



BITZER RECIP COMPRESSOR BOLT TORQUE SPECIFICATIONS

For Recip Compressors



TB-0060

www.bitzerus.com

BITZER Ecoline “CE” Series Recip Bolt Torque Specifications

Standard Bolt Torques				
Description	2KES-05...2FES-3	2EES-2...2CES-4	4FES-3...4CES-9	4VES-6...4NES-20
	CE1	CE2	CE3	CE4
Suction Valve	M8 - 18 ft/lbs	M8 - 18 ft/lbs	M10 - 37 ft/lbs	M10 - 37 ft/lbs. M12 - 74 ft/lbs.
Suction Valve Companion Flange	N/A	N/A	N/A	M12 - 74 ft/lbs.
Discharge Valve	M8 - 18 ft/lbs	M8 - 18 ft/lbs	M8 - 18 ft/lbs	M10 - 37 ft/lbs.
Terminal Plate Bolts	M6 - 12 ft/lbs	M6 - 12 ft/lbs	M8 - 30 ft/lbs	M10 - 56 ft/lbs.
Terminal Plate Ground Nut	N/A	N/A	N/A	M10 - 40 ft/lbs.
Housing Cover Bearing Cap	M8 - 30 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Endbell Bolts	M8 - 30 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Head Bolts	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Oil Drain Bolt or Plug	M8 - 30 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M22 - 100..114 ft/lbs.
Capacity Regulator / Unloader Flange	N/A	N/A	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Sightglass	1-1/8"-18 UNEF 48 ft/lbs	1-1/8"-18 UNEF 48 ft/lbs	1-1/8"-18 UNEF 48 ft/lbs	M6 - 6 ft/lbs. (bolt grade 8.8)
Terminal Box Screws	M6 - 4 ft/lbs	M6 - 4 ft/lbs	M6 - 4 ft/lbs	M6 - 4 ft/lbs.
Terminal Box Cover	M5 - 4 ft/lbs	M5 - 4 ft/lbs	M5 - 4 ft/lbs	M5 - 4 ft/lbs
Discharge Temp Sensor	N/A	N/A	1/8 NPTF - 25..30 ft/lbs	1/8 NPTF - 25...30 ft/lbs.
Oil Safety Control OLC-K1	N/A	M20 - 55 ft/lbs.	M20 - 55 ft/lbs.	M20 - 55 ft/lbs.
Oil Pump	N/A	N/A	N/A.	M8 - 17 ft/lbs.

Notes:

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

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BITZER Ecoline “BE” Series Recip Bolt Torque Specifications

Standard Bolt Torques				
Description	4JE...4HE-18	4HE-25...6GE-40	6FE-40...6FE-50	8GE...8FE
	BE5	BE5_BE6	BE6	CE8
Suction Valve	M12 - 74 ft/lbs.	M16 - 110 ft/lbs.	M16 - 110 ft/lbs.	M16 - 110 ft/lbs.
Suction Valve Companion Flange	M12 - 74 ft/lbs.	M16 - 110 ft/lbs.	M16 - 110 ft/lbs.	M16 - 110 ft/lbs.
Discharge Valve	M10 - 37 ft/lbs.	M10 - 37 ft/lbs.	M12 - 74 ft/lbs.	8GE: M12 - 74 ft/lbs 8FE: M16 - 110 ft/lbs
Discharge Valve Companion Flange	N/A	N/A	M12 - 74 ft/lbs.	8GE: M12 - 74 ft/lbs 8FE: M16 - 110 ft/lbs
Discharge Intermediate Flange Adapter	N/A	N/A	M10 - 59 ft/lbs.	N/A
Terminal Plate Bolts	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs
Terminal Plate Ground Bolt	M6 - 12 ft/lbs.	M6 - 12 ft/lbs.	M6 - 12 ft/lbs.	N/A
Bearing Housing	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	N/A
Endbell Bolts	M12 - 92 ft/lbs.	M12 - 92 ft/lbs.	M12 - 92 ft/lbs.	M12 - 92 ft/lbs.
Head Bolts	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
2 Bolt Shipping Pad	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Bottom Plate	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Mounting Foot Bolts	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Magnetic Oil Drain Plug	M26 - 114..129 ft/lbs	M26 - 114..129 ft/lbs	M26 - 114..129 ft/lbs	M26 - 114..129 ft/lbs
Capacity Regulator / Unloader Flange	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Sightglass	M6 - 8 ft/lbs. (bolt grade 10.9)	M6 - 8 ft/lbs. (bolt grade 10.9)	M6 - 8 ft/lbs. (bolt grade 10.9)	M6 - 8 ft/lbs. (bolt grade 10.9)
Terminal Box Screws	M6 - 4 ft/lbs	M6 - 4 ft/lbs	M6 - 4 ft/lbs	M10 - 15 ft/lbs.
Terminal Box Cover	M5 - 4 ft/lbs	M5 - 4 ft/lbs	M5 - 4 ft/lbs	M6 - 4 ft/lbs
Terminal Box Cover Grounding Strap	M6 - 12 ft/lbs.	M6 - 12 ft/lbs.	M6 - 12 ft/lbs.	N/A
Terminal Lug Nuts	M8 - 17 ft/lbs	M8 - 17 ft/lbs	M8 - 17 ft/lbs	N/A
Terminal Lug Bolts	N/A	N/A	N/A	M10 - 15 ft/lbs.
Discharge Temp Sensor	1/8 NPTF - 25..30 ft/lbs	1/8 NPTF - 25..30 ft/lbs	1/8 NPTF - 25..30 ft/lbs	1/8 NPTF - 25...30 ft/lbs.
Oil Safety Control Delta P	M20 - 55 ft/lbs.	M20 - 55 ft/lbs.	M20 - 55 ft/lbs.	M20 - 55 ft/lbs.
Oil Pump	M8 - 17 ft/lbs.	M8 - 17 ft/lbs.	M8 - 17 ft/lbs.	M8 - 17 ft/lbs.
Optional Oil Drain Valve ½”-14 NPTF	47..51 ft/lbs.	47..51 ft/lbs.	47..51 ft/lbs.	47..51 ft/lbs.
Heater Sleeve 3/8”-NPTF	31..35 ft/lbs.	31..35 ft/lbs.	31..35 ft/lbs.	31..35 ft/lbs.

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BITZER 2 Stage Recip Bolt Torque Specifications

Interstage Manifold and Suction Header

Description	S4G-12.2	S6J-16.2...S6F-30.2
	B5	B6
Interstage Manifold 4 Bolt Flange	M16 - 162 ft/lbs.	M16 - 162 ft/lbs.
Interstage Manifold 2 Bolt Flange	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Suction Header	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Suction Header Suction Valve	M10 - 37 ft/lbs.	M12 - 74 ft/lbs.
Suction Valve Companion Flange	M12 - 74 ft/lbs.	M12 - 74 ft/lbs.

Open Drive Shaft Seal Cover

Description	2T.2..4N.2 / W2TA..W4NA	4H.2..W4HA	S6H.2..S6F.2
Shaft Seal Cover	M8 - 29 ft/lbs	M8 - 29 ft/lbs	M8 - 29 ft/lbs

BITZER Slow Open Drive Bolt Torque Specifications

Description	Type	Type	Type	Type
	0,I	II,III	IV,V	VI,VII
Flywheel Key Nut	M6	M8	M8 / M12	M12
Shaft Seal Cover Plate	M6	M6	M8	M8
Sightglass	N/A	M6	M6	M6
Bearing Cover	M6	M6	M8	M8
Head Bolts	M8	M8	M8 / M10	M10 / M12
Suction Valve	M8	M8	M8 / M10	M10 / M12
Suction Valve Companion Flange	N/A	N/A	N/A	M12
Discharge Valve	M8	M8	M8 / M10	M10
Suction Rotolock Valve Couplings	N/A	N/A	7/8" / 1-1/8"	1-3/8"
Discharge Rotolock Valve Couplings	N/A	N/A	7/8"	1-1/8" / 1-3/8"

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BITZER Recip Open Drive Bolt Torque Specifications

Description	2T...2N	4H(.2)...6F.2 W4HA...W6FA	4T...4N(A)
Suction Valve	M8 - 17 ft/lbs. M10 - 37 ft/lbs.	M12 - 74 ft/lbs. (1-5/8") M16-110 ft/lbs. (2-1/8")	M10 - 37 ft/lbs. M12 - 74 ft/lbs.
Suction Valve Companion Flange	N/A	M12 - 74 ft/lbs. (1-5/8") M16-110 ft/lbs. (2-1/8")	N/A
Discharge Valve	M8 - 17 ft/lbs. M10 - 37 ft/lbs.	M10 - 37 ft/lbs. M12 - 74 ft/lbs.	M10 - 37 ft/lbs.
Discharge Valve Companion Flange	N/A	M12 - 74 ft/lbs.	M12 - 74 ft/lbs.
2 Bolt Connecting Flange	N/A	M10 - 37 ft/lbs.	N/A
Discharge Intermediate Flange Adapter	N/A	M10 - 37 ft/lbs.	N/A
Bearing Housing	M8 - 30 ft/lbs. M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Air Cooled Head Bolts	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Water Cooled Head Bolts	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Bottom Plate	M8 - 30 ft/lbs. M10 - 59 ft/lbs.	M10 - 59 ft/lbs.	M10 - 59 ft/lbs.
Magnetic Oil Drain Plug	M22 - 100..114 ft/lbs	M26 - 114..129 ft/lbs	M22 - 100..114 ft/lbs
Crankcase Heater Well 3/8"	31..35 ft/lbs.	31..35 ft/lbs.	
Sightglass	M6 - 8 ft/lbs. (bolt grade 10.9)	M6 - 8 ft/lbs. (bolt grade 10.9)	M6 - 8 ft/lbs. (bolt grade 10.9)
Housing Cover	N/A	M12 - 74 ft/lbs.	
Shaft Seal Cover	M8 - 29 ft/lbs.	M8 - 29 ft/lbs.	M8 - 29 ft/lbs.
Oil Pump	M8 - 17 ft/lbs.	M8 - 17 ft/lbs.	M8 - 17 ft/lbs.
Heater Sleeve 3/8"-NPTF	31..35 ft/lbs.	31..35 ft/lbs.	31..35 ft/lbs.

Notes:

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

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BITZER Recip Misc Torque Specifications

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 and Schrader Fittings					
Material	NPTF 1/8"	NPTF 1/4"	NPTF 3/8"	NPTF 1/2"	NPTF 3/4"
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

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			
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

Misc. Torque Values	
OLC-K1	55 ft/lbs with washer
Delta PII	55 ft/lbs with washer
All Fan Studs	59 ft/lbs.
CIC Oil Cooling Bracket	M10 - 59 ft/lbs / M12 - 92 ft/lbs
Discharge Gas Temperature Sensor	25-30 ft/lbs.
Marine Deep Sump Bottom Plate Bolts	M10 - 59 ft/lbs.

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