

## FASTENER REQUIREMENTS for SAE J518 4-BOLT SPLIT FLANGE CONNECTIONS

For inch fasteners, SAE J518-1 JAN2013 (Code 61) and SAE J518-2 APR2017 (Code 62) specify that either SAE J429 Grade 8 hex head screws or ASME 18.3 socket head cap screws of ASTM A574 material be used.

For metric fasteners, these standards specify that hexagon head screws, conforming to ISO 4017, or socket head screws, conforming to ISO 4762, either of property class 10.9 (minimum) be used.

Relevant References:

SAE J429 Mechanical and material requirements for externally threaded fasteners.

ASME B18.3 2003 Socket, cap, shoulder, and set screws, hex and spline keys (inch series).

ISO 898-1 Mechanical properties of fasteners made of carbon steel and alloy steel.

ISO 4017 Hexagon head screws- product grades A & B

ISO 4762 Hexagon socket head cap screws

### FASTENER COMPARISONS

QUALITY	GRADE 8 HHCS	INDUSTRY SHCS	UNBRAKO® SHCS*	Metric HHCS Class 10.9	Metric SHCS Class 12.9
<b>STRENGTH UTS-KSI min (SIZES)</b>	150 (1/4 thru 1 1/2)	180 ( ≤ 1/2) 170 ( > 1/2)	190 ( ≤ 1/2) 180 ( > 1/2)	150 5-100mm	176 1.6-100mm
<b>PROOF STRENGTH PTS – KSI</b>	120 (1/4 thru 1 1/2)	140 ( ≤ 1/2) 135 ( > 1/2)	148 ( ≤ 1/2) 140 ( > 1/2)	120 5-100mm	140 1.6-100mm
<b>ROCKWELL HARDNESS</b>	C33 – C39	C39 – C45 C37 – C45	C39 – C43 C38 – C43	C33 – 39	C38 – 44
<b>MARKING</b>	SIX RADIAL LINES	SHCS CONFIGURATION	MFG'S ID	CLASS NO. (10.9)	CLASS NO. (12.9)

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## BOLT KIT AVAILABILITY WITH 1960 SERIES SOCKET HEAD CAP SCREWS (UNRC COURSE THREAD SERIES- INCH SIZES)

ADACONN® and INSERTA® offer Bolt Kits that include Alloy Steel 1960 Series Socket Head Cap Screws that conform to ASTM A574. Sizes through 1/2" size have minimum ultimate tensile strength of 180,000 PSI and those over 1/2" have minimum ultimate tensile strength of 170,000 PSI. They are furnished with a thermal black finish. The threads are Unified standard: Class 3A, UNRC series for screw sizes through 1 inch, and Class 2A UNRC series for sizes over 1 inch. The availability of these Socket Head Cap Screws is listed in the following chart.

LENGTH ( INCH )	SIZE - THREADS PER INCH										
	8-32	10-24	1/4-20	5/16-18	3/8-16	7/16-14	1/2-13	5/8-11	3/4-10	7/8-9	1 1/8-7
.50	S										
.63	S	S	S								
.75		S	S								
.88		S	S								
1.00	S	S	S	S	S						
1.25	S	S	S	S	S	S	S				
1.50	S	S	S	S	S	S	S	S			
1.75	S	S	S	S	S	S	S	S	S		
2.00		S	S	S	S	S	S	S	S		
2.25			S	S	S	S	S	S	S	S	
2.50			S	S	S	S	S	S	S	S	S
2.75				S	S	S	S	S	S	S	
3.00				S	S	S	S	S	S	S	SS
3.25				S	S		S	S	S	S	
3.50				S	S	S	S	S	S	S	
3.75				SS	SS		S	S	S	S	
4.00				S	S	S	S	S	S	S	SS
4.50				SS	S	S	S	S	S	S	
5.00				SS	S	S	S	S	S	S	SS
5.50				SS	S		S	S	S	S	
6.00				SS	S		S	S	S	S	SS
6.50					SS		S	S	S	S	
7.00					SS		S	S	S	S	SS
7.50				SS			S	S			
8.00					SS		S	S	S	S	SS
8.50							SS	SS	SS		
9.00							SS	SS	SS		
10.00							SS	SS	SS		
11.00							SS	SS	SS		
12.00							SS	SS	SS		
13.00									SS		
14.00									S		

S = STANDARD, NORMALLY IN STOCK

SS = SEMI-STANDARD, MAY NOT BE IN STOCK

### ORDERING INFORMATION

**IBK — SH 4 038 — 16 x 1.00**

ADACONN® OR INSERTA®

A = ADACONN®  
I = INSERTA®

BOLT KIT

TYPE

SH = SOCKET HEAD CAP SCREW

BOLTS PER BOLT KIT

4 = 4 BOLTS PER BOLT KIT  
2 = 2 BOLTS PER BOLT KIT

BOLT LENGTH

1.00 = 1.00 LONG

SIZE-THREADS PER INCH

008-32 = #8-32    050-13= 1/2-13  
010-24 = #10-24    063-11= 5/8-11  
025-20 = 1/4-20    075-10= 3/4-10  
031-18 = 5/16-18    088-9 = 7/8-9  
038-16 = 3/8-16    112-7 = 1 1/8-7  
044-14 = 7/16-14