



BITZER SCREW COMPRESSOR BOLT TORQUE SPECIFICATIONS

For Screw Compressors



TB-0020

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BITZER CS Bolt Torque Specifications

Standard Bolt Torques				
Description	CS65	CS75	CS85	CS95
Suction Valve	M16 - 162 ft/lbs	M16 - 162 ft/lbs	M20 - 162 ft/lbs	M20 - 162 ft/lbs
Suction Valve Flange and / or Companion Flange	M16 - 162 ft/lbs	M18 - 162 ft/lbs	M20 - 162 ft/lbs	M20 - 162 ft/lbs
Discharge Valve	M12 - 66 ft/lbs	M16 - 162 ft/lbs	M16 - 162 ft/lbs	M20 - 162 ft/lbs
Discharge Valve Flange and / or Companion Flange	M12 - 66 ft/lbs	M18 - 162 ft/lbs	M18 - 162 ft/lbs	M20 - 162 ft/lbs
Eco Fitting	M22 - 66 ft/lbs	M22 - 66 ft/lbs	(2) M10 - 22 ft/lbs	(2) M10 - 22 ft/lbs
Liquid Injection Fitting	M22 - 66 ft/lbs	M22 - 66 ft/lbs	M10 - 22 ft/lbs	M10 - 22 ft/lbs
Liquid Inj. Rotolock Valve	80-100 ft/lbs	80-100 ft/lbs	80-100 ft/lbs	80-100 ft/lbs
Liquid Inj. Pipe Plug	M22 - 66 ft/lbs	M22 - 66 ft/lbs	N/A	N/A
Eco Rotolock Valve	1 1/4"-12 80-100 ft/lbs	1 1/4"-12 80-100 ft/lbs	1 3/4"-12 95-140 ft/lbs	1 3/4"-12 95-140 ft/lbs
Terminal Plate	(10) M10 - 59 ft/lbs	(11) M10 - 59 ft/lbs	(14) M10 - 59 ft/lbs	(14) M10 - 59 ft/lbs
Unloaders	M10 - 59 ft/lbs	M10 - 59 ft/lbs	M10 - 59 ft/lbs	M10 - 59 ft/lbs
Sightglass	1 1/8" - 29.5 ft/lbs with o-ring	1 1/8" - 29.5 ft/lbs with o-ring	1 1/8" - 29.5 ft/lbs with o-ring	1 1/8" - 29.5 ft/lbs with o-ring
Oil Drain Valve	360-480 in/lbs	360-480 in/lbs	360-480 in/lbs	360-480 in/lbs
Oil Drain Valve Fitting	66 ft/lbs with alum washer	66 ft/lbs with alum washer	66 ft/lbs with alum washer	66 ft/lbs with alum washer
Discharge / Oil Sensor	1/4" NPTF - 15 ft/lbs	1/4" NPTF - 15 ft/lbs	1/4" NPTF - 15 ft/lbs	1/4" NPTF - 15 ft/lbs
Stator Cover	(11) M12 - 92 ft/lbs	(12) M16 - 162 ft/lbs	(20) M16 - 162 ft/lbs	(20) M20 - 162 ft/lbs
Oil Separator Housing	(16) M12 - 92 ft/lbs	(16) M16 - 162 ft/lbs	(24) M16 - 162 ft/lbs	(24) M20 - 162 ft/lbs
Oil Separator End Cap	M52 - 59 ft/lbs with o-ring	M52 - 59 ft/lbs with o-ring	M10 - 59 ft/lbs with gasket	M10 - 59 ft/lbs with gasket
Oil Separator End Cap Plug	N/A	N/A	M20 - 55 ft/lbs	M20 - 55 ft/lbs
Stator Pin Plug	M22 - 29.5 ft/lbs with o-ring	M22 - 66 ft/lbs with alum washer	M22 - 66 ft/lbs with alum washer	M22 - 66 ft/lbs with alum washer
Oil Level Control Flange	M10 - 59 ft/lbs	M10 - 59 ft/lbs	M10 - 59 ft/lbs	M10 - 59 ft/lbs
External Oil Cooler Adapter	M10 - 59 ft/lbs	M10 - 59 ft/lbs	M10 - 59 ft/lbs	M10 - 59 ft/lbs
Terminal Lug Screws	N/A	M10 - 175 in/lbs	N/A	N/A
Terminal Lug Nuts	M8 - 203 in/lbs	N/A	M10 - 370 in/lbs	M10 - 370 in/lbs
Grounding Lug Nuts	N/A	M10 - 371 in/lbs	M10 - 371 in/lbs	M10 - 371 in/lbs
Grounding Lug Bolt	M6 - 90 in/lbs	N/A	N/A	N/A
Sensor Nuts	M4 - 18 in/lbs	N/A	N/A	N/A

Notes:

Do not oil metal gaskets. Tighten bolts in two steps using the crosswise method.

BITZER HS/OS Bolt Torque Specifications

Standard Bolt Torques			
Description	HS/OS53	HS64	HS/OS74
Suction Valve	M16 - 162 ft/lbs	M16 - 162 ft/lbs	M20 - 162 ft/lbs
Suction Valve Flange and / or Companion Flange	M16 - 162 ft/lbs	M16 - 162 ft/lbs	M18 - 162 ft/lbs
Discharge Valve (Option)	M12 - 66 ft/lbs	M12 - 66 ft/lbs	M16 - 162 ft/lbs
Discharge Valve Flange and / or Companion Flange	M12 - 66 ft/lbs	M12 - 66 ft/lbs	M16 - 162 ft/lbs
Eco Fitting Sealing Plug	M26 - 81 ft/lbs	M26 - 81 ft/lbs	M26 - 81 ft/lbs
Eco/Liquid Injection Fitting	M26 - 81 ft/lbs	M26 - 81 ft/lbs	M26 - 81 ft/lbs
L.I or ECO Rotolock Valve 1-1/4"x7/8"	80-100 ft/lbs	80-100 ft/lbs	80-100 ft/lbs
Terminal Plate	(10) M10 - 59 ft/lbs	(10) M10 - 59 ft/lbs	(10) M10 - 59 ft/lbs
Unloaders	N/A	M10 - 59 ft/lbs	M10 - 59 ft/lbs
Unloader Head and Body	(12) M8 – 30 ft/lbs	N/A	N/A
Oil Inlet Fitting	M22x1.5x1"-14 UNS 66 ft/lbs w/alum washer	M22x1.5x1-1/4"-12 UNF 66 ft/lbs w/alum washer	M22x1.5x1-1/4"-12 UNF 66 ft/lbs w/alum washer
Discharge Gas Sensor	1/4" NPTF - 15 ft/lbs	1/4" NPTF - 15 ft/lbs	1/4" NPTF - 15 ft/lbs
Stator Cover	(12) M12 - 92 ft/lbs	(12) M12 - 92 ft/lbs	(12) M12 - 92 ft/lbs
Stator Pin Plug	M22x1.5 29.5 ft/lbs with o-ring	N/A	N/A
Stator Key Bolt	N/A	M8 - 30 ft/lbs	M8 - 30 ft/lbs
Terminal Lug Screws	N/A	M10 - 175 in/lbs	M10 - 175 in/lbs
Terminal Lug Nuts	M8 - 203 in/lbs with lock washer	N/A	N/A
Ground Lug Bolt	M6 – 90 in/lbs with lock washer	N/A	N/A
Ground Lug Nut	N/A	M10 - 371 in/lbs with flat washer	M10 - 371 in/lbs with flat washer
Sensor Nuts (<2014)	M4 - 35 in/lbs with washer	N/A	N/A
Discharge Flange Cover	(10) M10 - 59 ft/lbs	(10) M10 - 59 ft/lbs	(16) M12 - 92 ft/lbs
Check Valve Cover	N/A	(4) M12 - 92 ft/lbs	N/A
Motor Rotor Bolt	M16 - 44 ft/lbs with lock washer	M16 - 44 ft/lbs with lock washer	M16 - 44 ft/lbs with lock washer
Shaft Seal Bolts	(5) M8 - 203 in/lbs	N/A	(6) M10 - 371 in/lbs
Coupling Housing (Compressor End)	M10 - 59 ft/lbs	N/A	M16 - 162 ft/lbs
Coupling Housing (Motor End)	Per Motor Supplier	N/A	Per Motor Supplier
Suction Screen Plate (OS74)	N/A	N/A	M16 – 162 ft/lbs

Notes:

Do not oil metal gaskets. Tighten bolts in two steps using the crosswise method.

BITZER HS/OS Bolt Torque Specifications

Standard Bolt Torques		
Description	OS85	HS85
Suction Valve	M20 - 162 ft/lbs	M20 - 162 ft/lbs
Suction Valve Flange and / or Companion Flange	M20 - 162 ft/lbs	M20 - 162 ft/lbs
Discharge Valve (Option OS85)	M16 - 162 ft/lbs	M16 - 162 ft/lbs
Discharge Valve Flange and / or Companion Flange	M16 - 162 ft/lbs	M16 - 162 ft/lbs
Eco Fitting Sealing Plate	M10 - 59 ft/lbs	M10 - 59 ft/lbs
Liquid Injection Fitting 3/4"-16 UNF	30 - 40 ft/lbs	30 - 40 ft/lbs
ECO Rotolock Valve 1-3/4"-15 UNF	95 - 140 ft/lbs	95 - 140 ft/lbs
Unloaders	M10 - 59 ft/lbs	M10 - 59 ft/lbs
Oil Stop Valve - Filter Flange	M12 - 92 ft/lbs	M12 - 92 ft/lbs
Oil Filter Monitoring Switch	(4) M6 - 12 ft/lbs	(4) M6 - 12 ft/lbs
Oil Flow Switch	(4) M6 - 12 ft/lbs	(4) M6 - 12 ft/lbs
Oil Stop Valve Switch	3/8" - 33 ft/lbs	3/8" - 33 ft/lbs
Oil Inlet Fitting	M26x1.5x1-1/4"-12 UNF 66 ft/lbs w/alum washer	M26x1.5x1-1/4"-12 UNF 66 ft/lbs w/alum washer
Discharge Gas Sensor	1/4" NPTF - 15 ft/lbs	1/4" NPTF - 15 ft/lbs
Discharge Flange Cover	M12 - 92 ft/lbs	M12 - 92 ft/lbs
Stator Cover	N/A	(24) M16 - 162 ft/lbs
Stator Pin Plug	N/A	M22 - 66 ft/lbs with alum washer
Terminal Plate	N/A	(14) M10 - 59 ft/lbs
Terminal Lug Nuts	N/A	M10 - 371 in/lbs with flat washer & lock washer
Ground Lug Nut	N/A	M10 - 371 in/lbs with flat washer & lock washer
Motor Rotor Bolt	N/A	M16 - 44 ft/lbs with lock washer
Shaft Seal Bolts	(6) M10 - 371 in/lbs	N/A
Coupling Housing (Compressor End)	M16 - 162 ft/lbs	N/A
Coupling Housing (Motor End)	Per Motor Supplier	N/A
Suction Screen Plate	(6) M10 - 59 ft/lbs	N/A

Oil Line Fittings		
1/8" NPT	1/4" NPT	3/8" NPT
8.5 ft/lbs	15.8 ft/lbs	33 ft/lbs
102 in/lbs	190 in/lbs	396 in/lbs

BITZER OS.A 95 Bolt Torque Specifications

Standard Bolt Torques	
Description	OS95
Suction Flange DN 150	(8) M24 – 236 ft/lbs
Discharge Flange DN 125	(8) M20 – 162 ft/lbs
Eco Connection Sealing Plug	M48 - 221 ft/lbs
Eco Screwed Fitting M48 x 1.5 x 2-1/4"-12 UN	M48 - 221 ft/lbs
Eco Screwed Fitting Union Nut 2-1/4"-12 UN	133 ft/lbs
Eco Rotolock Valve DN40 2-1/4"	125 ft/lbs
Oil Inlet Fitting	M48 – 221 ft/lbs
Oil Rotolock Valve 2-1/4"	125 ft/lbs
PT1000 Discharge Temp Sensor 1/8" NPT	15 ft/lbs
Discharge Flange Cover	(15) M20 – 162 f/lbs
Shaft Seal Bolts	(8) M10 – 59 ft/lbs.
Shaft Seal Oil Drain Connection Fitting	M6 – 12 ft/lbs
Oil Level Control Prism (OLC) 1-1/8"-18 UNEF	37 ft/lbs
Vi (+) / Vi (-) Solenoid Flanges	(6) M8 – 29 f/lbs
CR (+) / CR (-) Solenoid Flanges	(6) M8 – 29 ft/lbs
SPI Sensor	44 ft/lbs
SPI Cover Plate	(12) M10 – 59 ft/lbs
Coupling Housing (Compressor End)	(4) M16 – 110 ft/lbs.
Coupling Housing (Motor End)	Per Motor Supplier
Suction Screen Plate	(8) M20 – 162 ft/lbs.

BITZER CSV.2 Special Bolt Torque Specifications

*FI Current Buss Bars	41 ft/lbs.
*Screw, Washer, FI Connection, Buss Bar, Wedge Lock Washers, Nut	
FI Inj Cooling Solenoid Vlv	M14 – 11 ft/lbs.
Vi (+) / Vi (-) Solenoid Coils	M10 – 44 in/lbs.
Pressure Transmitters	25 ft/lbs.

BITZER Screw Compressor Bolt Torque Specifications

Standard Bolt Torques							
M5	M6	M8	M10	M12	M16	M20	M24
5.0 ft/lbs	12 ft/lbs	30 ft/lbs	59 ft/lbs	92 ft/lbs	162 ft/lbs	162 ft/lbs	236 ft/lbs
61.5 in/lbs	141 in/lbs	352 in/lbs	704 in/lbs	N/A	N/A	N/A	N/A

Special Bolt Torques	
Check Valve Nut	Check Valve Cover
M8	M10
13.25 ft/lbs	40 ft/lbs

Rotalock Couplings w/teflon O-ring				
3/4"-16	1"-14	1 1/4"-12	1 1/2"-12	1 3/4"-12
30 - 40 ft/lbs	50 - 60 ft/lbs	80 - 100 ft/lbs	100 - 120 ft/lbs	120 - 140 ft/lbs

Pipe Plugs					
Material	NPTF 1/8"-27	NPTF 1/4"-18	NPTF 3/8"-18	NPTF 1/2"-14	NPTF 3/4"-14
Steel	11-15 ft/lbs	22-26 ft/lbs	37-40 ft/lbs	44-18 ft/lbs	59-63 ft/lbs
Brass	26-30 ft/lbs	37-40 ft/lbs	63-66 ft/lbs	70-74 ft/lbs	88-92 ft/lbs

Oil Drain Plugs			
M22 (Al)	M22 (Cu)	M26 (Al)	M26 (Cu)
66 ft/lbs	107 ft/lbs	81 ft/lbs	118 ft/lbs
Sightglass/Optical Oil Sensor Prism-CS with O-Ring			
M22			
29.5 ft/lbs			
Liquid Injection, Eco and Oil Injection Fittings			
M22 w/Alum washer		M26 w/Alum washer	
66 ft/lbs		81 ft/lbs	
CS 70, 80, 90 Crankcase Heater Well			
Units Prior to 6/2002			
96 ft/lbs.			

Sightglass Bolts - HSKC			
M6 (8.8)	M6 (10.9)	M8 (5.6)	M10 (5.6)
70 in/lbs	97 in/lbs	123 in/lbs	158 in/lbs
Oil Separator Vessel HSKC			
M16 (8.8)			
110.5 ft/lbs			
Discharge Flange HSKC-70, 80 and 90 HP			
M16 (10.9)			
110.5 ft/lbs			
Valve Stem Caps			
Metal or Plastic Caps w/Rubber Gaskets			
Hand Tighten Only			



Common Wrench Sizes for Basic Compressor Service

M4 HHC	8mm	M10 SHC	8mm (allen)
M6 HHC	10mm	M12 HHC	19mm
M8 HHC	13mm	M12 SHC	10mm (allen)
M8 SHC	6mm (allen)	M16 HHC	24mm
M10 HHC	17mm	M20 HHC	30mm
HHC = Hex Head Cap / SHC = Socket Head Cap			
CS Sight Glass		36mm	

Valve Packing Gland Torque Specs

1-5/8" DN40	2-1/8" DN50	2-5/8" DN50	3-1/8" DN80	4-1/8" DN100	5" DN125
12.5 ft/lbs	37 ft/lbs	37 ft/lbs	37 ft/lbs	59 ft/lbs	59 ft/lbs

Valve Caps

1-5/8" DN40	2-1/8" DN50	2-5/8" DN50	3-1/8" DN80	4-1/8" DN100	5" DN125
15 ft/lbs	22 ft/lbs	22 ft/lbs	22 ft/lbs	22 ft/lbs	22 ft/lbs


HS53, 64, 74 and OS53, 74 Oil Filter Housing

40CN Housing
42-50 ft/lbs
80CN Housing
60-70 ft/lbs

Special Notes:

- Clean all threads and bores.
- Use new gaskets only.
- DO NOT oil metal gaskets.
- Fiber gaskets can have a light film of oil applied.
- Tighten with calibrated torque wrenches only.
- For flanged connections: Tighten in a crosswise pattern in at least 2 steps.
- Tolerance range for acceptable torque values is +/- 6%.
- Use sealing tape or paste on all pipe plug fittings.





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