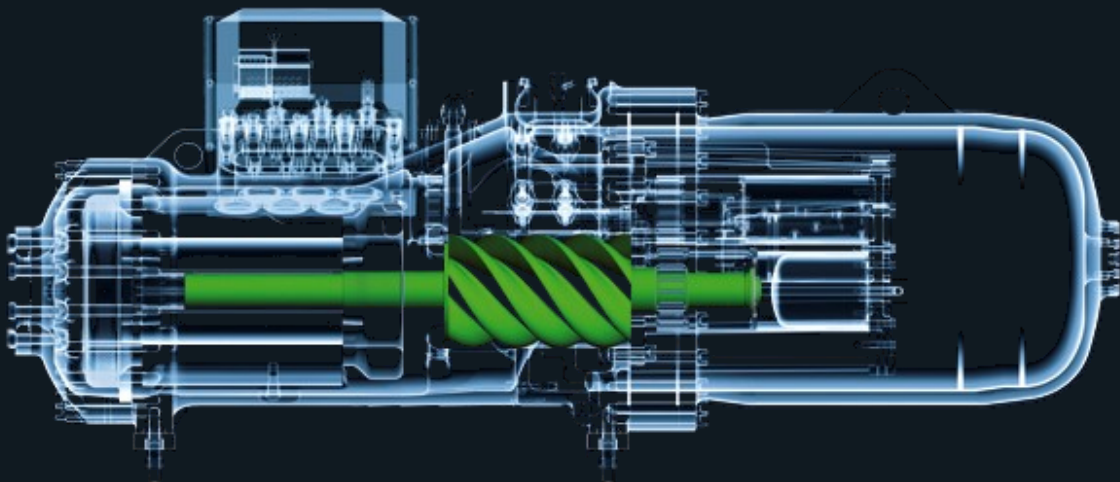




GUIDELINES FOR FIELD MOTOR REPLACEMENT

For CSH Series Screw
Compressors



TB-0030-02//07.2020

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BITZER Screw Compressors CS High Temp Series

Field Motor Replacement Guidelines

The intention of this document is to serve as general guidelines. The information contained is not intended to replace specific equipment and/or system manufacturer's information or guidelines. BITZER implies no liability for the information contained. It is BITZER's implicit intention that nothing contained in this guide replaces any past, present or future warranty policy of BITZER and/or any other manufacturer's equipment

These guidelines are supplied as a recommended procedure for replacing a motor in an existing CS screw compressor

These guidelines are not a replacement for information specific to that of the manufacturer or the manufacturer's system technical product information.

Each system may vary in design, usage and specifications. This document is intended for use specific to the compressor only and not intended to be a "catch all" for any and every possible application of the compressor.

BITZER's intention is that only qualified and certified (where applicable) individuals specific to the refrigeration industry use the information contained and all standard refrigeration handling and safety practices must be followed at all times.

BITZER's intention is that all electric work is performed by qualified and certified (where applicable) individuals and all standard electrical safety practices must be followed at all times.

WARNING

This icon indicates instructions to avoid personal injury and material damage



CAUTION

This icon indicates instructions to avoid property damage and possible personal injury



HIGH VOLTAGE

This icon indicates operations with a danger of electric shock



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Introduction

BITZER Screw compressors are designed and engineered with "Slide Fit" motors for installation and removal. These guidelines are supplied as a recommended procedure for removing, inspecting and replacing the motor in the field.

Please note: Each installation may be different and these guidelines are only a minimum recommendation specific to the compressor only.

Safety Instructions

These Guidelines are only supplied as from collected accepted field guidelines. BITZER implies no liability to these and this is only a general field guideline to field replacements. BITZER accepts no responsibilities for any current and / or future warranty considerations.

These guidelines are not intended to replace the system expertise available from system manufacturers.







All standard basic refrigerant handling and practices must be followed.

All standard safety practices must be followed.

All standard electrical practices must be followed.

The system / compressor shall be tagged out electrically with second personnel responsibility checks required.

You are strongly advised to follow these safety instructions.

 WARNING This icon indicates instructions to avoid personal injury and material damage.	 CAUTION This icon indicates instructions to avoid property damage and possible personal injury.
 High Voltage This icon indicates operations with a danger of electric shock.	 IMPORTANT This icon indicates instructions to avoid malfunction of the compressor.
 Danger of burning or frostbite This icon indicates operations with a danger of burning or frostbite.	NOTE This word indicates a recommendation for easier operation.
 Explosion Hazard This icon indicates operations with a danger of explosion.	

Instructions

Depending on the motor manufacturer and age of the compressor, the motor spacer sleeve may have to be replaced.

Each motor is supplied with the motor rotor spacer sleeve.

Prior to serial numbers beginning with "05", most compressors will have either an AOSI or VEM Motor. After "05", Leroy Somer motors are used.

AOSI and VEM motors utilize one common spacer, whereas Leroy Somer uses a different length of spacer due to rotor length.

For Frame 1: Regardless of oil type, each compressor requires 304 ounces of oil or 2.375 gallons.

For Frame 2: Regardless of oil type, each compressor requires 507 ounces of oil or 3.96 gallons.

For Frame 3: Regardless of oil type, each compressor requires 744 ounces of oil or 5.8125 gallons.

Please see Recommended Oil Draining and Charging Guidelines.

Note: For BSE170 Oil 793-1170-34 = 1 Gallon Container and 793-3170-34 = 5 Gallon Container

Note: B320SH Oil 793-3320-01 = 1 Gallon Container and 793-3320-34 = 5 Gallon Container

****Never leave an open compressor unattended****

On-Site oil sample test for acid content should be completed as a pre-disassembly requirement. Although the oil will be drained from the compressor, this pre-check will provide data for future clean-up procedures.

Refrigerant sampling prior to disassembly will also assist future system clean-up procedures.

Review motor manufacture of replacement motor to determine if the motor rotor spacer will be replaced.

Inspect system contactors for proper sizing, wear, damage and repair or replace as required.



Use personal safety equipment. Safety goggles, gloves, protective clothing, safety boots and hard hats should be worn where necessary.

Frame 1									
BITZER M/N	BITZER M/N	Copeland M/N	Motor	Stator Cover Gasket	Terminal Plate Gasket	Stator Pin o-ring	Suction Valve Circular Gasket	Oil 1 Gallon	Oil 5 Gallon
CSH 6551-35Y-2PU	CSH 6553-35Y-2PU	SCA2-350E-FWC	346635-47	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6551-35Y-4PU	CSH 6553-35Y-4PU	SCA2-350E-FWD	346855-43	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6551-35Y-5PU	CSH 6553-35Y-5PU	SCA2-350E-TWE	346855-52	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6561-40Y-2PU	CSH 6563-40Y-2PU	SCA2-400E-FWC	346635-47	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6561-40Y-4PU	CSH 6563-40Y-4PU	SCA2-400E-FWD	346860-43	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6561-40Y-5PU	CSH 6563-40Y-5PU	SCA2-400E-TWE	346860-52	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6551-50-2PU	CSH 6553-50-2PU	SCH2-5000-FWC	346865-47	372316-09	372422-01	372003-13	372301-03	793-3320-01	793-3320-34
CSH 6551-50-4PU	CSH 6553-50-4PU	SCH2-5000-FWD	346865-43	372316-09	372422-01	372003-13	372301-03	793-3320-01	793-3320-34
CSH 6551-50-5PU	CSH 6553-50-5PU	SCH2-5000-TWE	346865-52	372316-09	372422-01	372003-13	372301-03	793-3320-01	793-3320-34
CSH 6561-60-2PU	CSH 6563-60-2PU	SCH2-6000-FWC	346871-47	372316-09	372422-01	372003-13	372301-03	793-3320-01	793-3320-34
CSH 6561-60-4PU	CSH 6563-60-4PU	SCH2-6000-FWD	346871-43	372316-09	372422-01	372003-13	372301-03	793-3320-01	793-3320-34
CSH 6561-60-5PU	CSH 6563-60-5PU	SCH2-6000-TWE	346871-52	372316-09	372422-01	372003-13	372301-03	793-3320-01	793-3320-34
CSH 6551-50Y-2PU	CSH 6553-50Y-2PU	SCH2-500E-FWC	346865-47	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6551-50Y-4PU	CSH 6553-50Y-4PU	SCH2-500E-FWD	346860-43	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6551-50Y-5PU	CSH 6553-50Y-5PU	SCH2-500E-TWE	346865-52	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6561-60Y-2PU	CSH 6563-60Y-2PU	SCH2-600E-FWC	346871-47	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6561-60Y-4PU	CSH 6563-60Y-4PU	SCH2-600E-FWD	346871-43	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH 6561-60Y-5PU	CSH 6563-60Y-5PU	SCH2-600E-TWE	346871-52	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH6583-50Y-2PU	N/A	N/A	346865-47	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH6583-50Y-4PU			346860-43	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH6583-50Y-5PU			346865-52	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH6593-60Y-2PU			346871-47	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH6593-60Y-4PU			346871-43	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSH6593-60Y-5PU			346871-52	372316-09	372422-01	372003-13	372301-03	793-1170-34	793-3170-34
CSW 6583-40Y-2PU	N/A	N/A	346635-47	372316-09	372422-01	372003-13	372301-03	Depending on Refrigerant type, the CSW will use BSE170L for R134A / BSE170 for R407C or B320SH for R22	
CSW 6583-40Y-4PU			346860-43	372316-09	372422-01	372003-13	372301-03		
CSW 6583-40Y-5PU			346860-52	372316-09	372422-01	372003-13	372301-03		
CSW 6583-50Y-2PU			346865-47	372316-09	372422-01	372003-13	372301-03		
CSW 6583-50Y-4PU			346865-43	372316-09	372422-01	372003-13	372301-03		
CSW 6583-50Y-5PU			346865-52	372316-09	372422-01	372003-13	372301-03		
CSW6593-50Y-2PU	N/A	N/A	346865-47	372316-09	372422-01	372003-13	372301-03	Depending on Refrigerant type, the CSW will use BSE170L for R134A / BSE170 for R407C or B320SH for R22	
CSW6593-50Y-4PU			346865-43	372316-09	372422-01	372003-13	372301-03		
CSW6593-50Y-5PU			346865-52	372316-09	372422-01	372003-13	372301-03		
CSW6593-60Y-2PU			346871-47	372316-09	372422-01	372003-13	372301-03		
CSW6593-60Y-4PU			346871-43	372316-09	372422-01	372003-13	372301-03		
CSW6593-60Y-5PU			346871-52	372316-09	372422-01	372003-13	372301-03		

Frame 2										
BITZER M/N	BITZER M/N	Copeland M/N	Motor	Stator Cover Gasket	Terminal Plate Gasket	Stator Pin Aluminum Ring	*CSH.1 Stator Cover o-ring	Suction Valve Circular Gasket	Oil 1 Gallon	Oil 5 Gallon
CSH 7551-50Y-2PU	CSH 7553-50Y-2PU	SCA2-500E-FWC	346635-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7551-50Y-4PU	CSH 7553-50Y-4PU	SCA2-500E-FWD	346635-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7551-50Y-5PU	CSH 7553-50Y-5PU	SCA2-500E-TWE	346635-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7561-60Y-2PU	CSH 7563-60Y-2PU	SCA2-600E-FWC	346645-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7561-60Y-4PU	CSH 7563-60Y-4PU	SCA2-600E-FWD	346645-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7561-60Y-5PU	CSH 7563-60Y-5PU	SCA2-600E-TWE	346645-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7571-70Y-2PU	CSH 7573-70Y-2PU	SCA2-700E-FWC	346656-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7571-70Y-4PU	CSH 7573-70Y-4PU	SCA2-700E-FWD	346656-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7571-70Y-5PU	CSH 7573-70Y-5PU	SCA2-700E-TWE	346656-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7581-80Y-2PU	CSH 7583-80Y-2PU	SCA2-801E-FWC	346667-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7581-80Y-4PU	CSH 7583-80Y-4PU	SCA2-801E-FWD	346667-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7581-80Y-5PU	CSH 7583-80Y-5PU	SCA2-801E-TWE	346667-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7591-90Y-2PU	CSH 7593-90Y-2PU	SCA2-901E-FWC	346671-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7591-90Y-4PU	CSH 7593-90Y-4PU	SCA2-901E-FWD	346671-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7591-90Y-5PU	CSH 7593-90Y-5PU	SCA2-901E-TWE	346671-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7551-70-2PU	CSH 7553-70-2PU	SCH2-7000-FWC	346656-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7551-70-4PU	CSH 7553-70-4PU	SCH2-7000-FWD	346656-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7551-70-5PU	CSH 7553-70-5PU	SCH2-7000-TWE	346656-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7561-80-2PU	CSH 7563-80-2PU	SCH2-8000-FWC	346667-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7561-80-4PU	CSH 7563-80-4PU	SCH2-8000-FWD	346667-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7561-80-5PU	CSH 7563-80-5PU	SCH2-8000-TWE	346667-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7571-90-2PU	CSH 7573-90-2PU	SCH2-9000-FWC	346671-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7571-90-4PU	CSH 7573-90-4PU	SCH2-9000-FWD	346671-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7571-90-5PU	CSH 7573-90-5PU	SCH2-9000-TWE	346671-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-3320-01	793-3320-34
CSH 7551-70Y-2PU	CSH 7553-70Y-2PU	SCH2-700E-FWC	346656-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7551-70Y-4PU	CSH 7553-70Y-4PU	SCH2-700E-FWD	346656-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7551-70Y-5PU	CSH 7553-70Y-5PU	SCH2-700E-TWE	346656-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7561-80Y-2PU	CSH 7563-80Y-2PU	SCH2-800E-FWC	346667-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7561-80Y-4PU	CSH 7563-80Y-4PU	SCH2-800E-FWD	346667-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7561-80Y-5PU	CSH 7563-80Y-5PU	SCH2-800E-TWE	346667-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7571-90Y-2PU	CSH 7573-90Y-2PU	SCH2-900E-FWC	346671-47	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7571-90Y-4PU	CSH 7573-90Y-4PU	SCH2-900E-FWD	346671-43	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH 7571-90Y-5PU	CSH 7573-90Y-5PU	SCH2-900E-TWE	346671-52	372316-06	372421-03	382403-05	(1) 372021-20	372303-03	793-1170-34	793-3170-34
CSH7583-100-2PU			346681-47	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSH7583-100-4PU	N/A	N/A	346681-43	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSH7583-100-5PU			346681-52	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSH7593-100-2PU			346681-47	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSH7593-100-4PU	N/A	N/A	346681-43	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSH7593-100-5PU			346681-52	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSH7593-110-2PU			346691-47	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSH7593-110-4PU	N/A	N/A	346691-43	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSH7593-110-5PU			346691-52	(2) 372316-06	372421-03	382403-05	n/a	372303-03	793-1170-34	793-3170-34
CSW7573-60Y-2PU			346645-47	372316-06	372421-03	382403-05	n/a	372303-03	Depending on Refrigerant type, The CSW will use BSE170L for R134A / BSE170 for R407C or B320SH for R22	
CSW7573-60Y-4PU	N/A	N/A	346645-43	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7573-60Y-5PU			346645-52	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7573-70Y-2PU			346656-47	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7573-70Y-4PU			346656-43	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7573-70Y-5PU			346656-52	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7583-70Y-2PU			346656-47	372316-06	372421-03	382403-05	n/a	372303-03	Depending on Refrigerant type, The CSW will use BSE170L for R134A / BSE170 for R407C or B320SH for R22	
CSW7583-70Y-4PU	N/A	N/A	346656-43	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7583-70Y-5PU			346656-52	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7583-80Y-2PU			346667-47	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7583-80Y-4PU			346667-43	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7583-80Y-5PU			346667-52	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7593-80Y-2PU			346667-47	372316-06	372421-03	382403-05	n/a	372303-03	Depending on Refrigerant type, The CSW will use BSE170L for R134A / BSE170 for R407C or B320SH for R22	
CSW7593-80Y-4PU	N/A	N/A	346667-43	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7593-80Y-5PU			346667-52	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7593-90Y-2PU			346671-47	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7593-90Y-4PU			346671-43	372316-06	372421-03	382403-05	n/a	372303-03		
CSW7593-90Y-5PU			346671-52	372316-06	372421-03	382403-05	n/a	372303-03		

* The stator cover o-ring was obsoleted for models >02/2012

Frame 3

BITZER M/N	BITZER M/N	Copeland M/N	Motor	Stator Cover Gasket	Terminal Plate Gasket	Stator Pin Aluminum Ring	*Suction End Bell Bearing	Suction Valve Circular Gasket	Oil 1 Gallon	Oil 5 Gallon
CSH 8551-80Y-2PU	CSH 8553-80Y-2PU	SCA2-800E-FWC	346705-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8551-80Y-4PU	CSH 8553-80Y-4PU	SCA2-800E-FWD	346705-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8551-80Y-5PU	CSH 8553-80Y-5PU	SCA2-800E-TWE	346705-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8561-90Y-2PU	CSH 8563-90Y-2PU	SCA2-900E-FWC	346710-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8561-90Y-4PU	CSH 8563-90Y-4PU	SCA2-900E-FWD	346710-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8561-90Y-5PU	CSH 8563-90Y-5PU	SCA2-900E-TWE	346710-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8571-110Y-2PU	CSH 8573-110Y-2PU	SCA2-11HE-FWC	346710-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8571-110Y-4PU	CSH 8573-110Y-4PU	SCA2-11HE-FWD	346710-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8571-110Y-5PU	CSH 8573-110Y-5PU	SCA2-11HE-TWE	346710-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8581-125Y-2PU	CSH 8583-125Y-2PU	SCA2-12HE-FWC	346720-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8581-125Y-4PU	CSH 8583-125Y-4PU	SCA2-12HE-FWD	346720-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8581-125Y-5PU	CSH 8583-125Y-5PU	SCA2-12HE-TWE	346720-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH8591-140Y-2PU	CSH8593-140Y-2PU	SCA2-14HE-FWC	346725-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH8591-140Y-4PU	CSH8593-140Y-4PU	SCA2-14HE-FWD	346725-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH8591-140Y-5PU	CSH8593-140Y-5PU	SCA2-14HE-TWE	346725-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8551-110-2PU	CSH 8553-110-2PU	SCH2-11H0-FWC	346715-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH 8551-110-4PU	CSH 8553-110-4PU	SCH2-11H0-FWD	346715-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH 8551-110-5PU	CSH 8553-110-5PU	SCH2-11H0-TWE	346715-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH 8561-125-2PU	CSH 8563-125-2PU	SCH2-12H0-FWC	346720-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH 8561-125-4PU	CSH 8563-125-4PU	SCH2-12H0-FWD	346720-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH8561-125-5PU	CSH8563-125-5PU	SCH2-12H0-TWE	346720-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH 8571-140-2PU	CSH 8573-140-2PU	SCH2-14H0-FWC	346725-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH 8571-140-4PU	CSH 8573-140-4PU	SCH2-14H0-FWD	346725-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH 8571-140-5PU	CSH 8573-140-5PU	SCH2-14H0-TWE	346725-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-3320-01	793-3320-34
CSH 8551-110Y-2PU	CSH 8553-110Y-2PU	SCH2-11HE-FWC	346715-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8551-110Y-4PU	CSH 8553-110Y-4PU	SCH2-11HE-FWD	346715-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8551-110Y-5PU	CSH 8553-110Y-5PU	SCH2-11HE-TWE	346715-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8561-125Y-2PU	CSH 8563-125Y-2PU	SCH2-12HE-FWC	346720-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8561-125Y-4PU	CSH 8563-125Y-4PU	SCH2-12HE-FWD	346720-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8561-125Y-5PU	CSH 8563-125Y-5PU	SCH2-12HE-TWE	346720-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8571-140Y-2PU	CSH 8573-140Y-2PU	SCH2-14HE-FWC	346725-47	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8571-140Y-4PU	CSH 8573-140Y-4PU	SCH2-14HE-FWD	346725-43	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSH 8571-140Y-5PU	CSH 8573-140Y-5PU	SCH2-14HE-TWE	346725-52	372441-01	372421-06	382403-05	386200-24	372303-13	793-1170-34	793-3170-34
CSW8573-90Y-2PU	N/A	N/A	346710-47	372441-01	372421-06	382403-05	386200-24	372303-13	Depending on Refrigerant type, The CSW will use BSE170L for R134A / BSE170 for R407C or B320SH for R22	
CSW8573-90Y-4PU			346710-43	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8573-90Y-5PU			346710-52	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8573-110Y-2PU			346710-47	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8573-110Y-4PU			346710-43	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8573-110Y-5PU	346710-52	372441-01	372421-06	382403-05	386200-24	372303-13				
CSW8583-110Y-2PU	N/A	N/A	346710-47	372441-01	372421-06	382403-05	386200-24	372303-13	Depending on Refrigerant type, The CSW will use BSE170L for R134A / BSE170 for R407C or B320SH for R22	
CSW8583-110Y-4PU			346710-43	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8583-110Y-5PU			346710-52	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8583-125Y-2PU			346720-47	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8583-125Y-4PU			346720-43	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8583-125Y-5PU	346720-52	372441-01	372421-06	382403-05	386200-24	372303-13				
CSW8593-125Y-4PU	N/A	N/A	346720-43	372441-01	372421-06	382403-05	386200-24	372303-13	Depending on Refrigerant type, The CSW will use BSE170L for R134A / BSE170 for R407C or B320SH for R22	
CSW8593-125Y-5PU			346720-52	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8593-140Y-4PU			346725-43	372441-01	372421-06	382403-05	386200-24	372303-13		
CSW8593-140Y-5PU			346725-52	372441-01	372421-06	382403-05	386200-24	372303-13		

* The bearing in the end bell if requested 386200-24

Recommended Tools

Tools (Minimum):

M8 Hex head Allen socket (1/2 inch drive) for terminal plate bolts
M10 Hex head Allen socket (1/2 inch drive) for stator cover bolts
M10 deep well socket (1/2 inch drive) for terminal lug nuts, ground lugs (external) and motor lead nuts (internal)
Phillips screwdriver
M28 Spanner socket (1/2 inch drive) for rotor bolt collar, if required
M12 deep well socket for stator bolt pin pipe plug (external-required) and motor rotor bolt internal), if required
Flashlight
M6 metric bolt for removing the stator pin

Accessories (Minimum):

Suction Replacement Screen (If Required)	Lifting devices (if required)
22mm Aluminum Washer for Stator Plug (If Required)	Support devices (if required)
Oil collection basin	Field Refrigerant Recovery System
Shop rags/towels/oil absorbent pads	Vacuum Pump
Waste container for used oil	Oil for assembly

Recommended Publications

SB-170 - Semi-Hermetic Compact Operating Instructions
SH-170 - Semi-Hermetic Compact Application Manual
SW-100 and/or TB-0020 - Torque Requirements for Metric Fasteners
ST-410 and/or TB-0017 - Oil Draining and Charging Procedures for CSH Screw Compressors
Troubleshooting Guidelines for the SE-E1 and INT69VSY-II Electronic Modules
Motor Code for Semi-Hermetic Screw Compressors

More information can be found on www.bitzerus.com or by contacting our application engineering department at techsupport@bitzerus.com or 770-503-9226.

BITZER Compressor Nomenclature

CSH7573-70Y-4PU



“Y” after the 11th Digit is Oil Type (when required)

“Y” = BSE170 for HFC’s / If no “Y” in Model Number = B320SH for R22

CopelandBitzer LP Compressor Nomenclature

Screw Compressor	Body Type	Temp. Range	Version	Horsepower	Voltage	BOM
S	C	H	2	4000	FWD	200
	C = Compact	H = High		11H* = 110 HP	FWC	200
	H = Semi-Hermetic	L = Low		12H* = 120 HP	FWD	800
	D = Open Drive	M = Med		14H* = 140 HP	TWE	
		A = R134A		18H* = 180 HP	EWC	
				21H* = 210 HP	EWD	
				24H* = 240 HP		
				28H* = 280 HP		
				30H* = 300 HP		
				*(0 = R22, E = HFC)		

Frame 1 Motor Change Instructions

CSH65 (Frame 1) Field Motor Change Recommended Guidelines

BITZER Screw Compressors are designed and engineered with "Slide Fit" motors for installation and removal.

These Guidelines are supplied as a recommended procedure for removing, inspecting and replacing the motor.

Note: Each installation may be different and the below is a minimum recommendation specific to the compressor only.

Depending on the motor manufacturer and age of the compressor, the motor spacer sleeve may have to be replaced. Each motor is supplied with the motor rotor spacer sleeve. Prior to serial numbers beginning with "05", most compressors will have either an AOSI or VEM Motor. After "05", Leroy Somer motors are used. AOSI and VEM motors utilize one common spacer, whereas Leroy Somer uses a different length of spacer due to rotor length.

Regardless of oil type, each compressor requires 507 ounces of oil or 3.96 gallons. Please see

Recommended Oil Draining and Charging Guidelines for more information.

Note: For BSE170 Oil PN# 793-1170-34 = 1 Gallon Container and PN# 793-3170-34 = 5 Gallon Container. For B320SH Oil PN# 793-3320-01 = 1 Gallon Container and PN# 793-3320-34 = 5 Gallon Container.

Tools (Minimum):

- M8 Hex head Allen socket (1/2 inch drive) for terminal plate bolts
- M10 Hex head Allen socket (1/2 inch drive) for stator cover bolts
- M8 motor lead nuts (internal)
- M22 metric socket and/or adjustable wrench for removing the stator pin sealing plug
- M5 wrench or small adjustable for Terminal Sensor Nuts (inside terminal box)
- 1-1/8" socket and/or adjustable wrench for removing (1) sealing plug on the stator cover
- M16 deep well socket for motor rotor bolt (internal), if required
- Flashlight
- Phillips screwdriver

Accessories (Minimum):

- Suction Replacement Screen (If Required) Part Number 362002-08
- Adjustable wrench for removing 1/4" pipe plug under stator housing
- Oil collection container
- O-Ring for Stator Pin Plug (if required) 372003-13
- Shop rags/towels/oil absorbent pads
- Waste container for used oil
- Lifting devices (if required)
- Support devices (if required)
- Field Refrigerant Recovery System

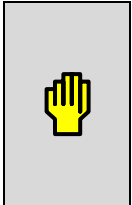
- Vacuum Pump
- Oil for assembly

Recommended Instruction Guidelines for Review:

SW-100 and/or TB-0020 - Instruction and Guidelines for Torque Requirements of Metric Fasteners
SB-170 - Semi-Hermetic Compact Operating Instructions
SH-170 - Semi Hermetic Compact Screw Compressor Application Manual
SE-160 - Screw Compressor Replacement Parts Guide

Basic Procedure:

The below guidelines are only issued as from standard accepted field guidelines.
BITZER implies No Liability to the below and this is only a general field guideline to field motor replacements and accepts no responsibilities for warranty considerations.



IMPORTANT:

All Standard Basic Refrigerant Practices Must be Followed.
All Standard Safety Practices Must be Followed
All Standard Electrical Practices Must be Followed
The System/Compressor shall be Tagged Out Electrically with
Second Personnel Responsibility Checks Required

On-Site oil sample test for acid content should be completed as a pre-disassembly requirement. Although the oil will be drained from the compressor, this pre-check will tend to lead for future clean-up procedures. Refrigerant sampling prior to disassembly will also assist to future system clean-up procedures. Review motor manufacture of replacement motor to determine if the motor rotor spacer will be replaced. Inspect system contactors for proper sizing, wear, damage and repair or replace as required.

Ensure All Power is turned off to the compressor, including the control circuit/module Power

Isolate the compressor from the system (Close Suction, Discharge Service Valves, Close Liquid Injection or Economizer Valves). Recover refrigerant per standard recovery practices and per local city, township, county, and state requirements. Process oil sample as above. Drain oil from crankcase and stator housing areas per oil drain procedures (See Fig 1).

Verify All Power is De-energized/Shut-off prior to opening the terminal box cover

- Open terminal box cover and prepare, mark all electrical connections for re-connection after motor change (See Fig 2).
- Disconnect all power leads by removing the M8 brass nuts and Lugs
- Disconnect the grounding lug by also removing the M6 bolt and spacer
- Disconnect motor sensor PTC's (brown wire) by removing the M4 Nuts from T-1 and T-2
- Disconnect all other system wiring from the electronic module (module power L and N, control circuit 11 and 14, general fault output 14 if used)
- Disconnect terminal D-1 on the INT69VSY-II for phase rotation protection (not applicable on the SE-E1 module)
- Remove the M6x12 screws connecting the terminal box to the terminal plate

After ensuring no refrigerant and/or pressure is in the compressor

- Remove (10) M10x20 terminal plate bolts
- Visually inspect the motor-terminal plate areas for contamination
- Using a flashlight, look into the top of the terminal plate areas for any debris and/or contaminants
- Unplug terminals T-1 and T-2 Motor sensors from the terminal plate
- Remove the (6) motor lead nuts from the terminal plate using the M10 socket and keep for re-assembly.
- Cover the terminal plate opening to ensure no external debris can fall into this area
- Remove (12) stator cover/motor housing bolts by using the M12 Allen socket (See Fig 3).
- It is recommended that (2) bolts be loosened but not removed until ready to lift off the stator cover.
- Visually inspect the opposite lead end of the motor and look for any electrical failure (See Fig 4)
- Visually inspect the Suction Screen for any damage. Clean and/or Replace if required.
- The suction screen is located under the suction service valve.
- Grasp the motor rotor and drive rotor (male screw) by hand. (See Fig 4)



Turn the motor rotor and drive rotor (male screw) by hand and feel for Any Restrictions. The rotors should turn by hand with No Restrictions. Both Male and Female Rotors (screws) should turn by hand with No Restrictions.

IF ANY RESTRICTIONS ARE FELT or NOTICED, NO FURTHER ACTION ON FIELD MOTOR REPLACEMENT IS RECOMMENDED AND THE COMPRESSOR SHOULD BE REMOVED FOR FURTHER INTERNAL CONTROLLED ANALYSIS.

This is an Indication of Severe Winding Damage where the rotors were exposed to copper particles being carried into the rotor casing. Once this happens, the compressor cannot be salvaged for continued use as the rotors and bearings become suspect for normal use.

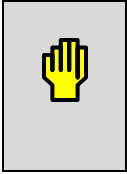
IF No Restrictions are felt and the compressor is fairly clean, proceed as follows for motor removal/replacement.

This series of high temp screw compressors have a "stator pin" which locks the motor into the housing. This pin is located in the 1 o'clock position from the motor end or near the top of the motor casing (See Fig 5). The pin is secured in place by a M22 pipe plug. Locate and remove the plug and O-ring (See Fig 6). The motor is now ready for removal.



CAUTION: Extreme care and caution must be followed when removing the motor. The average weight, depending on horsepower, is 90 lbs.

- Prepare the work area under the stator housing to "receive the motor"
- Grasp the motor and pull out until the motor clears the motor rotor and stator housing (See Fig 7)
- Once the motor is removed, place in an area and inspect entire motor for electrical failure
- Remove the motor key from the housing (located at the 3 o'clock position from the motor end)
- Turn the motor rotor by hand as indicated above and feel for any restrictions while turning. No Restrictions should be felt
- Inspect the motor housing for any debris. Inspect the motor rotor for any debris
- If No Restrictions are noticed and the stator housing area is clean, proceed as follows
- The housing areas can be cleaned with a non-residual cleaner
- At this time, the continued use or removal of the motor rotor is required.
- Depending on the original manufacturer and the replacement motor-rotor combination, the rotor may have to be replaced (See above)
- If the new motor requires the replacement of the motor rotor, use the M16 socket to remove the motor rotor bolt and washer (See Fig 4)
- After removing the rotor bolt and lock washer, remove the washer and spacer
- Once removed, remove the motor rotor and the rotor spacer from the drive rotor (See Fig 4)
- Slide the motor rotor off of the drive rotor. Ensure the rotor key is saved for re-use
- Again, turn the drive rotor (screw) by hand and feel for any restrictions



CAUTION: *Installing the Replacement Motor-Rotor Extreme Care must be exercised as to not in any way nick or damage the motor windings during pre-paring and assembly*

If the replacement motor is Leroy Somer, the stator key removed previously is not required and can be discarded. If the replacement motor is the same as removed (AOSI or VEM) the motor key should be re-used. Depending on the replacement motor, either re-install the stator key or discard. Depending on the motor manufacturer, the rotor is re-used or replaced.

If the motor rotor was removed, as indicated above, install the new matching rotor onto the drive rotor with the rotor key. If the motor rotor was replaced, install the rotor spacer that was supplied with the new motor, ensuring the key is aligned. If the motor rotor was not replaced, no further action is required with the rotor spacer.

Once the new or existing motor rotor is installed on the drive rotor, the motor is now ready for installation. As indicated above about the stator key, carefully align the new motor within the stator housing, motor rotor and slide the motor into the housing. Please note that there are no stator stops in the housing. Forcing the stator into the housing and slamming the stator against the end of the housing can lead to potential damage on the windings and premature failure will result due to the damaged windings.

The motor should carefully be inserted into the housing until the stator pin recess is observed through the stator pin access previously removed (See Fig 6). Ensure the 21.9mm x 1.7mm O-ring is still intact on the pipe plug. Reinstall the stator pin into the motor housing and into the stator pin recess as per the removal instructions above and torque to spec (29.5 ft/lbs.). Turn the rotors again by hand to ensure no restrictions are felt. Replace the terminal plate gasket at this time.

Reconnect the motor leads to the inside of the terminal plate. Ensure the motor leads are connected as per the markings on the terminal plate. L-1 to 1, L-2 to 2, L-3 to 3, L-7 to 7, L-8 to 8 and L-9 to 9. Reconnect the motor sensor leads T-1 and T-2. Note: it does not matter which plug the sensor leads are connected to. The motor sensor leads are internally wired in series. After ensuring the internal leads are installed correctly, re-install the terminal plate and torque the bolts to specs (59 ft/lbs.)

Inspect the Stator cover gasket to determine if it should be replaced. Carefully align the stator cover into place. Re-install the stator cover bolts and follow standard crisscross torque patterns as per torque specs (92 ft/lbs.). Install acid core filter driers. Place entire system on vacuum, ensuring the oil was drained prior to disassembly. After a short period of time, re-charge with new oil as per type of refrigerant used while still in vacuum as per above instructions. Continue vacuum per standard practices. Check contactors as per above instructions. Reconnect all previously removed electrical wiring and components as indicated above and ensure tightness. After vacuum, re-charge compressor/system with refrigerant.

NOTE

IMPORTANT: Do not start compressor under vacuum. Ensure crankcase heater has been energized for 24 hours prior to start to ensure no refrigerant is in the compressor.

Using pressure gauges, bump start the compressor for direction of rotation. Suction will drop, Discharge will rise.

Post Motor Change / System Checks (as a minimum):

- After 1 to 2 days of operation, a complete oil change is required
- Follow the above procedures and guidelines
- When the oil change is completed, submit an oil analysis for quality of the oil
- Pending the results, a second oil change may be required
- Replace acid core driers depending on the pressure drops across the inlet and outlet of the core housing

It is recommended to draw a sample of the refrigerant and test for purity and corrective measures taken

Figure 1

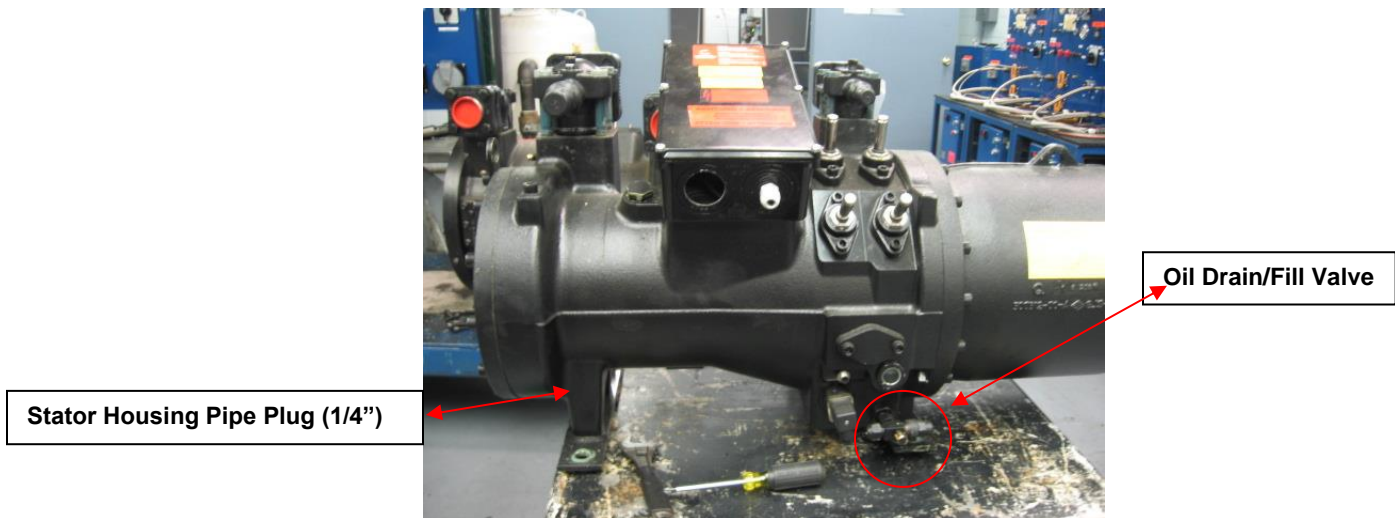


Figure 2

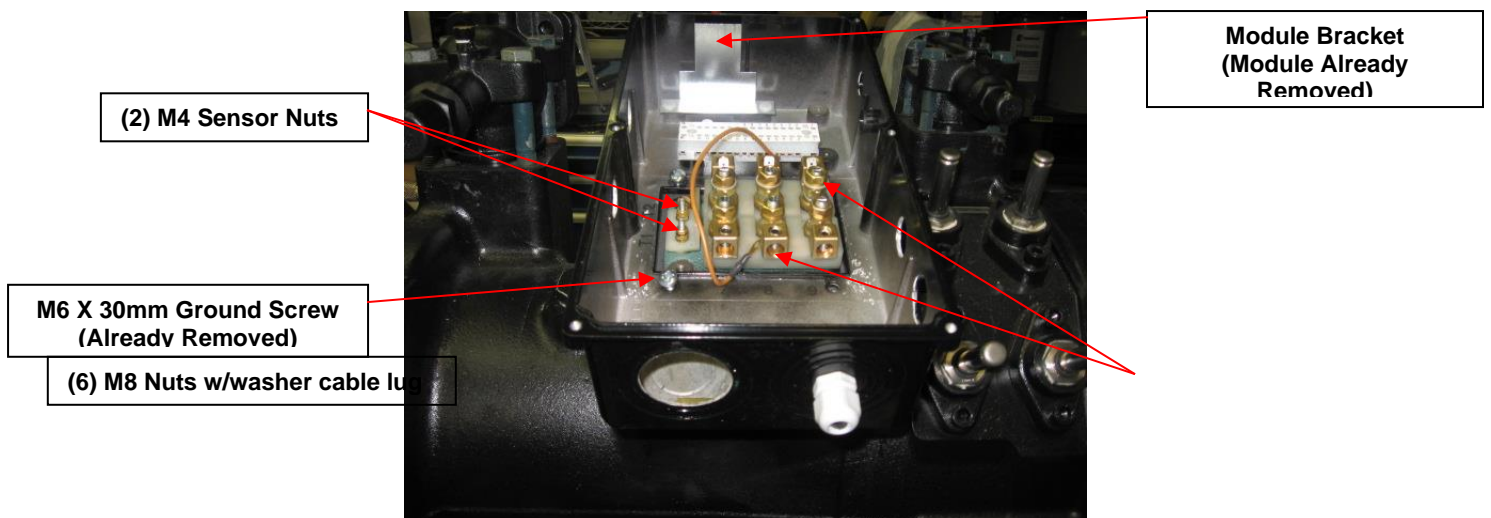


Figure 3

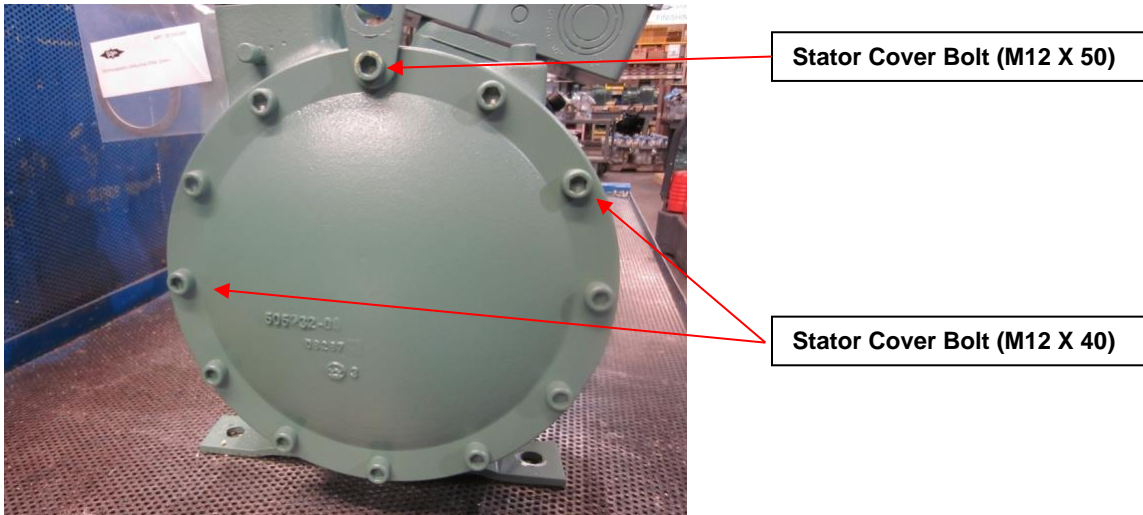


Figure 4

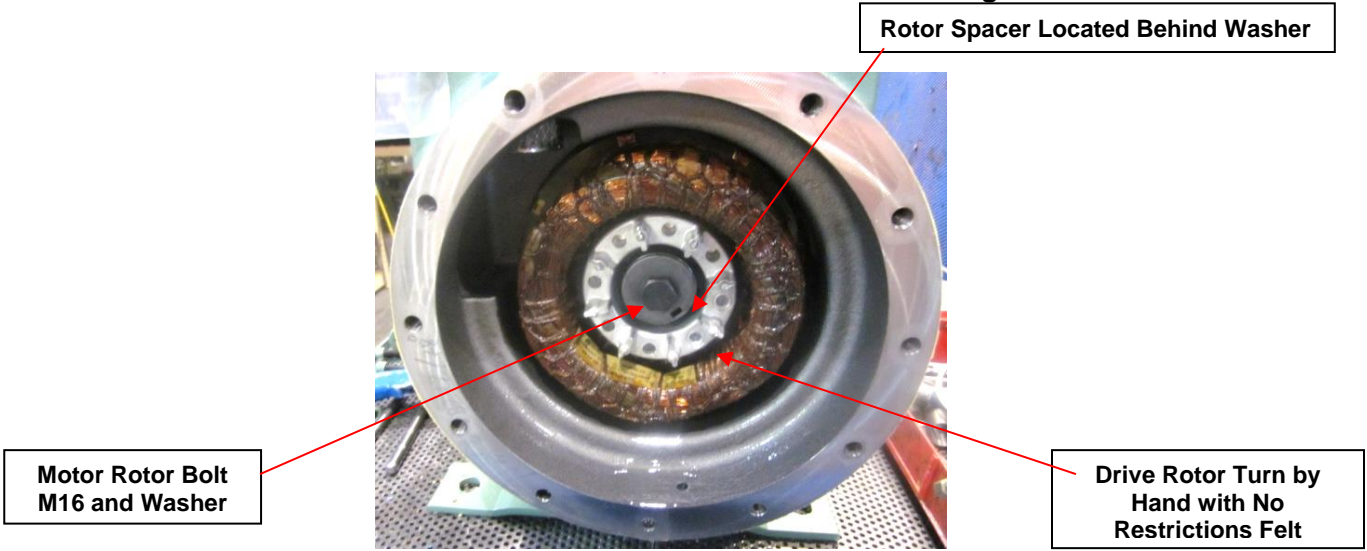


Figure 5

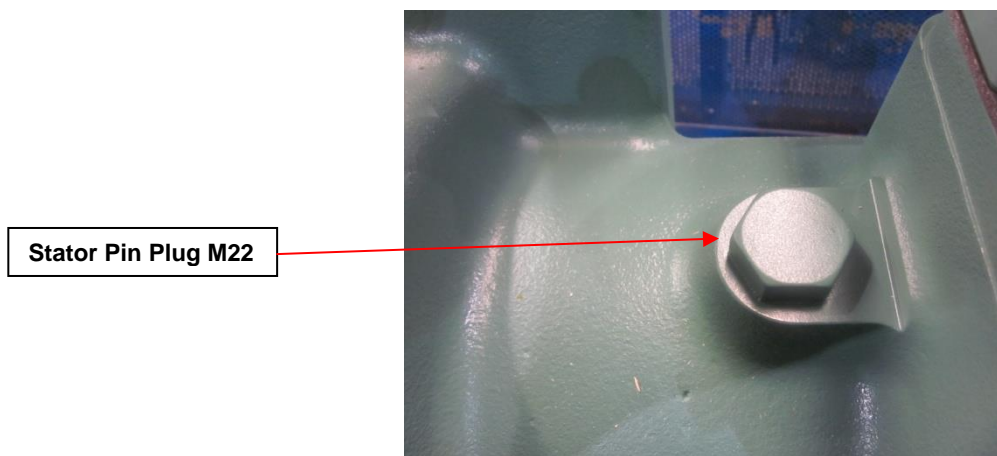


Figure 6



Stator Pin Plug M22



Stator Pin Recess shown with O-ring

Figure 7

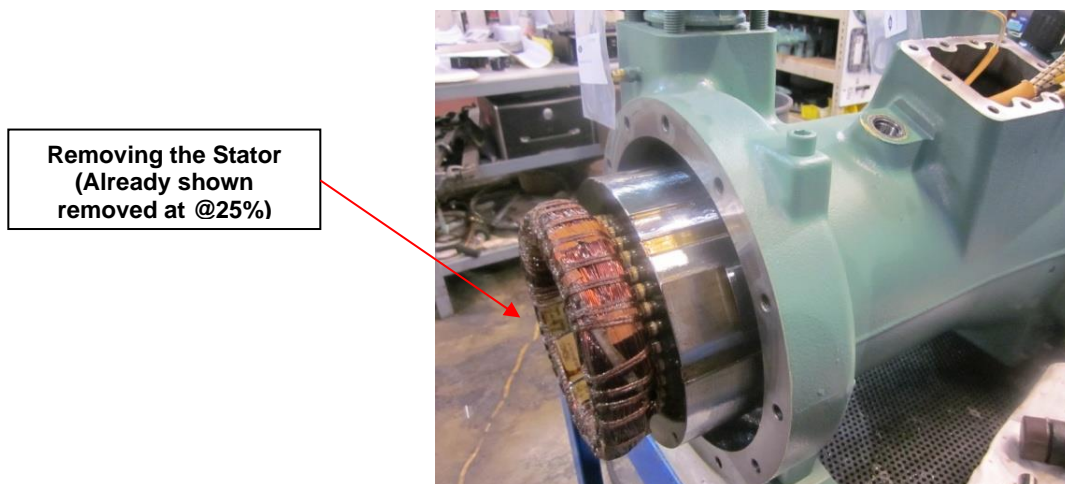


Figure 8

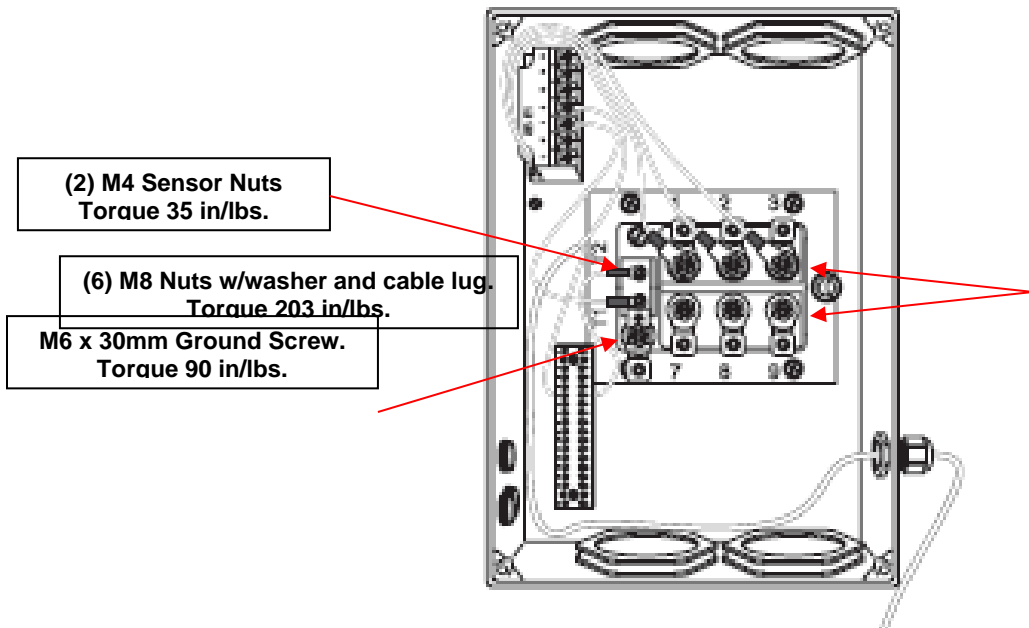


Figure 9

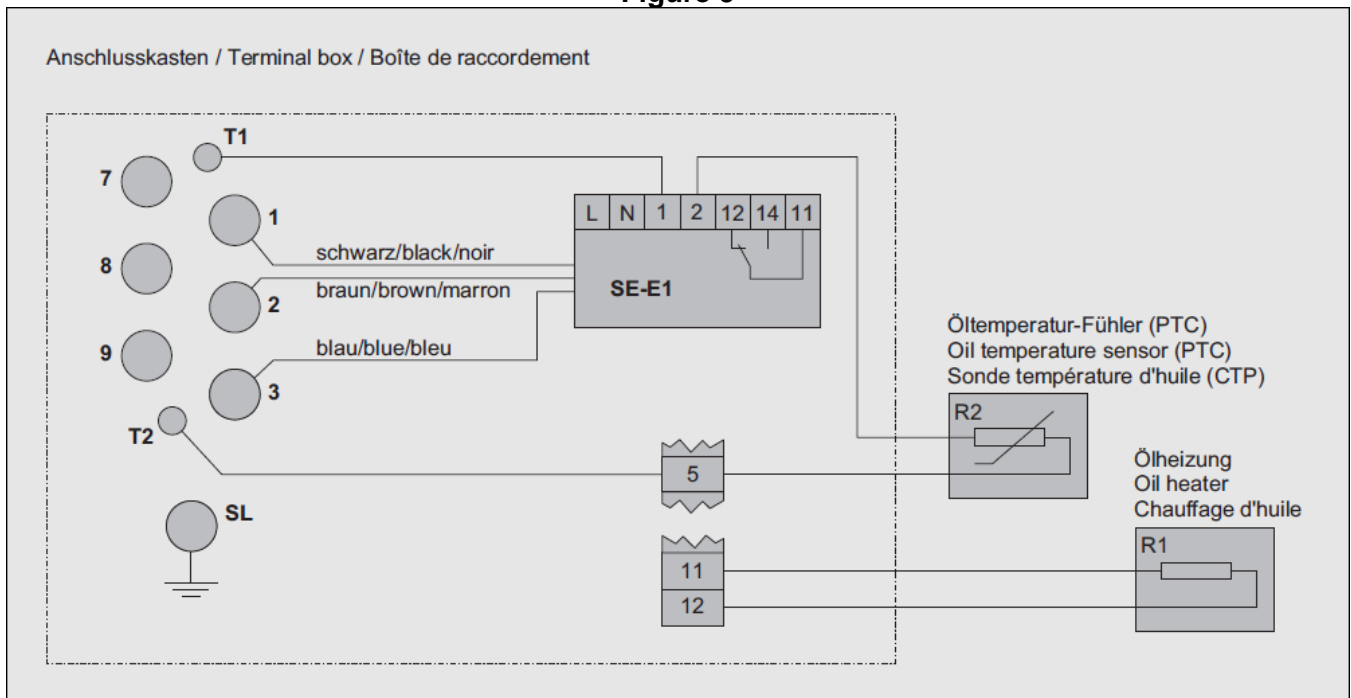
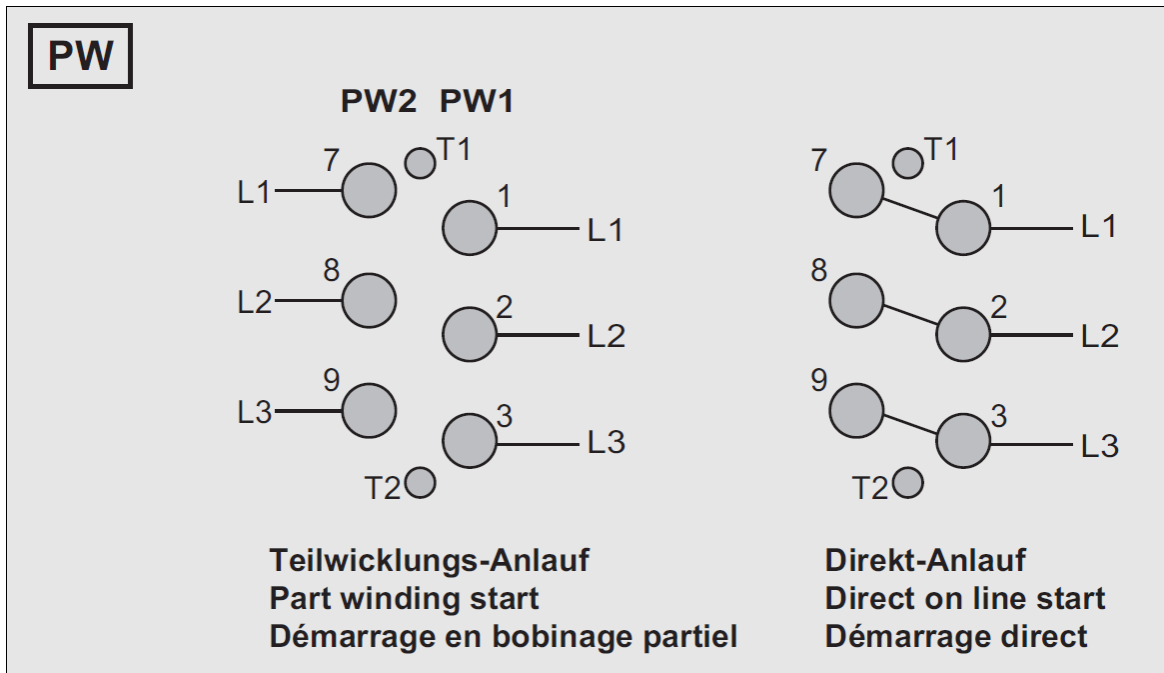


Figure 10



Frame 2 Motor Change Instructions

CSH75 (Frame 2) Field Motor Change Recommended Guidelines

BITZER Screw Compressors are designed and engineered with "Slide Fit" motors for installation and removal.

These Guidelines are supplied as a recommended procedure for removing, inspecting and replacing the motor.

Note: Each installation may be different and the below is a minimum recommendation specific to the compressor only.

Depending on the motor manufacturer and age of the compressor, the motor spacer sleeve may have to be replaced. Each motor is supplied with the motor rotor spacer sleeve. Prior to serial numbers beginning with "05", most compressors will have either an AOSI or VEM Motor. After "05", Leroy Somer motors are used. AOSI and VEM motors utilize one common spacer, whereas Leroy Somer uses a different length of spacer due to rotor length.

Note: For BSE170 Oil PN# 793-1170-34 = 1 Gallon Container and PN# 793-3170-34 = 5 Gallon Container. For B320SH Oil PN# 793-3320-01 = 1 Gallon Container and PN# 793-3320-34 = 5 Gallon Container.

Tools (Minimum):

- M8 Hex head Allen socket (1/2 inch drive) for terminal plate bolts
- M10 Hex head Allen socket (1/2 inch drive) for stator cover bolts
- M10 deep well socket (1/2 inch drive) for terminal ground lug nut (external) and motor lead nuts (internal)
- M22 metric socket and/or adjustable wrench for removing the stator pin sealing plug
- M6 metric bolt for removing the stator pin
- 1-1/8" socket and/or adjustable wrench for removing (1) sealing plug on the stator cover
- M12 deep well socket for stator bolt pin pipe plug (external-required) and motor rotor bolt (internal), if required
- Flashlight
- Phillips screwdriver

Accessories (Minimum):

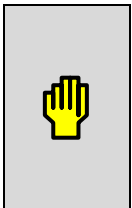
- Suction Replacement Screen (If Required) Part Number 362013-01
- 22mm Aluminum Washer for Stator Plug (If Required) Part Number 382403-05
- 26mm Aluminum Washer for Stator Cover Bolt (If Required) Part Number 372021-20
- Oil collection basin
- Shop rags/towels/oil absorbent pads
- Waste container for used oil
- Lifting devices (if required)
- Support devices (if required)
- Field Refrigerant Recovery System
- Vacuum Pump
- Oil for assembly

Recommended Instruction Guidelines for Review:

SW-100 and/or TB-0020 - Instruction and Guidelines for Torque Requirements of Metric Fasteners
SB-170 - Semi-Hermetic Compact Operating Instructions
SH-170 - Semi Hermetic Compact Screw Compressor Application Manual
SE-170 - Screw Compressor Replacement Parts Guide

Basic Procedure:

The below guidelines are only issued as from standard accepted field guidelines. BITZER implies No Liability to the below and this is only a general field guideline to field motor replacements and accepts no responsibilities for warranty considerations.



IMPORTANT:

All Standard Basic Refrigerant Practices Must be Followed.
All Standard Safety Practices Must be Followed
All Standard Electrical Practices Must be Followed
The System/Compressor shall be Tagged Out Electrically with
Second Personnel Responsibility Checks Required

On-Site oil sample test for acid content should be completed as a pre-disassembly requirement. Although the oil will be drained from the compressor, this pre-check will tend to lead for future clean-up procedures. Refrigerant sampling prior to disassembly will also assist to future system clean-up procedures. Review motor manufacture of replacement motor to determine if the motor rotor spacer will be replaced. Inspect system contactors for proper sizing, wear, damage and repair or replace as required.

Ensure All Power is turned off to the compressor, including the control circuit/module Power

Isolate the compressor from the system (Close Suction, Discharge Service Valves, Close Liquid Injection or Economizer Valves). Recover refrigerant per standard recovery practices and per local city, township, county, and state requirements. Process oil sample as above. Drain oil from crankcase and stator housing areas per oil drain procedures (See Fig 1).

Verify All Power is De-energized/Shut-off prior to opening the terminal box cover

- Open terminal box cover and prepare, mark all electrical connections for re-connection after motor change (See Fig 2).
- Disconnect all power leads by removing the M8 brass nuts and Lugs
- Disconnect the grounding lug by also removing the M6 bolt and spacer
- Disconnect motor sensor PTC's (brown wire) by removing the M4 Nuts from T-1 and T-2
- Disconnect all other system wiring from the electronic module (module power L and N, control circuit 11 and 14, general fault output 14 if used)
- Disconnect terminal D-1 on the INT69VSY-II for phase rotation protection (not applicable on the SE-E1 module)
- Remove the M6x12 screws connecting the terminal box to the terminal plate

After ensuring no refrigerant and/or pressure is in the compressor

- Remove (11) M10x25 terminal plate bolts and (2) M10 Ground Nuts
- Visually inspect the motor-terminal plate areas for contamination
- Using a flashlight, look into the top of the rotor casing and inspect the drive and driven rotors for any contaminants
- Unplug terminals T-1 and T-2 Motor sensors from the terminal plate (See Fig 2)
- Remove the (6) motor lead nuts from the terminal plate using the M10 socket and keep for re-assembly. (See Fig 2)
- Cover the terminal plate opening to ensure no external debris can fall into this area
- Remove (12) stator cover/motor housing bolts by using the M10 Allen socket (See Fig 3).
- (10) M16x160mm and (1) M16x170mm bolts are "external" while (1) M16x35mm bolt is accessed after removing the 1-1/8" sealing plug and using the M10 Allen head socket can be removed.
- It is recommended that (2) bolts be loosened but not removed until ready to lift off the stator cover.
- Visually inspect the opposite lead end of the motor and look for any electrical failure (See Fig 4)
- Visually inspect the Suction Screen for any damage. Clean and/or Replace if required.
- The suction screen is attached to the inside of the stator cover and held in place by (1) M12x16 bolt
- Grasp the motor rotor and drive rotor (male screw) by hand. (See Fig 4)



Turn the motor rotor and drive rotor (male screw) by hand and feel for Any Restrictions. The rotors should turn by hand with No Restrictions. Both Male and Female Rotors (screws) should turn by hand with No Restrictions.

IF ANY RESTRICTIONS ARE FELT or NOTICED, NO FURTHER ACTION ON FIELD MOTOR REPLACEMENT IS RECOMMENDED AND THE COMPRESSOR SHOULD BE REMOVED FOR FURTHER INTERNAL CONTROLLED ANALYSIS.

This is an Indication of Severe Winding Damage where the rotors were exposed to copper particles being carried into the rotor casing Once this happens, the compressor cannot be salvaged for continued use as the rotors and bearings become suspect for normal use

IF No Restrictions are felt and the compressor is fairly clean, proceed as follows for motor removal/replacement.

This series of high temp screw compressors have a "stator pin" which locks the motor into the housing. This pin is located in the 6 o'clock position from the motor end or near the bottom of the motor casing (See Fig 5). The pin is secured in place by a M22 pipe plug. Locate and remove the plug and O-ring (See Fig 5). The motor is now ready for removal.



CAUTION: Removing the motor from the compressor Extreme care and caution must be followed when removing the motor. The average weight, depending on horsepower is 200 lbs.

- Prepare the work area under the stator housing to "receive the motor"
- Grasp the motor and pull out until the motor clears the motor rotor and stator housing (See Fig 7)
- Once the motor is removed, place in an area and inspect entire motor for electrical failure
- Remove the motor key from the housing (located at the 3 o'clock position from the motor end)
- Turn the motor rotor by hand as indicated above and feel for any restrictions while turning. No Restrictions should be felt
- Inspect the motor housing for any debris. Inspect the motor rotor for any debris
- If No Restrictions are noticed and the stator housing area is clean, proceed as follows
- The housing areas can be cleaned with a non-residual cleaner
- At this time, the continued use or removal of the motor rotor is required.
- Depending on the original manufacturer and the replacement motor-rotor combination, the rotor may have to be replaced (see above)
- If the new motor requires the replacement of the motor rotor, use the M16 socket to remove the motor rotor bolt and washer (See Fig 4)
- After removing the rotor bolt and lock washer, remove the washer and spacer
- Once removed, remove the motor rotor and the rotor spacer from the drive rotor (See Fig 4)
- Slide the motor rotor off of the drive rotor. Ensure the rotor key is saved for re-use
- Again, turn the drive rotor (screw) by hand and feel for any restrictions



CAUTION: *Installing the Replacement Motor-Rotor Extreme Care must be exercised as to not in any way nick or damage the motor windings during pre-paring and assembly*

If the replacement motor is Leroy Somer, the stator key removed previously is not required and can be discarded. If the replacement motor is the same as removed (AOSI or VEM) the motor key should be re-used. Depending on the replacement motor, either re-install the stator key or discard. Depending on the motor manufacturer, the rotor is re-used or replaced.

If the motor rotor was removed, as indicated above, install the new matching rotor onto the drive rotor with the rotor key. If the motor rotor was replaced, install the rotor spacer that was supplied with the new motor, ensuring the key is aligned. If the motor rotor was not replaced, no further action is required with the rotor spacer.

Once the new or existing motor rotor is installed on the drive rotor, the motor is now ready for installation. As indicated above about the stator key, **Carefully** align the new motor within the stator housing, motor rotor and slide the motor into the housing. **Note:** **there are no stator stops in the housing.** Forcing the stator into the housing and slamming the stator against the end of the housing **Can** lead to potential damage on the windings and premature failure will result due to the damaged windings.

The motor should carefully be inserted into the housing **Until** the stator pin recess is observed through the stator pin access previously removed. Re-install the stator pin into the motor housing and into the stator pin recess as per the removal instructions above. Ensure the 22mm aluminum washer is still intact on the pipe plug. Turn the rotors again by hand to ensure no restrictions are felt.

Replace the terminal plate gasket at this time. Reconnect the motor leads to the inside of the terminal plate. Ensure the motor leads are connected as per the markings on the terminal plate. L-1 to 1, L-2 to 2, L-3 to 3, L-7 to 7, L-8 to 8 and L-9 to 9. Re-connect the motor sensor leads T-1 and T-2.

Note: it does not matter which plug the sensor leads are connected to. The motor sensor leads are internally wired in series. After ensuring the internal leads are installed correctly, re-install the terminal plate and torque the bolts to specs.

Carefully align the stator cover into place, reinstall the stator cover bolts and follow standard criss-cross torque patterns as per torque specs.

Install acid core filter driers. Place entire system on vacuum, ensuring the oil was drained prior to disassembly. After a short period of time, re-charge with new oil as per type of refrigerant used while still in vacuum as per above instructions. Continue vacuum per standard practices. Check contactors as per above instructions. Reconnect all previously removed electrical wiring and components as indicated above and ensure tightness. After vacuum, recharge compressor/system with refrigerant.

NOTE

IMPORTANT: Do not start compressor under vacuum. Ensure crankcase heater has been energized for 24 hours prior to start to ensure no refrigerant is in the compressor.

Using pressure gauges, bump start the compressor for direction of rotation. Suction will drop, discharge will rise.

Post Motor Change / System Checks (as a minimum):

- After 1 to 2 days of operation, a complete oil change is required
- Follow the above procedures and guidelines
- When the oil change is completed, submit an oil analysis for quality of the oil
- Pending the results, a second oil change may be required
- Replace acid core driers depending on the pressure drops across the inlet and outlet of the core housing

The refrigerant is also recommended to be sampled and tested for purity and corrective measures taken

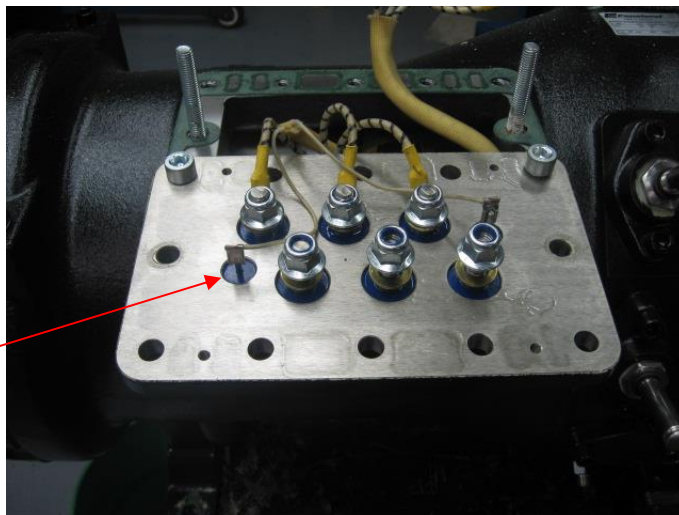
Figure 1



Stator Housing Pipe Plug (1/4")

Oil Drain/Fill Valve

Figure 2



Motor Lead Nuts (M10)

Motor Sensors

Figure 3

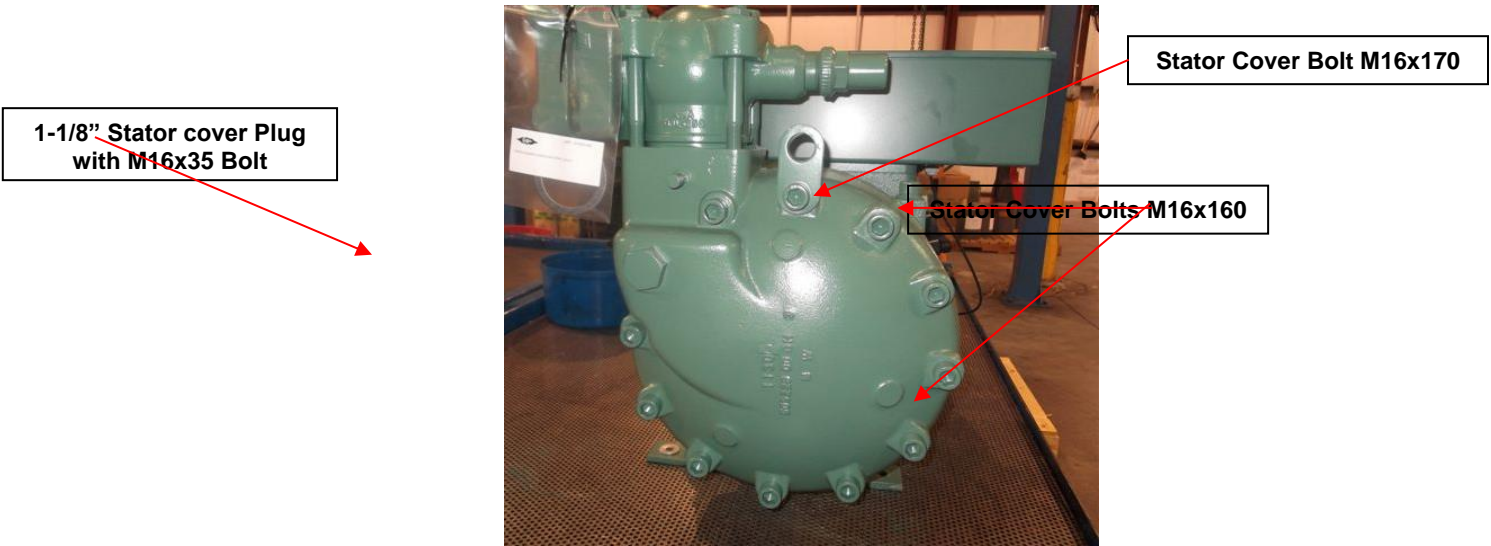


Figure 4

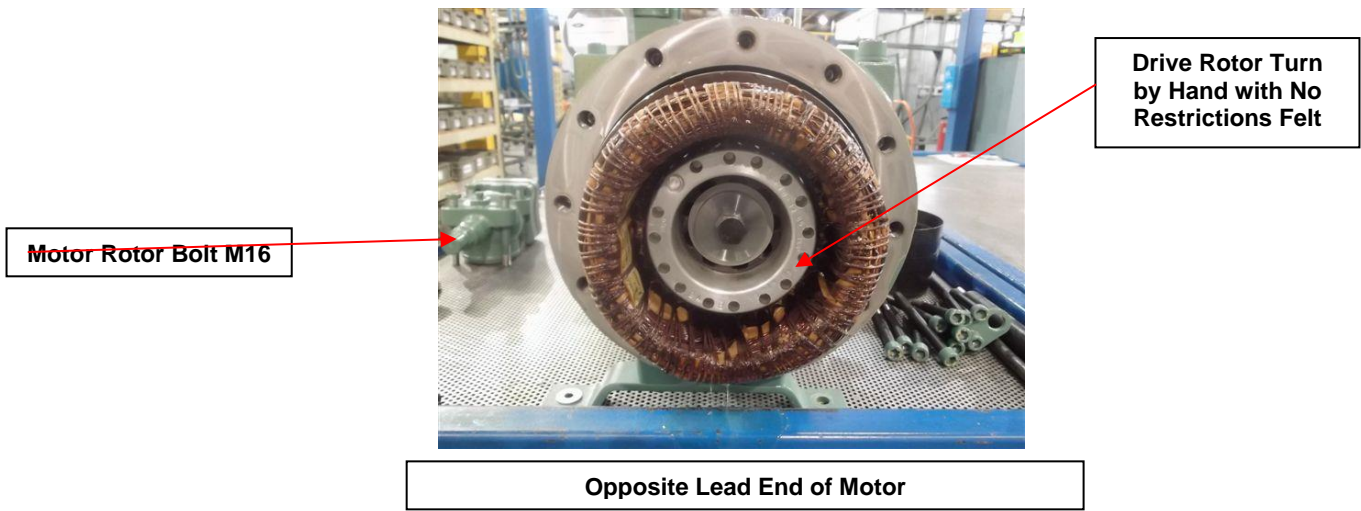


Figure 5

Stator Pin Plug M22

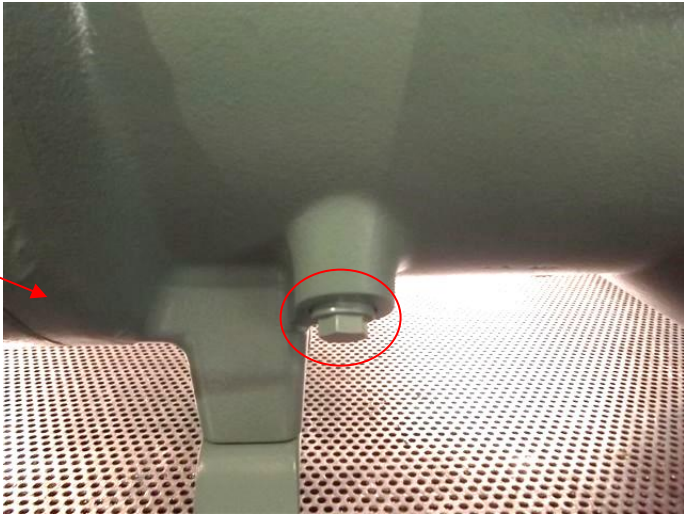


Figure 6

Stator Pin
(Underneath 22mm
Pipe Plug with
Aluminum Washer)

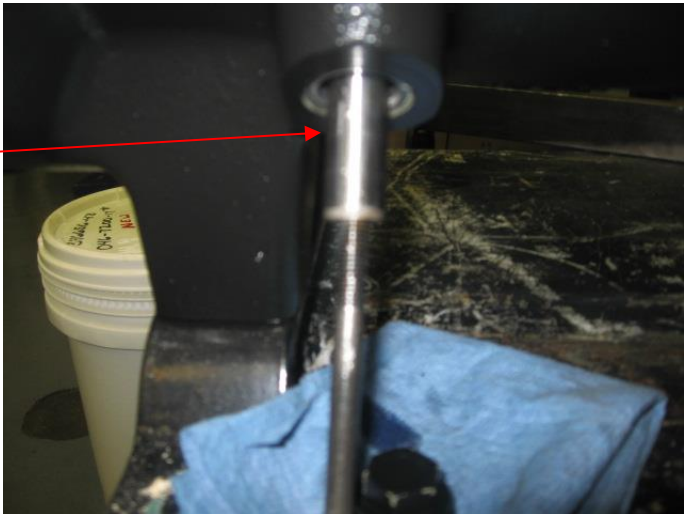


Figure 7

**Removing the Stator
(Already shown removed at 50%)**

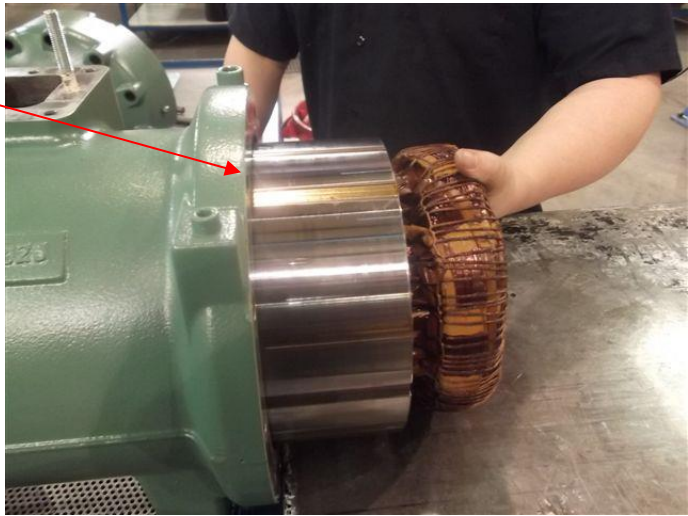
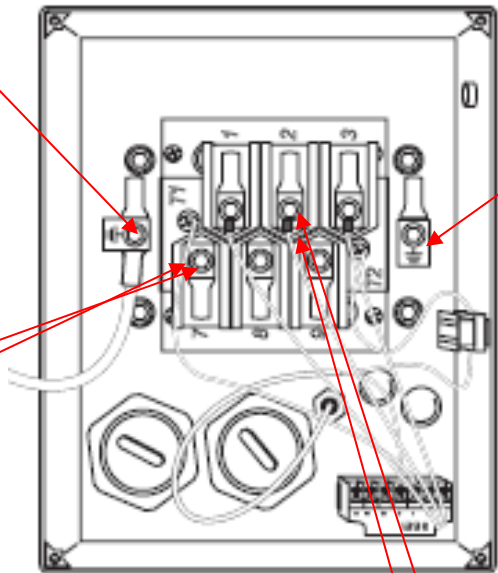


Figure 8

**M10 Ground Nut w/washer
Torque 371 in/lbs.**

**M10 Ground Nut w/washer
Torque 371 in/lbs.**

**(6) M8 Metric Screw for Cable to
Lug Connection
Torque 175 in/lbs.
(6) M8 Metric Screw for Lug to
Terminal Plate Connection**



**(6) M8 Metric Screw for Cable to Lug
Connection
Torque 175 in/lbs.
(6) M8 Metric Screw for Lug to
Terminal Plate Connection**

Figure 9

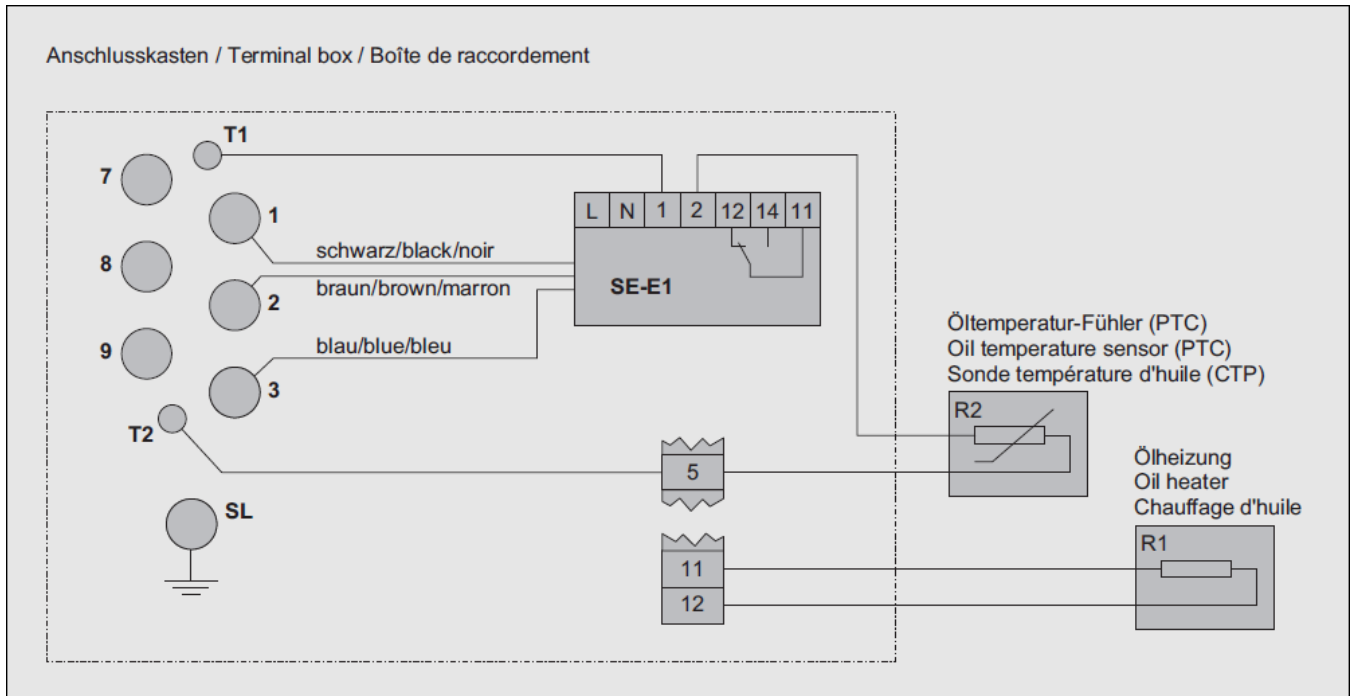
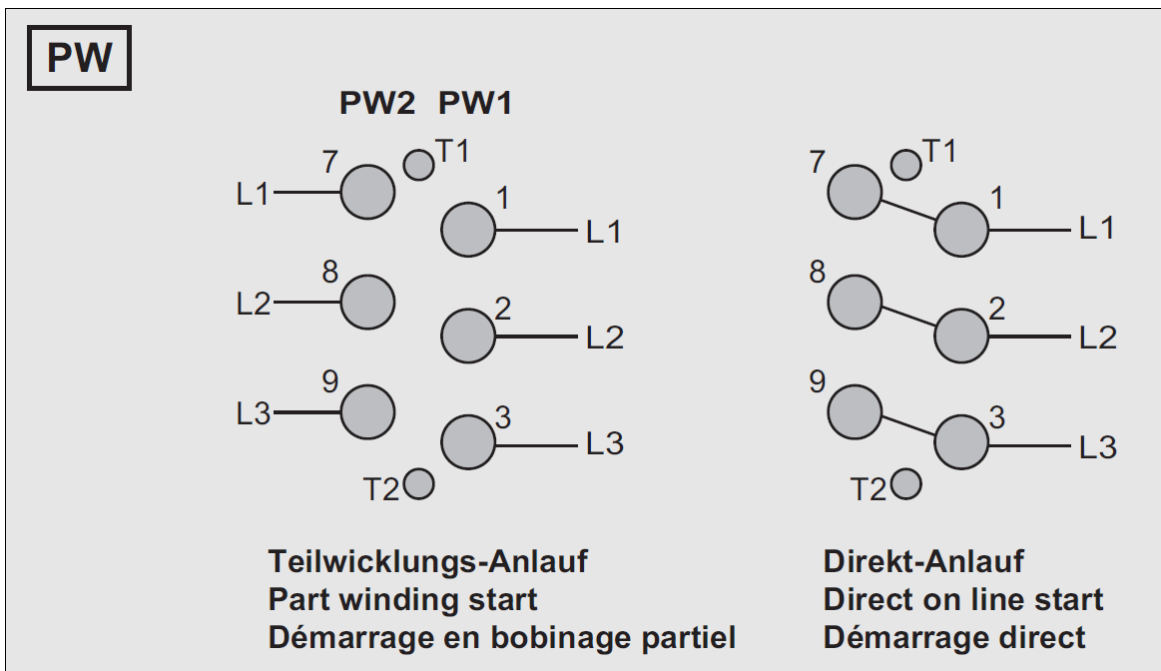


Figure 10



Frame 3 Motor Change Instructions

CSH85 (Frame 3) Field Motor Change Recommended Guidelines

BITZER Screw Compressors are designed and engineered with "Slide Fit" motors for installation and removal.

These Guidelines are supplied as a recommended procedure for removing, inspecting and replacing the motor.

Note: Each installation may be different and the below is a minimum recommendation specific to the compressor only.

Depending on the motor manufacturer and age of the compressor, the motor spacer sleeve may have to be replaced. Each motor is supplied with the motor rotor spacer sleeve. Prior to serial numbers beginning with "05", most compressors will have either an AOSI or VEM Motor. After "05", Leroy Somer motors are used. AOSI and VEM motors utilize one common spacer, whereas Leroy Somer uses a different length of spacer due to rotor length.

Note: For BSE170 Oil PN# 793-1170-34 = 1 Gallon Container and PN# 793-3170-34 = 5 Gallon Container. For B320SH Oil PN# 793-3320-01 = 1 Gallon Container and PN# 793-3320-34 = 5 Gallon Container.

Tools (Minimum):

- M8 Hex head Allen socket (1/2 inch drive) for terminal plate bolts
- M10 Hex head Allen socket (1/2 inch drive) for stator cover bolts
- M10 deep well socket (1/2 inch drive) for terminal ground lug nut (external) and motor lead nuts (internal)
- M22 metric socket and/or adjustable wrench for removing the stator pin sealing plug
- M6 metric bolt for removing the stator pin
- 1-1/8" socket and/or adjustable wrench for removing (1) sealing plug on the stator cover
- M12 deep well socket for stator bolt pin pipe plug (external-required) and motor rotor bolt (internal), if required
- Flashlight
- Phillips screwdriver

Accessories (Minimum):

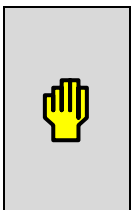
- Suction Replacement Screen (If Required) Part Number 362016-20
- 22mm Aluminum Washer for Stator Plug (If Required) Part Number 382403-05
- Oil collection basin
- Shop rags/towels/oil absorbent pads
- Waste container for used oil
- Lifting devices (if required)
- Support devices (if required)
- Field Refrigerant Recovery System
- Vacuum Pump
- Oil for assembly

Recommended Instruction Guidelines for Review:

SW-100 and/o TB-0020 - Instruction and Guidelines for Torque Requirements of Metric Fasteners
SB-170 - Semi-Hermetic Compact Operating Instructions
SH-170 - Semi Hermetic Compact Screw Compressor Application Manual
SE-180 - Screw Compressor Replacement Parts Guide

Basic Procedure:

The below guidelines are only issued as from standard accepted field guidelines. BITZER implies No Liability to the below and this is only a general field guideline to field motor replacements and accepts no responsibilities for warranty considerations.



IMPORTANT:

All Standard Basic Refrigerant Practices Must be Followed.
All Standard Safety Practices Must be Followed
All Standard Electrical Practices Must be Followed
The System/Compressor shall be Tagged Out Electrically with
Second Personnel Responsibility Checks Required

On-Site oil sample test for acid content should be completed as a pre-disassembly requirement. Although the oil will be drained from the compressor, this pre-check will tend to lead for future clean-up procedures. Refrigerant sampling prior to disassembly will also assist to future system clean-up procedures. Review motor manufacture of replacement motor to determine if the motor rotor spacer will be replaced. Inspect system contactors for proper sizing, wear, damage and repair or replace as required.

Ensure All Power is turned off to the compressor, including the control circuit/module Power

Isolate the compressor from the system (Close Suction, Discharge Service Valves, Close Liquid Injection or Economizer Valves). Recover refrigerant per standard recovery practices and per local city, township, county, and state requirements. Process oil sample as above. Drain oil from crankcase and stator housing areas per oil drain procedures (See Fig 1).

Verify All Power is De-energized/Shut-off prior to opening the terminal box cover

- Open terminal box cover and prepare, mark all electrical connections for re-connection after motor change (See Fig 2).
- Disconnect all power leads by removing the M8 brass nuts and Lugs
- Disconnect the grounding lug by also removing the M6 bolt and spacer
- Disconnect motor sensor PTC's (brown wire) by removing the M4 Nuts from T-1 and T-2
- Disconnect all other system wiring from the electronic module (module power L and N, control circuit 11 and 14, general fault output 14 if used)
- Disconnect terminal D-1 on the INT69VSY-II for phase rotation protection (not applicable on the SE-E1 module)
- Remove the M6x12 screws connecting the terminal box to the terminal plate

After ensuring no refrigerant and/or pressure is in the compressor

- Remove (11) M10x25 terminal plate bolts and (2) M10 Ground Nuts
- Visually inspect the motor-terminal plate areas for contamination
- Using a flashlight, look into the top of the rotor casing and inspect the drive and driven rotors for any contaminants
- Unplug terminals T-1 and T-2 Motor sensors from the terminal plate (See Fig 2)
- Remove the (6) motor lead nuts from the terminal plate using the M10 socket and keep for re-assembly. (See Fig 2)
- Cover the terminal plate opening to ensure no external debris can fall into this area
- Remove (12) stator cover/motor housing bolts by using the M10 Allen socket (See Fig 3).
- (10) M16x160mm and (1) M16x170mm bolts are "external" while (1) M16x35mm bolt is accessed after removing the 1-1/8" sealing plug and using the M10 Allen head socket can be removed.
- It is recommended that (2) bolts be loosened but not removed until ready to lift off the stator cover.
- Visually inspect the opposite lead end of the motor and look for any electrical failure (See Fig 4)
- Visually inspect the Suction Screen for any damage. Clean and/or Replace if required.
- The suction screen is attached to the inside of the stator cover and held in place by (1) M12x16 bolt
- Grasp the motor rotor and drive rotor (male screw) by hand. (See Fig 4)

Turn the motor rotor and drive rotor (male screw) by hand and feel for Any Restrictions. The rotors should turn by hand with No Restrictions. Both Male and Female Rotors (screws) should turn by hand with No Restrictions.

IF ANY RESTRICTIONS ARE FELT or NOTICED, NO FURTHER ACTION ON FIELD MOTOR REPLACEMENT IS RECOMMENDED AND THE COMPRESSOR SHOULD BE REMOVED FOR FURTHER INTERNAL CONTROLLED ANALYSIS.



This is an Indication of Severe Winding Damage where the rotors were exposed to copper particles being carried into the rotor casing. Once this happens, the compressor cannot be salvaged for continued use as the rotors and bearings become suspect for normal use

IF No Restrictions are felt and the compressor is fairly clean, proceed as follows for motor removal/replacement.

This series of high temp screw compressors have a "stator pin" which locks the motor into the housing. This pin is located at the 5 o'clock position from the motor end or 75% down from the top of the compressor's centerline. The pin is secured in place by a 3/4" pipe plug. Locate and remove the plug (See Fig 9). Using an M6 bolt, screw the bolt into the pin and pull straight down, removing the pin. The motor is now ready for removal.



CAUTION: Removing the motor from the compressor Extreme care and caution must be followed when removing the motor. The average weight, depending on horsepower is 200 lbs.

- Prepare the work area under the stator housing to "receive the motor"
- Grasp the motor and pull out until the motor clears the motor rotor and stator housing (See Fig 10)
- Once the motor is removed, place in an area and inspect entire motor for electrical failure
- Remove the motor key from the housing (located at the 9 o'clock position from the motor end) (See Fig 11)
- Turn the motor rotor by hand as indicated above and feel for any restrictions while turning. No Restrictions should be felt
- Inspect the motor housing for any debris. Inspect the motor rotor for any debris
- If No Restrictions are noticed and the stator housing area is clean, proceed as follows
- The housing areas can be cleaned with a non-residual cleaner
- At this time, the continued use or removal of the motor rotor is required.
- Depending on the original manufacturer and the replacement motor-rotor combination, the rotor may have to be replaced (see above)
- If the new motor requires the replacement of the motor rotor, use the M28 spanner to remove the motor rotor locking nut (See Fig 6)
- Once removed, remove the motor rotor and the rotor spacer from the drive rotor (See Fig 6)
- Slide the motor rotor off of the drive rotor. Ensure the rotor key is saved for re-use
- Again, turn the drive rotor (screw) by hand and feel for any restrictions
- Remove the suction screen and inspect for any damage, replace if required



CAUTION: Installing the Replacement Motor-Rotor Extreme Care must be exercised as to not in any way nick or damage the motor windings during pre-paring and assembly

If the replacement motor is Leroy Somer, the stator key removed previously is not required and can be discarded. If the replacement motor is the same as removed (AOSI or VEM) the motor key should be re-used. Depending on the replacement motor, either reinstall the stator key or discard. Depending on the motor manufacturer, the rotor is reused or replaced.

If the motor rotor was removed, as indicated above, install the new matching rotor onto the drive rotor with the rotor key. If the motor rotor was replaced, install the rotor spacer that was supplied with the

new motor, ensuring the key is aligned. If the motor rotor was not replaced, no further action is required with the rotor spacer.

Once the new or existing motor rotor is installed on the drive rotor, the motor is now ready for installation. As indicated above about the stator key, **Carefully** align the new motor within the stator housing, motor rotor and slide the motor into the housing. **Note: there are no stator stops in the housing.** Forcing the stator into the housing and slamming the stator against the end of the housing **Can** lead to potential damage on the windings and premature failure will result due to the damaged windings.

The motor should carefully be inserted into the housing **Until** the stator pin recess is observed through the stator pin access previously removed. Reinstall the stator pin into the motor housing and into the stator pin recess as per the removal instructions above. Ensure the 20mm aluminum washer is still intact on the pipe plug. Turn the rotors again by hand to ensure no restrictions are felt.

Replace the terminal plate gasket at this time. Reconnect the motor leads to the inside of the terminal plate. Ensure the motor leads are connected as per the markings on the terminal plate. L-1 to 1, L-2 to 2, L-3 to 3, L-7 to 7, L-8 to 8 and L-9 to 9. Re-connect the motor sensor leads T-1 and T-2. Note: it does not matter which plug the sensor leads are connected to. The motor sensor leads are internally wired in series. After ensuring the internal leads are installed correctly, reinstall the terminal plate and torque the bolts to specs.

Carefully align the stator cover into place, reinstall the stator cover bolts and follow standard criss-cross torque patterns as per torque specs.

Install acid core filter driers. Place entire system on vacuum, ensuring the oil was drained prior to disassembly. After a short period of time, recharge with new oil as per type of refrigerant used while still in vacuum as per above instructions. Continue vacuum per standard practices. Check contactors as per above instructions. Reconnect all previously removed electrical wiring and components as indicated above and ensure tightness. After vacuum, recharge compressor/system with refrigerant.

NOTE

IMPORTANT: Do Not start compressor under vacuum. Ensure crankcase heater has been energized for 24 hours prior to start to ensure no refrigerant is in the compressor.

Using pressure gauges, bump start the compressor for direction of rotation. Suction will drop, discharge will rise.

Post Motor Change / System Checks (as a minimum):

- After 1 to 2 days of operation, a complete oil change is required
- Follow the above procedures and guidelines
- When the oil change is completed, submit an oil analysis for quality of the oil
- Pending the results, a second oil change may be required
- Replace acid core driers depending on the pressure drops across the inlet and outlet of the core housing

The refrigerant is also recommended to be sampled and tested for purity and corrective measures taken.

Figure 1



Stator Housing Pipe Plug (1/4")

Oil Drain / Fill Valve

Figure 2

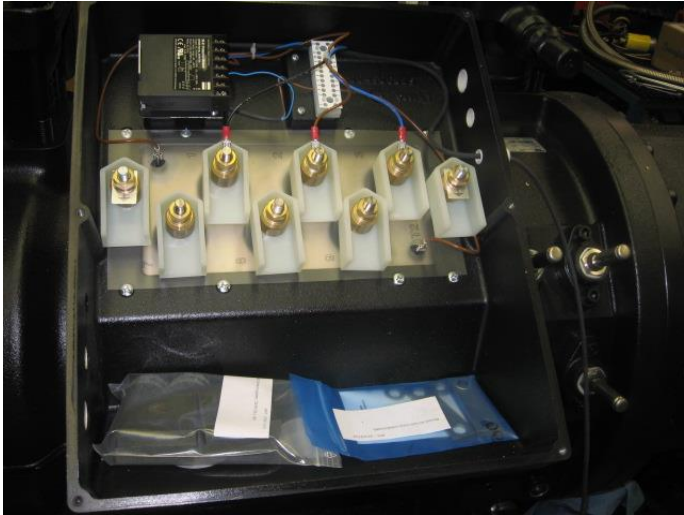


Figure 3

Terminal Plate Bolts (M8X16)

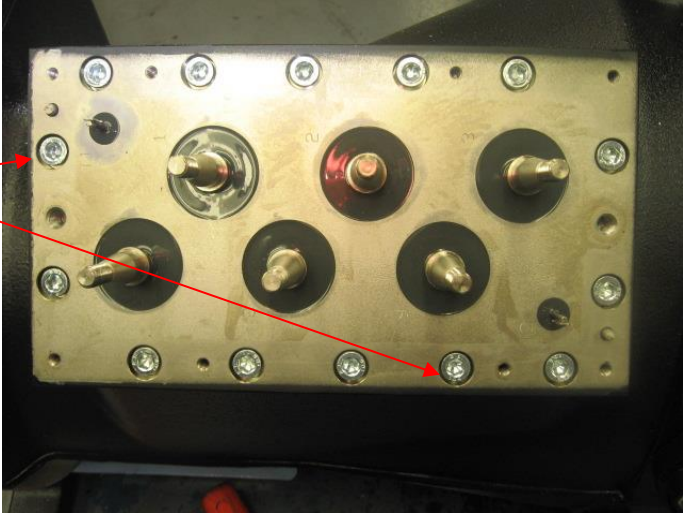


Figure 4

Motor Lead Nuts (M10)

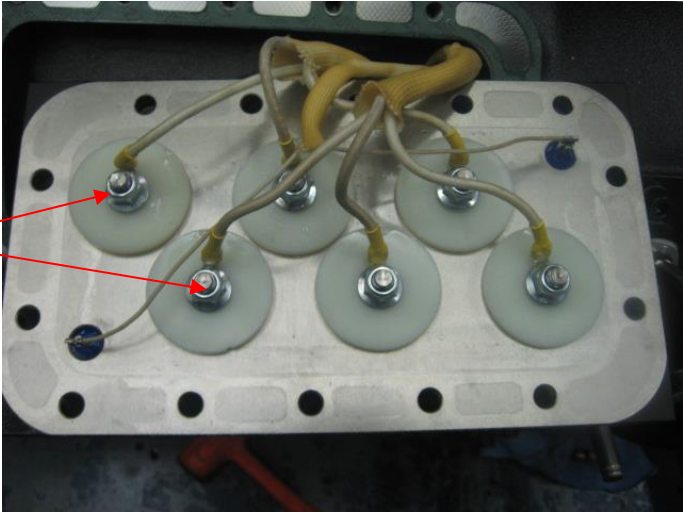


Figure 5

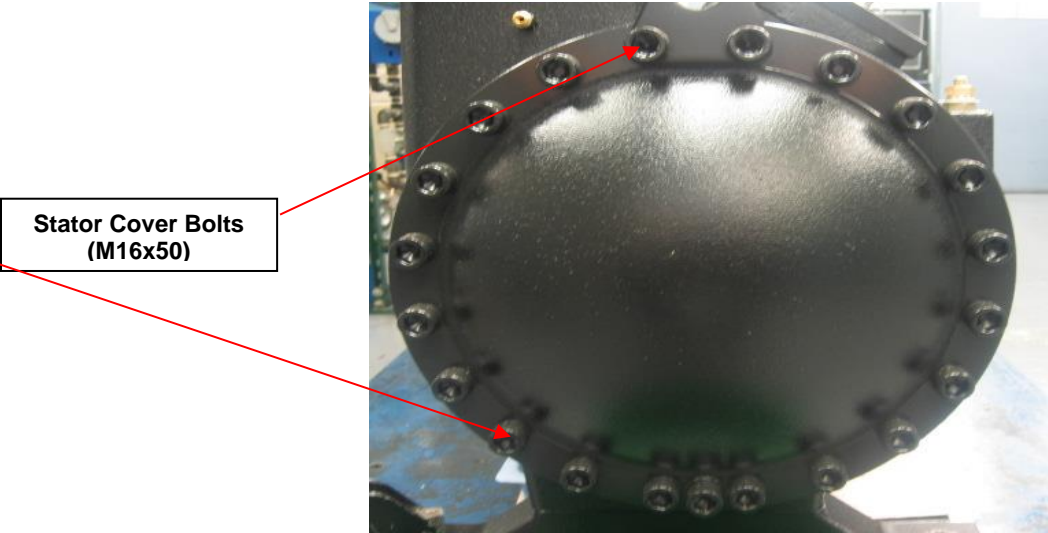


Figure 6

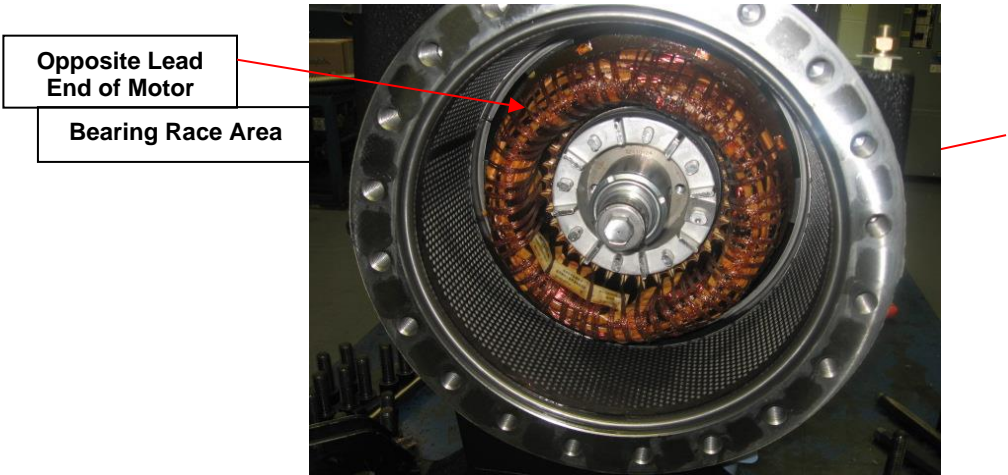
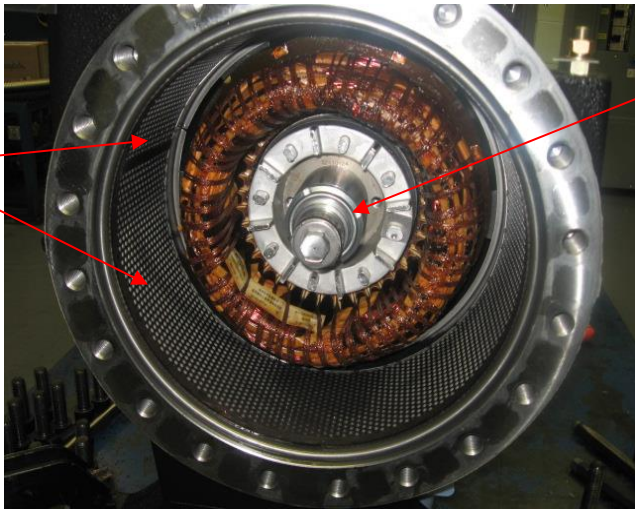


Figure 7

Suction
Screen



Motor Rotor Lock Nut
and Rotor spacer

Figure 8
Shown Without motor or rotor

Drive Rotor
Turn by Hand with No
Restrictions Felt



Figure 9

**Stator Pin
(Underneath, 22mm
pipe lug with
aluminum washer)**



Figure 10

**Removing the
Stator**

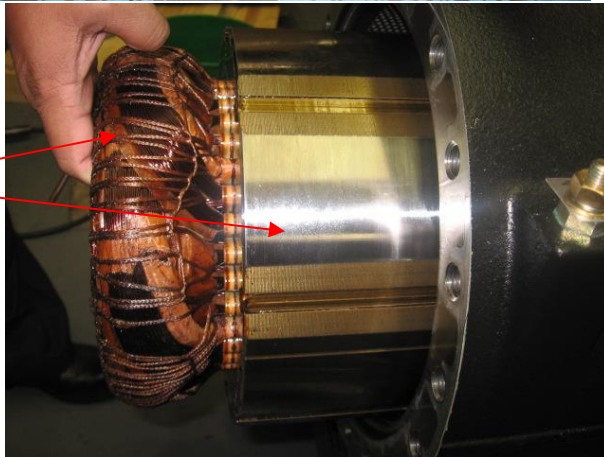


Figure 11

Stator Key

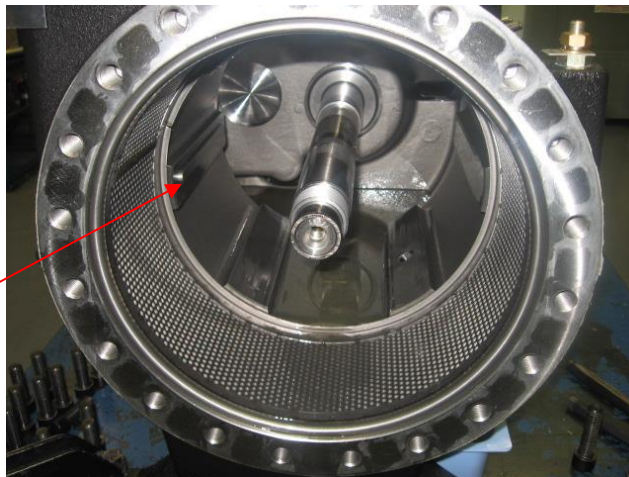


Figure 12

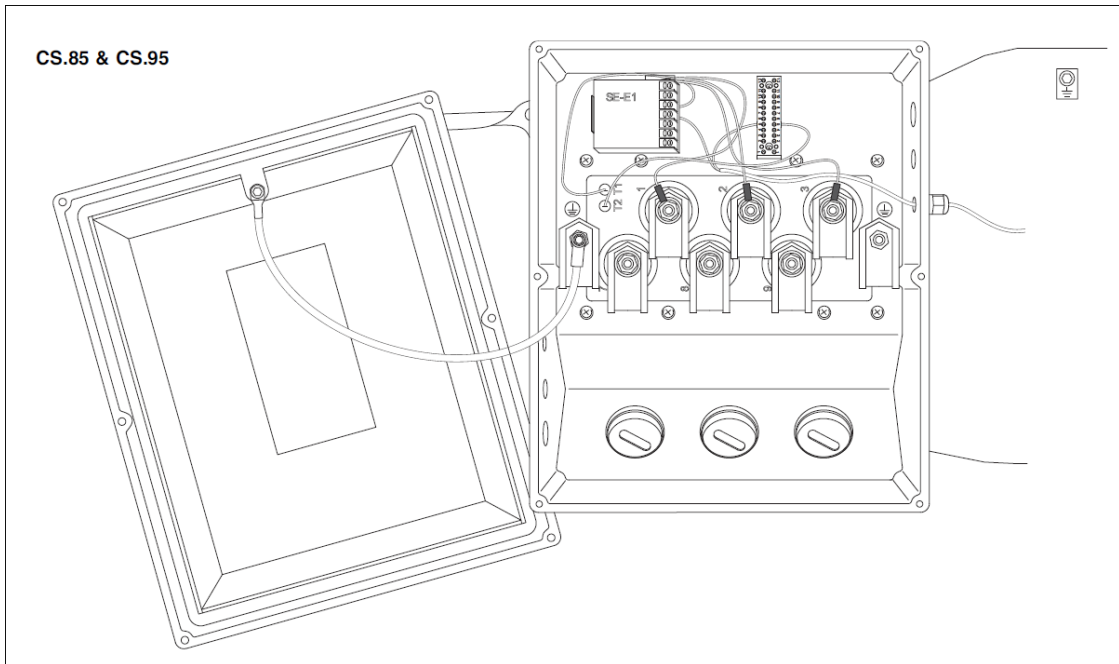
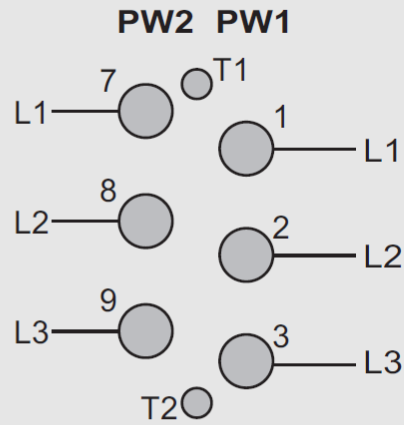
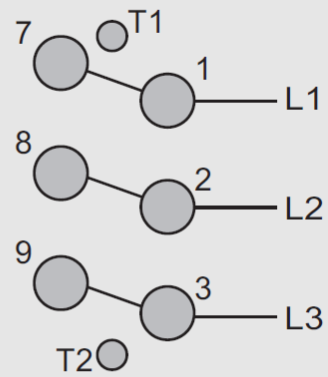


Figure 13

PW



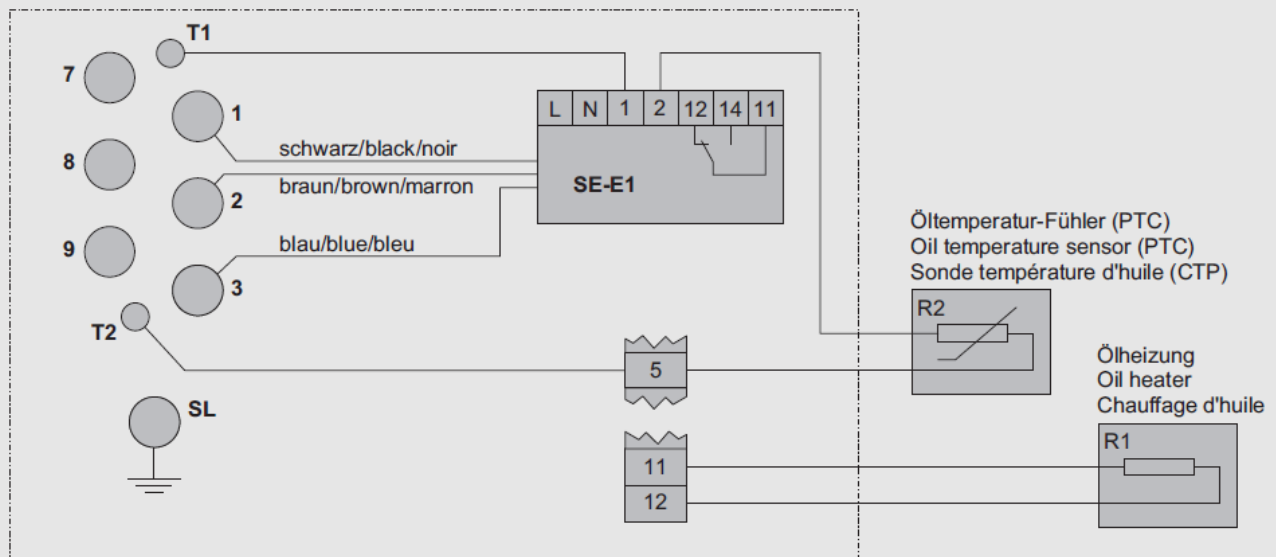
Teilwicklungs-Anlauf
Part winding start
Démarrage en bobinage partiel




Direkt-Anlauf
Direct on line start
Démarrage direct

Figure 14

Anschlusskasten / Terminal box / Boîte de raccordement





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