



## TRICK FLOW SUPER 23® Aluminum 215cc & 230cc Cylinder Heads

### Small Block Chevrolet

Thank you for purchasing Trick Flow Super 23® aluminum cylinder heads designed for the Small Block Chevrolet.

Please follow the steps outlined in this instruction manual to ensure that the installation of your new cylinder heads is done correctly and that they perform according to design.

Please read all the enclosed information before beginning any work. If you have any questions regarding installation or the written materials supplied with your new heads, contact the Trick Flow technical department at 1-330-630-1555 for assistance, Monday through Friday from 9:00am to 5:00pm EST.

#### Tuning

In most cases, a naturally aspirated small block Chevrolet with our heads will only require 32-36 degrees of timing with dome pistons leaning more towards 36 degrees and flat top pistons closer to 32. We highly recommend starting around 32 degrees and slowly adding timing until you don't gain power or ET, then back it down another degree to ensure there's no detonation. Improper tuning and valve float are the leading cause of cylinder head component damage.

#### Valves and Valve Springs

While the valves and springs included in assembled cylinder heads are high quality, dyno and durability tested, they are intended to fit a wide variety of applications. High RPM, forced induction, or nitrous applications are potentially subject to requiring higher grade valves and/or springs. We recommend contacting your cam manufacturer for spring recommendations and Trick Flow Sales and Tech department for valve recommendations. If more installed height is needed, valves can be ordered with a higher lock groove for use with  $\pm 0.050$  locks/retainers.

#### Standard Springs (TFS-16094-16):

Cam Type: Hydraulic Roller/Flat Tappet  
Diameter: Ø1.550 Dual  
Pressure/Rate: 138 lb @ 1.950; 427 lb/in rate  
Max Lift: .680"

#### Optional Springs (TFS-16324-16):

Cam Type: Solid Roller  
Diameter: Ø1.550 Dual  
Pressure/Rate: 215 lb @ 1.950; 460 lb/in rate  
Max Lift: .700"

#### Standard Valves:

Exhausts: Ø1.600" – **TFS-32400212** (EV-8 Stainless)  
Intake: Ø2.080" – **TFS-32400213** (EV-8 Stainless)

#### Valve Guide Clearance

Intake and exhaust guide clearances are set from Trick Flow for the specific guide material and most applications. On more severe power adder applications, looser guide clearances may be required.

#### Pushrod Length

It is required that pushrod length is checked, longer than stock pushrods are required for Super 23® cylinder heads. We do not recommend a specific length as every combination will be slightly different. Please visit [TrickFlow.com](http://TrickFlow.com) to order a pushrod length checker. Length Checker 6.800 to 7.800: **TFS-9501**  
Length Checker 7.800 to 8.800: **TFS-9502**

#### Pushrod Diameter

It is recommended to step up to a 3/8" diameter pushrod on higher spring pressures and high RPM to minimize deflection.  
3/8 pushrod guideplates: **ISK-300-AGP**

## Port Matching

Port matching your intake manifold to the heads is a common step required when building your engine. *Do not use a gasket to port match* as you are almost guaranteed to get some mismatch when you're done grinding.

## Porting

There's a lot of time spent in port development at Trick Flow, and we do not recommend porting or changing valve sizes as the entire package has been optimized on the flow bench and on the dyno. If you wish to change these heads, this will be done entirely at your own risk. Modifying these ports can result in a loss of performance and a chance of breaking through a pushrod hole or water jacket.

## Pistons

In most cases, aftermarket pistons are required because of the 2.080" intake valve. ***We recommend checking piston to valve and piston to head regardless of the combination!***

## Valve Seats

We use high quality, heat treated ductile iron seats that are designed for longevity in applications using unleaded and leaded gasolines as well as E85 and methanol.

## Head Gaskets

Use a good quality gasket from Trick Flow Cometic, or Fel-Pro with the proper bore size and thickness for your application. Head gaskets typically have smaller water holes than the block and/or head, so there is nothing to worry about if that is the case. The deck surface of our cylinder heads exceeds the surface finish required for a good MLS gasket. It is fine for the bore diameter of the head gasket to be larger than the bore diameter of the block.

Min. Bore: 4.000"

215cc Head Gasket Bore: 4.155"

230cc Head Gasket Bore: 4.200"

Recommended Gasket: **TFS-30494200-040**

## Intake Gaskets

Use good quality Fel-Pro 1207 or 1267 intake gaskets. When installing the gasket, make sure it fits around the port and make sure to put a thin layer of silicone around the water ports.

## Exhaust Gaskets

Use **Fel-Pro 1406** exhaust gaskets for all Super 23® cylinder heads.

## Valve Cover Gaskets

Use Trick Flow **TFS-30400941** rubber gasket with steel core.

## Guide Plates and Rocker Studs

Use TFS guide plates (TFS-30400623-8) and rocker studs (TFS-51400614). Seal *all* rocker threads with thread sealer or silicone. Move the guide plate around until the roller of the rocker arm is centered side to side on the valve. Torque to **55 ft-lbs.**



## Cylinder Head Fastener Selection

High quality head bolts or studs are required for these cylinder heads. A hardened washer must be used to ensure proper torque and prevent damage to the head. Head bolts can be used in most applications, but we recommend stepping up to head studs if a power adder is being utilized. These heads are drilled for 7/16" fasteners.

7/16" Head Bolts: **TFS-92000**

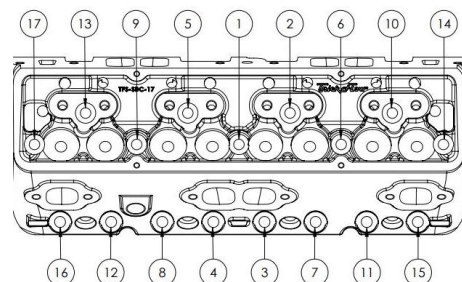
7/16" Head Studs: **ARP-234-4301**

## Cylinder Head Fastener Torque

We recommend using the fastener manufacturer's instructions to determine the proper lubrication and torque specifications. Below is our general guide to lubrication and torque sequence for cylinder head fasteners.

**Head Bolts:** Place a small amount of ARP moly lube on the tops of your head bolt washers. If the bolt intersects a water jacket in the block, coat the threads of your head bolts with a good quality sealant; otherwise, use ARP moly lube on the threads. Torque in the sequence below.

**Head Studs:** Place a drop of engine oil or blue Loctite on the coarse threads going into the block. If the stud intersects a water jacket in the block, coat the threads of your head studs with a good quality sealant. Use ARP moly lube on the washers and the fine thread end of the studs, then thread the nuts onto the studs. Torque in the sequence below.



## Spark Plugs

Specs: **14mm – .750” Reach – Gasketed – 5/8” Hex**

We recommend contacting your spark plug manufacturer for specific recommendations for your application. Below is our general guide to get started. There are many factors that can change which heat range to use.

### Naturally Aspirated

Street, low compression **Autolite 3922**

Race, low compression **NGK 5671A-8**

### Nitrous or Forced Induction

Start with a colder plug than naturally aspirated; this will typically be an **NGK 5671A-9** or **NGK 5671A-10**.

## Rocker Arms

Always ensure there is proper clearance between the retainer/spring and the rocker arm. We would recommend a minimum clearance of **0.015”**.

Stud Mounted Rockers: **TFS-31400520** or **TFS-31400521**

Shaft Rockers: **JESEL SPORTSMAN KSS-336060**  
**JESEL PRO KPS-01001-6060**

## Pre-lubing the Valvetrain

It is highly recommended to use a good high-pressure lube such as CMD #3 on the pushrod tips and a drop of oil on the valve tip prior to priming and firing the engine.

## Intake Manifold

It is highly recommend using a Trick Flow or Edelbrock intake manifold depending on your specific combination.

### Carbureted:

Trick Flow R-Series: **TFS-32400111**

Edelbrock: **2925** (215cc and 230cc)  
**2892** (230cc)

## Cylinder Head Specs

Head Material: A356-T61 Aluminum

Intake Port Location: Stock

Intake Valve Angle: 23°

Intake Port Dimension: 1.275” x 2.265”

Intake Valve Diameter: 2.080” x 11/32”

**TFS-32400213**

Exhaust Port Location: Stock

Exhaust Valve Angle: 23°

Exhaust Valve: 1.600” x 11/32”

**TFS-32400212**

Exhaust Port Dimension: 1.450” x 1.450” D-Shape

Valve Guide: Bronze Alloy

Intake **TFS-51600251**

Exhaust **TFS-51600252**

Valve Seal: Fluoroelastomer Canister

**TFS-30400454**

Intake Valve Seat: Ductile Iron

**TFS-51600271**

Exhaust Valve Seat: Ductile Iron

**TFS-51700272**

Valve Seat Angle: 45°

Valve Angle Count: 5 Intake, 3 Exhaust

Spring Pockets: 1.615”

ID Locator: 1.500”

**TFS-21400440**

Retainers: Steel 10° x 1.550”

**TFS-41400423**

Titanium 10° x 1.550”

**TFS-214T0525**

Locks: 10° Square with lash cap recess

**TFS-52400444**

Minimum Bore: 4.000”

Milling Specs: 0.006” per CC

Weight: 21 lbs. each, bare

## Ultimate Bolt-On Performance® Lifetime Warranty

Trick Flow Specialties guarantees original, unmodified cylinder head castings against manufacturing defects. Trick Flow's liability is limited to replacing the casting.

The valves, valve guides, valve seats, valve job, valve springs, valve spring retainers, valve locks, rocker arm studs, guide plates, and valve stem seals included on assembled Trick Flow Specialties cylinder heads are warranted to the original purchaser to be free from defects in materials and workmanship for a period of two years from the date of purchase. All other Trick Flow Specialties products are warranted to be free from defects in materials and workmanship for a period of 90 days.

There are no mileage limitations.

### **PROPOSITION 65 WARNING**

This product may contain one or more substances or chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

### **TRICK FLOW SPECIALTIES**

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