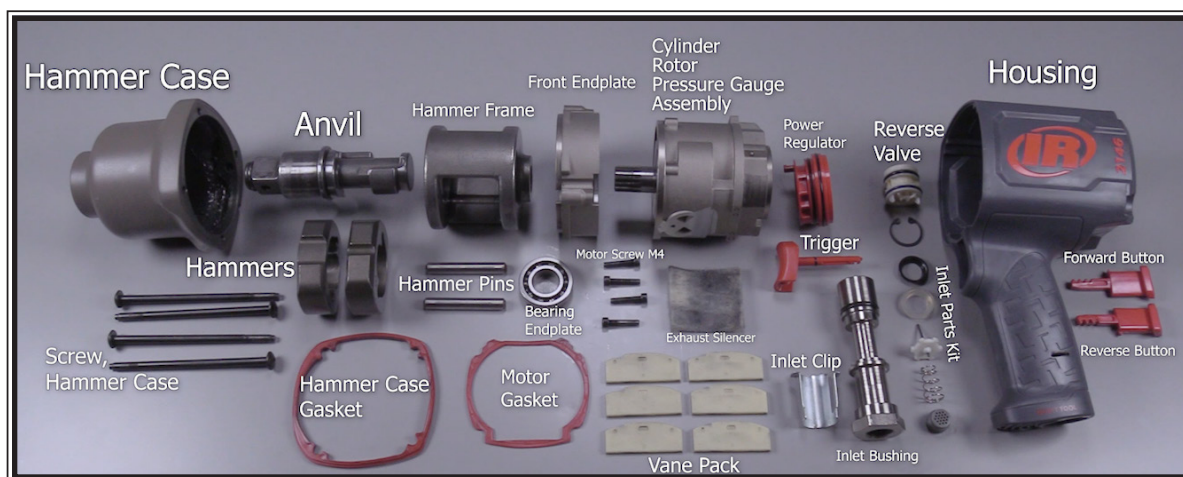


# 2146 Impact Service Instruction



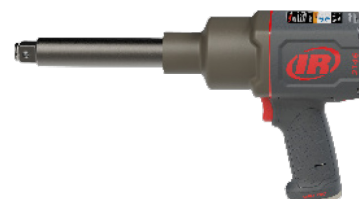
2146Q1MAX  
3/4" Impact Wrench



2146Q2MAX  
1" Impact Wrench



2146Q1MAX-3  
3/4" Impact Wrench  
with extended 3 inch anvil



2146Q1MAX-6  
3/4" Impact Wrench  
with extended 6 inch anvil

## Recommended Service Tools

Flat head screw driver



5/16 inch HEX key



T-25 Torx bit



T-15 Torx bit



Torque wrench



IR Impact Oil



Arbor Press



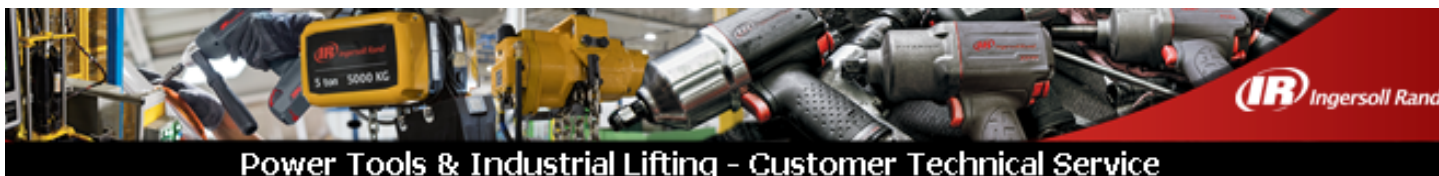
IR Grease #105



O ring Lubrication



Optional Equipment: Tachometer, Brake or bolt plate, Skidmore  
(some testing cannot be completed without these items)



## Power Tools & Industrial Lifting - Customer Technical Service

### Tool Evaluation

#### Verify Air Supply

- Connect the tool to an air supply - run at full speed, no load
- Measure Dynamic Air Pressure to verify there is adequate air supply - 90 psi at the tool inlet while running.  
See article/video link: FAQ - Dynamic Air Pressure

#### Verify that the 2146 series tool air gauge is in the “green”

Feel/Listen to the tool while running. Note any excessive noise or vibration and its apparent source.

#### Check tool performance

- Measure torque output on a Skidmore or equivalent. Compare against published working range torque.
- Determine if performance is in range.
- Run on a 9 RPM brake for a subjective evaluation of noise, uneven impacting, vibration. Compare to a known good tool.

Problem/ Trouble found	Probable Causes	Solution	Warrantable?
Low Power Low Torque output	Dirty inlet bushing or air strainer and/or exhaust silencer material	Using a suitable cleaning solution in a well ventilated area, clean inlet parts and exhaust silencer	No
	Worn or broken vanes	Replace complete vane set	Yes, if not due to improper lube or contamination
	Worn or broken cylinder and/or scored end plates	Examine cylinder and replace if worn or broken or if bore is scored or wavy. Replace end plates if they are scored.	Maybe, if not due to improper lube or contamination
	Dirty motor parts	Disassemble the tools and clean in a suitable cleaning solution in a well ventilated area. Reassemble and test	No
Motor will not run, “blows air”	Improper positioning of FWD/REV valve Incorrect assembly or damage of motor components (rotor, bearings, vanes, cylinder, spacers, etc.) Insufficient lubrication or damage of impact mechanism	Make certain valve is fully engaged to left or right. Make certain that valve is properly timed in composite body tools. Disassemble motor, replace worn or broken parts Remove hammer case and clean and lubricate mechanism	Yes, unless caused by improper previous repair. Yes, unless caused by improper previous repair. No
Motor will not run, “blows air”	Broken or worn impact mechanism parts	Remove hammer case and examine impact mechanism parts. Replace any worn or broken parts. Lubricate upon reassembly.	Yes, unless caused by improper previous repair or abuse.
	Impact mechanism assembled incorrectly	Review assembly and correct as necessary. Refer to the service information.	Yes, unless caused by improper previous repair.



## Major Part Identification



**Bushing / Hammer Case Assembly**

Models: 2146Q1MAX, 2146Q1MAX-3 and 2146Q2MAX  
2146-641

Model: 2146Q1MAX-6  
2146-6-641



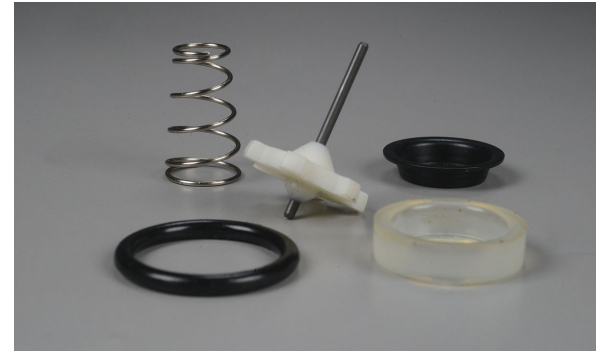
**Cylinder Rotor Pressure Gauge Assembly**

2146-A3



**Anvil**

Model 2146Q1MAX 2145-A626 (shown)  
Model 2146Q1MAX-3 2145-A626-3  
Model 2146Q1MAX-6 2145-A626-6  
Model 2146Q2MAX 2155-A626



**Inlet Parts Kit**

2141 - K303



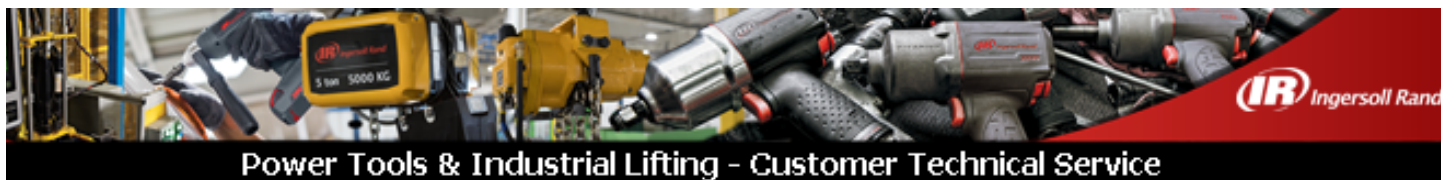
**Front Endplate**

2146-A11



**Front Endplate Bearing**

R38P-606



## Power Tools & Industrial Lifting - Customer Technical Service

### Parts List

#### 2146 Series Air Impact Wrench - Parts List

Item	Part Description	Part Number	Item	Part Description	Part Number
* 1	Housing Assembly	2146-A40	21	Grease Fitting	130SR-188
1	Housing	--	† *	Trigger Assembly	2146-D93
2	Information Label	--	22	Trigger	--
3	Motor Gasket	--	22A	O-Ring	--
* 4	Reverse Valve Assembly	--	*	Reverse Valve Assembly	2141-A329
* 5	Button Kit	--	23A	O-Ring, Reverse Valve (Top - Black)	--
* 6	Power Regulator Assembly	2146-D249A	23B	O-Ring, Reverse Valve (Bottom - Blue)	--
4	Power Regulator	--	23C	Reverse Valve	--
4A	O-Ring (Front - Black)	--	*	Inlet Bushing Assembly	2145-D565
4B	O-Ring (Rear - Red)	--	24	Inlet Bushing	--
5	Screw, Hammer Case (4 required)	2146-638	† 25	Inlet Pre-Screen	2145-61A
6	Cylinder Rotor Pressure Gauge Assembly	2146-A3	26	Inlet Parts Kit	2141-K303
6A	Ball Bearing (Cylinder)	2131-97	27	Inlet Clip	2141-57
6B	Spacer	2146-448	*	Button Kit	2146-K75
6C	Cylinder	2146-K3	28	Forward Button	--
6D	Rotor	2146-53	29	Reverse Button	--
† 7	Vane Pack (set of 6)	2146-42-6	*	Tune-Up Kit	2146-TK2
8	Exhaust Silencer	2146QIMAX-311	3	Motor Gasket	--
* 9	Endplate Assembly	2146-A11	4A	O-Ring (Front-Black)	--
9	Front Endplate	--	4B	O-Ring (Rear-Red)	--
10	Bearing (Endplate)	R38P-606	† 7	Vane Pack (set of 6)	--
11	Motor Screw M4 (4 required)	2146-639	11	Motor Screw M4 (4 required)	--
† 12	Gasket, Hammer Case	2146-36	12	Gasket, Hammer Case	--
* 13	Hammer Mechanism Kit	2146-THK1	22A	O-Ring	--
13	Hammer (2 required)	--	23A	O-Ring, Reverse Valve (Top - Black)	--
14	Hammer Frame	--	23B	O-Ring, Reverse Valve (Bottom - Blue)	--
15	Hammer Pin (2 required)	--	26	Inlet Parts Kit	--
* 16	Anvil Assembly	--	*	O-Ring, Seal	--
	for Model 2146Q1MAX	2145-A626	*	Throttle Spring	--
	for Model 2146Q1MAX-3	2145-A626-3	*	Throttle Valve	--
	for Model 2146Q1MAX-6	2145-A626-6	*	Valve Seat	--
	for Model 2146Q2MAX	2155-A626	*	Seat Support	--
16	Anvil	--	*	Retainer	--
* 17	Socket Retainer Kit	--	*	Inlet Clip Removal Tool	2131-322
† *	Socket Retainer Kit	--	*	Socket Retention Ring (3/4" Anvil)	RR100345
	for Models 2146Q1MAX, 2146Q1MAX-3, and 2146Q1MAX-6 (3/4" Ring Type)	2145-K425	*	Socket Retention Ring (1" Anvil)	RR100155
	for Model 2146Q2MAX (1" Ring Type)	2155-K425	† *	Air Care Kit (Grease Gun, Grease and Oil)	115-LBK1
17	O-Ring	--	*	Grease (replacement tube for LBK1)	115-4T
18	Socket Retainer	--	*	Air Tool Oil (4 oz. Bottle)	10Z4
* 19	Hammer Case Assembly	--	*	Grease (1 lb. Can)	105-1LB
	for Models 2146Q1MAX, 2146Q1MAX-3 and 2146Q2MAX	2146-D727A	*	Grease (8 lb. Can)	105-8LB
	for Model 2146Q1MAX-6	2146-6-D727A	*	Grease Gun	R000A2-228
19	Bushing, Hammer Case	--			
	for Models 2146Q1MAX, 2146Q1MAX-3 and 2146Q2MAX	2146-641			
	for Model 2146Q1MAX-6	2146-6-641			
20	Hammer Case	--			
21	Grease Fitting	--			

\* Indicates not illustrated.

† Indicates common-wear parts. Maintain stock to reduce downtime.

#### Parts and Maintenance

When tool life has expired, it is recommended that the tool be disassembled, degreased and parts separated by material for proper recycling.

Tool repair and maintenance should only be carried out by an authorized Service Center.

Refer all communications to the nearest **Ingersoll Rand** office or distributor.

#### Related Documentation

Manuals can be downloaded from [ingersollrand.com](http://ingersollrand.com)

For additional information, refer to:

Product Safety Information Manual 04580916.

Product Information Manual 47684805001.

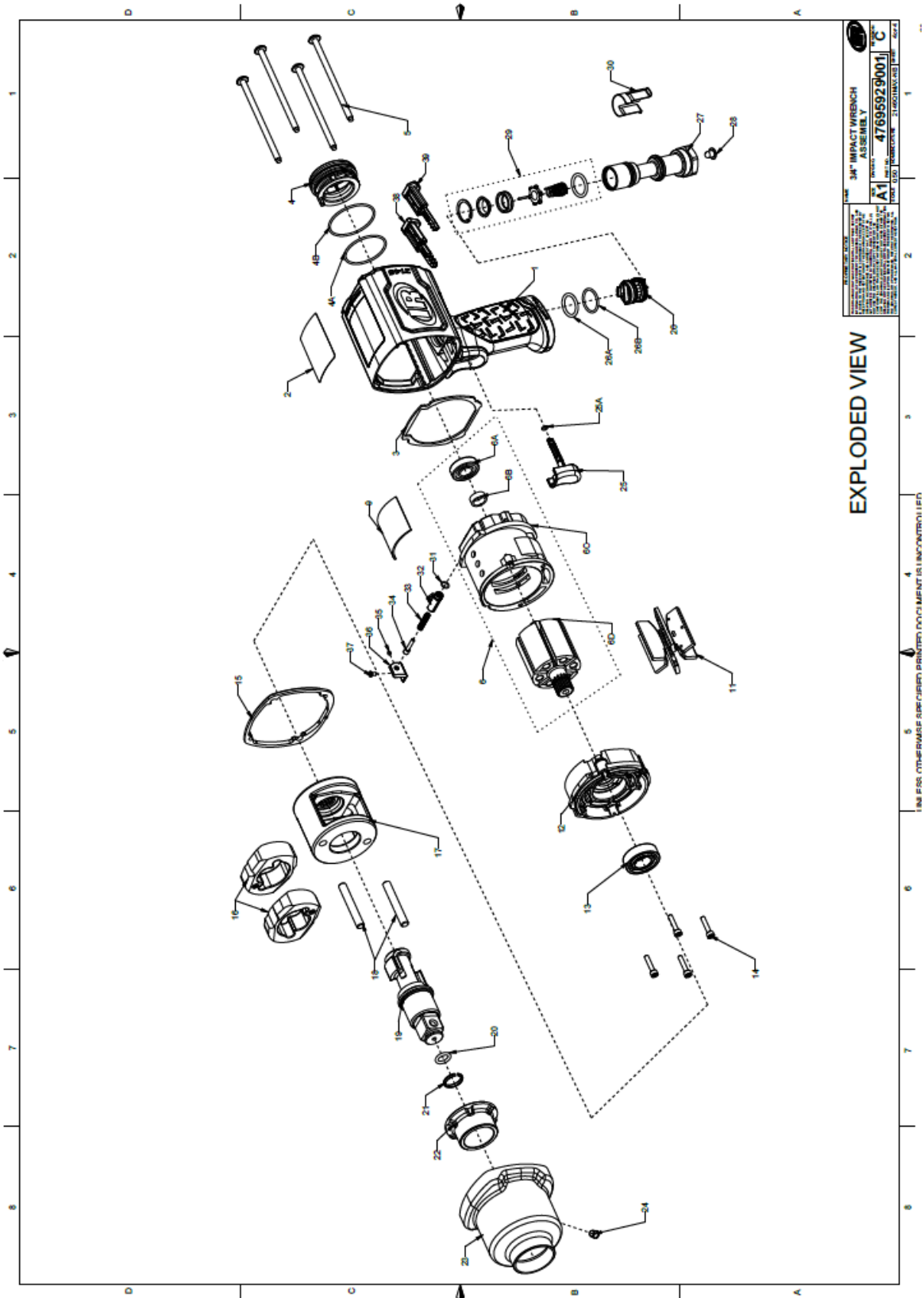
Declaration of Conformity 47726216001.



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47684804001  
Edition 1  
June 2021

Exploded Parts View





## Service Steps Disassembly



Use a 15 Torx drive to remove the 4 hammer case bolts from the back of the tool



Place the tool on its back with the anvil pointing upwards. Simultaneously press down on the anvil while lifting the 2146 hammer case up and off the tool



Remove hammer mechanism assembly from tool



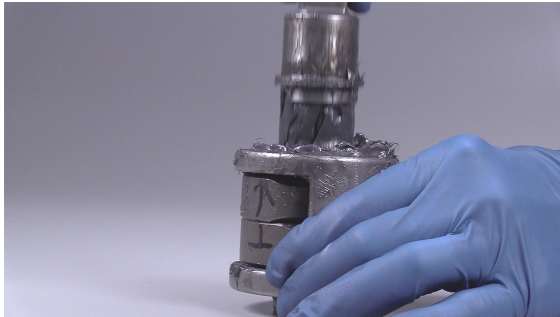
Before removing the anvil from the pins, hammers and frame, use a marker to mark the hammers in their current orientation.

Be sure to place the hammers back in the same orientation when reassembling.

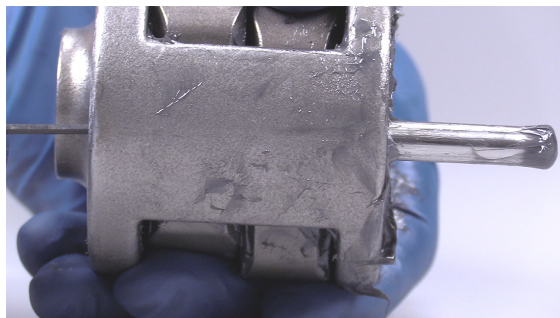
Marking the hammers ensures the original wear patterns are kept together and the wear on the hammers remain consistent.



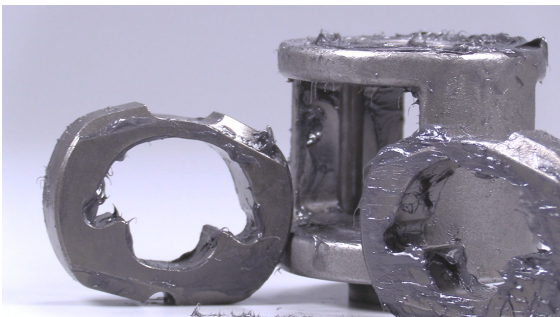
## Service Steps Disassembly



Rotate the anvil back and forth while pulling up to remove it from the hammer frame.



Use a small hex wrench to push the hammer pins out from the hammer frame.



Use your fingers to press out the 2 individual hammers.



Hammer Mechanism Kit - 2146-THK1

Hammer (2 required)  
Hammer Frame  
Hammer Pin (2 required)



## Service Steps Disassembly



Remove the hammercase gasket.  
Note the "bump" on the gasket in front of the trigger assembly.  
This is the orientation marker for proper installation of the gasket.  
Note the ridge on the gasket is orientated in the downward position



Place your hand over the motor opening and rotate the tool by its handle to drop the motor assembly from the tool into your hand.



Use a flathead screw driver to remove the forward and reverse buttons from the housing.

Firmly hold onto the housing body and press downward on each button to release its tab from the enclosure.



Use a flathead screwdriver to remove the inlet bushing from the tool handle.

Insert a flathead screwdriver into the slot and gently press in and downward on the inlet clip's tab, trapping it against the housing wall.

Repeat the procedure on the opposite side of the handle.



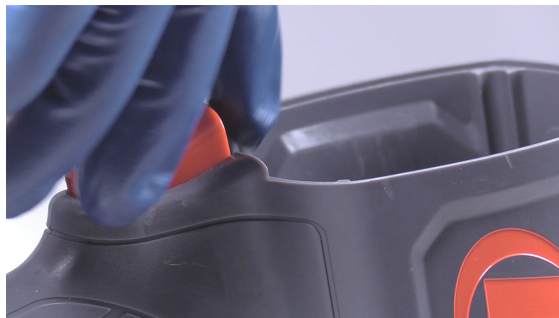
## Power Tools & Industrial Lifting - Customer Technical Service

### Service Steps Disassembly



Once tabs on both sides are secure and no longer holding the bushing in place, pry the inlet bushing free from the tool.

Inlet Bushing Assembly 2145-D565



After the inlet bushing has been removed, remove the trigger assembly by pulling up on the trigger.

Trigger Assembly 2146-D93

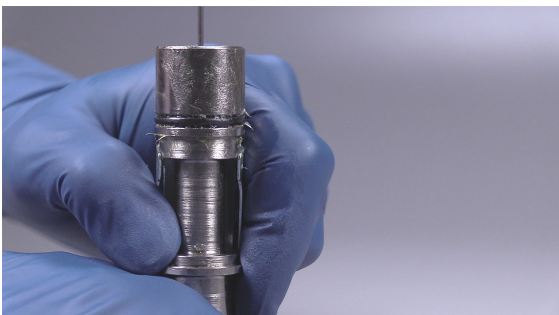


Remove the reverse valve assembly using a small screwdriver to press it gently straight down in the handle opening.

The valve will drop out of the bottom of the handle

Inspect orings for nicks and tears, replace if needed.

Reverse Valve Assembly 2141-A329

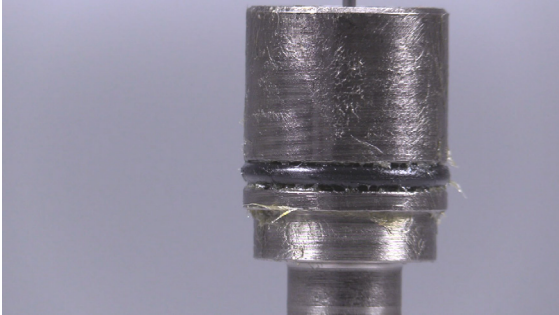


Remove inlet clip

Grasp the inlet clip and inlet bushing separately and pull the items apart from each other

Inlet Clip 2141-57

## Service Steps Disassembly



Inspect the inlet bushing oring for nicks or tears.  
Replace if necessary

Remove the inlet parts



Place your finger over the opening as you remove the retainer ring from the bushing.

Its contents are under spring tension and could easily launch parts over your work bench

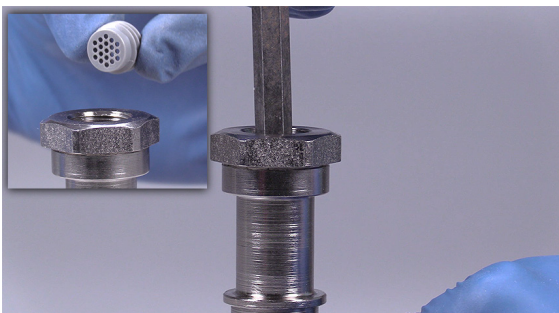
Remove Inlet Parts

- O-Ring, Seal --
- Throttle Spring --
- Throttle Valve --
- Valve Seat --
- Seat Support --
- Retainer



Inlet Parts Kit 2141-K303

Remove the inlet pre- screen



Use a 5/16th hex wrench to remove the inlet pre- screen.

Inlet Pre-Screen 2145-61A



## Service Steps Disassembly

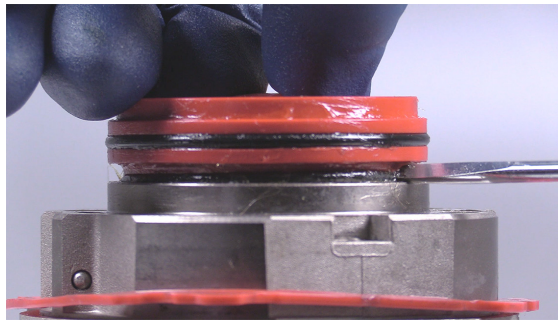


Inlet bushing contents

Inlet bushing

Inlet pre- screen

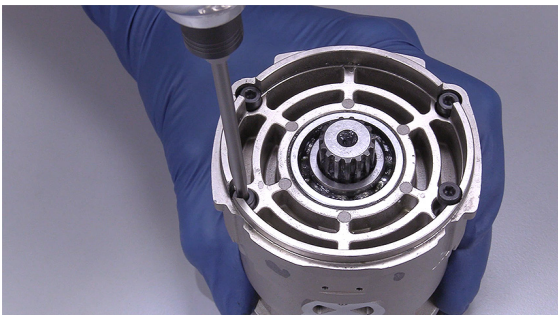
Inlet Parts Kit 2141-K303



Remove power gauge

Use a small flathead screwdriver to gently pry up the gauge from its position.

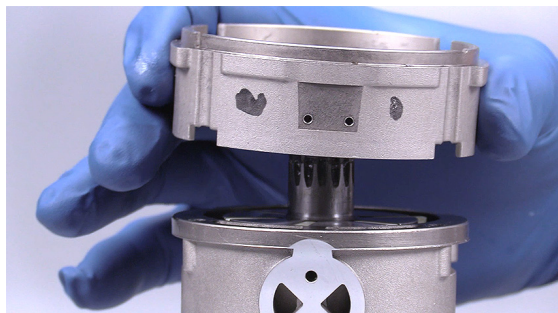
Power Regulator Assembly 2146-D249A



Remove the front endplate

Use a T25 Torx bit to remove front endplate bolts

Motor Screw M4 (4 required) 2146-639

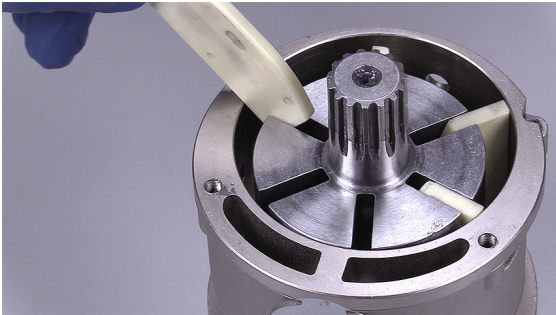


Lift the Front endplate off the cylinder

Endplate Assembly 2146-A11



## Service Steps Disassembly



Remove the Vanes / Blades

Remove and inspect each vane for wear and damage

Vane Pack (set of 6) 2146-42-6



Remove endplate bearing

Use an inner bearing puller to remove the endplate bearing

Bearing (Endplate) R38P-606



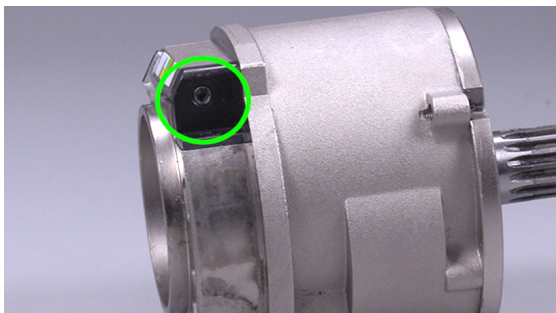
Right: Right Side (as if viewed from back of tool)

Top left: Back of cylinder

Bottom left: Front of cylinder

It is highly recommend to purchase the replacement part #6 Cylinder Rotor Pressure Gauge Assembly if service is necessary to any of these items.

Cylinder Rotor Pressure Gauge Assembly 2146-A3



The integrated cylinder air gauge is calibrated at the factory.

**DO NOT ATTEMPT TO ADJUST AIR GAUGE**

## Service Steps Reassembly



Install the inlet pre-screen

Use a 5/16th hex wrench to install pre-screen

Tighten to snug - **DO NOT OVER TIGHTEN**

Inspect inlet bushing oring for nicks or cuts



Order of installation of inlet parts kit



1. Throttle Spring
2. Throttle Valve
3. Valve Seat
4. Valve support
5. Retainer

Install throttle spring small end up





## Service Steps Reassembly



Insert valve seat into valve support  
Place assembly valve seat up over throttle valve

Install the retainer



Place your finger over the opening as you install the retainer into the inlet bushing.

The spring tension could easily launch parts over your work bench.

Install the inlet bushing clip



Align the top of the clip to just under the inlet bushing oring.  
Snap into place

Install reverse valve assembly



Lubricate the orings with O Ring lube  
Orientate the valve with tab downward  
Rotate tab so it is towards the back of the handle  
Insert and drop the valve into the handle opening.

## Service Steps Reassembly



Install the reverse valve assembly

Use a flathead screwdriver to gently rotate the valve back and forth as you press the valve into place.

### IMPORTANT



Install the reverse valve into the housing inlet until it just pops out into the motor area of the housing.

The last little bit may take a “bump” as the orings travel over some internal edges...

Just don’t push too hard that the top reverse valve oring starts to protrude out of the hole

### IMPORTANT



You must orientate the valve to install the REVERSE button first.

ROTATE VALVE UNTIL THE TRAILING EDGE OF ITS TAB IS JUST PAST THE CENTER LINE OF THE TOOL BODY – POSITION SHOWN FOR INSTALLING THE REVERSE VALVE.



Lightly lubricate the forward and reverse buttons before installing



## Service Steps Reassembly



Install the reverse button

Insert button with its teeth orientated inward  
Press firmly downward on the reverse button  
The button will snap into place



Install the forward button

Insert the forward button with its teeth orientated inward  
Press firmly downward on the button  
The button will snap into place  
Check for proper operation before proceeding  
Pressing the forward and reverse buttons should operate smoothly in either direction.



Install inlet bushing assembly

Align the ears of the inlet bushing assembly with the openings of the tool's handle

Press the tabs inward and insert assembly into the tool's handle



Install inlet bushing assembly

Press the assembly into the handle until it clicks into place



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## Service Steps Reassembly



Install Trigger assembly

Lightly lubricate the Trigger assembly oring and shaft

Orientate the assembly with the rounded edge of the trigger towards the bottom of the tool

Press into place

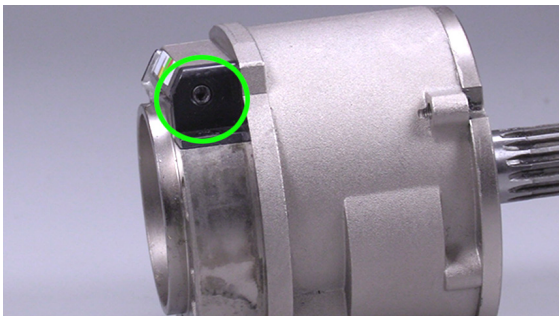


Motor assembly

### IMPORTANT

The integrated cylinder air gauge is calibrated at the factory.

**DO NOT ATTEMPT TO ADJUST AIR GAUGE**

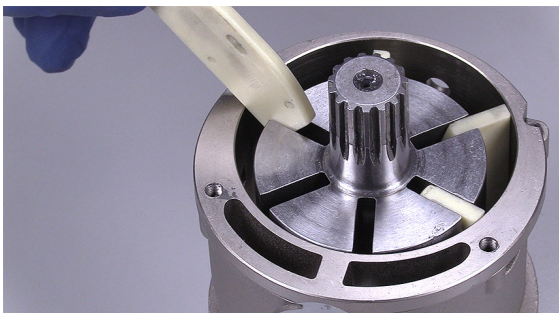


Install vanes / blades

Inspect vanes for wear or damage  
Replace vanes if necessary

Insert 6 vanes with the straight edge facing out

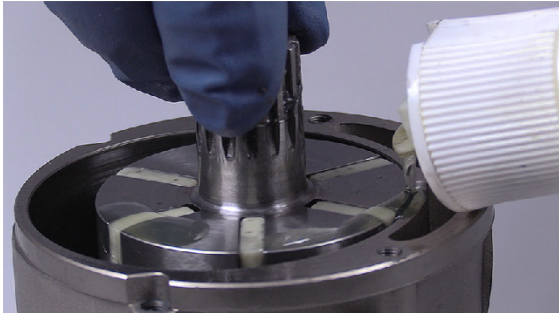
NOTE: It doesn't matter which way the notches on the vane (opposite the side of the straight edge), are orientated as they are inserted into the cylinder





Power Tools & Industrial Lifting - Customer Technical Service

## Service Steps Reassembly



### Lubricate cylinder

Use Ingersoll Rand Impact oil to lubricate the cylinder, cylinder wall and vanes liberally



### Install front endplate bearing

Carefully align bearing with the opening of the frontend plate

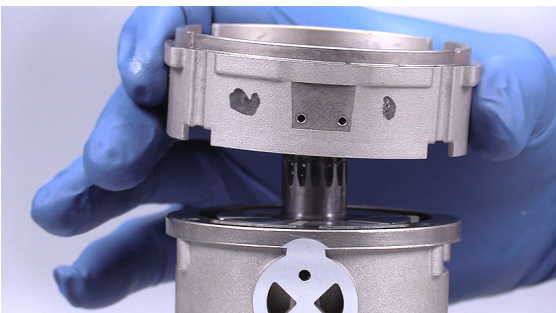


### Install front endplate bearing

Use your thumbs to press equally on both sides of the outer bearing at the same time.

Move your thumbs 90 degrees and repress to ensure bearing is seated properly

NOTE: An arbor press may be needed to press the endplate bearing fully into place



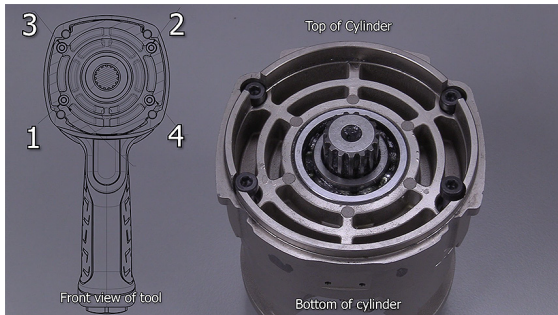
### Install front Endplate assembly

Orientate the front endplate assembly with its ports facing towards the cylinder inlet port

Slide the endplate over spline and onto the cylinder



## Service Steps Reassembly

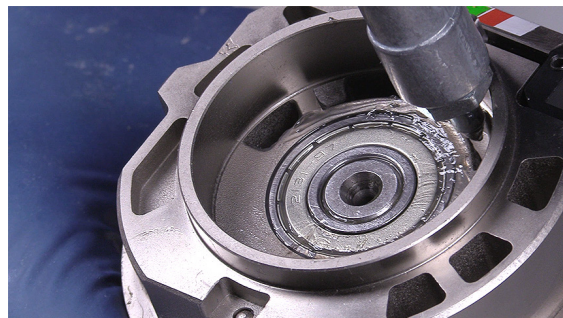
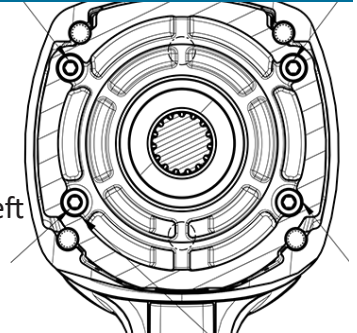


Install 4 motor screws

Use a T-25 Torx bit to tighten the motor screws.

Tighten in the sequence shown to the left

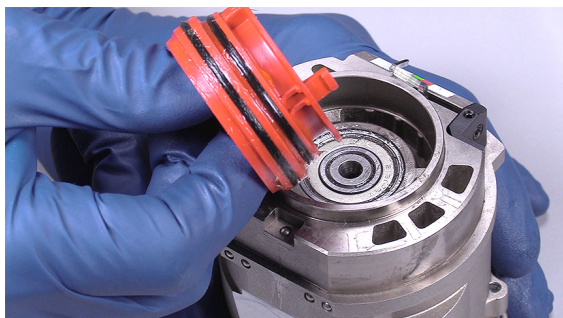
Torque to: 2.8-3.2 N.m(25-28 IN-LBS)



Install the power regulator

Before installing the power regulator assembly add 1/3 cc of #105 Ingersoll Rand grease to its detente position

Install the power regulator



Lubricate the orings with O-Ring lube

Place tab on the power regulator into the highest position to the right side (as viewed from back of tool).

Press firmly into place

Check for proper movement before continuing



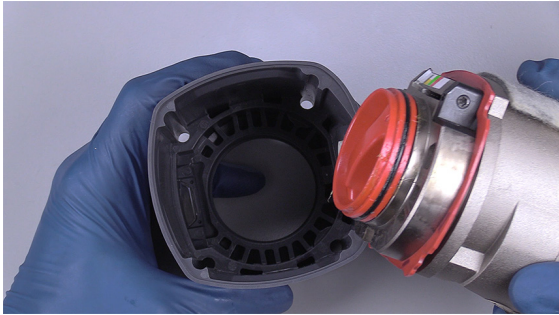
Install motor gasket

Inspect the gasket for nicks or tears and replace if needed

Align the gasket with the figure of the cylinder and adjust into place.



## Service Steps Reassembly



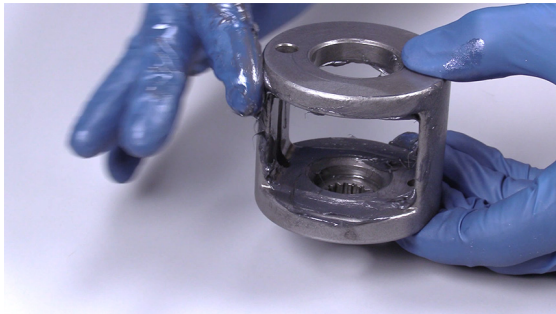
Install the motor assembly

Place the muffler material on top of the motor exhaust ports

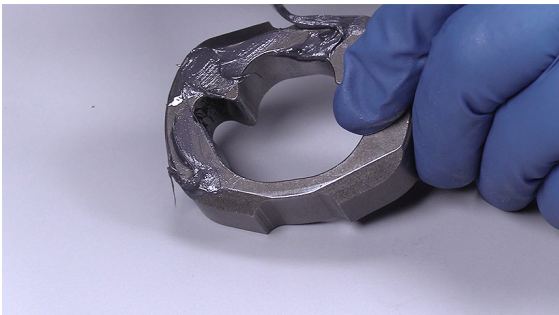
Grasp the housing firmly in one hand, with your other, leverage both the motor and muffler components into the housing opening.

Gently ease both into place

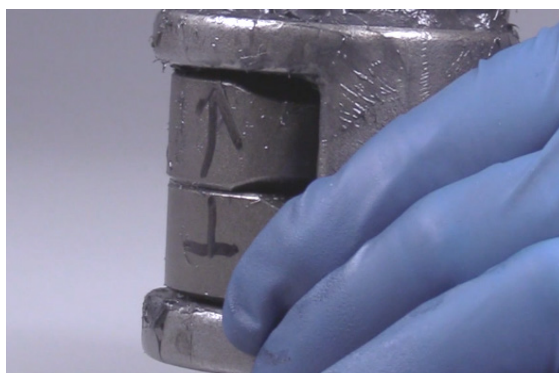
Assemble the hammer mechanism



Use Ingersoll Rand #105 to coat the hammer frame



Use Ingersoll Rand #105 to coat both hammers



Install Hammers into the hammer frame

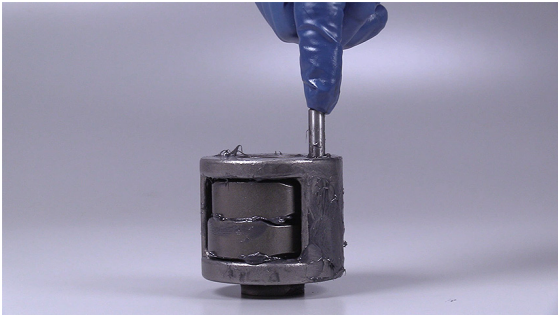
Reinstall the hammers in the same orientation you removed them.

Hammers must be installed in opposite directions of each other

NOTE: Markings were made at the time the hammers were removed for servicing



## Service Steps Reassembly

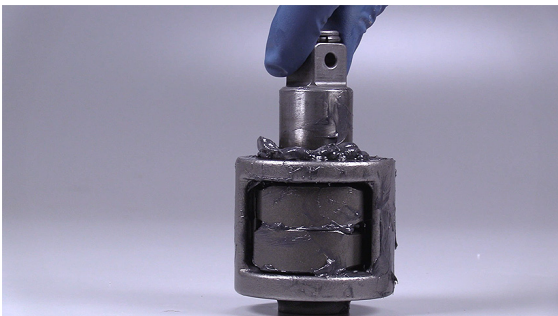


Install hammer pins

Grease pins with Ingersoll Rand #105 grease  
Insert pins into their openings and press downward



Use Ingersoll Rand #105 to fully envelop the jaw of the anvil approximately 15 ccs of grease



Install anvil

Insert the anvil into the hammer frame opening.

Rotate the anvil back and forth until it sets completely inside the hammer frame



Install housing gasket

Orientate the gasket with ridge down and the bump towards the trigger side of housing

Press into place

## Service Steps Reassembly



Install hammer mechanism kit onto the motor

Use Ingersoll Rand #105 grease to lightly lubricate the motor spline.



Install hammer mechanism kit onto the motor

Line up the motor's spline with the teeth of the hammer frame.  
Rotate mechanism to check for proper movement



Install hammer case

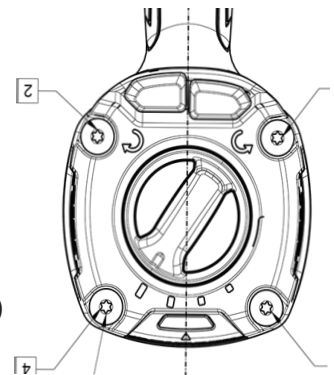
Orientate the hammer case so that its grease fitting is to the right side of the tool (as if viewed from the back of the tool)



Install hammer case

Install 4 hammercase bolts  
Tighten in sequence shown

Torque to: 5.3 -5.9 N.m(47-52 IN-LBS)





- 2146 Service Video Available
- Contact [IRTechsupport@irco.com](mailto:IRTechsupport@irco.com)

