two positions to cut down on stacked tolerances

Equipped with both SBC and LS motor mounts

Redesigned water jackets for more support around the cylinder for big boost applications

Manufactured to QS-9000 standards



Priority Main Oiling System ensures that main bearings are lubricated first and the cylinder heads receive oil later along the flow path

**WE URGE YOU TO COMPARE THE FEATURES AND MANUFACTURING QUALITY OF WORLD'S WARHAWK TO ANY OTHER LS-SERIES BLOCK ON THE MARKET—INCLUDING GM'S C5R AND LSX MODELS. YOU'LL SEE WHY WARHAWK IS YOUR BEST BET FOR PERFORMANCE & RELIABILITY!**

**Technical Data:**

**Casting ID Number:** WOR-045B (9.240") WOR-045A (9.800")

**Material:** 357-T6 Aluminum (absolute strongest available)

**Deck Thickness:** .600" minimum

**Cam Bearings:** Stock (can machine to 60mm)

**Cam Location:** Stock

**Maximum Bore:** 4.155"

**Cylinder Sleeves:** Centrifugally cast ductile iron dry sleeves

**Cylinder Wall Thickness:** .100" dry sleeve w/.300" aluminum wall support @ 4.155"

**Water Jackets:** Redesigned for more support around the cylinder for big boost applications

**Lubrication:** Priority main oiling system

**Oil Pan Rails:** Solid (stock width) but redesigned internally to allow for a 4.500" stroke

**Main Cap Material:** Race blocks are made from 1045 billet steel (unlike competitors' softer 1020)

**Main Caps:** 4-bolt, cross-bolted

**Main Cap Hardware:** 7/16" ARP and ring dowels used to locate main caps firmly into position

**Rear Main Seal:** One piece

**Motor Mounts:** Stock LS and standard small block Chevrolet

**Cylinder Head Bolt Holes:** Blind tapped to prevent water leaks

**Starter Mount:** Stock location

**Weight:** Approximately 130lbs.

# WARHAWK ALUMINUM ENGINE BLOCK

LS CHEVROLET

The ultimate replacement for Chevrolet LS1, LS7 or C5R blocks, World's "LS7X" has important improvements that even factory race blocks don't have. This translates into engine builders being able to obtain more power and enjoy improved reliability with Warhawk-based engines.

Let's start at the bottom end. Main caps made of 1045 alloy steel billet are employed. This material is tougher than the 1020 steel used by others. The caps are located by ring dowels and secured with 200,000 psi tensile strength 7/16" ARP main studs and cross-bolts.

It's important to note that the Warhawk uses a Priority Main oiling system, which feeds the crankshaft first and the top-end last. Others feed the top-end first and can starve the main bearings.

Water jackets are redesigned to provide more support around the cylinder—important for big boost applications. They also enhance cooling. The block is cast from 357-T6 alloy aluminum, the absolute strongest available.

Are you beginning to see a trend of leadership here?

World Products also recognized that in order for engine builders who employ power-adders to maintain high combustion pressures with complete reliability it was essential to improve the sealing of the LS. With this in mind World's engineering team added provisions for optional use of two extra head studs per cylinder. They are designed to work in concert with 12° Warhawk cylinder heads, which also have the extra bolt holes. Please note that the cast iron GM LSX block and the aluminum World Warhawk block do not have identical locations for the extra head bolts. Standard 4-bolt GM LS heads will fit.

Another way that World has improved upon the quality of its LS block is through the machining process (which are to QS-9000 standards). All Warhawk blocks are CNC-machined in only two fixturing positions, which prevents the problems that can occur with "production line" blocks that are machined in multiple operations and the tolerances "stack" from one machine to the next. Bottom line, World's Warhawk is the most advanced, precision-made block on the market for LS applications.

**1045 alloy billet steel main caps and 200,000 psi ARP main studs plus cross-bolts ensure bottom end reliability!**



**The Warhawk' block is designed with priority main oiling so the bottom end gets fed first and "upstairs" last**



## WORLD'S RACE-PREPARED BLOCKS SAVE TIME AND MONEY!

For the enthusiast who is planning to assemble an engine in their home garage, getting the block in a race-prepped state is almost a no-brainer relative to saving time and money. World's experienced staff performs important basic operations:

- Decks milled +/- .0025",
- Honed main journals +/- .0004"
- Plate honed cylinder bores .001" O.S. +/- .0005",
- Honed lifter bores +/- .0005"
- Block hot tanked
- Cam bearings installed
- Freeze plugs, installed

- Dowel pins and all pipe plugs are installed
- Block deburred
- Machined surfaces sprayed with rust prohibitor
- Protectively wrapped

More and more professional engine builders are also recognizing the benefits of ordering race-prepped blocks instead of endeavoring to perform these many tasks themselves. Many have realized that their time can be better spent doing critical assembly work such as degreasing in camshafts and setting up the valve train. By employing race-prepped World blocks the shop's through-put can be accelerated, and there are demonstrated savings in terms of personnel, shop equipment, space and cash flow. Do the math.

| Part #      | Series | Type    | Deck   | Bore   | Mains  | Lifters | Main Caps                | Max Stroke |
|-------------|--------|---------|--------|--------|--------|---------|--------------------------|------------|
| 086505      | Race   | Bare    | 9.240" | 3.990" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |
| 086505-4000 | Race   | Prepped | 9.240" | 4.000" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |
| 086505-4030 | Race   | Prepped | 9.240" | 4.030" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |
| 086515      | Race   | Bare    | 9.240" | 4.115" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |
| 086515-4125 | Race   | Prepped | 9.240" | 4.125" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |
| 086515-4155 | Race   | Prepped | 9.240" | 4.155" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |
| 086525      | Race   | Bare    | 9.800" | 4.115" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |
| 086525-4125 | Race   | Prepped | 9.800" | 4.125" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |
| 086525-4155 | Race   | Prepped | 9.800" | 4.155" | 2.751" | .8437"  | 1045 Billet Steel 4-Bolt | 4.500"     |

**Bare Blocks Include:** Screw-in freeze plugs, cam plugs and dowel pin kit

**Prepped Blocks Include:** Decks milled +/- .005", honed main journals +/- .0004", plate honed cylinder bores .001" O.S. +/- .0005", honed lifter bores +/- .0005", hot tanked, cam bearings, freeze plugs, dowel pins and all pipe plugs are installed, deburred sprayed w/rust prohibitor and wrapped

**Important Note:** Due to varying engine builder preferences, the sleeves in an aluminum prepped block are not flush-milled with the deck and may vary.

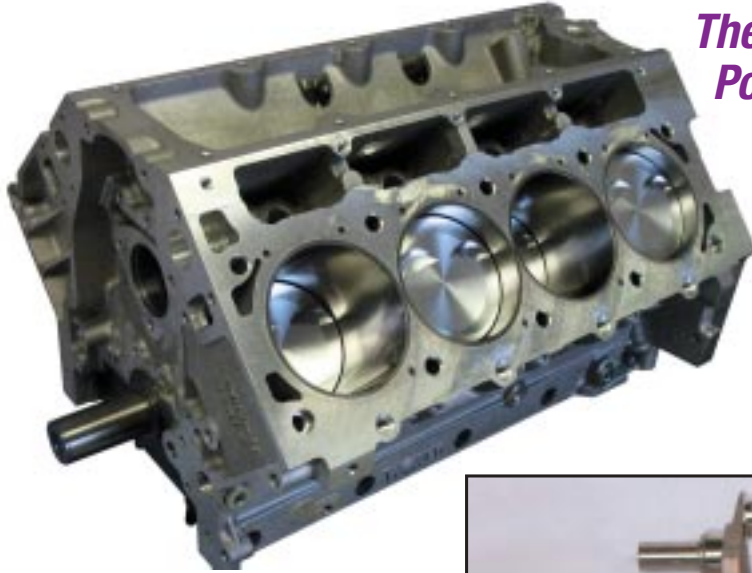
| Accessories: |  |            |  |
|--------------|--|------------|--|
| 832560       | Head stud kit for Warhawk LS cylinder head/Warhawk 9.240/9.800" LS engine block (standard bolt pattern)              | 832800     | Camshaft retainer plate  |
| 832561       | Head stud kit for Warhawk LS cylinder head/Warhawk 9.240" LS engine block (extra bolts for Pro bolt pattern)         | 832820     | Rear seal cover  |
| 832564       | Head stud kit for Warhawk LS cylinder head/Warhawk 9.800" LS engine block (extra bolts for Pro bolt pattern)         | 061070     | Intake manifold spacer for 9.800" Warhawk LS engine block with LS1 cylinder heads  |
| 832875       | 9.240" engine block accessory kit (includes: cam plate, rear plate, valley plate, 4-bolt per cylinder head stud kit) | 061071     | Intake manifold spacer for 9.800" Warhawk LS engine block with LS7 cylinder heads. |
| 832876       | 9.240" engine block accessory kit (includes: cam plate, rear plate, valley plate, 6-bolt per cylinder head stud kit) | 061075     | Valley cover plate   |
| 832877       | 9.800" engine block accessory kit (includes: cam plate, rear plate, valley plate, 4-bolt per cylinder head stud kit) | Z216-85950 | Rear main seal for LS engine   |
| 832878       | 9.800" engine block accessory kit (includes: cam plate, rear plate, valley plate, 6-bolt per cylinder head stud kit) | Z216-85951 | Rear seal plate gasket for Warhawk LS engine block                                 |
|              |  | 832517     | Screw-in freeze plug and pipe plug kit for Warhawk LS aluminum engine block        |
|              |  | 832525     | Dowel pin kit for Warhawk LS engine block  |
|              |  | 841106-NF  | Cylinder sleeve for 9.800" Warhawk LS engine block (4.115" bore)                   |
|              |  | 841107-NF  | Cylinder sleeve for 9.240" Warhawk LS engine block (3.990" bore)                   |

# WARHAWK 427 & 454 CID

## LS1 PARTIAL ENGINES, SHORT BLOCKS & ASSEMBLIES

World's Warhawk 427 and 454 LS1 partial engines and short blocks are designed for owners of Camaros, Corvettes and Firebirds who want the extra power and torque that comes with large displacement engines and want to use their existing intake systems (and possibly heads). These are excellent bolt-in swaps that will take your ride beyond the original engine sizes. The partial

engines feature Warhawk LS1 15° heads, which come with 235cc intake ports (also available with CNC-ported heads with 255cc runners. The assemblies feature a premium grade 4340 forged steel crank, 4340 forged steel H-beam rods, forged aluminum pistons and are digitally balanced (internal). The heads are compatible with all GM LS1-style valve train components. Listings on next page.



**The Easy Way To Obtain Big-Inch Power For Late Model Camaros, Firebirds and 'Vettes. Replace The OEM 5.7 (345") and 6.0L (364") LS1 and LS2 Engines With a Big 427 or 454 Incher!**



**World's Rotating Assemblies Contain Top Quality Components From Many Of The Most Respected Companies In The Aftermarket. We Urge You To Compare These To What Comes In OEM Crate Motors!**



*Do-it yourselfers will appreciate World's Short Block Kits. They include a race-prepped Warhawk aluminum engine block, a 4340 forged steel crankshaft (Eagle or Scat), a set of Eagle or Scat 4340 H-beam connecting rods, forged aluminum pistons (Mahle or Manley) and a high performance ring set (Mahle or Total Seal). The rotating assembly is digitally balanced (internally) to provide smooth operation. It is also available separately.*

*There are a number of components available from World for its Warhawk series of LS replacement engines. The valley cover, rear plate and cam cover are listed below. Also available are premium quality ARP® fasteners, as used in complete World engines. A rear main seal and seal plate gaskets, as well as a dowel pin kit, are also offered.*



**Accessories:**

|        |  |            |   |
|--------|--|------------|---|
| 832560 | Head stud kit for Warhawk LS cylinder head/Warhawk 9.240/9.800" LS engine block (standard bolt pattern)              | 061075     | Valley cover plate  |
| 832564 | Head stud kit for Warhawk LS cylinder head/Warhawk 9.800" LS engine block (extra bolts for Pro bolt pattern)         | Z216-85950 | Rear main seal for LS engine  |
| 832875 | 9.240" engine block accessory kit (includes: cam plate, rear plate, valley plate, 4-bolt per cylinder head stud kit) | Z216-85951 | Rear seal plate gasket for Warhawk LS engine block                          |
| 832800 | Camshaft retainer plate  | 832517     | Screw-in freeze plug and pipe plug kit for Warhawk LS aluminum engine block |
| 832820 | Rear seal cover  | 832525     | Dowel pin kit for Warhawk LS engine block                                   |
|        |  | 841107-NF  | Cylinder sleeve for 9.240" Warhawk LS engine block (3.990" bore)            |

# WARHAWK 427 & 454 CID

## LS1 PARTIAL ENGINES, SHORT BLOCKS & ASSEMBLIES

LS CHEVROLET

Shown with optional valve covers

Equipped with aluminum roller rocker arms and Manley stainless steel valves

Equipped with ARP 200,000 psi head studs

Warhawk 15° LS1 heads have 235cc intake ports and significantly out-flow factory heads. CNC-porting optional

Redesigned water jackets for more support around the cylinder for big boost applications

Rotating assembly is digitally balanced (internally)

| Part #                          | C.I.D. | Heads/Pistons     | Application      | Compression | Camshaft         | Induction | Dome     | Notes |
|---------------------------------|--------|-------------------|------------------|-------------|------------------|-----------|----------|-------|
| <b>Partial Engine (Stage 2)</b> |        |                   |                  |             |                  |           |          |       |
| 103151A                         | 427    | Warhawk LS1       | Street           | 11.5:1      | Hydraulic Roller | None      | -8cc     | A     |
| 103153A                         | 427    | Warhawk LS1       | For Power Adders | 9.6:1       | Hydraulic Roller | None      | -19cc    | B     |
| 103161A                         | 454    | Warhawk LS1       | Street           | 11.5:1      | Hydraulic Roller | None      | -14cc    | A     |
| 103163A                         | 454    | Warhawk LS1       | For Power Adders | 9.3:1       | Hydraulic Roller | None      | -30cc    | B     |
| <b>Short Block Assembly</b>     |        |                   |                  |             |                  |           |          |       |
| 103251A                         | 427    | LS1 Applications  | Street           | 11.5:1      | None             | None      | -8cc     | A     |
| 103253A                         | 427    | LS1 Applications  | For Power Adders | 9.6:1       | None             | None      | -19cc    | B     |
| 103255A                         | 427    | LS1 Applications  | Race             | 13.6:1      | None             | None      | 5cc      | C     |
| 103261A                         | 454    | LS1 Applications  | Street           | 11.5:1      | None             | None      | -14cc    | A     |
| 103263A                         | 454    | LS1 Applications  | For Power Adders | 9.3:1       | None             | None      | -30cc    | B     |
| 103266A                         | 454    | LS7 Applications* | Race             | 13.8:1      | None             | None      | 2cc Dome | D     |
| <b>Short Block Kit</b>          |        |                   |                  |             |                  |           |          |       |
| 103351A                         | 427    | LS1 Applications  | Street           | 11.5:1      | None             | None      | -8cc     | A     |
| 103353A                         | 427    | LS1 Applications  | For Power Adders | 9.6:1       | None             | None      | -19cc    | B     |
| 103355A                         | 427    | LS1 Applications  | Race             | 13.6:1      | None             | None      | 5cc      | C     |
| 103361A                         | 454    | LS1 Applications  | Street           | 11.5:1      | None             | None      | -14cc    | A     |
| 103363A                         | 454    | LS1 Applications  | For Power Adders | 9.3:1       | None             | None      | -30cc    | B     |
| 103366A                         | 454    | LS7 Applications* | Race             | 13.8:1      | None             | None      | 2cc Dome | D     |
| <b>Rotating Kit</b>             |        |                   |                  |             |                  |           |          |       |
| 103451                          | 427    | LS1 Applications  | Street           | 11.5:1      | None             | None      | -8cc     | A     |
| 103453                          | 427    | LS1 Applications  | Street           | 9.6:1       | None             | None      | -19cc    | B     |
| 103455                          | 427    | LS1 Applications  | Race             | 13.6:1      | None             | None      | 5cc      | C     |
| 103461                          | 454    | LS1 Applications  | Street           | 11.5:1      | None             | None      | -14cc    | A     |
| 103463                          | 454    | LS1 Applications  | For Power Adders | 9.3:1       | None             | None      | -30cc    | B     |
| 103466                          | 454    | LS7 Applications* | Race             | 13.8:1      | None             | None      | 2cc Dome | D     |

**Partial Engine Includes:** All the same premium components as the complete engines, less intake manifold, induction system, ignition system and damper

**Short Blocks Include:** Decks milled +/- .005", honed main journals +/- .0004", plate honed cylinder bores .001" O.S. +/- .0005", honed lifter bores +/- .0005", hot tanked, cam bearings, freeze plugs, dowel pins and all pipe plugs are installed, deburred sprayed w/rust inhibitor and wrapped, digitally internal balanced crank, pistons and connecting rods balanced within 2grms

**Short Block Kits Include:** Prepped block and balanced rotating kit

**Notes:**

- A = Compression calculated with a 64cc head, +.005" deck, -8cc piston and a .053" MLS gasket
  - B = Compression calculated with a 72cc head, +.005" deck, -19cc piston and a .053" MLS gasket
  - C = Compression calculated with a 64cc head, +.005" deck, 5cc piston and a .053" MLS gasket
  - D = Compression calculated with a 64cc head, +.005" deck, 2cc piston and a .053" MLS gasket
- All Warhawk 427/454 LS1 engines have a positive deck (piston above the engine block).

**Important Note:**

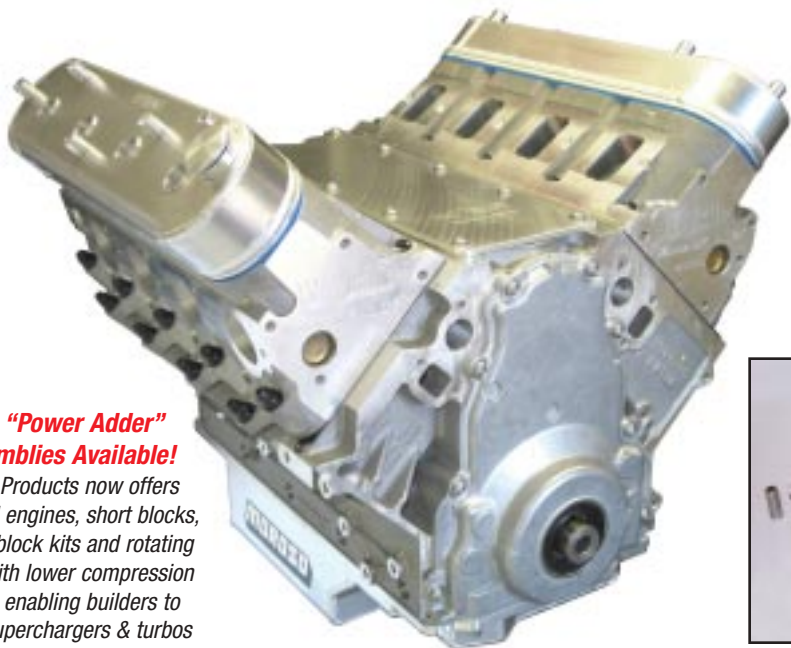
- All Warhawk block assemblies are equipped with a 24 tooth reluctor. For a 58 tooth reluctor add letter Z to part number.
- For a 58 tooth reluctor with long crank snout (for dry sump applications) add letters YZ to part number.
- \* 454 Race shorts and rotating kits use LS7 style pistons\*

# WARHAWK 427 & 481 CID

## LS7 PARTIAL ENGINES & ASSEMBLIES

For those who want to add serious horsepower to their Camaros, Corvettes and Firebirds, World offers big-inch combinations that feature Warhawk LS7 style heads and the highly regarded Warhawk aluminum block. These 7L & 8L powerhouses can provide breathtaking performance thanks to use of the big Warhawk 12° heads with 285cc intake and 106cc exhaust ports. As an option,

you can order CNC ported heads, which feature high-flowing 296cc intake runners and efficient 110cc exhaust ports. Short blocks and block/rotating kit packages are also offered. They are compatible with GM's LS7 components. The block and head can accommodate two extra head bolts per cylinder which provides necessary sealing for big-boost combinations.



**Note: "Power Adder" Assemblies Available!**

World Products now offers partial engines, short blocks, short block kits and rotating kits with lower compression ratios, enabling builders to add superchargers & turbos

| Part #                      | C.I.D. | Heads/Pistons   | Application      | Compression | Camshaft         | Induction | Dome     | Notes |
|-----------------------------|--------|-----------------|------------------|-------------|------------------|-----------|----------|-------|
| <b>Partial Engine</b>       |        |                 |                  |             |                  |           |          |       |
| 103152A                     | 427    | Warhawk LS7     | Street           | 11.5:1      | Hydraulic Roller | None      | -8cc     | A     |
| 103154A                     | 427    | Warhawk LS7     | For Power Adders | 9.6:1       | Hydraulic Roller | None      | -19cc    | B     |
| 103172A                     | 481    | Warhawk LS7     | Street           | 11.6:1      | Hydraulic Roller | None      | -19cc    | D     |
| 103174A                     | 481    | Warhawk LS7     | For Power Adders | 9.8:1       | Hydraulic Roller | None      | -30cc    | E     |
| <b>Short Block Assembly</b> |        |                 |                  |             |                  |           |          |       |
| 103252A                     | 427    | LS7 Application | Street           | 11.5:1      | None             | None      | -8cc     | A     |
| 103254A                     | 427    | LS7 Application | For Power Adders | 9.6:1       | None             | None      | -19cc    | B     |
| 103256A                     | 427    | LS7 Application | Race             | 13.6:1      | None             | None      | 5cc      | C     |
| 103272A                     | 481    | LS7 Application | Street           | 11.6:1      | None             | None      | -19cc    | D     |
| 103274A                     | 481    | LS7 Application | For Power Adders | 9.8:1       | None             | None      | -30cc    | E     |
| 103276A                     | 481    | LS7 Application | Race             | 13.6:1      | None             | None      | Flat Top | F     |
| <b>Short Block Kit</b>      |        |                 |                  |             |                  |           |          |       |
| 103352A                     | 427    | LS7 Application | Street           | 11.5:1      | None             | None      | -8cc     | A     |
| 103354A                     | 427    | LS7 Application | For Power Adders | 9.6:1       | None             | None      | -19cc    | B     |
| 103356A                     | 427    | LS7 Application | Race             | 13.6:1      | None             | None      | 5cc      | C     |
| 103372A                     | 481    | LS7 Application | Street           | 11.6:1      | None             | None      | -19cc    | D     |
| 103374A                     | 481    | LS7 Application | For Power Adders | 9.8:1       | None             | None      | -30cc    | E     |
| 103376A                     | 481    | LS7 Application | Race             | 13.6:1      | None             | None      | Flat Top | F     |
| <b>Rotating Kit</b>         |        |                 |                  |             |                  |           |          |       |
| 103452                      | 427    | LS7 Application | Street           | 11.5:1      | None             | None      | -8cc     | A     |
| 103454                      | 427    | LS7 Application | For Power Adders | 9.6:1       | None             | None      | -19cc    | B     |
| 103456                      | 427    | LS7 Application | Race             | 13.6:1      | None             | None      | 5cc      | C     |
| 103472                      | 481    | LS7 Application | Street           | 11.6:1      | None             | None      | -19cc    | D     |
| 103474                      | 481    | LS7 Application | For Power Adders | 9.8:1       | None             | None      | -30cc    | E     |
| 103476                      | 481    | LS7 Application | Race             | 13.6:1      | None             | None      | Flat Top | F     |

**Partial Engine Includes:** All the same premium components as the complete engines, less intake manifold, induction system, ignition system and damper

**Short Blocks Include:** Decks milled +/- .005", honed main journals +/- .0004", plate honed cylinder bores .001" O.S. +/- .0005", honed lifter bores +/- .0005", hot tanked, cam bearings, freeze plugs, dowel pins and all pipe plugs are installed, deburred sprayed w/rust prohibitor and wrapped, digitally internal balanced crank, pistons and connecting rods balanced within 2grms

**Short Block Kits Includes:** Prepped block and balanced rotating kit

**Notes :**

- A = Compression calculated with a 64cc head, +.005" deck, -8cc piston and a .053" MLS gasket
- B = Compression calculated with a 72cc head, +.005" deck, -19cc piston and a .053" MLS gasket
- C = Compression calculated with a 64cc head, +.005" deck, 5cc piston and a .053" MLS gasket
- D = Compression calculated with a 64cc head, +.010" deck, -19cc piston and a .053" MLS gasket
- E = Compression calculated with a 64cc head, +.010" deck, -30cc piston and a .053" MLS gasket
- F = Compression calculated with a 64cc head, +.005" deck, flat top piston and a .053" MLS gasket

**Important Note:**

All Warhawk block assemblies are equipped with a 24 tooth reluctor. For a 58 tooth reluctor add letter Z to part number. For a 58 tooth reluctor with long crank snout (for dry sump applications) add letters YZ to part number.

All Warhawk 427/481 LS7 engines have a positive deck (piston above the engine block).

# WARHAWK 427 CID LS1 & LS7 ENGINES

LS CHEVROLET

Starting at a dyno-tested 600 horsepower, the Warhawk 427 with LS1 heads has almost 20% more power than any normally aspirated Corvette engine, and comes with your choice of an EFI or carburetor. Want even more power? Get the Warhawk 427 with LS7 heads (235cc vs. 285cc intakes) for a whopping 650 HP on pump gasoline. Not enough? World offers the a Warhawk 427 with a solid roller cam in place of the hydraulic rollers and a 13.6:1 compression ratio that requires use of racing gas—good for 700 or 750 HP depending on

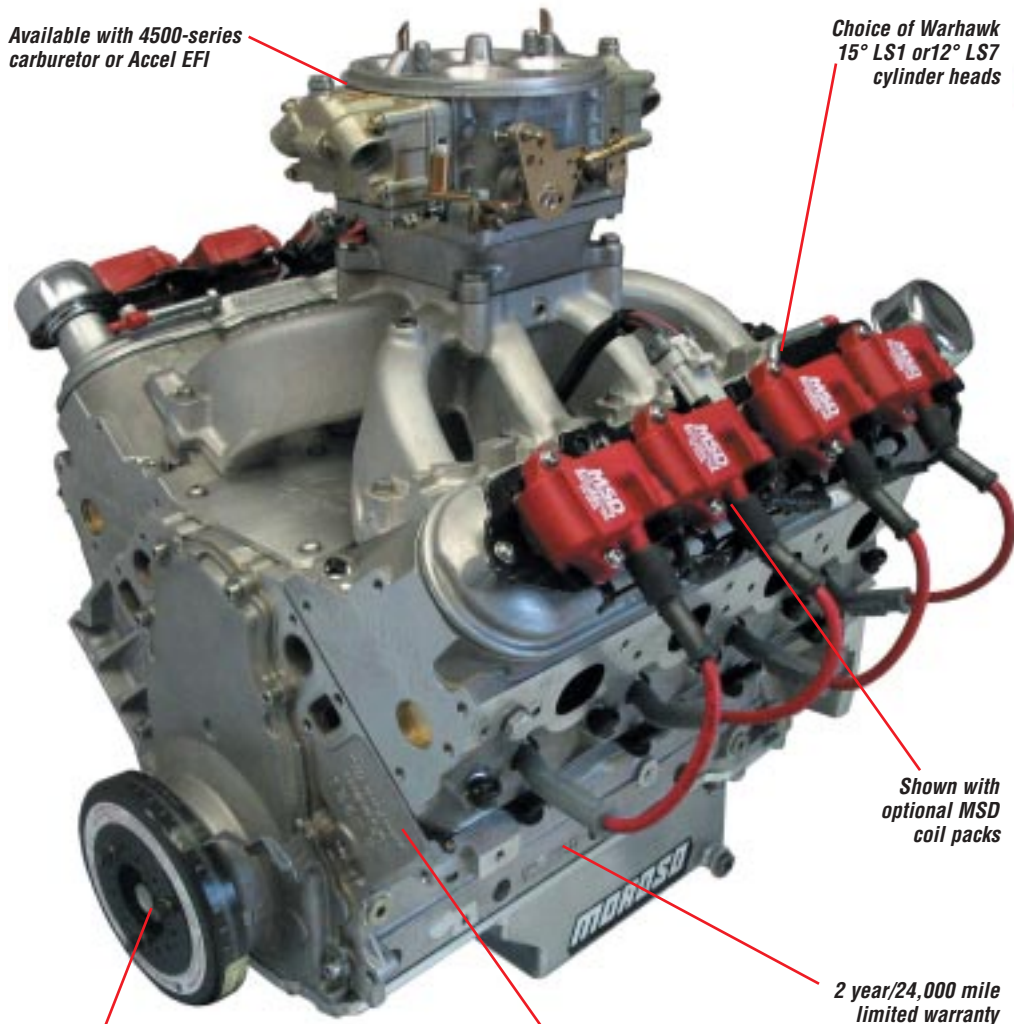
which heads are employed. Add another 30 HP for optional CNC ported heads. These engines are based on World's highly acclaimed Warhawk aluminum block and equipped with a 4340 forged steel crank (Eagle or Scat), 4340 forged steel H-beam rods (Eagle or Scat), forged aluminum pistons (Manley or Mahle) and high performance rings (Mahle or Total Seal). Each engine is dyno-tested and performance certified. The Street engines come with a 2-year, 24,000-mile warranty.

Available with 4500-series carburetor or Accel EFI

Choice of Warhawk 15° LS1 or 12° LS7 cylinder heads



**From 600 To 700 Normally Aspirated Horsepower! Dyno Tested And Ready To Rumble!**



Rotating assembly digitally balanced internally

Warhawk LS aluminum engine block

Shown with optional MSD coil packs

2 year/24,000 mile limited warranty (Street engines)

| Technical Data:           |   |
|---------------------------|---|
| <b>Engine Block:</b>      | Warhawk (Y block)                               |
| <b>Deck Height:</b>       | 9.240"  |
| <b>Bore/Stroke:</b>       | 4.125" x 4.000"                                 |
| <b>Main Caps:</b>         | 4-bolt, cross-bolted billet                     |
| <b>Cylinder Heads:</b>    | Warhawk 15° LS1 or 12° LS7 style aluminum       |
| <b>Valves:</b>            | Manley stainless steel                          |
| <b>Carburetor:</b>        | AED (or Accel EFI)                              |
| <b>Timing Chain:</b>      | Double roller                                   |
| <b>Crankshaft:</b>        | 4340 Eagle/Scat internally balanced             |
| <b>Connecting Rods:</b>   | 4340 Eagle/Scat                                 |
| <b>Pistons:</b>           | Manley/Mahle                                    |
| <b>Gaskets:</b>           | Fel-Pro   |
| <b>Internal Hardware:</b> | ARP®  |
| <b>Exterior Hardware:</b> | Totally Stainless                               |
| <b>Oil Pan:</b>           | Moroso  |
| <b>Warranty:</b>          | 2 year/24,000 mile limited (Street Series only) |

| Part #                 | C.I.D. | Heads | HP  | Application | Compression | Camshaft         | Induction    | Dome | Notes |
|------------------------|--------|-------|-----|-------------|-------------|------------------|--------------|------|-------|
| <b>Complete Engine</b> |        |       |     |             |             |                  |              |      |       |
| 103051A                | 427    | LS1   | 600 | Street      | 11.5:1      | Hydraulic Roller | 4500 1050cfm | -8cc | A     |
| 103052A                | 427    | LS7   | 625 | Street      | 11.5:1      | Hydraulic Roller | 4500 1050cfm | -8cc | A     |
| 103059A                | 427    | LS1   | 600 | Street      | 11.5:1      | Hydraulic Roller | EFI          | -8cc | A     |
| 103060A                | 427    | LS7   | 625 | Street      | 11.5:1      | Hydraulic Roller | EFI          | -8cc | A     |
| 103057A                | 427 :  | LS1   | 675 | Race        | 13.6:1      | Solid Roller     | 4500 1050cfm | 5cc  | B     |
| 103058A                | 427    | LS7   | 725 | Race        | 13.6:1      | Solid Roller     | 4500 1050cfm | 5cc  | B     |

**Complete Engine Includes:** Pan to carb (or EFI), fully assembled, dyno tuned and tested and comes with a 2 year/24 month warranty (does not include starter, water pump, flywheel or electronics)

**Notes :**  
 A = Compression calculated with a 64cc head, +.005" deck, -8cc piston and a .053" MLS gasket  
 B = Compression calculated with a 64cc head, +.005" deck, 5cc piston and a .053" MLS gasket  
 All Warhawk 427 LS7 engines have a positive deck (piston above the engine block).

**Important Note:**  
 All Warhawk block assemblies are equipped with a 24 tooth reluctor. For a 58 tooth reluctor add letter Z to part number. For a 58 tooth reluctor with long crank snout (for dry sump applications) add letters YZ to part number.

|  |   |
|--|---|
| <b>Available options:</b><br>Polished aluminum engine block, cylinder heads and intake manifold (6 to 8 weeks lead time)<br>Polished cylinder heads and intake manifold (6 to 8 weeks lead time)<br>CNC head porting (add 30 hp) | 1 year/12,000 mile limited warranty (includes dyno break-in) Partial engine only MSD ignition<br><br>Contact your World sales representative for details. |
|--|---|

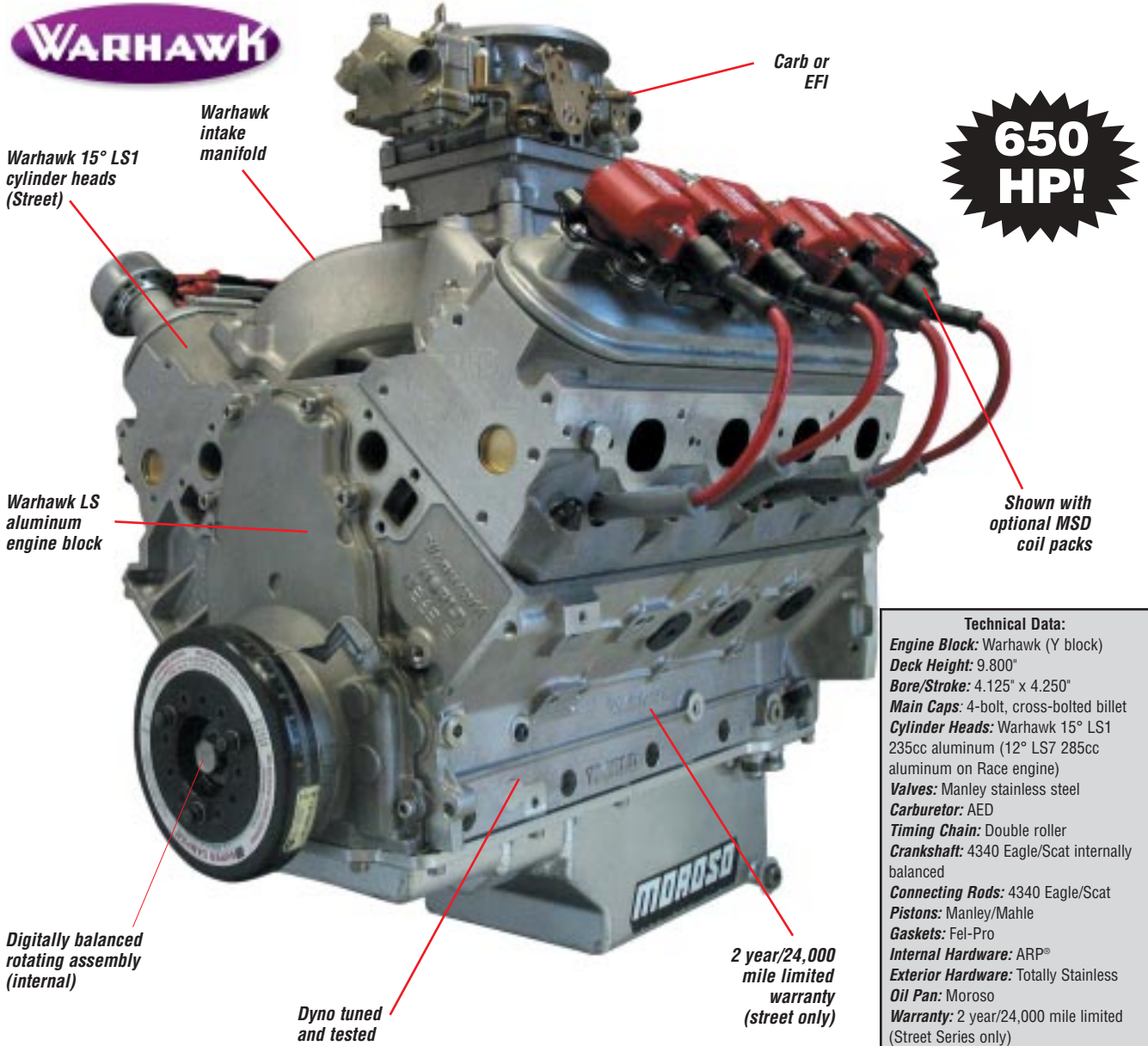
# WARHAWK 454 CID LS1/LS7 ENGINES

For those seeking awesome torque World offers a trio of 454 cubic inch Warhawk engines that come with a 4.125" bore and 4.250" stroke, these big-inch powerhouses take you far beyond factory offerings. They've got about a hundred ponies over the latest Corvette Z06 engines.

For street applications there's a 635 horsepower engine with a hydraulic roller cam and your choice of a carburetor or Accel EFI. These engines are

equipped with World's Warhawk LS1-style 15° cylinder heads with 235cc intake runners. A high compression Race engine is also offered. It has a solid roller cam and larger 285cc intake LS7-style Warhawk 12° cylinder heads. It puts out 775 horsepower on racing gas.

For even more power, engines are available with optional CNC-ported heads. They're conservatively rated as being worth 30 extra horsepower.



| Technical Data:           |  |
|---------------------------|--|
| <b>Engine Block:</b>      | Warhawk (Y block)  |
| <b>Deck Height:</b>       | 9.800"   |
| <b>Bore/Stroke:</b>       | 4.125" x 4.250"  |
| <b>Main Caps:</b>         | 4-bolt, cross-bolted billet  |
| <b>Cylinder Heads:</b>    | Warhawk 15° LS1 235cc aluminum (12° LS7 285cc aluminum on Race engine) |
| <b>Valves:</b>            | Manley stainless steel   |
| <b>Carburetor:</b>        | AED  |
| <b>Timing Chain:</b>      | Double roller  |
| <b>Crankshaft:</b>        | 4340 Eagle/Scat internally balanced                                    |
| <b>Connecting Rods:</b>   | 4340 Eagle/Scat  |
| <b>Pistons:</b>           | Manley/Mahle   |
| <b>Gaskets:</b>           | Fel-Pro  |
| <b>Internal Hardware:</b> | ARP®   |
| <b>Exterior Hardware:</b> | Totally Stainless  |
| <b>Oil Pan:</b>           | Moroso   |
| <b>Warranty:</b>          | 2 year/24,000 mile limited (Street Series only)                        |

| Part #                 | C.I.D. | Heads | HP  | Application | Compression | Camshaft         | Induction    | Dome     | Notes |
|------------------------|--------|-------|-----|-------------|-------------|------------------|--------------|----------|-------|
| <b>Complete Engine</b> |        |       |     |             |             |                  |              |          |       |
| 103061A                | 454    | LS1   | 650 | Street      | 11.5:1      | Hydraulic Roller | 4500 1050cfm | -14cc    | A     |
| 103069A                | 454    | LS1   | 650 | Street      | 11.5:1      | Hydraulic Roller | EFI          | -14cc    | A     |
| 103068A                | 454    | LS7   | 725 | Race        | 13.8:1      | Solid Roller     | 4500 1050cfm | 2cc Dome | B     |

**Complete Engine Includes:** Pan to carb (or EFI), fully assembled, dyno tuned and tested and comes with a 2 year/24 month warranty (does not include starter, water pump, flywheel or electronics)

**Notes:**  
 A = Compression calculated with a 64cc head, +.005" deck, -14cc piston and a .053" MLS gasket  
 B = Compression calculated with a 64cc head, +.005" deck, 2cc piston and a .053" MLS gasket  
 All Warhawk 454 LS1 engines have a .005" positive deck (pistons above the engine block)

**Important Note:**  
 All Warhawk block assemblies are equipped with a 24 tooth reluctor. For a 58 tooth reluctor add letter Z to part number. For a 58 tooth reluctor with long crank snout (for dry sump applications) add letters YZ to part number.

|  |  |
|--|--|
| <p><b>Available options:</b></p> <ul style="list-style-type: none"> <li>Polished aluminum engine block, cylinder heads and intake manifold (6 to 8 weeks lead time)</li> <li>Polished cylinder heads and intake manifold (6 to 8 weeks lead time)</li> <li>CNC head porting (add 30 hp)</li> </ul> | <p>1 year/12,000 mile limited warranty (includes dyno break-in) Partial engine only MSD ignition</p> <p>Contact your World sales representative for details.</p> |
|--|--|

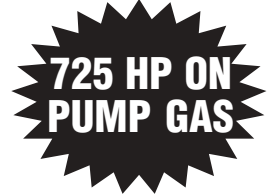
# WARHAWK 481 CID LS7 ENGINE

LS CHEVROLET

World Products has always advocated the premise that "There's no substitute for cubic inches!" Large displacement engines are the perfect way to get exceptional power without sacrificing reliability. World's Warhawk 481 LS7 engine is a case in point. Thanks in no small part to its whopping 481 cubic inch displacement, you'll get 725 dyno-tested horses from engines topped with either an EFI or Dominator-style carburetor. These Street-rated engines have hydraulic roller cams and use pump gasoline. A solid roller cammed-engine with 13.5:1 compression (requires racing gas) is rated at 825 horsepower.

The awesome performance of these engines can also be attributed to the Warhawk 12° LS7-style heads that are employed. With 285cc intake and 106cc exhaust ports they provide outstanding flow. They also feature a Warhawk aluminum block that's fitted with a balanced rotating assembly consisting of a 4340 forged steel crank (Callies), 6440 forged steel H-beam rods (Callies Compstar), forged aluminum pistons (Manley or Mahle) and high performance rings (Mahle or Total Seal).

For even more power order this engine with optional CNC-ported cylinder heads. With 296cc intake and 110cc exhaust ports they're worth 30 extra HP!



Warhawk 12° LS7 cylinder heads

Available with carb or EFI

Dyno tuned and tested

Warhawk LS aluminum engine block

Shown with optional MSD coil packs

2 year/24,000 mile limited warranty

Rotating assembly digitally balanced (internally)

Lubrication system far superior to OEM design

| Technical Data:           |   |
|---------------------------|---|
| <b>Engine Block:</b>      | Warhawk (Y block)                               |
| <b>Deck Height:</b>       | 9.800"  |
| <b>Bore/Stroke:</b>       | 4.125" x 4.500"                                 |
| <b>Main Caps:</b>         | 4-bolt, cross-bolted billet                     |
| <b>Cylinder Heads:</b>    | Warhawk 12° LS7 285cc aluminum                  |
| <b>Valves:</b>            | Manley stainless steel                          |
| <b>Carburetor:</b>        | AED   |
| <b>Timing Chain:</b>      | Double roller                                   |
| <b>Crankshaft:</b>        | 4340 Callies internally balanced                |
| <b>Connecting Rods:</b>   | 4340 Eagle/Scat                                 |
| <b>Pistons:</b>           | Manley/Mahle                                    |
| <b>Gaskets:</b>           | Fel-Pro   |
| <b>Internal Hardware:</b> | ARP   |
| <b>Exterior Hardware:</b> | Totally Stainless                               |
| <b>Oil Pan:</b>           | Moroso  |
| <b>Warranty:</b>          | 2 year/24,000 mile limited (Street Series only) |

| Part #                 | C.I.D. | HP  | Application | Compression | Camshaft         | Induction    | Dome     | Notes |
|------------------------|--------|-----|-------------|-------------|------------------|--------------|----------|-------|
| <b>Complete Engine</b> |        |     |             |             |                  |              |          |       |
| 103072A                | 481    | 725 | Street      | 11.6:1      | Hydraulic Roller | 4500 1050cfm | -19cc    | A     |
| 103080A                | 481    | 725 | Street      | 11.6:1      | Hydraulic Roller | EFI          | -19cc    | A     |
| 103078A                | 481    | 825 | Race        | 13.5:1      | Solid Roller     | 4500 1050cfm | Flat Top | B     |

**Complete Engine Includes:** Pan to carb (or EFI), fully assembled, dyno tuned and tested and comes with a 2 year/24 month warranty (does not include starter, water pump, flywheel or electronics)

**Notes:**

A = Compression calculated with a 64cc head, +.010" deck, -19cc piston and a .053" MLS gasket  
 B = Compression calculated with a 64cc head, +.005" deck, flat top piston and a .053" MLS gasket  
 All Warhawk 481 LS7 engines have a positive deck (piston above the engine block .010") except drag race, which is .005" above block.

**Important Note:**

All Warhawk block assemblies are equipped with a 24 tooth reluctor. For a 58 tooth reluctor add letter Z to part number. For a 58 tooth reluctor with long crank snout (for dry sump applications) add letters YZ to part number.

|   |   |
|---|---|
| <p><b>Available options:</b><br/>                 Polished aluminum engine block, cylinder heads and intake manifold (6 to 8 weeks lead time)<br/>                 Polished cylinder heads and intake manifold (6 to 8 weeks lead time)<br/>                 CNC head porting (add 30 hp)</p> | <p>1 year/12,000 mile limited warranty (includes dyno break-in)<br/>                 MSD ignition<br/>                 Contact your World sales representative for details.</p> |
|---|---|