

# ZRC Clutch / ARC Top Load

## Service & Installation Instructions

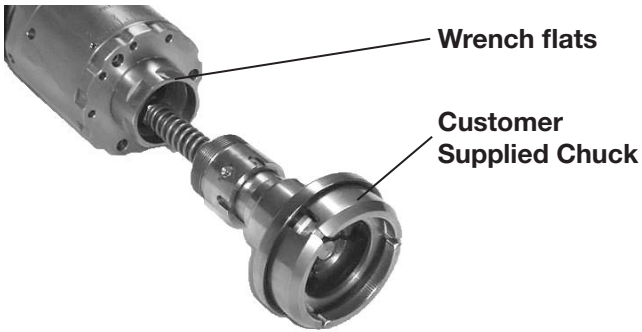
P-2018-WE  
ZRC/ARC



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# ARC Installation Procedure



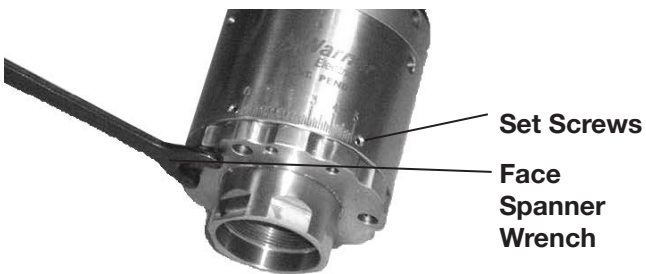
**Figure 1**

Install chuck (not supplied). Use appropriate open-end wrench (**YTL4-0005, YTL4-0008, YTL4-0010**) depending on headset model to hold headset output. See Figure 1.



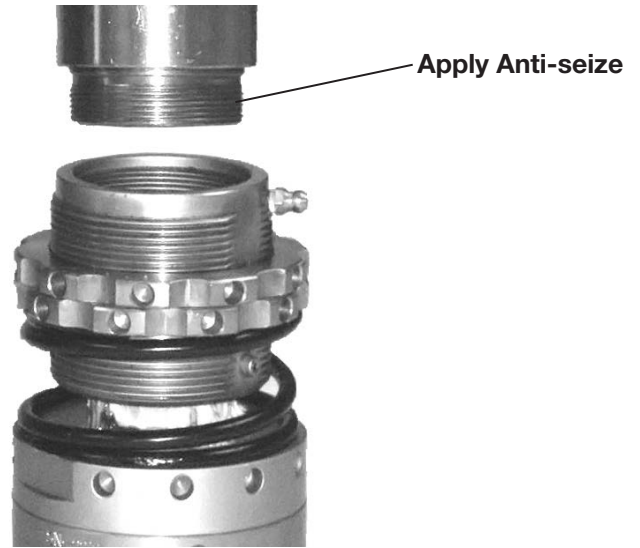
**Figure 2**

Set the top-load assembly using provided spring setting chart. Lock the jam nuts using O.D. spanner wrenches with 1/4" pins (**YTL3-0009**). See Figure 2.



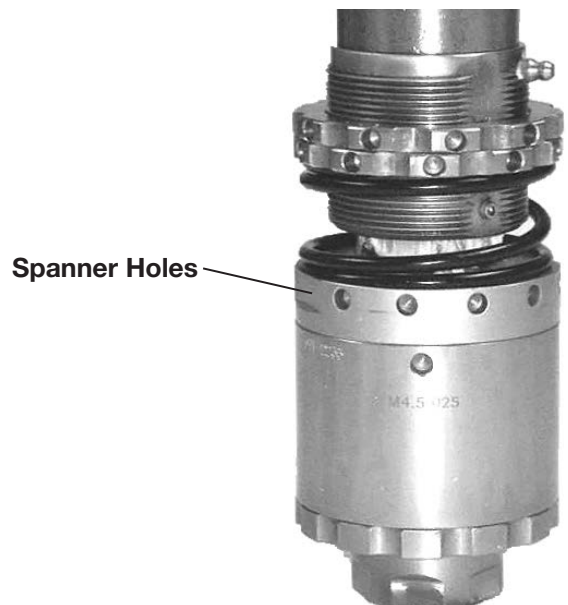
**Figure 3**

Set the preliminary static torque using provided torque setting chart. Loosen set screws with hex key wrench, turn end cap with face spanner wrench (**YTL2-0002**). Tighten set screws to 8-10 lb-in. Over tightening is not necessary and will strip the screws or possibly damage the housing body. See Figure 3.



**Figure 4**

Apply anti-seize compound to spindle shaft. Install headset on spindle. Turn onto threaded spindle until headset is fully seated on spindle. See Figure 4.



**Figure 5**

Install headset on spindle. Turn onto threaded spindle until headset is fully seated on spindle. Tighten headset securely using O.D. Spanner wrench (**YTL3-0009**). See Figure 5.

# Setting Top Load Spring Force

1. Determine initial spring setting from spring force chart below.
2. Compress the spring with the locking ring just enough to allow the adjustment ring into its correct setting.
3. Move the adjustment ring to the desired setting. Bring the locking ring down and jam the rings together with a spanner wrench.
4. For optimum results check download force with a force scale.
5. Set headset on the scale and manually compress the spring downward 5mm. Take the force reading at this position. The lines on the spring cover are .100" (2.5mm) apart, so two lines equal the recommended .200" (5mm) compression.

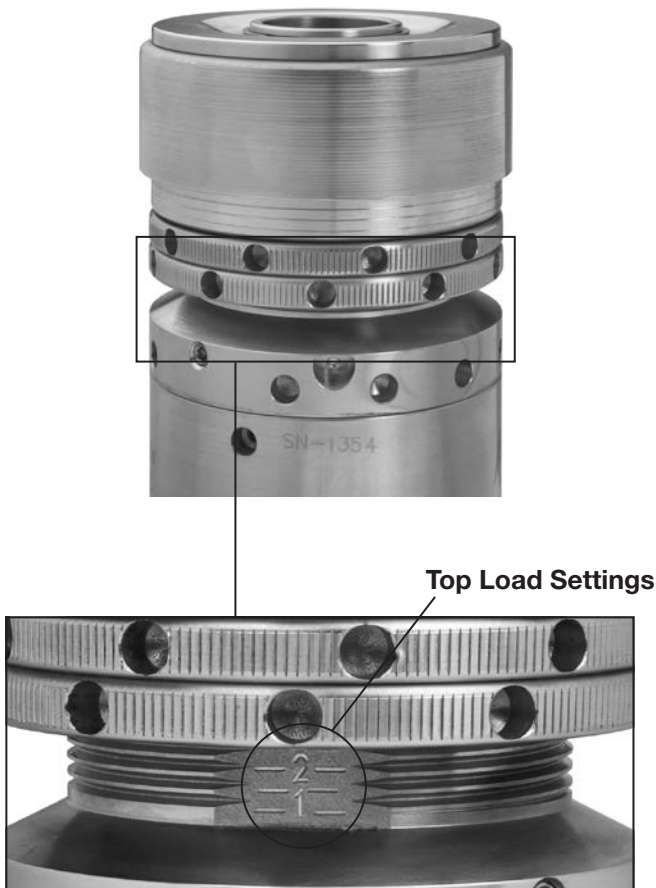


Figure 6

## Top Load Spring Force Setting Chart

### Spring Force at 0.200" (5mm) Deflection

Spring Setting	Standard Spring YTP1-0010 Plain		Low Spring YTP1-0003 Grey		High Spring YTP1-0008 Black	
	lb	Kg	lb	Kg	lb	Kg
1.0	34	15	24	11	50	23
1.5	39	18	27	12	58	26
2.0	44	20	31	14	66	30
2.5	49	22	34	15	73	33
Max	54	24	38	17	80	37

### Spring Force at 0.100" (2.5mm) Deflection

Spring Setting	Standard Spring YTP1-0010 Plain		Low Spring YTP1-0003 Grey		High Spring YTP1-0008 Black	
	lb	Kg	lb	Kg	lb	Kg
1.0	29	13	20	9	43	20
1.5	34	15	24	11	50	23
2.0	39	18	27	12	58	26
2.5	44	20	31	14	66	30
Max	49	22	34	15	73	33

**NOTE:** The charts above provide actual spring loads without any added load due to the weight of the headset. These spring loads are valid for any headset. Not all headsets have the full range of settings; some headsets do not have a '3.0' setting, other headsets do not have '1.0' or '1.5' settings. The spring loads are calculated at the given deflection as listed in the chart.

## Setting Application Torque

1. Determine initial clutch setting from torque chart below.
2. Loosen the torque adjustment screws. Rotate the adjustment ring using the face spanner wrench to the desired setting and then retighten the torque adjustment screws. Do not use the set screw in the slot on the backside of the housing for torque adjustment. Tighten set screws to 8-10 lb-in. Over tightening is not necessary and will strip the screws or possibly damage the housing body.
3. For optimum results, check setting with a torque wrench and FIX-0007 or FIX-0010.



Figure 7

### Application Torque Setting Charts

Clutch Setting	Application Torque-Low Inertia Magnet		Application Torque (Ncm) Standard Magnet	
	lb-in	Ncm	lb-in	Ncm
0.00	2.00	22.5	6.0	67.8
0.50	3.50	39.5	7.0	79.1
1.00	5.00	56.5	8.0	90.4
1.50	8.50	96.0	11.5	129.9
2.00	10.50	118.6	14.0	158.2
2.50	13.50	152.5	16.0	180.8
3.00	16.00	180.7	21.0	237.3
3.50	17.50	197.7	23.5	265.5
4.00	18.50	209.0	25.5	288.1
4.50	19.00	214.6	28.0	316.4
5.00	19.50	220.3	29.5	333.3

## Recommended Maintenance Schedule

**Lubricate the upper assembly every 500 hours of run time.**

- Using a grease injector needle, apply lubricant into the grease port.
- Recommended grease: No. 2 Food Grade Grease



Figure 8

**Disassemble, clean, and replace all wearing parts in the headset every 7000 hours of machine run time.**

- See rebuild instructions for detailed information on disassembly and assembly of Warner headsets.
- Dependent upon machine speed and washdown procedure, some environments may require more frequent rebuilds.

### Rebuild Kits available:

- **M4.5-BK** (Bearing and Hardware Rebuild Kit)
- **M4.5-MK** (Magnet Rebuild Kit)
- **M4.5-PK** (Push rod Rebuild Kit)
- **M4.5-TL** (Replacement Top Load Assembly)

\*Contact customer service for the exact kit part number for your specific headset model.

# Installation Tools and Fixtures



**Figure 10**

**FIX-0001** – Bearing installation and removal fixture for the ZRC style bearings.



**Figure 11**

**FIX-0002** – Bearing installation and removal fixture for the ARC style bearing.



**Figure 12**

**FIX-0003** – Use to hold the output of ARC style unit during disassembly. Earlier revision levels with a larger output dimension that will not fit in this fixture can be clamped directly in a vice.



**Figure 13**

**FIX-0004** – Upper assembly nut removal fixture for ZRC style unit.

**Continued on page 6.**

## Tool Kit Component Parts Cont.



Figure 14

**FIX-0019** – Clutch nut removal fixture for some ZRC style units. Not included in tool kits. May be ordered on an as-needed basis.



Figure 15

**FIX-0005** – Upper assembly nut removal fixture for ARC style unit.



Figure 16

**FIX-0007** – Torque checking fixture for some ARC models.



Figure 17

**FIX-0010** – Torque checking fixture for some ARC & ZRC models.



Figure 18

**YTL3-0009 (Qty 2) & YTL3-0008** – Adjustable O.D. Spanner Wrenches used for adjusting top load and separating top load and clutch body.



Figure 19

**YTL4-0009, YTL4-0005, YTL4-0008, YTL4-0010, YTL4-0007** – Open end wrenches used to install and remove chucks on several ARC & ZRC models.



Figure 20

**YTL2-0002** – Face Spanner Wrench for adjusting end cap and setting static torque on ARC & ZRC units.



Figure 21

**YTL3-0005** – ER-25 Spanner Wrench used for upper assembly adapter removal for some ZRC style units.

# ZRC Clutch Rebuild Procedure



**Figure 22**

With a 1/8" 3mm hex wrench, loosen the set screw that holds the top load assembly and clutch together. See Figure 22.



**Figure 23**

Using Spanner wrenches (YTL3-0009 & YTL3-0008) and soft hammer, separate the clutch from the top load assembly. See Figure 23.



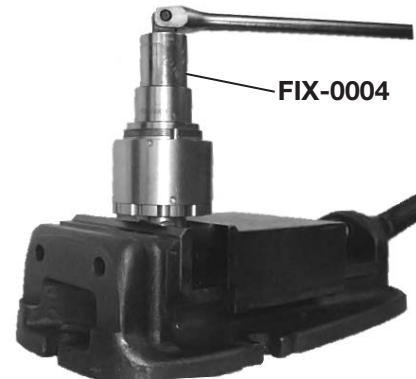
**Figure 24**

Remove two set screw with a 3/32" 3mm hex wrench. See Figure 24.



**Figure 25**

Remove the three torx screws using a T-15 security torx bit. See Figure 25.



**Figure 26**

Place chuck output shaft in vice, clamping on flats. Using a socket, FIX-0004, and a breaker bar, remove ring nut on top of clutch. See Figure 26.



**Figure 27**

Remove housing from clutch. See Figure 27.



**Figure 28**

Press Shaft out of unit. Separate remaining components. Clean or replace all parts as required. Use an alcohol based cleaning solvent to clean the black driver magnets. Do not use anything abrasive when wiping the black driver magnets. Use a Scotch Brite deburr wheel to polish the hysteresis magnet. See Figure 28.



**Figure 29**

Using a 9/64" (M3) hex wrench, remove the socket head cap screws. See Figure 29.



**Figure 30**

Using an arbor press and FIX-0001 push out bearings in adjustable end cap and housing. See Figure 30.



**Figure 31**

Using an arbor press and FIX-0001 install new bearings in adjustable end cap and housing. See Figure 31.



**Figure 32**

Using a 9/64" 3mm hex wrench, install magnet plate assembly on adjustable end cap. See Figure 32.



**Figure 33**

Replace all seals and apply a light layer of grease on seals. See Figure 33.





**Figure 34**

Install shaft into adjustable end cap magnet assembly. Apply a light film of grease on magnet. See Figure 34.



**Figure 35**

Install spacer on shaft on end cap. See Figure 35.



**Figure 36**

Install Hysteresis magnet. See Figure 36.



**Figure 37**

Install second spacer. See Figure 37.



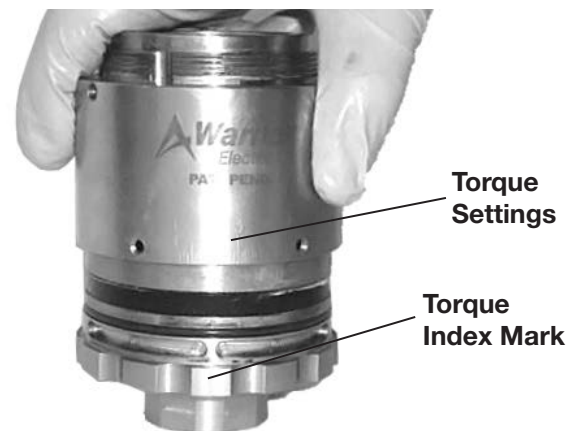
**Figure 38**

Install magnet plate in housing by holding the magnet inside the housing body, lining up any three holes, and tightening the three button head torx screws using a T-15 security torx bit. See Figure 38.



**Figure 39**

Apply a light film of grease on magnet. See Figure 39.



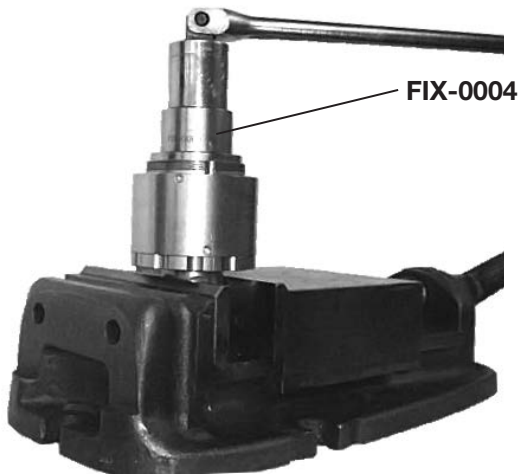
**Figure 40**

With torque settings on the housing and torque index mark on end cap facing you, place housing on end cap. Use caution as magnets will attract to each other. Tap in place with soft hammer if necessary. See Figure 40.



**Figure 41**

Apply blue loctite on ring nut. See Figure 41.



**Figure 42**

Place chuck output shaft in vice, clamping on flats. Using a socket, FIX-0004, and a breaker bar, torque nut to 45 ft-lb (508 Ncm). See Figure 42.



**Figure 43**

Install two set screws. See Figure 43.



**Figure 44**

Torque test the unit before re-installing upper assembly and installing headset on machine. Using face spanner wrench (YTL2-0002), set the torque at setting 5. See Figure 44.



**Figure 45**

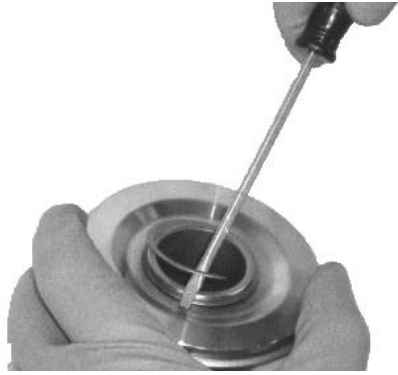
Using FIX-0007 or FIX-0010 and a torque wrench, check to make sure the torque is smooth and reaching the specified maximum torque. If torque is not smooth or is very high, disassemble clutch to look for mechanical rubbing or parts assembled incorrectly. See Figure 45.



**Figure 46**

Set torque to desired setting using face spanner wrench (YTL2-0002) and tighten set screws. Tighten set screws to 8-10 lb-in. Over tightening is not necessary and will strip the screws or possibly damage the housing body. See Figure 46.

# ARC Top Load Rebuild Procedure



**Figure 47**

Using a small standard screwdriver remove snap ring. See Figure 52.



**Figure 48**

Remove spring plate, upper spring cover (if applicable), spring, and lower spring cover (if applicable) from top-load assembly. See Figure 53.



**Figure 49**

Remove internal shaft and inspect for wear, replace as necessary. Clean all parts. See Figure 54.



**Figure 50**

Install new pins, apply a thin layer of grease to internal shaft and pins. See Figure 55.



**Figure 51**

Remove seal and replace. See Figure 56.



**Figure 52**

Apply a thin layer of grease the seal and bore. See Figure 57.



**Figure 53**

Install shaft in top load assembly. Make sure all 4 pins stay engaged during insertion. See Figure 58.



**Figure 54**

Set top-load on FIX-0002 so that the shaft does not push in while compressing the spring. Install lower spring cover (if applicable), spring, upper spring cover (if applicable), and spring plate. See Figure 59.



**Figure 55**

Compress spring plate and install snap ring. Make sure that the snap ring seats fully into groove. See Figure 60.



**Figure 56**

Thread together the clutch and top-load assembly. See Figure 61.



**Figure 57**

Tighten using spanner wrenches (YTL3-0009) and a soft hammer. See Figure 62.



**Figure 58**

Install set screw with 1/8" 3mm hex wrench; tighten. Tighten set screws to 8-10 lb-in. Over tightening is not necessary and will strip the screws or possibly damage the housing body. See Figure 63.

# Rebuild Kits and Rebuild Exchange Programs

## Warner Electric Capping Headsets

### Magnetic Headset Rebuild Kits

End-users can purchase rebuild kits to rebuild the magnetic headsets themselves. It is recommended that the end-user keep both bearing and magnetic kits on hand in order to reduce maintenance downtime.

### Factory Rebuild Program

End-users can ship their headsets back to Warner Electric for a full factory rebuild and certification. Upon receipt, Warner Electric will rebuild and factory certify headsets. Typical turnaround for headsets is 1-2 weeks. Expedited services are available upon request. Additional fees will apply. End-user will be invoiced for the rebuilt headset when the rebuilt headset is shipped. The end-user is responsible for freight to and from factory.

### Headset Exchange Program (TWO YEAR AGREEMENT):

Once end-users own Warner Electric headsets, they have the option of signing up for a Warner Electric Headset Exchange Program for rebuilt headsets. In this case, end-users would receive rebuilt headsets from Warner Electric at a predetermined time during the year in exchange for their used Warner Electric headsets. End-user signs an agreement for the headset exchange program for 2 years. Pricing for the headset exchange program will be paid once per year, on the date the agreement is signed and on the agreement anniversary date. At the beginning of the agreement period, the end-user must specify the headset model, how many heads are to be rebuilt, and what time(s) during the year rebuilt headsets are expected. Warner Electric will ship rebuilt headsets to end-user at the predetermined date. Within two weeks from receipt of rebuilt headsets, the end-user is required to return their used headsets. The end-user is responsible for freight to and from the factory.

### Headset Lease Exchange Program (3 YEAR AGREEMENT)

Warner Electric offers an option for end-users to receive factory rebuilt Warner Electric headsets at no initial purchase fee if they sign up for a 3 year headset exchange program with Warner Electric. At the end of the 3 year agreement period, the end-user will own their Warner Electric headsets. End-user signs an agreement for the headset exchange program for 3 years. Pricing for the headset exchange program will be paid once per year, on the date the agreement is signed and on the agreement anniversary dates. At the beginning of the agreement period, the end-user must specify the headset model, how many heads are to be rebuilt and what time(s) during the year rebuilt headsets are expected. Upon receipt of initial payment, Warner Electric will ship rebuilt headsets to the end-user. On the predetermined rebuild dates, Warner Electric will ship rebuilt headsets to end-user. Within two weeks from receipt of rebuilt headsets, the end-user is required to return their used headsets. At the end of the 3 year agreement period, the end-user will own their magnetic headsets. The end-user is responsible for all freight to and from the factory.

# On-site Service Support

## Warner Electric Capping Headsets

On-site service support is available for installation of new Warner headsets, rebuild support of existing Warner headsets, training, etc. Our factory-trained and certified service department with over 50 years combined experience can help prevent costly delays and down time of your capping operation.

**Precision Tork is the ONLY Service Group that is factory authorized to work on the Warner Electric headsets.**

### Services Provided:

- Installation of new equipment
- Machine audits and troubleshooting
- Service and repair of filling and capping equipment
- Consulting: New Installations-existing issues for filling and capping
- Develop new design for efficient production
- Assist with planning of preventative maintenance programs
- Operator and mechanical training
- Highly qualified trained field engineers ready to work on the following bottling equipment:

• **Alcoa** • **Zalkin** • **Fowler** • **AROL**

### Precision Tork Service Benefits:

- We manufacture the headsets!
- Most up-to-date designs available only through Precision Tork.
- Our service technicians are trained to rebuild your headsets to their existing revision level OR upgrade them to the latest technology.
- Component parts and rebuild kits on hand so you do not incur downtime.
- Coming soon...secure website for headset information and parts ordering with a credit card.

**To schedule a certified Warner Service Technician contact Melissa Bottke at  
1-888-350-1891**

# Materials Requirements

## Anti-Seize Compound

- Apply to spindle at time of headset installation Cleaning Solution

## Cleaning Solution

- Alcohol based cleaning solvent used to wipe and clean parts during rebuild.

## Grease

- Citgo Clarion Food Grade Grease, HTEP NLGI No. 2 Grade used to lubricate headset.

## Loctite

- Blue Removable - 242 threadlocker used to secure components within the headset.

## Epoxy

- Five minute epoxy – Amber, Devcon dev-pak adhesive 14270 used to fill counter-bores in the magnet plate.

## Information for Ordering Spare Parts

It is important to stock spare parts on hand to avoid unnecessary downtime. Warner recommends that you stock at least two spare headsets per machine and a few bearing and magnet rebuild kits so that you have the necessary parts on hand if you need them.

### How to order spare parts – required information:

1. Purchase Order Number.
2. Warner headset model number/part number OR serial number (only on models manufactured July 2007 and later).
3. Warner Component or Kit Part Number.
4. Preferred distributor to order from. All orders will be routed through local distribution. Pricing and lead time can be quoted by calling the Manufacturing Facility at (888) 350-1891.







# Warranty

Warner Electric LLC warrants that it will repair or replace (whichever it deems advisable) any product manufactured and sold by it which proves to be defective in material or workmanship within a period of one (1) year from the date of original purchase for consumer, commercial or industrial use.

This warranty extends only to the original purchaser and is not transferable or assignable without Warner Electric LLC's prior consent.

Warranty service can be obtained in the U.S.A. by returning any defective product, transportation charges prepaid, to the appropriate Warner Electric LLC factory. Additional warranty information may be obtained by writing the Customer Satisfaction Department, Warner Electric LLC, 449 Gardner Street, South Beloit, Illinois 61080, or by calling 815-389-3771.

A purchase receipt or other proof of original purchase will be required before warranty service is rendered. If found defective under the terms of this warranty, repair or replacement will be made, without charge, together with a refund for transportation costs. If found not to be defective, you will be notified and, with your consent, the item will be repaired or replaced and returned to you at your expense.

This warranty covers normal use and does not cover damage or defect which results from alteration, accident, neglect, or improper installation, operation, or maintenance.

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

Warner Electric LLC's obligation under this warranty is limited to the repair or replacement of the defective product and in no event shall Warner Electric LLC be liable for consequential, indirect, or incidental damages of any kind incurred by reason of the manufacture, sale or use of any defective product. Warner Electric LLC neither assumes nor authorizes any other person to give any other warranty or to assume any other obligation or liability on its behalf.

WITH RESPECT TO CONSUMER USE OF THE PRODUCT, ANY IMPLIED WARRANTIES WHICH THE CONSUMER MAY HAVE ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL CONSUMER PURCHASE. WITH RESPECT TO COMMERCIAL AND INDUSTRIAL USES OF THE PRODUCT, THE FOREGOING WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

## Changes in Dimensions and Specifications

All dimensions and specifications shown in Warner Electric catalogs are subject to change without notice. Weights do not include weight of boxing for shipment. Certified prints will be furnished without charge on request to Warner Electric.



[www.warnerelectric.com](http://www.warnerelectric.com)

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