Twisted Wedge® 11R Aluminum Cylinder Heads

Small Block Ford

Thank you for purchasing Trick Flow Twisted Wedge® 11R aluminum cylinder heads designed for the Small Block Ford.

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

11R cylinder heads are very efficient and require significantly less timing than other cylinder heads. In most cases, a naturally aspirated small block Ford with 11R heads will only require 26-28 degrees of timing. We highly recommend starting around 26 degrees and slowly adding timing until ET or horsepower drops off, 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, the spring pockets may be machined .050" deeper and valves can be ordered with a higher lock groove.

Standard Springs (**TFS-16306-16**):

Cam Type:	Hydraulic Roller
Diameter:	Ø1.275 Dual
Pressure/Rate:	150 lb @ 1.800; 450 lb/in rate
Max Lift:	.600"

Standard Valves:

All Exhausts:	Ø1.600" – **TFS-52500212** (EV-8 Stainless)
170cc:	Ø2.020" – **TFS-52500211** (EV-12 Stainless)
190cc:	Ø2.055" – **TFS-52500213** (EV-12 Stainless)
205cc/227cc:	Ø2.080" – **TFS-52500215** (EV-12 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. We do not recommend a specific length as every combination will be slightly different. Please visit TrickFlow.com to order a pushrod length checker.
302 Length Checker: **TFS-9501**
351 Length Checker: **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.

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

If utilizing a Trick Flow Stage 1, Trick Flow Stage 2, or a stock camshaft, no special piston should be required for proper piston to valve clearance. ***We still 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.

4.030" Bore: **TFS-51494030-040**
4.060" Bore: **TFS-51494060-040**

Intake Gaskets

Use good quality Trick Flow and Fel-Pro 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.

170cc: **Fel-Pro 1250**
190cc: **Fel-Pro 1262**
205cc: **Fel-Pro 1262R or TFS-52400921**
227cc: **Fel-Pro 1262R or TFS-52400921**

Exhaust Gaskets

Use **Fel-Pro 1415** exhaust gaskets for all 11R heads.

Valve Cover Gaskets

Use Trick Flow **TFS-51400941** rubber gasket with steel core.

Guide Plates and Rocker Studs

Use TFS guide plates (TFS-51400623 or TFS-51400624) 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 1/2" fasteners; even if 7/16" fasteners are required for the application, a reducer bushing is **not** required.

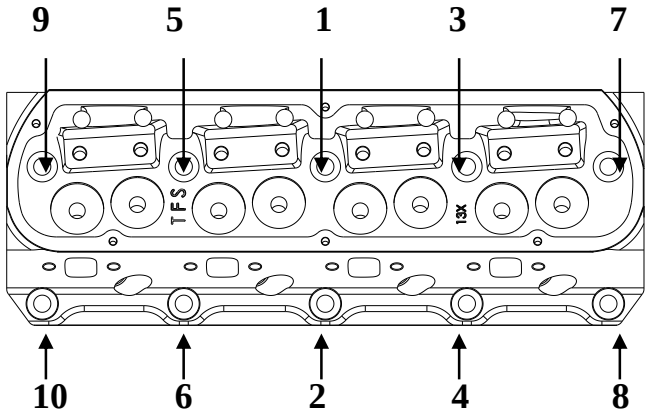
7/16" Head Bolts: **TFS-92005**
1/2" Head Bolts: **ARP-154-3603**
7/16" Head Studs: **ARP-154-4205**
1/2" Head Studs: **ARP-154-4203**

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 crosses 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 crosses 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 3924**

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-51400520** or **TFS-51400521**
Shaft Rockers:	**Scorpion 3710**
	Jesel KPS-470191
	T&D 7314

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

We highly recommend using a Trick Flow, Edelbrock, or Holley intake manifold depending on your specific combination. The next page has a chart of various manifolds and their compatibility with TFS 11R cylinder heads.

Cylinder Head Specs

Head Material:	A356-T61 Aluminum
Intake Port Location:	Stock
Intake Valve Angle:	11°
Exhaust Port Location:	Stock
Exhaust Valve Angle:	13°
Exhaust Valve:	1.600" x 8mm
	TFS-52500212
Exhaust Port Dimension:	1.250" x 1.480"
Valve Guide:	Bronze Alloy
	TFS-52500251
Valve Seal:	Fluoroelastomer Canister
	TFS-30600455
Intake Valve Seat:	Ductile Iron
	TFS-52500271
Exhaust Valve Seat:	Ductile Iron
	TFS-30600274
Valve Seat Angle:	45°
Valve Angle Count:	5 Intake, 3 Exhaust
Spring Pockets:	1.640"
ID Locator:	1.300"
	TFS-21400442
Retainers:	Steel 7° x 1.300"
	TFS-21400415
	Titanium 7° x 1.300"
	TFS-214T0415
Locks:	7° Steel Beadlock
	TFS-30600444
Minimum Bore:	4.000"
Milling Specs:	0.006" per CC
Weight:	24 lbs. each, bare
170cc	
Intake Port Dimension:	2.000" x 1.200"
Intake Valve Diameter:	2.020"
	TFS-52500211
190cc	
Intake Port Dimension:	2.100" x 1.280"
Intake Valve Diameter:	2.055"
	TFS-52500213
205cc and 227cc	
Intake Port Dimension:	2.250" x 1.400"
Intake Valve Diameter:	2.055"
	TFS-52500215

Intake Manifold and 11R Head Compatibility

351W Carbureted					
Part Number	**Series**	**11R 170**	**11R 190**	**11R 205**	**11R 227**
TFS-52400114	R-Series		X	X	X
TFS-52500114-C04	R-Series				PM
Edelbrock 2981	Victor Jr	X	X		
Edelbrock 2924	Super Victor			X	X
Edelbrock 7581	Performer RPM	X			

351W EFI					
Part Number	**Series**	**11R 170**	**11R 190**	**11R 205**	**11R 227**
TFS-52400115	R-Series		X	X	X
TFS-52500115-C04	R-Series				PM
TFS-51511004	R-Series		75mm	75mm	75mm
TFS-51511006	R-Series		90mm	90mm	90mm
TFS-51511009	Box-R-Series			90mm	90mm
Holley 300-241BK	Hi-Ram		95mm	95mm	95mm
Holley 300-242BK	Hi-Ram			105mm	105mm

***PM indicates port matched manifold**

289/302 Carbureted					
Part Number	**Series**	**11R 170**	**11R 190**	**11R 205**	**11R 227**
TFS-52400111	R-Series		X	X	X
Edelbrock 2921	Victor Jr.	X	X		
Edelbrock 2928	Super Victor			X	X
Edelbrock 7521	Performer RPM	X			

289/302 EFI					
Part Number	**Series**	**11R 170**	**11R 190**	**11R 205**	**11R 227**
TFS-52400112	R-Series		X	X	X
TFS-51511001	StreetBurner	75mm			
TFS-51511002	Track Heat	75mm	75mm		
TFS-51511003	R-Series		75mm	75mm	75mm
TFS-51511005	R-Series		90mm	90mm	90mm
TFS-51511008	Box-R-Series		90mm	90mm	90mm
Holley 300-272BK	Hi-Ram		95mm	95mm	95mm
Holley 300-273BK	Hi-Ram			105mm	105mm

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.

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