ROD BOLTS & NUTS

8740 Chrome Moly: Until the development of today's modern alloys, chrome moly was popularly considered a high strength material. Now viewed as only moderate strength, 8740 chrome moly is seen as a good tough steel, with adequate fatigue properties for most racing applications, but only if the threads are rolled after heat-treatment, as is the standard ARP production practice. Typically, chrome moly is classified as a quench and temper steel, that can be heat-treated to deliver tensile strengths between 180,000 and 210,000 psi.

8740 STEEL ALLOY (180,000 p.s.i.)			
Part No.	Description	Material	Type
90828-16	3/8 X 1.600	8740	12 pt Cap Screw
90805-16	3/8 X 1.920	8740	Thru-bolt

ARP2000®: ARP2000 is an alloy steel that can be safely heat treated to a higher level, producing a greater strength material than 8740. While 8740 and ARP2000 share similar characteristics – ARP2000 is capable of achieving a clamp load at 220,000 psi. ARP2000 is used widely in short track and drag racing as an up-grade from 8740 chrome moly in both steel and aluminum rods. Stress corrosion and hydrogen embrittlement are typically not a problem, providing care is taken during installation.

ARP2000® (220,000 p.s.i.)			
Part No.	Description	Material	Type
90824A-16	5/16 X 1.500	ARP2000®	12 pt Cap Screw
90821-8	3/8 X 1.600	ARP2000®	12 pt Cap Screw
90821-12	3/8 X 1.600	ARP2000®	12 pt Cap Screw
90821-16	3/8 X 1.600	ARP2000®	12 pt Cap Screw
90846-16	7/16 X 1.440	ARP2000®	12 pt Cap Screw
90826A-16	7/16 X 1.555	ARP2000®	12 pt Cap Screw

L19: This is a premium steel that is processed to deliver superior strength and fatigue properties. L19 is a very high strength material compared to 8740 and ARP2000 and is capable of delivering a clamp load at 260,000 psi. It is primarily used in short track and drag racing applications where inertia loads exceed the clamping capability of ARP2000. Like most high strength, quench and temper steels – L19 requires special care during manufacturing to avoid hydrogen embrittlement. This material is easily contaminated and subject to stress corrosion. It must be kept well-oiled and not exposed to moisture.

L19 (260,000 p.s.i.)			
Part No.	Description	Material	Type
90824-16	5/16 X 1.500	L19	12 pt Cap Screw
90823-16	7/16 X 1.650	L19	12 pt Cap Screw
90820-16	7/16 X 1.800	L19	12 pt Cap Screw
90849-16	1/2-20 1.870	L19	12 pt Cap Screw

TORQUE SPECS. SEE PAGE 203

ARP3.5® (AMS5844): While similar to Inconel 718, these super-alloys are found in many jet engine and aerospace applications where heat and stress attack the life of critical components. The high cobalt content of this alloy, while expensive, delivers a material with superior fatigue characteristics and typically tensile strength in the 260,000-280,000 psi range. The immunity to hydrogen embrittlement and corrosion of these materials is a significant design consideration. These materials are primarily used in connecting rods where extremely high loads, high RPM and endurance are important factors – Formula 1, NASCAR and IRL applications.

ARP3.5® (AMS5844) (280,000 p.s.i.)			
Part No.	Description	Material	Type
90847-8	1/4 X 1.375	AMS5844	12 pt Cap Screw
90845-16	5/16 X 1.500	ARP3.5®	12 pt Cap Screw
90842-16	3/8 X 1.600	ARP3.5®	12 pt Cap Screw
90830-16	7/16 X 1.550	ARP3.5®	12 pt Cap Screw
90833-16	7/16 X 1.650	ARP3.5®	12 pt Cap Screw
90832-16	7/16 X 1.800	ARP3.5®	12 pt Cap Screw

ROD NUTS

ROD NUTS			
Part No.	Description	Material	Type
90811-16	7/16	8740	12 pt
90814-16	3/8	8740	12 pt

Part No.	Description	Dimension
90811-1	Billet or Forged Rods	7/16
90813-1	Billet Rods	11/32
90814-1	Billet & Sportsman Rods , 12-point Alloy	3/8

Connecting Rod Accessories

ALIGNMENT SLEEVES

Crower hollow dowel connecting rod alignment sleeves are precision ground from high grade alloy. Sold by the piece.

Part No.	Description	Dimension
90850-1	Rod alignment sleeve (1 only)	5/16
90851-1	Rod alignment sleeve (1 only)	3/8
90852-1	Rod alignment sleeve (1 only)	7/16
90854-1	Rod alignment sleeve (1 only)	1/4
90855-1	Rod alignment sleeve (1 only)	1/2

STRETCH GAUGE

Crower highly recommends using a stretch gauge to tighten rod bolts to their recommended stretch figures. This tool will provide accurate and repeatable results every time if used correctly. Includes dial indicator, fixture and instructions.

Part No.	Description
90700	Rod bolt stretch gauge indicator

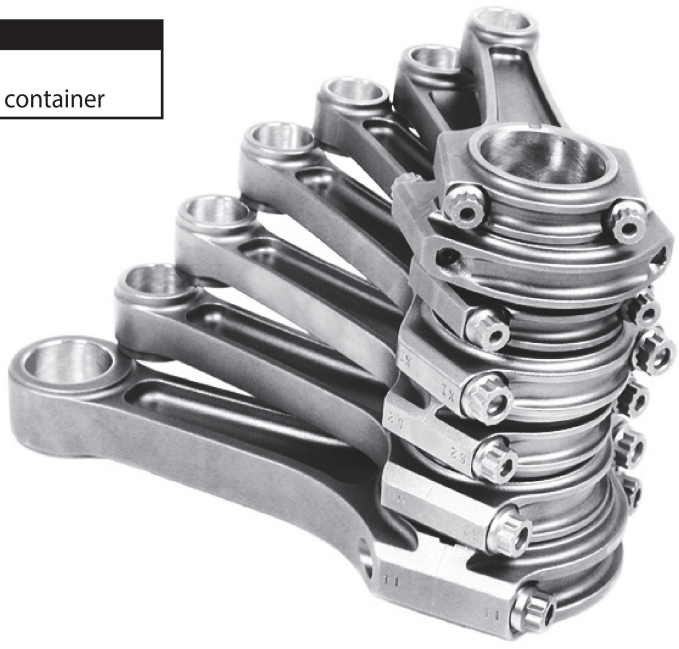
ARP ULTRA TORQUE LUBE

In order to achieve proper preload during rod bolt installation, it is important to use the lubricant that is recommended for that particular bolt and rod combination.

- Steel rods with 8740 bolts and Steel rods with H-11 or upgraded AMS5844 bolts must use ARP Ultra-Torque Lube (#90894).
- Titanium rods with H-11 or AMS5844 bolts must use special Crower titanium lube (#90897).

Part No.	Description
90894	ARP Ultra Torque Lubricant 1/2 oz. tube

Part No.	Description
90897	Crower Anti-Seize (Titanium rods) 1/2 oz tub
90897C	Crower Anti-Seize (Titanium rods) 2 lb, 10 oz container



ROD BUSHINGS

Crower uses premium aluminum-bronze one piece billet bushings in all of the rods we manufacture. These high quality bushings are sold separately, by the piece.

Part Number	Wrist Pin	Rod Pin Size	Bushing O.D.
90991	.4907″	.547″	.550″
90951	.5512″	.607″	.610″
90959	.5905″	.647″	.650″
90924	.6246″	.687″	.690″
90929	.6299″	.687″	.690″
90969	.6693″	.737″	.740″
90988	.6883″	.747″	.750″
90908	.7087″	.777″	.780″
90928	.7283″	.787″	.790″
90947	.7480″	.817″	.820″
90950	.7500″	.817″	.820″
90957	.7576″	.817″	.820″
90906	.7663″	.827″	.830″
90967	.7676″	.827″	.830″
90987	.7874″	.857″	.860″
90989	.7896″	.857″	.860″
90979	.7913″	.857″	.860″
90970	.8002″	.862″	.865″
90911	.8122″	.877″	.880″
90926	.8268″	.897″	.900″
90966	.8662″	.932″	.935″
90976	.8752″	.937″	.940″
90901	.9009″	.967″	.970″
90904	.9046″	.967″	.970″
90905	.9055″	.967″	.970″

Note: Custom orders available, specify bore, pin dia and length. Customer needs to specify width or overall length.

Part Number	Wrist Pin	Rod Pin Size	Bushing O.D.
90912	.9122″	.979″	.982″
90927*	.9272″	.994″	.997″
90927N	.9272″	.979″	.982″
90930	.9308″	.979″	.982″
90937	.9375″	.997″	1.000″
90939	.9398″	.997″	1.000″
90944	.9447″	1.008″	1.010″
90977	.9678″	1.027″	1.030″
90975	.9752″	1.039″	1.042″
90980	.9802″	1.039″	1.042″
90984	.9842"	1.039"	1.042"
90990	.9900"	1.039"	1.042"
90900	1.000"	1.067"	1.070"
90923	1.0236"	1.087"	1.090"
90931	1.0306"	1.107"	1.110"
90940	1.0402"	1.107"	1.110"
90964	1.0639"	1.122"	1.125"
90994	1.0939"	1.152"	1.155"
90925	1.1253"	1.202"	1.205"
90948	1.2463"	1.317"	1.320"
90938	1.3080"	1.382"	1.385"
90933	1.3385"	1.422"	1.425"
90903	1.3582"	1.437"	1.440"
90962	1.6243"	1.727"	1.730"
90909	1.5748"	1.672"	1.675"

CUSTOM ROD BUSHINGS

Part Number	Bushing O.D.
90922X000	up to 1.099"
90922X100	1.100" to 1.199"
90922X200	1.200" to 1.299"
90922X300	1.300" to 1.399"
90922X400	1.400" to 1.499"
90922X500	1.500" to 1.599"
90922X600	1.600" to 1.699"

Rod-Bolt Stretch & Torque Specs

Connecting Rod Bolt Specification				Steel Connecting Rods			Titanium Connecting Rods		
Part #	Diameter x U.H.Length	PSI	Material	Assembly Lubricant	Bolt Stretch	Torque	Assembly Lubricant	Bolt Stretch	Torque
90847	1/4" x 1.375"	270,000	ARP 3.5	Crower #90894 *	.005"-.007"	275 in lbs	Crower Lube #90897	.005"-.007"	240 in lbs
90824A	5/16" x 1.500"	200,000	ARP2000	Crower #90894 *	.005"-.007"	30 ft lbs	Crower Lube #90897	.005"-.007"	25 ft lbs
90824	5/16" x 1.500"	220,000	L19	Crower #90894 *	.005"-.007"	30 ft lbs	Crower Lube #90897	.005"-.007"	25 ft lbs
90845	5/16" x 1.500"	270,000	ARP 3.5	Crower #90894 *	.005"-.007"	45 ft lbs	Crower Lube #90897	.005"-.007"	35 ft lbs
90839	8mm" x 1.850"	220,000	L19	Crower #90894 *	.005"-.007"	35 ft lbs			
90819	3/8" x 1.500"	220,000	H-11	Crower #90894 *	.005"-.007"	45 ft lbs	Crower Lube #90897	.005"-.007"	45 ft lbs
90821	3/8 x 1.600"	200,000	ARP2000	Crower #90894*	.005"-.007"	45 ft lbs	Crower Lube #90897	.005"-.007"	40 ft lbs
90818	3/8" x 1.600"	220,000	H-11	Crower #90894 *	.005"-.007"	45 ft lbs	Crower Lube #90897	.005"-.007"	45 ft lbs
90828	3/8" x 1.600"	180,000	8740	Crower #90894 *	.005"-.007"	45 ft lbs			
90842	3/8" x 1.600"	270,000	ARP 3.5	Crower #90894 *	.005"-.007"	65 ft lbs	Crower Lube #90897	.005"-.007"	50 ft lbs
90805	3/8" x 1.920"			20W/50 Motor Oil	.004"-.006"	50 ft lbs			
90848	7/16" x 1.400"	180,000	8740	Crower #90894 *	.005"-.007"	75 ft lbs			
90846	7/16" x 1.440"	200,000	ARP2000	20W/50 Motor Oil	.005"-.007"	75 ft lbs			
90830	7/16" x 1.540"	270,000	ARP 3.5	Crower #90894 *	.005"-.007"	95 ft lbs	Crower Lube #90897	.005"-.007"	80 ft lbs
90826A	7/16" x 1.550"	200,000	ARP2000	Crower #90894 *	.005"-.007"	75 ft lbs	Crower Lube #90987	.005"-.007"	65 ft lbs
90823	7/16" x 1.650"	220,000	L19	Crower #90894 *	.005"-.007"	75 ft lbs	Crower Lube #90897	.005"-.007"	65 ft lbs
90833	7/16" x 1.650"	270,000	ARP 3.5	Crower #90894 *	.005"-.007"	95 ft lbs	Crower Lube #90897	.005"-.007"	80 ft lbs
90802	7/16" x 1.700"			20W/50 Motor Oil	.004"-.006"	65 ft lbs			
90820	7/16" x 1.800"	220,000	L19	Crower #90894 *	.005"-.007"	75 ft lbs	Crower Lube #90897	.005"-.007"	65 ft lbs
90829	7/16" x 1.800"	180,000	8740	Crower #90894 *	.005"-.007"	75 ft lbs			
90832	7/16" x 1.800"	270,000	ARP 3.5	Crower #90894 *	.005"-.007"	95 ft lbs	Crower Lube #90897	.005"-.007"	80 ft lbs
90803	7/16" x 1.940"			20W/50 Motor Oil	.004"-.006"	65 ft lbs			
90800	7/16" x 2.000"			Crower #90894 *	.005"-.007"	70 ft lbs			
90807	7/16" x 2.070"			20W/50 Motor Oil	.004"-.006"	65 ft lbs			
90804	7/16" x 2.320"			20W/50 Motor Oil	.004"-.006"	65 ft lbs			
90809	1/2" x 2.500"			Crower #90894*	.005"-.007"	95 ft lbs			
90849	1/2" x 1.880"	220,000	L19	Crower #90894 *	.005"-.007"	100 ft lbs			

** Note: Crower #90894 is ARP Ultra Torque Lubricant. Not all bolts listed are currently available.*

Proper bolt torque: Torque rod bolts to 10 ft lbs on both sides, then torque to proper spec with one pull.

***Thru-bolt torque specs based on steel rods using motor oil.**
***Cap Screw 8740 torque specs based on steel rods using oil**
***Cap Screw H-11 torque specs based on steel rods using anti-seize.**
***AMS5844 torque specs based on steel rods using anti-seize.**
*** Bolts for titanium rods require special lubricant available from Crower.**

Specify -8 after part number if four cylinder, -12 if six or -16 in eight cyl.
Note: If using stretch method, Crower recommends .005" to .007".

Rod Bolt Stretch & Torque Specs

The following information is vital for the proper connecting rod assembly installation:

STEP 1: Your Crower connecting rods came with a connecting rod specification tag. Check the tag to find the rod bolt part number used to fasten your connecting rods. Rod bolt length listed here is the measurement from under the head to the end.

STEP 2: Use the chart to determine the recommended lubricant, rod bolt stretch and torque amounts.

IMPORTANT DO NOT EXCEED THE TORQUE AMOUNT SHOWN FOR EACH BOLT PART NUMBER AND ITS RECOMMENDED LUBRICATION (If you are using lubrication other than shown, a stretch gauge must be used)

STEP 3: Taking the necessary precautions to protect the rod surfaces, secure the rod in a vise and leave the cap free to float. If the rod is titanium, take extra precautions to avoid damaging the plasma coating on the big end sides of the rod.

STEP 4: Apply a liberal amount of the recommended assembly lubricant to the bolt's threads and under the head of the bolt (the underside of the bolt's head).

STEP 5: (Use Stretch Method to determine exact torque) Since it is near impossible to use a stretch gauge when installing rods inside the motor, please use the following method to determine the exact torque that your wrench will read when the correct stretch is achieved. Using the above table, torque the rod bolts to achieve the required amount of stretch for your application. Record this torque spec as this is the exact torque spec that you will be using to install your rods in the motor.

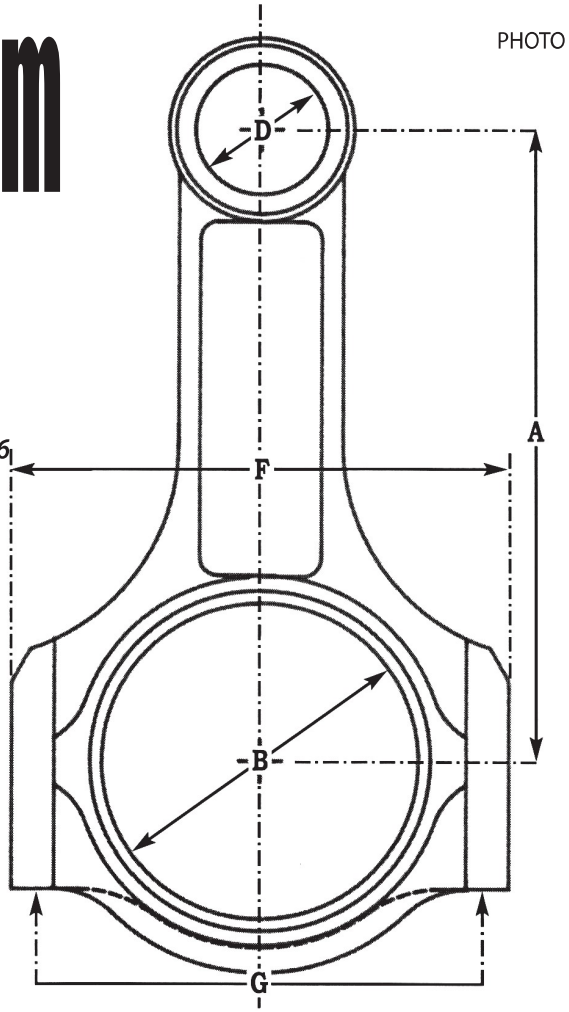
STEP 6: (Torquing the bolt) When tightening bolts, especially in titanium rods it is best to torque all bolts to 20% of the total required torque and then in one smooth motion torque the bolt to the final torque spec without stopping.

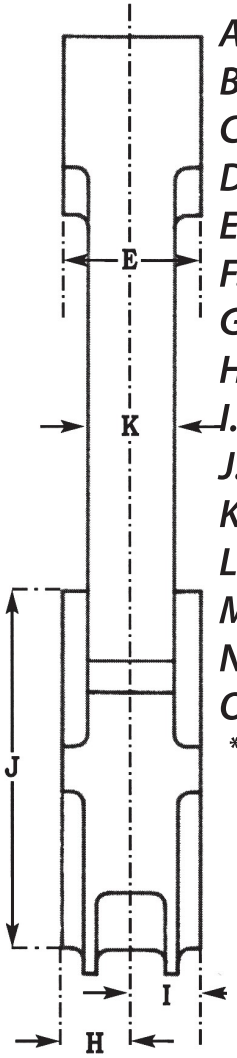
Torquing your rod bolts without pre-determining the required torque to achieve the correct rod bolt stretch is not recomended. However if this is the only tightening method available to you, DO NOT EXCEED THE TORQUE AMOUNT INDICATED FOR YOUR BOLTS.

NOTE: Your Crowerods are totally rebuildable. We can make most used rods like new again, replace bolts, replace bushings, resize them, respray the plasma on Titanium rods and freshen them up as needed. If you have any questions as to the durability and application of your rods or whether it is time to rebuild or replace them, please call our tech line at (619) 661-6477 or email us at rods@crower.com

Crowerod Form

PHOTO COPY





*A.** _____ Center to Center Length
*B.** _____ Big End Housing Bore
*C.** _____ Big End Width
*D.** _____ Pin End Bore
*E.** _____ Pin End Width
F. _____ Overall BE Width
G. _____ Bolt to Bolt Width
H. _____ BE Offset
I. _____ BE Offset
J. _____ Big End Ring Diameter
K. _____ Beam Width
L. _____ Tang Positioning
M. _____ Tang Width
N. _____ Tang Dimension
O. _____ Rib to Rib Width

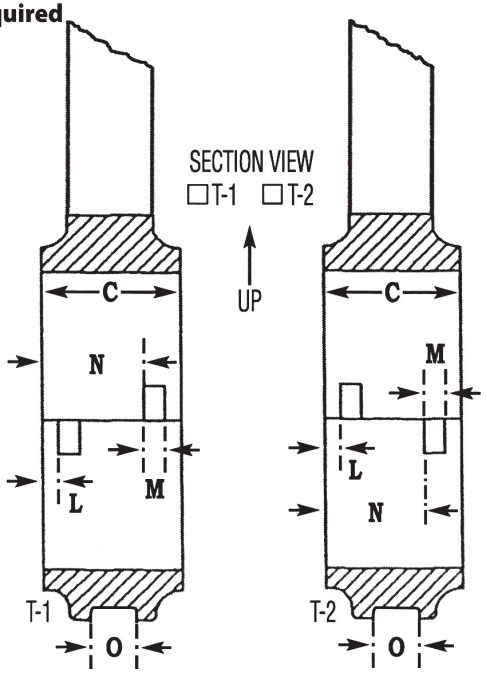
***Required**

Quantity Desired: _____

☐ I-Beam ☐ H-Beam

☐ Premium Steel ☐ Titanium

FAX COMPLETED FORM TO 619-661-6466
EMAIL: engr@crower.com



Measurement in inches or millimeters

Previous W.O. No.: _____
Customer: _____
Company: _____
Address: _____
_____
Phone: _____
Fax: _____
Email: _____

Engine Make: _____
No. of Cylinders: _____
Cylinder Bore Size: _____
Target Weight: _____
Max RPM: _____
Max Horsepower: _____
Turbo/Boost: _____ p.s.i./bar
Nitrous Oxide: _____ HP Shot