

# Micro Control Systems

## APPLICATION NOTE

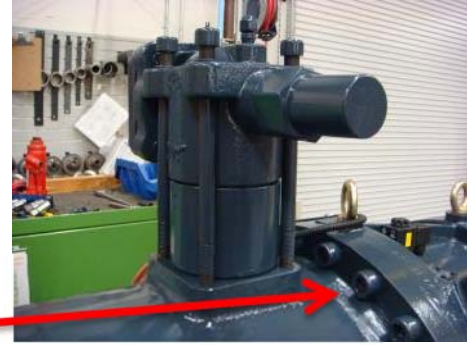
APP-080

# How to Replace a HANBELL Screw Compressor Slide Piston

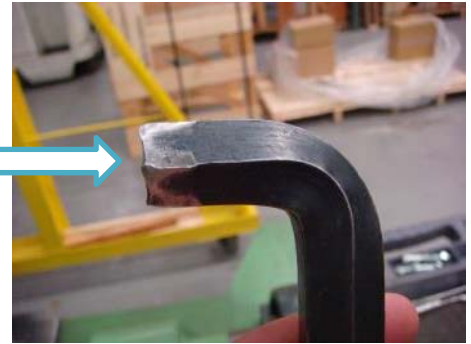
## Revision History

Date	Author	Description
08/10/12	Michael Schreiber	Created application note
01/15/15	Daniel Bonessi	Rev. B
02/09/17	Daniel Bonessi	Rev. C

**Step 1.** Isolate the compressor using the discharge and suction stop valves. Dismantle the check valve. You may need to cut the short end of an ALLEN wrench to access the 2 bolts of the oil separator at the top in front of the discharge.



Cut Allen Wrench



**Step 2.** Install two eyebolts on oil separator and hang it using an overhead crane, and then loosen all bolts of oil separator. You may also use a strap, or support the oil separator with two by fours if in the field. You can also use long guide bolts



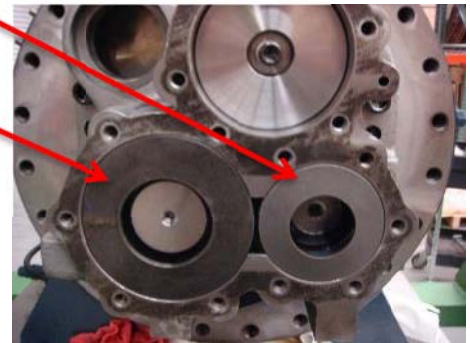
**Step 3.** Remove Oil Separator.



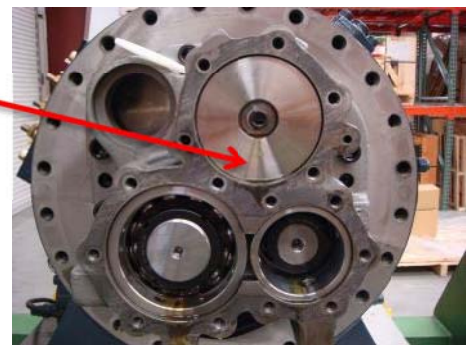
**Step 4.** Loosen all bolts of discharge cover plate and remove.



**Step 5.** Take out disc springs.



**Step 6.** Take notice of piston position. Check motion of piston by pushing it in and releasing it using a hex bit on an extension. Loosen the bolt of piston and remove it.

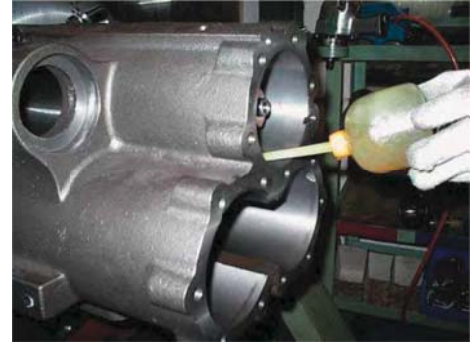


**Step 7.** Pull out piston, modulation spring, and copper washer. Remove any copper build up or rough areas in the cylinder using a Scotch-Brite pad. Be careful not to wear down the cylinder wall.

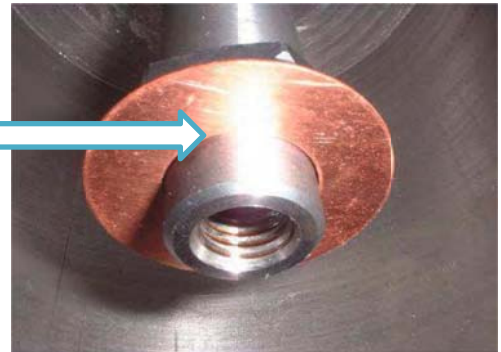


**Step 8.** Apply some oil in the cylinder.

Wipe off any oil on back of piston, piston rod and both sides of copper washer. Apply a small amount of Loctite 554 or 510 to both sides of copper washer and place on the piston rod.



**Copper Washer**



**Step 9.** Make sure piston has piston rings. Add piston guide ring and install piston into piston guide press tool

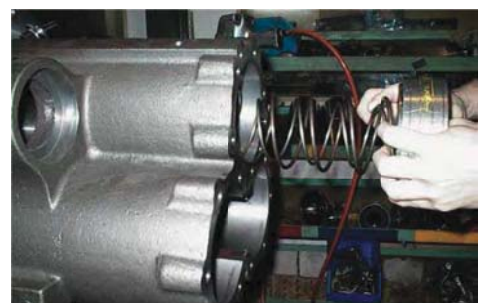
**Piston Guide ring**



**Press tool**



**Step 10.** Install the piston with the modulation spring and guide ring facing in. Be careful not to knock the copper washer off inside the piston chamber.



**Step 11.** Install the piston bolt with the washer and spring washer. Apply Loctite to the bolt threads and torque to specified rating from chart on page 8. Check motion of piston by pushing it in and releasing it. It should rebound to at least 75% of its travel.



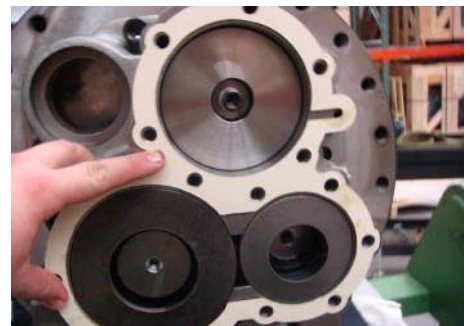
**Step 12.** Apply some oil to the discharge bearings.



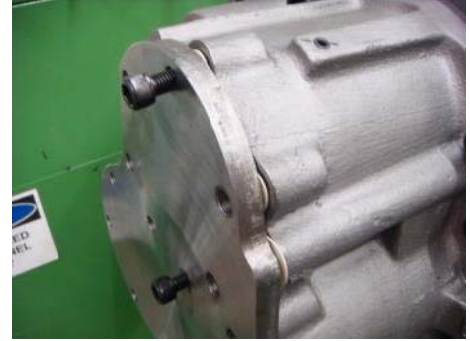
**Step 13.** Install disc springs (male and female).



**Step 14.** Be sure to align new gasket properly before installing discharge cover plate to discharge bearing housing.



**Step 15.** Install discharge cover plate with new gasket.



**Step 16.** Install the bolts and tighten them using a torque wrench with a hex bit. See chart on page 8 for torque settings.



**Step 17.** Be sure oil separator flange and compressor casing are free of any gasket material from old gasket.

**Step 18.** Put new Teflon gasket in the bearing seat's discharge port.

**Teflon Gasket**



**Step 19.** Place new oil separator gasket on oil separator using one bolt on each side to hold in place.



**Step 20.** Install the oil separator and mount it snug with 2 bolts. Remove bolts and pull oil separator off. Make sure the Teflon Gasket has an indentation ensuring a tight seal. Install all the screw bolts and tighten to proper torque specification. See chart on page 8 for torque ratings.



**Step 21.** Remove old gaskets and reassemble service stop valve and check valve with new gaskets.



	<b>Part Name</b>	<b>Bolt Size</b>	<b>Torque Rating FT/LBS</b>
1.	Motor Cover plate	M12x1.75x45 or M12x1.75x40	72
2.	Oil Filter Flange	M12X1.75x35	72
3.	Cleaning Cover	M12X1.75x35	72
4.	Oil Switch Flange	M12X1.75x65	72
5.	Discharge Flange 1 1/2"	M16x2.0x55	116
6.	Suction Flange 2 1/2"	M16x2.0x55	116
7.	Discharge Flange 2 1/2"	M16x2.0x55	116
8.	Suction Flange 3"	M20x2.0x60	145
9.	Discharge Flange 3"	M20x2.0x60	145
10.	Suction Flange 4"	M20x2.0x65	145
11.	Discharge Flange 4"	M20x2.0x60	145
12.	Suction Flange 5"	M16x2.0x60	116
13.	Sight Glass		14
14.	Plug P1.P2	1/4" PTx11	14
15.	Piston Rod		36
16.	Bolt	M6x1.0x??	7
17.	Bolt	M8x1.25x??	18
18.	Bolt	M10x1.5x??	36
19.	Bolt	M12x2.0x??	72
20.	Bolt	M16x2.0x??	145
21.	Bolt	M20x2.0x??	275
22.	Power Bolt		65
23.	Terminal Cover Plate	M12	65
24.	Copper Nuts for Wire Connections	3/4"	22-29



## Hex Key Size Chart in Metric

<b>BOLT Size</b>	<b>Hex Key Size</b>
<b>M3</b>	<b>2.5</b>
<b>M4</b>	<b>3</b>
<b>M5</b>	<b>4</b>
<b>M6</b>	<b>5</b>
<b>M8</b>	<b>6</b>
<b>M10</b>	<b>8</b>
<b>M12</b>	<b>10</b>
<b>M14</b>	<b>12</b>
<b>M16</b>	<b>14</b>
<b>M18</b>	<b>14</b>
<b>M20</b>	<b>17</b>
<b>M22</b>	<b>17</b>
<b>M24</b>	<b>19</b>