PIN CLAMP MAINTENANCE MANUAL
PCS, PCT, PCM

STANDARD BULLETPIN NOSE PIN

PNEUMATIC ACTUATOR
NPT or G PORTS

SOLID STATE CYLINDER SWITCH

STANDARD LOW PROFILE PIN
STANDARD STEEL PART BACKUP

PIN RETRACT OPTION:
LOW PROFILE PIN RETRACTS FLUSH WITH BACKUP

WORLD SWITCH OPTION

CUSTOMER SUPPLIED PROX SWITCH FOR RETRACT OPTION WITH WORLD SWITCH

Welker Engineered Products  1401 Piedmont  Troy, MI 48083  (248) 528-2020  www.welkerproducts.com
SHEET 1  REV 6/15/2020
MAINTENANCE

SAFETY FIRST!

MAINTENANCE SHOULD ONLY BE PERFORMED BY QUALIFIED PERSONNEL. PROPER SAFETY GEAR AND PROCEDURES MUST BE USED AT ALL TIMES. BEFORE PERFORMING MAINTENANCE, CUT OFF AIR SUPPLY TO THE UNIT, ENSURE THAT ALL AIR IS REMOVED AND THAT THERE ARE NO "TRAPPED AIR" CONDITIONS.

PREVENTATIVE MAINTENANCE: Regularly inspect unit to verify proper operation. Check for debris build up and clean as needed. Inspect all pneumatic, electrical, and mounting connections, making sure all connections are tight and secure. Routine replacement of cylinder seals is recommended.

CYLINDER: Welker pneumatic cylinders are lube free and require very little maintenance. Check for abnormal wear or damage. Plant air supply to the cylinder should be free of contaminants, filtered to a minimum of 50micron and have a water separator. Be sure fittings are in good condition. Seals are subject to wear under normal operating conditions. It is recommended to keep a spare cylinder seal kit or repair kit on hand.

PINS: Pins are subject to wear under normal operating conditions and should be replaced when worn.

BACKUPS: Replace when damaged or worn.

SWITCH: Switches may fail and need replacement; it is recommended to keep a spare switch on hand.

WELKER RECOMMENDS IN-PLANT RECERTIFICATION AFTER SERVICE/REPAIR/REPLACEMENT.

TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Failure</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin clamp does not clamp or unclamp</td>
<td>Insufficient air pressure or voltage</td>
<td>Check/confirm air pressure or voltage</td>
</tr>
<tr>
<td></td>
<td>Contamination build up on clamp fingers</td>
<td>Regularly clean particulate from unit by cycling pin up and down while applying compressed air. Do not use oil or lube. Replace pin cartridge if needed.</td>
</tr>
<tr>
<td></td>
<td>Cylinder/motor failure</td>
<td>Repair or replace cylinder/motor</td>
</tr>
<tr>
<td>Pin fails to extend</td>
<td>Too tight of fit on part hole</td>
<td>Proper pin size: 0.2mm minimum clearance.</td>
</tr>
<tr>
<td>Pin &amp; fingers remain retracted</td>
<td>Side load too high from improper shimming.</td>
<td>Correct shims to fit metal.</td>
</tr>
<tr>
<td></td>
<td>Side load too high due to part shift when welding.</td>
<td>Better part control during process.</td>
</tr>
<tr>
<td>Clamp fingers do not actuate</td>
<td>Contamination build up on clamp fingers</td>
<td>Regularly clean particulate from unit by cycling pin up and down while applying compressed air. Do not use oil or lube. Replace pin cartridge if needed.</td>
</tr>
<tr>
<td></td>
<td>Fingers worn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Part rest (backup) worn</td>
<td>Inspect under regular scheduled maintenance. Wear item. Replace if needed.</td>
</tr>
<tr>
<td>Broken or worn locating pin</td>
<td>Improper application. Misalignment of tooling-to-part.</td>
<td>Inspect under regular scheduled maintenance. Wear item. Replace pin cartridge if needed.</td>
</tr>
<tr>
<td></td>
<td>Loose pin clamp mount to main bracket</td>
<td>Check pin clamp mount</td>
</tr>
<tr>
<td>Switch failure</td>
<td>Switch failure, loose wire</td>
<td>Check switch for proper operation and connection. Replace switch if required.</td>
</tr>
</tbody>
</table>
REPLACEMENT PIN CLAMP CARTRIDGES
SEE CATALOG FOR PIN TYPES AND FINGER ORIENTATION

Series
- C R T -
T PCT Body
C PCS Body
M PCM Body

Options
G Electric actuator
T Retractable cartridge

Pin Diameter*
12.00-16.00 T Series
16.01-25.00 C Series
25.01-40.00 M Series
*Pin diameter to 2 decimal places

Backup
Std Standard Backup
Long Long Backup
(Backups must be ordered separately)

Pin Type
A Bullet Nose Pin w/ fingers at 0°
B Bullet Nose Pin w/ fingers at 90°
C Bullet Nose 2-way Pin w/ fingers @ 0°**
D Bullet Nose 2-way Pin w/ fingers @ 90°**
E Low Profile Pin w/ fingers at 0°
F Low Profile Pin w/ fingers at 90°
G Low Profile 2-Way Pin w/ fingers @ 0°**
H Low Profile 2-Way Pin w/ fingers @ 90°**
** Not available on PCT with pin diameters 12.00 - 12.99

Cartridge ordering examples:
C-CRT-16.00-A-STD
M-CRT-40.00-B-LONG
C-CRT-19.00-A-STD-T

REPLACEMENT BACKUP
ALL BACKUPS INCLUDE A BACKUP, BACKUP RING WITH SEAL, SPACER & HARDWARE

Options
- E 0 6 C -
A C & T Standard Backup
B Steel Long Backup
C Alum Bronze Backup
D Alum Bronze Long Backup

Series
- E 0 6 C -
T PCT Body
C PCS Body
M PCM Body

Pin Diameter*
12.00-16.00 T Series
16.01-25.00 C Series
25.01-40.00 M Series
*Pin diameter to 2 decimal places

Backup Diameter
035-050 (Ø35-Ø50mm) C & T Series
051-075 (Ø51-Ø75mm) M Series

Backup ordering example:
CE06C-16.00-035-K-A

Backup Distance
K 14mm (for clamping range 0.1 - 4mm)
N 17mm (for clamping range 4.1 - 7mm)
CARTRIDGE REPLACEMENT

BEFORE REMOVAL, PIN MUST BE IN THE EXTENDED POSITION AND CLAMP FINGERS BELOW FLUSH. MAINTAINING AIR ON THE CYLINDER HELPS OPERATION, ESPECIALLY WITH A SPRING RETRACT CYLINDER.

1. Remove cylinder screws from actuator plate. Note port locations prior to removing cylinder. Slide cylinder to remove coupler from key slot.
2. Remove cover plate screws (3), remove cover plate.
3. Remove trip dog/screw.
4. Remove roller pin screws/lock washers. Remove roller pin.
5. Remove cartridge.
6. When installing a new cartridge, make sure the fingers are flush to the pin and the slot is orientated as shown.
7. Use purple (#222MS) Loctite on trip dog screw before reassembly.
8. Apply grease* to end of roller pin and inside pin clamp body.
9. Reinstall components in reverse order.
10. Before installing the cylinder assembly, make sure cartridge moves freely up and down and the fingers extend and retract properly. Leaving the cartridge in the retracted position will make it easier to line up the cylinder to the key slot when re-attaching.

NOTE: Backup may need to be removed if replacing a cartridge with damaged or broken fingers

*Use standard lithium grease on all seals and sliding surfaces.
CARTRIDGE REPLACEMENT FOR UNITS WITH RETRACT CYLINDER

BEFORE REMOVAL, PIN MUST BE IN THE EXTENDED POSITION AND CLAMP FINGERS BELOW FLUSH. MAINTAINING AIR ON THE CYLINDER HELPS OPERATION, ESPECIALLY WITH A SPRING RETRACT CYLINDER.

1. Remove cylinder screws from actuator plate. Note port locations prior to removing cylinder. Slide cylinder to remove coupler from key slot.
2. Remove cap screws (2). Remove cap. Remove piston.
3. Remove retract cylinder.
4. Remove cover plate screws (3), remove cover plate.
5. Remove trip dog/screw.
6. Remove pin screws/lock washers. Remove pin.
7. Remove cartridge.
8. When installing a new cartridge, make sure the fingers are flush to the pin and the slot is orientated as shown.
9. Use purple (#222MS) Loctite on trip dog screw before reassembly.
10. Apply grease* to end of piston and to piston seal before assembly. Be sure piston seal is seated properly.
11. Apply grease* inside pin clamp body before installing cartridge.
12. Reinstall components in reverse order.
13. Before installing the cylinder assembly, make sure cartridge moves freely up and down and the fingers extend and retract properly. Leaving the cartridge in the retracted position will make it easier to line up the cylinder to the keyslot when re-attaching.

NOTE: Backup may need to be removed if replacing a cartridge with damaged or broken fingers.

*Use standard lithium grease on all seals and sliding surfaces.
**CARTRIDGE REPLACEMENT: LEGACY CYLINDERS**

1. **Remove Actuator Plate with Cylinder Attached**: Slide toward switch—see key slot in bottom of cartridge.
2. **Remove Cover Plate**: (3) M5 x 10 long SHCS.
3. **Remove Trip Dog**: (1) M3 x 16 LONG. Use purple (#222MS) LOCTITE before re-assembly.
4. **Remove Pin**: (2) M5 x 10 long BHCS.
5. **Remove Cartridge**.

**Sensors Can Be Moved for Desired Sensing**: Sensor position should be verified after cartridge installation.

**Note Orientation of Ports Before Removing**.

**Bottom Plug Can Be Removed to Manually Extend Locating Pin and Retract Clamp Fingers**. A 3/4” 16 x 1 1/2 bolt will be required to advance piston.

**Pin Clamp Cartridge Remove and Replace**:

Before removal, pin must be in the extended position and clamp fingers below flush. Maintaining air on the cylinder helps operation especially with a spring retract cylinder. If air cannot be maintained, removal of the bottom plug may be required to keep piston advanced. See callout at bottom plug.

Remove components per steps 1-5.

When installing a new cartridge, make sure the fingers are flush to the pin and the slot is oriented as shown.

Reinstall components in reverse order. Before installing the cylinder assembly, make sure cartridge moves freely up & down and the fingers extend and retract properly. Leaving the cartridge in the retracted position will make it easier to line up the cylinder to the key slot when re-attaching.

**Tools Required**:

- 2 1/2mm, 3mm, 4mm, 5mm hex key wrenches
- Needle nose pliers
- Purple LOCTITE #222MS
CARTRIDGE REPLACEMENT: LEGACY CYLINDER WITH BOLT ON SWITCH

WORLD SWITCH ASSEMBLY

(4) M5 X 30 LONG WORLD SWITCH SCREWS
4MM ALLEN WRENCH

(2) M5 X 10 LONG ROLLER PIN SCREWS
3mm ALLEN WRENCH

ROLLER PIN

HOUSING

STANDARD COVER PLATE
WHEN NO WORLD SWITCH ASSEMBLY IS ORDERED.

ACTUATOR MOUNTING PLATE

(4) M6 X 30 LONG ACTUATOR PLATE
5mm ALLEN WRENCH

M6 X 20 LONG TRIP DOG
SHLDR SCREW
3mm ALLEN WRENCH

PISTON SLOT

TRIP DOG MOUNT
LINE UP WITH SLOT IN HOUSING
DURING REINSTALL

INTERNAL PIN CARTRIDGE

ACTUATOR

NOTE ORIENTATATION
OF PORTS BEFORE
ACTUATOR REMOVAL

3/4-16 THREAD

CAP PLUG

MUST BE REMOVED (3/16" ALLEN WRENCH)
TO EXTEND PISTON DUE TO AIR LOSS OR POWER DOWN.
USE A 3/4-16 X 1 1/2" LONG SHCS (3/8" ALLEN WRENCH)
TO THREAD INTO CAP TO EXTEND PISTON AND PIN CARTRIDGE
UNTIL PIN IS FULLY EXTENDED AND CLAMP FINGERS ARE
FLUSH WITH PIN. THIS ALSO RELIEVES THE SPRING PRESSURE ON
ACTUATORS WITH SPRING ASSIST.

SEE FOLLOWING PAGE FOR INSTRUCTIONS >>>
CARTRIDGE REPLACEMENT: LEGACY CYLINDER WITH BOLT ON SWITCH

1. BEFORE REMOVAL, PIN MUST BE IN THE EXTENDED POSITION AND CLAMP FINGERS AT OR BELOW FLUSH OF PIN. FOR EASE OF ASSEMBLY, REMOVE ENTIRE PIN CLAMP FROM ANY MOUNTING SURFACE AND PLACE ON A TABLE HORIZONTALLY. THE UNIT MAY STAY MOUNTED IF THERE IS AT LEAST 8'OF CLEARANCE AT THE REAR OF THE UNIT TO REMOVE ACTUATOR & REPLACE CARTRIDGE. THERE MUST ALSO BE AT LEAST 4" OF CLEARANCE ON THE SWITCH SIDE. THE UNIT SHOULD REMAIN MOUNTED TO AVOID REVALIDATION OF THE PART REST SURFACE.

2. AIR MUST BE TURNED OFF.IN MOST CASES, AIR LINES MAY NOT HAVE TO BE REMOVED FROM ACTUATOR.

3. THE CAP PLUG AT REAR OF ACTUATOR MUST BE REMOVED (6 ALLEN WRENCH) TO EXTEND PISTON DUE TO AIR LOSS OR POWER DOWN. USE A 3/4-16 X 1-1/2, LONG SHCS TO THREAD INTO CAP TO EXTEND PISTON AND PIN CARTRIDGE UNTIL PIN IS FULLY EXTENDED AND CLAMP FINGERS ARE FLUSH WITH PIN. THIS ALSO RELIEVES THE SPRING PRESSURE ON ACTUATORS WITH SPRING ASSIST.

4. IF UNIT HAS A WORLD SWITCH ASSEMBLY, REMOVE THE (4) SHCS. REMOVE ENTIRE WORLD SWITCH ASSEMBLY. NOTE ITS ORIENTATION AND SET ASIDE. REMOVE THE M6 TRIP DOG AND SET ASIDE.

5. IF THERE IS NO SWITCH ASSEMBLY, THEN REMOVE THE STANDARD COVER PLATE. THIS WILL EXPOSE THE ROLLER PIN. SOME UNITS HAVE (2) COVER PLATES THAT WILL NEED TO BE REMOVED BECAUSE THEY HAVE A SECOND ROLLER PIN. MOST UNITS ONLY HAVE (1) ROLLER PIN.

6. REMOVE (2) ROLLER PIN BHCS WITH LOCKWASHERS AND THEN REMOVE THE ROLLER PIN(S) WITH NEEDLE NOSE PLIERS.


8. THE NEW CARTRIDGE CAN NOW BE INSTALLED INTO HOUSING MAKING SURE THE TRIP DOG MOUNT LINES UP WITH THE SLOT IN THE HOUSING AND SLOT ON CARTRIDGE PISTON LINES UP WITH ROLLER PIN HOLE.

9. REINSTALL THE ROLLER PIN IN HOLE. SLIGHT ROTATION OF THE CARTRIDGE MAY BE NECESSARY FOR ROLLER TO FIND THE CARTRIDGE SLOT AND SLIGHT MOVEMENT UP AND DOWN MAY BE NECESSARY TO ALLOW THE ROLLER HEAD TO FULLY SEAT BELOW THE HOUSING COUNTERBORE. REINSTALL ROLLER PIN BHCS WITH LOCKWASHERS. THE SECOND ROLLER PIN (IF PRESENT) CANNOT BE REINSTALLED AND MUST BE DISCARDED. MANUALLY PUSH CARTRIDGE UP AND DOWN TO ENSURE FINGER OPERATION AND FLUSHNESS.

10. RETRACT CARTRIDGE TO MORE EASILY ALIGN ACTUATOR COUPLER WITH BOTTOM OF CARTRIDGE. INSERT COUPLER IN CARTRIDGE KEY SLOT AND PUSH ACTUATOR AND CARTRIDGE TO EXTENDED POSITION TO MATE ACTUATOR PLATE TO HOUSING. ASSURE PORTS ARE IN THEIR CORRECT POSITION. REINSTALL THE (4) M6 ACTUATOR MOUNTING PLATE BHCS.

11. LOOSEN 3/4-16 BOLT ABOUT 1/2". PUSH CARTRIDGE TO RETRACT AGAINST BOLT. TIGHTEN BOLT AGAIN TO RESEAT CARTRIDGE UP IN EXTENDED POSITION. RECHECK CLAMP FINGER FLUSHNESS. FINGERS MUST BE FLUSH OR JUST BELOW. IF NOT, REPEAT RETRACTING AND EXTENDING THE CARTRIDGE 2 MORE TIMES. IF FINGERS REMAIN BEYOND FLUSH, CONTACT WELKER FOR PROCEDURE TO TUNE IN FINGERS TO CORRECT FLUSHNESS.

12. REINSTALL TRIP DOG SCREW INTO MOUNTTHRU HOUSING SLOT. BLUE LOCTITE MUST BE USED. REINSTALL WORLD SWITCH ASSEMBLY MAKING SURE NO SENSOR WIRES OR SENSORS INTERFERE WITH TRIP DOG SCREW. WIRES MUST ALSO BE POSITIONED BELOW 2mm GUIDE RODS.

13. IF THERE IS NO WORLD SWITCH ASSEMBLY, RE-INSTALL STANDARD COVER PLATE OVER ROLLER PIN. IF UNIT HAS (2) COVER PLATES, RE-INSTALL BOTH.

14. REMOVE 3/4-16 BOLT AND REINSTALL CAP PLUG.

15. PIN CLAMP IS FINISHED AND CAN BE REMOUNTED TO ITS BRACKET. IF AIR FITTINGS WERE REMOVED FROM ACTUATOR, USE TEFLO TAPE WHEN REINSTALLING. VERIFY OPERATION AND FLUSHNESS OF CLAMP FINGERS. AT FULL EXTEND, CLAMP FINGERS SHOULD BE AT FLUSH OR ABOUT .001" BELOW FLUSH. IF THEY ARE ABOVE FLUSH OR TOO FAR BELOW FLUSH, PLEASE CONTACT WELKER. FINALLY, VERIFY SWITCH OPERATION.
IDENTIFYING PNEUMATIC ACTUATORS

PCT WITH ACTUATOR OPTION A

PCT WITH ACTUATOR OPTION T

PCS WITH ACTUATOR OPTION B

PCS WITH LEGACY ACTUATOR OPTION B

PCT WITH LEGACY ACTUATOR OPTION A

PCM WITH LEGACY ACTUATOR OPTION T

RETRACT ACTUATOR (SECONDARY)

CUSTOMER SUPPLIED SWITCH

SOLID STATE CYLINDER SWITCH

WORLD SWITCH

RETRACT ACTUATOR (SECONDARY)

SOLID STATE CYLINDER SWITCH

NEW ACTUATOR

NEW ADAPTER PLATE

LEGACY ACTUATOR

UNIT BODY

LEGACY ADAPTER PLATE

NEW ADAPTER PLATE

REPLACING LEGACY ACTUATOR WITH NEW ACTUATOR

1. For spring assist actuators (B and T), extend coupler using air.
2. Disconnect air lines to cylinder, release any trapped air conditions.
3. Remove cylinder screws from actuator plate. Note port locations prior to removing cylinder. Slide cylinder to remove coupler from key slot.
4. Remove legacy actuator plate.
5. Clean body surface.
6. For spring assist actuators (B and T) extend coupler of new cylinder using air, prior to installation.
7. Install new adapter plate to unit body.
8. Align new actuator coupler to key slot.
9. Install new actuator to adapter plate with (2) screws & lock washers, noting port location.
# PCT REPLACEMENT ACTUATORS

## PCT PIN CLAMP ACTUATORS:

<table>
<thead>
<tr>
<th>ACTUATOR OPTION</th>
<th>DESCRIPTION</th>
<th>PORT OPTION</th>
<th>PORT TYPE</th>
<th>ACTUATOR (PRIMARY)</th>
<th>RETRACT ACTUATOR (SECONDARY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>DOUBLE ACTING AIR CYLINDER</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCN-2164-N-26 W COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCN-2164-N-26 W COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td>B</td>
<td>DOUBLE ACTING AIR CYLINDER WITH SPRING RETRACT</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCW-2163-W-26 W/COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCW-2163-G-26 W/COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td>T</td>
<td>DOUBLE ACTING AIR CYL W/ SPRING ASSIST &amp; RETRACTABLE PIN</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCW-2163-N-26</td>
<td>PCX-T-N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCW-2163-G-26</td>
<td>PCX-T-G</td>
</tr>
</tbody>
</table>

*CYLINDER SEAL KIT AVAILABLE ORDER #WCW2163-CSK*
# PCS REPLACEMENT ACTUATORS

*CYLINDER SEAL KIT AVAILABLE
ORDER #WCW-2163-CSK

## PCS PIN CLAMP ACTUATORS:

<table>
<thead>
<tr>
<th>ACTUATOR OPTION</th>
<th>DESCRIPTION</th>
<th>PORT OPTION</th>
<th>PORT TYPE</th>
<th>ACTUATOR (PRIMARY)</th>
<th>RETRACT ACTUATOR (SECONDARY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B*</td>
<td>DOUBLE ACTING AIR CYLINDER W/ SPRING RETRACT</td>
<td>A, B, C, D</td>
<td>1/4 NPT</td>
<td>WCW-2163-N-26 W/COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J, K, L, M</td>
<td>1/4 G</td>
<td>WCW-2163-G-26 W/COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td>T*</td>
<td>DBL ACTING CYL W/ SPRING ASSIST &amp; RETRACTABLE PIN</td>
<td>A, B, C, D</td>
<td>1/4 NPT</td>
<td>WCW-2163-N-26</td>
<td>PCX-T-N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J, K, L, M</td>
<td>1/4 G</td>
<td>WCW-2163-G-26</td>
<td>PCX-T-G</td>
</tr>
</tbody>
</table>

## PCS REPLACEMENT ACTUATORS: LEGACY

<table>
<thead>
<tr>
<th>ACTUATOR OPTION</th>
<th>DESCRIPTION</th>
<th>PORT OPTION</th>
<th>PORT TYPE</th>
<th>ACTUATOR (PRIMARY)</th>
<th>RETRACT ACTUATOR (SECONDARY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>DOUBLE ACTING AIR CYLINDER</td>
<td>A, B, C, D</td>
<td>1/4 NPT</td>
<td>WCN-2108-19 W/COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
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<td>J, K, L, M</td>
<td>1/4 G</td>
<td>WCN-2108-19 W/COUPLER</td>
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<tr>
<td>B</td>
<td>DOUBLE ACTING AIR CYLINDER W/ SPRING RETRACT</td>
<td>A, B, C, D</td>
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<td>WCW-2094-W-26 W/COUPLER</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>J, K, L, M</td>
<td>1/4 G</td>
<td>WCW-2094-G-26 W/COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td>C</td>
<td>DOUBLE ACTING - DOUBLE ROD AIR CYLINDER</td>
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<td>WCN-2110-19 W/COUPLER</td>
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</tr>
<tr>
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<td>WCN-2110-19 W/COUPLER</td>
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</tr>
<tr>
<td>D</td>
<td>DOUBLE ACTING AIR CYLINDER W/ DOUBLE ROD &amp; SPRING RETRACT</td>
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<td>WCW-2104-N-26 W/COUPLER</td>
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<tr>
<td></td>
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<td>WCW-2104-G-26 W/COUPLER</td>
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<tr>
<td>E</td>
<td>DOUBLE ACTING AIR CYLINDER WITH LINEAR TRANSDUCER</td>
<td>A, B, C, D</td>
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<td>WCN-2109-19 W/COUPLER</td>
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<tr>
<td></td>
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<td>WCN-2109-19 W/COUPLER</td>
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<tr>
<td>F</td>
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<td>WCW-2100-N-26 W/COUPLER</td>
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<tr>
<td></td>
<td></td>
<td>J, K, L, M</td>
<td>1/4 G</td>
<td>WCW-2100-G-26 W/COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td>G</td>
<td>DC STEPPER MOTOR WITH 5/8-8 LEAD SCREW-SIZE 23 FRAME</td>
<td>N, P, R, S</td>
<td>N/A</td>
<td>CP-IE-WELKER-13148 PROFILE 10</td>
<td>N/A</td>
</tr>
<tr>
<td>T</td>
<td>DBL ACTING CYL W/ SPRING ASSIST &amp; RETRACTABLE PIN</td>
<td>A, B, C, D</td>
<td>1/4 NPT</td>
<td>WCW-2094-N-26</td>
<td>PCX-T-N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J, K, L, M</td>
<td>1/4 G</td>
<td>WCW-2094-G-26</td>
<td>PCX-T-G</td>
</tr>
</tbody>
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## PCM REPLACEMENT ACTUATORS

*CYLINDER SEAL KIT AVAILABLE
ORDER #WCW-2163-CSK

### PCM PIN CLAMP ACTUATORS:

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<th>ACTUATOR OPTION</th>
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<tr>
<td>B*</td>
<td>DOUBLE ACTING AIR CYLINDER W/ SPRING RETRACT</td>
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<td>WCW-2163-N-26</td>
<td>W/COUPLER N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCW-2163-G-26</td>
<td>W/COUPLER N/A</td>
</tr>
<tr>
<td>T*</td>
<td>DBL ACTING AIR CYL W/ SPRING ASSIST &amp; RETRACTABLE PIN</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCW-2163-N-26</td>
<td>PCX-T-N</td>
</tr>
<tr>
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<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCW-2163-G-26</td>
<td>PCX-T-G</td>
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</table>

### PCM PIN CLAMP ACTUATORS: LEGACY

<table>
<thead>
<tr>
<th>ACTUATOR OPTION</th>
<th>DESCRIPTION</th>
<th>PORT OPTION</th>
<th>PORT TYPE</th>
<th>ACTUATOR (PRIMARY)</th>
<th>RETRACT ACTUATOR (SECONDARY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>DOUBLE ACTING AIR CYLINDER</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCN-2091-19 W COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCN-2091-19 W COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td>B</td>
<td>DOUBLE ACTING AIR CYLINDER W/ SPRING RETRACT</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCW-2094-W-26</td>
<td>W/COUPLER N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCW-2094-G-26</td>
<td>W/COUPLER N/A</td>
</tr>
<tr>
<td>C</td>
<td>DOUBLE ACTING - DOUBLE ROD AIR CYLINDER</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCN-2102-19 W COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCN-2102-19 W COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td>D</td>
<td>DOUBLE ACTING AIR CYLINDER W/ DOUBLE ROD &amp; SPRING RETRACT</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCW-2102-N-26</td>
<td>W/COUPLER N/A</td>
</tr>
<tr>
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<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCW-2102-N-26</td>
<td>W/COUPLER N/A</td>
</tr>
<tr>
<td>E</td>
<td>DOUBLE ACTING AIR CYLINDER WITH LINEAR TRANSDUCER</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCN-2098-19 W COUPLER</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCN-2098-19 W COUPLER</td>
<td>N/A</td>
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<tr>
<td>F</td>
<td>DBL ACTING AIR CYL W/LINEAR TRANSDUCER &amp; SPRING RETRACT</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCW-2097-N-26</td>
<td>W/COUPLER N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCW-2097-G-26</td>
<td>W/COUPLER N/A</td>
</tr>
<tr>
<td>G</td>
<td>DC STEPPER MOTOR WITH 5/8-8 LEAD SCREW-SIZE 23 FRAME</td>
<td>N,P,R,S</td>
<td>N/A</td>
<td>CP-JE232-2-13470 PROFILE 8</td>
<td>N/A</td>
</tr>
<tr>
<td>T</td>
<td>DBL ACTING AIR CYL W/ SPRING ASSIST &amp; RETRACTABLE PIN</td>
<td>A,B,C,D</td>
<td>1/4 NPT</td>
<td>WCW-2094-N-26</td>
<td>PCX-T-N</td>
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<tr>
<td></td>
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<td>J,K,L,M</td>
<td>1/4 G</td>
<td>WCW-2094-G-26</td>
<td>PCX-T-G</td>
</tr>
</tbody>
</table>
CYLINDER SEAL REPLACEMENT: WCW2163-CSK

Cylinder seal kit includes end cap seals (2), rod wipers (2), piston seal (1), internal port seal (2), Igus rod bearing. Seals should be replaced routinely to avoid cylinder failure.

For spring assist actuators (B and T) extend coupler using air.

Disconnect air lines to cylinder, release any trapped air conditions.

Remove cylinder screws from actuator plate. Note port locations prior to removing cylinder. Slide cylinder to remove coupler from key slot. (See cartridge replacement sheet for detail)

TO REPLACE SEALS

*Use standard lithium grease on all seals and sliding surfaces.*

1. Remove plastic plugs (2). Loosen screws enough to release tube/end cap assembly.
2. Replace end cap seals (2).
3. Replace piston seal.
4. Replace internal port seals (2).
5. Remove and replace piston seal.
6. Remove Igus bearing and wipers via front of end cap, noting orientation. Replace.
7. Reassemble unit making sure internal port seals are in place and cylinder tube is aligned correctly. Using torque wrench tighten cylinder screws to 14 ft.lb.
8. Install plastic plugs. Install air lines, making sure they are free of contaminants.
## SWITCH INFORMATION

<table>
<thead>
<tr>
<th>Reorder #</th>
<th>Mfr. Part Number</th>
<th>Manufacturer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWA</td>
<td>N2-Q6.5-AP6-0.1-FS 4.4X3/S304</td>
<td>Turck</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
<tr>
<td>SWB</td>
<td>N2-Q6.5-ADZ32-0.1-FSB 4.4X3/S304</td>
<td>Turck</td>
<td>4-Wire, 5-Pin, AC/DC 1/2-20 (N.O.)</td>
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<tr>
<td>SWC</td>
<td>N2-Q6.5-AN6-0.1-FS 4.4X3/S304</td>
<td>Turck</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (NPN)</td>
</tr>
<tr>
<td>SWD</td>
<td>NBN2-F581-100S6-E8-V1</td>
<td>Pepperl &amp; Fuchs</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
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<tr>
<td>SWE</td>
<td>BES-Z02KR2-PSC20F-P100-S04-V</td>
<td>Balluff</td>
<td>3-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
<tr>
<td>SWJ</td>
<td>IN5374</td>
<td>Efector</td>
<td>3-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
<tr>
<td>SWZ</td>
<td>WWS001A</td>
<td>Welker</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
</tbody>
</table>

### World Switches

- **SWITCH L3**: Weld field immune, comparable to World Switches
  - **Manufacturer**: Welker
  - **Description**: 4-Wire, 4-Pin, DC M12 X 1 (PNP)

### Cylinder Switches

- **SWITCH L3S**: Single switch for retract cylinder
  - **Manufacturer**: Welker
  - **Description**: 3-Wire, 4-Pin, DC M12 X 1 (PNP)

- **SWITCH L5**: Single switch; 2 required per cylinder; 1 required for retract cylinder
  - **Manufacturer**: Efector
  - **Description**: 3-Wire, 4-Pin, DC M12 X 1 (NPN)

### Standard Switch Option - All other options may affect price and delivery

- **PCS WITH ACTUATOR B AND WORLD SWITCH**
- **PCS WITH ACTUATOR B AND L3 SWITCH**
- **PCM WITH ACTUATOR T (RETRACT OPTION) AND L3 SWITCHES**