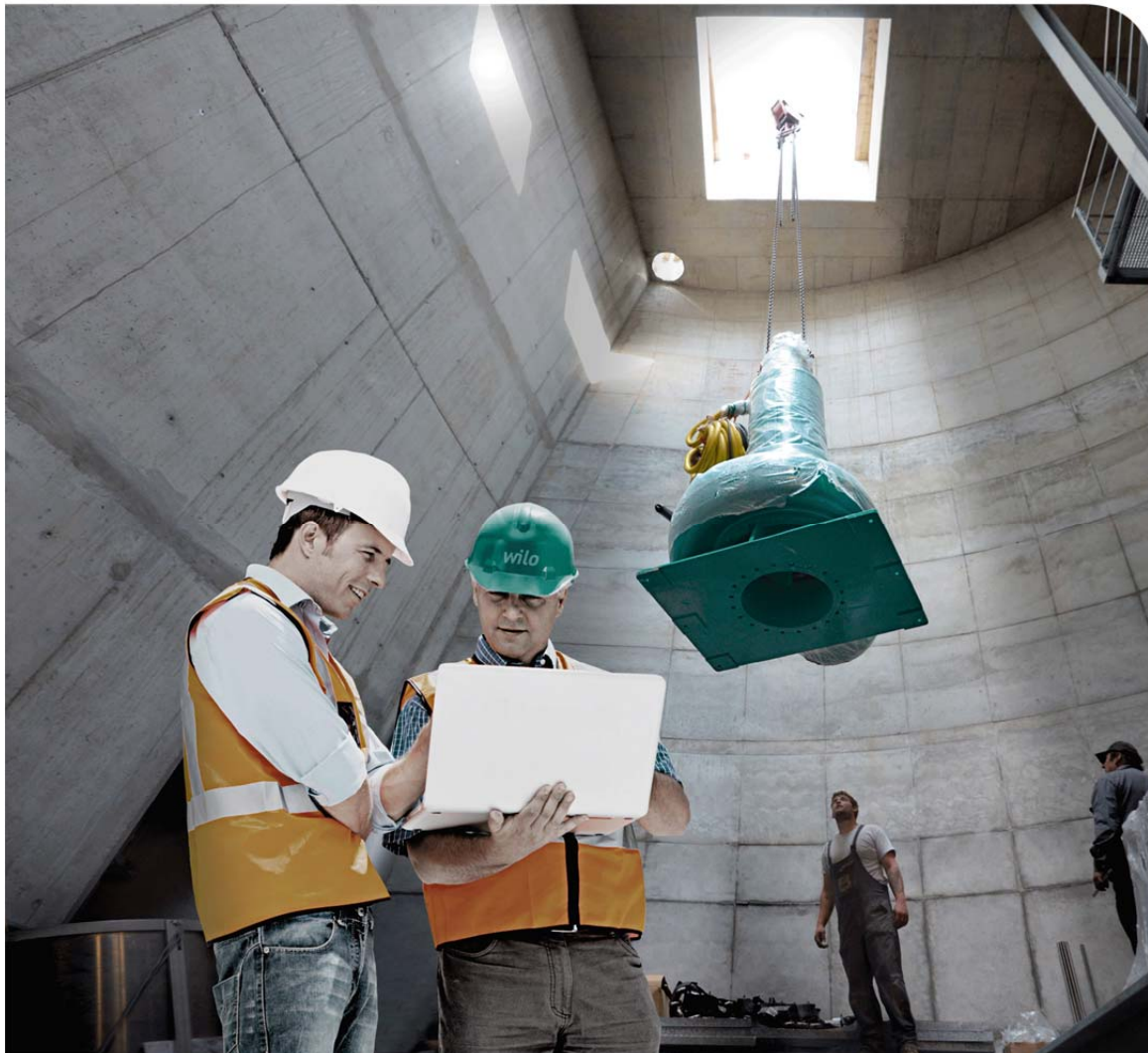


## Submersible Pump Model FA10.78Z with 4 Pole, 1740 RPM Motor and Two Vane Impeller

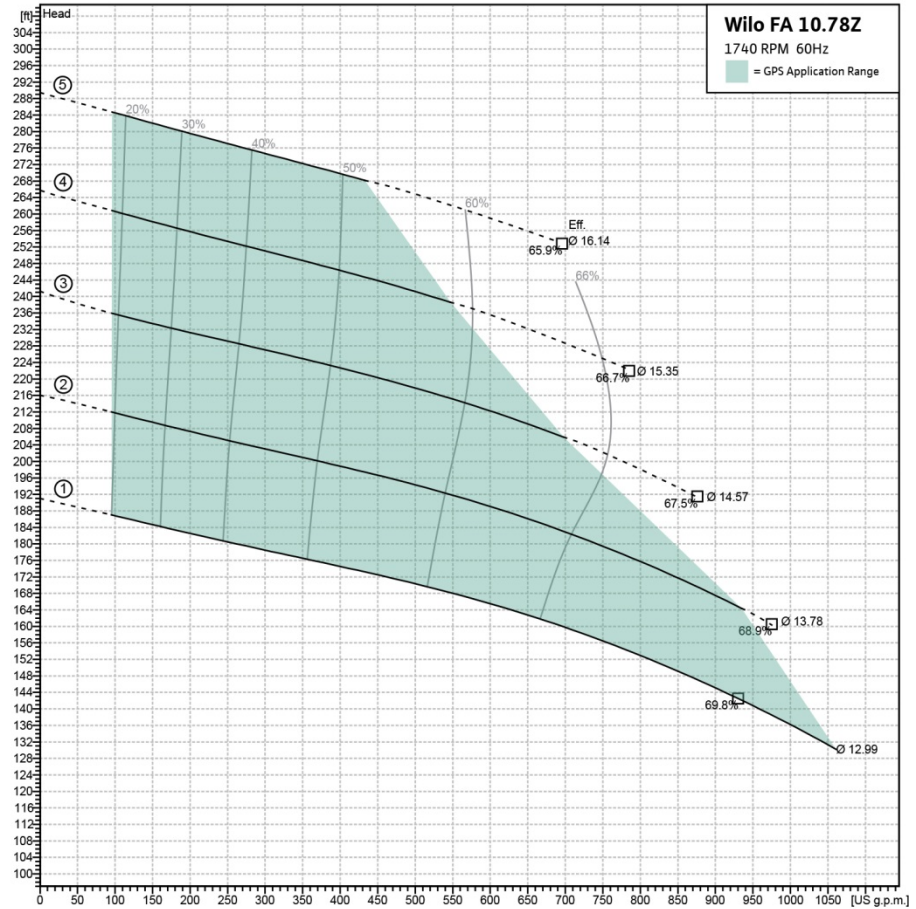
**Project Name:** \_\_\_\_\_

*Project Manager:* Chris Harnevious, Order Management

*Prepared By:* Ray Herndon, Order Management



**FA 10.78Z - 4 pole, 1740 RPM, Non-clog Vane Type**

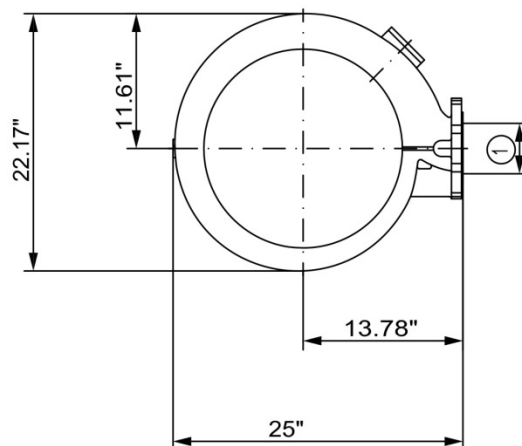
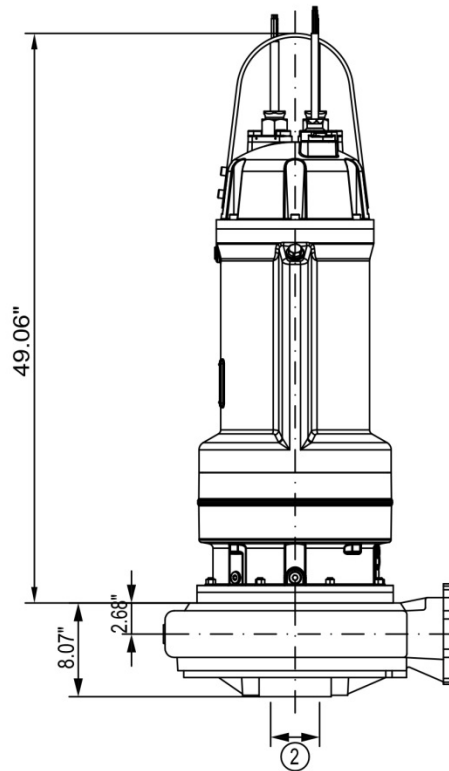


Installation Type	
Installation Type	Wet Pit Dry Pit
Voltage	460v
Suction Size	4"
Discharge Size	4"

Impeller Number	Impeller Diameter		Motor HP
	in	mm	
1	12.99	330	57
2	13.78	350	57
3	14.57	370	57
4	15.35	390	57
5	16.14	410	57

Materials of Construction	
Volute	ASTM A48 Class 35 Cast Iron
Impeller	ASTM A536 Ductile Cast Iron
Volute Wear Ring	AISI 304 Stainless Steel
Impeller Wear Ring	AISI 329 Duplex Stainless Steel

FA 10.78Z, FKT27.1-4/28



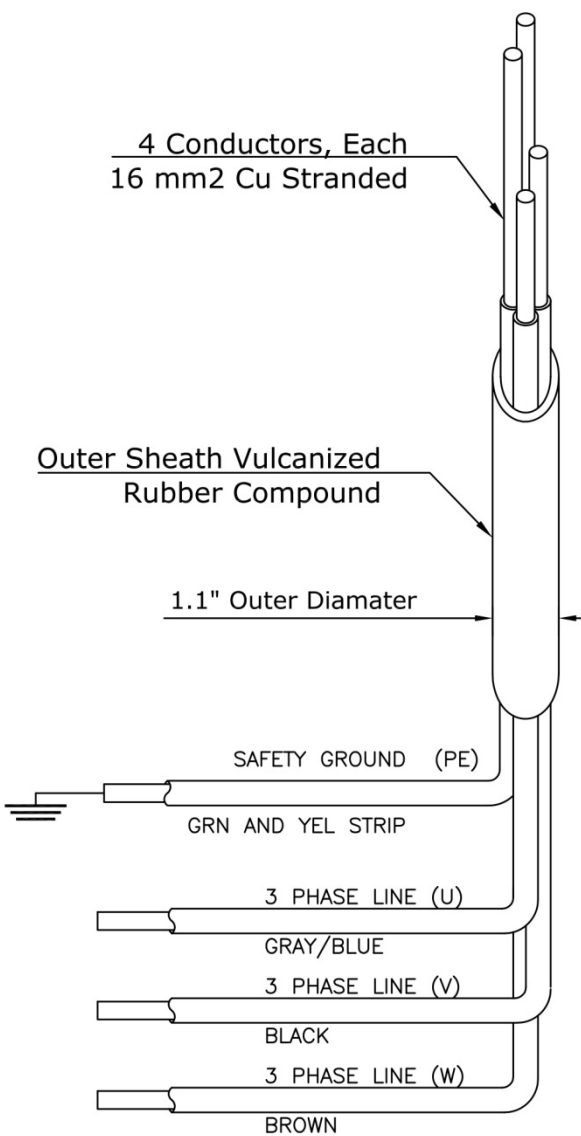
- 1. DN 100, PN 10 / ANSI B16.1, Class 125, Size 4
- 2. DN 100, PN 10

## Electrical Cables

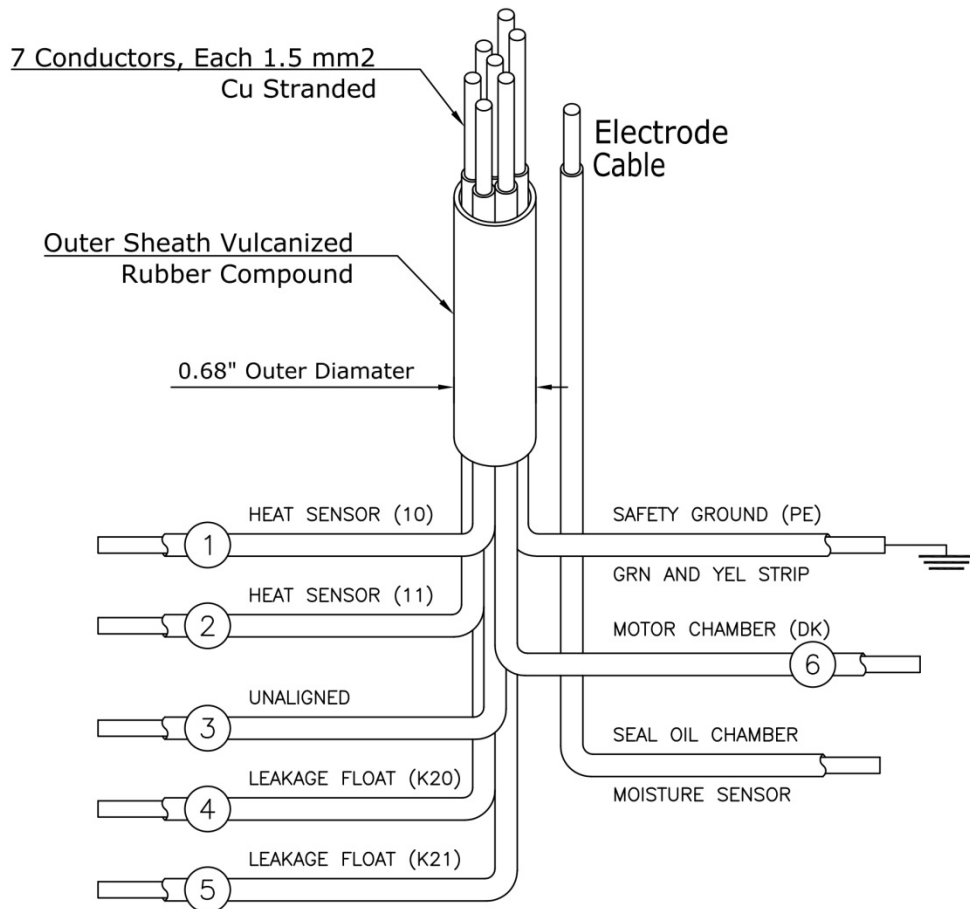
Model FA 10.78Z with FKT27.1-4/28k motor NSSHOU

4x16+7x1.5

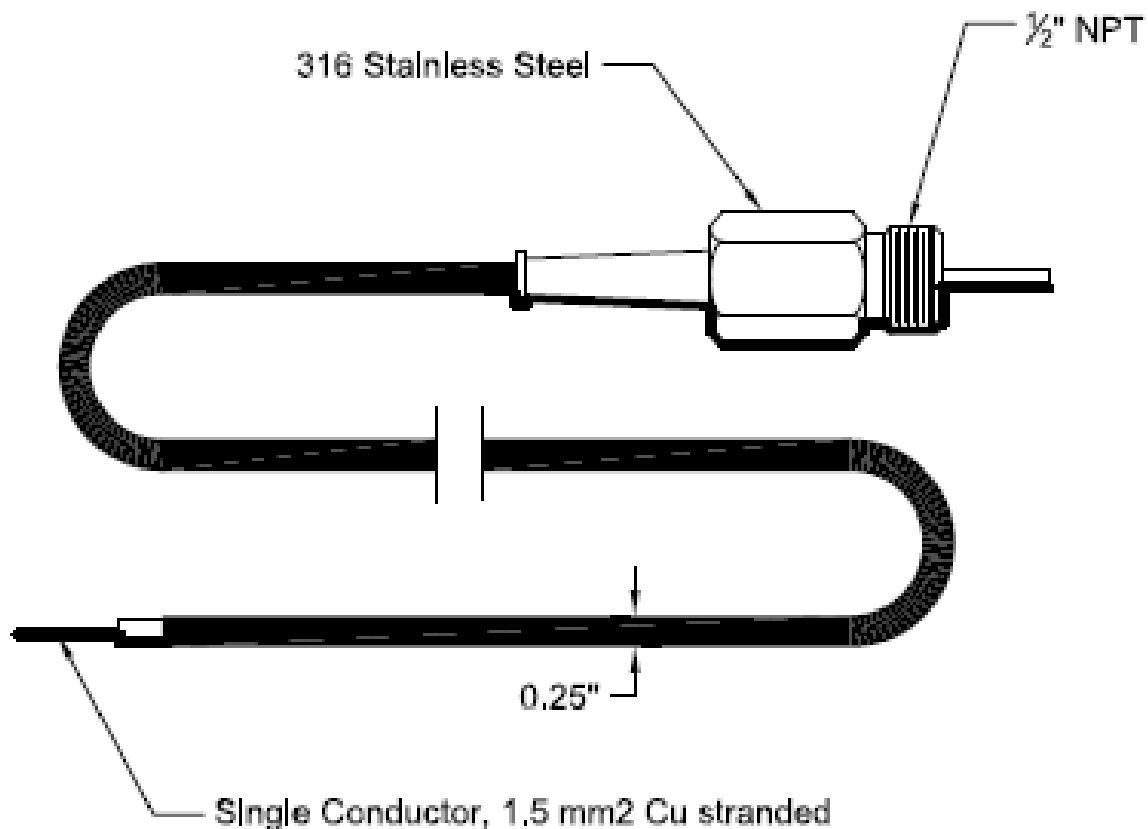
### Main Cable



### Control Cable



## Moisture Sensor Pencil Electrode



### Notes:

1. Maximum 18 amps; actual 0,005 Amps
2. Maximum 1000V; actual <20V
3. Dedicated relay required for proper operation,
4. Dedicated conduit recommended for moisture probe cable.
5. Optional lengths available.
6. refer to the following sheets for additional technical data.



product data **carboline**® Carboguard® 890

**Selection & Specification Data**

<b>Generic Type</b>	Cycloaliphatic Amine Epoxy TE test
<b>Description</b>	Highly chemical resistant epoxy mastic coating with exceptionally versatile uses in all industrial markets. Self-priming and suitable for application over most existing coatings, and tightly adherent to rust. Serves as stand-alone system for a variety of chemical environments and is also designed for various immersion conditions.
<b>Features</b>	<ul style="list-style-type: none"> <li>• Excellent chemical resistance</li> <li>• Surface tolerant characteristics</li> <li>• Conventional and low-temperature versions</li> <li>• Self-priming and primer/finish capabilities</li> <li>• Very good abrasion resistance</li> <li>• VOC compliant to current AIM regulations</li> <li>• Suitable for use in USDA inspected facilities</li> </ul>
<b>Color</b>	Refer to Carboline Color Guide. Certain colors may require multiple coats for hiding. Note: The low temperature formulation will cause most colors to yellow or discolor more than normal in a short period of time.
<b>Finish</b>	Gloss
<b>Primers</b>	Self-priming.
<b>Topcoats</b>	May be coated with Acrylics, Epoxies, or Polyurethanes depending on exposure and need.
<b>Dry Film Thickness</b>	0.0 - 10.0 mils (0.0 - 254 microns) per coat 4.0 - 6.0 mils (102 - 152 microns) per coat  6.0-8.0 mils (150-200 microns) over light rust and for uniform gloss over inorganic zincs. Don't exceed 10 mils (250 microns) in a single coat. Excessive film thickness over inorganic zincs may increase damage during shipping or erection.
<b>Solids Content</b>	By Volume 75% +/- 2%
<b>Theoretical Coverage Rate</b>	1203 ft <sup>2</sup> at 1 mil (30 m <sup>2</sup> /l at 25 microns) 301 ft <sup>2</sup> at 4 mils (7 m <sup>2</sup> /l at 100 microns) 120 ft <sup>2</sup> at 10 mils (3 m <sup>2</sup> /l at 250 microns)  Allow for loss in mixing and application.
<b>VOC Values</b>	Thinner 2 13oz/gal=2.2lbs/gal (271g/l) Thinner 2 7oz/gal=2.0lbs/gal (250g/l) Thinner 33 16oz/gal=2.3lbs/gal (285g/l) Thinner 33 7oz/gal=2.0lbs/gal (250g/l) As Supplied 1.7lbs/gal (214 g/l)  *Use Thinner #76 up to 8 oz/gal for 890 where non-photochemically reactive solvents are required.
<b>Dry Temp. Resistance</b>	Continuous: 250 °F (121 °C) Non-Continuous: 300 °F (149 °C)  Discoloration and loss of gloss is observed above 200°F(93°C)
<b>Limitations</b>	Do not apply over latex coatings. For immersion projects use only factory made material in special colors. Consult Technical Service for specifics.

**Substrates & Surface Preparation**

<b>General</b>	Surfaces must be clean and dry. Remove dirt, dust, oil and all other contaminant.
<b>Steel</b>	<b>Immersion:</b> SSPC-SP10 <b>Non-immersion:</b> SSPC-SP6 1.5-3.0 mils (38-75 microns) SSPC-SP2 or SP3 are suitable cleaning methods for mild environments.
<b>Galvanized Steel</b>	Prime with specific Carboline primers as recommended by your Carboline Sales Representative. Refer to the specific primer's Product Data Sheet for requirements.
<b>Concrete or CMU</b>	Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing. Mortar joints should be cured a min of 15 days.
<b>Drywall &amp; Plaster</b>	Joint compound and plaster should be fully cured prior to coating application.
<b>Previously Painted Surfaces</b>	Lightly sand or abrade to roughen surface and degloss the surface. Existing paint must attain a minimum 3B rating in accordance with ASTM D3359 "X-Scribe" adhesion test.

**Performance Data**

Test Method	System	Results
ASTM B 117 Salt Fog	Blasted Steel 2 cts. 890	No effect on plane, rust in scribe. 1/16" undercutting at scribe after 2000 hours
ASTM B117 Salt Fog	Blasted Steel 1 ct. IOZ 1 ct 890	No effect on plane, no rust in scribe and no undercutting after 4000 hours
ASTM D 4080 Abrasion	Blasted Steel 1 ct Epoxy Pr. 1 ct 890	85 mg. loss after 1000 cycles, CS17 wheel 1000 gm. load
ASTM D1735 Water Fog	Blasted Steel 1 ct. Epoxy Pr. 1 ct. 890	No blistering, rusting or delamination after 2800 hours
ASTM D2486 Scrub Resistance	Blasted Steel 1 ct. 890	93% gloss retained after 10,000 cycles w/ liquid scrub medium
ASTM D3359 Adhesion	Blasted Steel 1 ct 890	5A
ASTM D3363 Pencil Hardness	Blasted Steel 2 cts 890	Greater than 8H
ASTM E84 Flame and Smoke	2 ct 890	5 Flame 5 Smoke Class A

Test reports and additional data available upon written request.

or the current Warranty information, visit [www.wilo-usa.com](http://www.wilo-usa.com)

**As of 1/2015:**

**WILO WATER MANAGEMENT  
LIMITED WARRANTY FOR WILO FA PUMPS  
ONE-YEAR WARRANTY FOR CERTAIN ANCILLARY EQUIPMENT**

**EXCEPT AS EXPRESSLY PROVIDED HEREIN, WILO USA LLC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, WITH RESPECT TO ANY PRODUCTS, PARTS OR SERVICES PROVIDED BY WILO USA LLC INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, APPLICATION OR USE.**

**LENGTH AND SCOPE OF WARRANTY**

WILO USA LLC offers the below limited Warranty against defects in materials and workmanship, for WILO FA Model pumps used in permanent installations in accordance with and subject to all requirements of WILO installation and operation instructions, when such installations are operated under normal conditions pumping wastewater at ambient temperature. Normal conditions specifically include a maximum of 15 equipment starts per hour on constant speed installations or unlimited pump starts per hour on soft start or variable speed installations. Pumps that handle abrasive and/or corrosive liquids are not covered by this warranty unless specifically agreed to, and approved in writing by WILO USA LLC. FA pumps are warranted only for the original application and specific hydraulic conditions.

Motors, electrical control boxes and all other items other than WILO pumps furnished by WILO USA LLC are covered by a Limited Warranty for a period of one (1) year from date of commissioning, or six (6) months after shipment, and are subject to all of the conditions, limitations, and requirements stated herein.

The warranty period starts at either commissioning or six (6) months after shipment, whichever comes first. Commissioning is defined to be the day that the unit is put into service and start up is completed.

**OBLIGATIONS OF WILO**

WILO USA LLC's sole obligation shall be to either repair, modify or replace, at its sole discretion, (a) a defective municipal use FA pump which is received by WILO within five (5) years or a defective industrial use FA pump which is received by WILO within two (2) years after the start of the warranty period that (b) has been inspected by WILO to confirm the existence of a defect.

Municipal and industrial use pumps received within one (1) year of the start of the warranty period shall be repaired at no charge. Municipal pumps received in years two through five (2-5), and Industrial use pumps received in year two (2) of the warranty period shall be repaired at no charge, excluding labor.

FA pumps shipped to WILO for warranty service must be shipped prepaid to WILO, or a WILO Authorized Service Center. Repaired pumps shall be returned to the purchaser freight collect. Electrical Schematics and start-up reports satisfactory to WILO are required from purchaser prior to consideration of any claim under this Limited Warranty.

Commissioning and initial start-up of WILO Model FA Pumps shall be performed by WILO or a WILO Authorized Service Center, and a written start-up report shall be generated by WILO. A copy of the start-up report shall be made available to the purchaser. Should a WILO Model FA Pump require a repair during the warranty period, WILO, or a WILO Authorized Service Center, shall provide re-commissioning of the repaired pump at no charge to the purchaser and issue a new start-up report. Operation of a WILO Model FA pump without an approved start-up shall make any warranty from WILO null and void without written permission from an officer of the company of WILO.

**OBLIGATIONS OF PURCHASER**

The purchaser is responsible for all freight and rigging charges for removing pumps from service and delivery of the pumps to and from a WILO Authorized Service Center. The purchaser is responsible for all repair costs that are deemed to be outside of the scope of WILO's warranty. The purchaser should inspect all shipments/deliveries upon receipt. Damaged products should not be accepted, or signed for as "damaged" on the original bill of lading. WILO must be notified immediately of any shipments which were damaged. Upon receipt of delivery from WILO you have a period of 48hrs to declare any missing material listed on the BOL but not received. After this period WILO USA cannot be responsible for claims of missing items after this time.

The purchaser shall connect all WILO provided motor sensors to the control system. Motor sensor control circuitry must be operational at start-up, and at all times. WILO requires any application using variable frequency drives to use load side filters where power cable lengths are in excess of 50 feet.

**EXCLUSIONS AND EXCEPTIONS**

This Limited Warranty excludes damage or wear to products caused by misapplication of product, improper maintenance, accident, abuse, unauthorized alteration or repair, Acts of God, or installation or operation that is non-compliant with WILO installation and operation instructions.

This Limited Warranty excludes normal wear and tear of wear rings, impellers, volutes and heat exchangers and other consumable parts and does not cover any failure caused by lightning, single-phasing, incorrect voltage, other defects or interruptions in the power supply or by splicing the electrical cable between the pump control panel and the pumps.

This Limited Warranty shall only apply to the type of WILO pumps described above, and shall not apply to any WILO pumps, electrical control equipment, or other items furnished which have been repaired by anyone other than WILO or a WILO Authorized Service Center.

## WARRANTY CARD

### PROJECT

Project Name: \_\_\_\_\_

Location: \_\_\_\_\_

Engineer: \_\_\_\_\_

Purchaser: \_\_\_\_\_

Purchase Order Number: \_\_\_\_\_

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### OWNER

Owner: \_\_\_\_\_

Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

Jobsite Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

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### WILO USE ONLY

Wilo Project Number(s): \_\_\_\_\_

Equipment: \_\_\_\_\_ FA Pumps \_\_\_\_\_ TR Mixers \_\_\_\_\_ RZP \_\_\_\_\_ Well Pumps \_\_\_\_\_ Other

Equipment Model Numbers: \_\_\_\_\_

Serial Numbers: \_\_\_\_\_

Official Date of Start-up: \_\_\_\_\_ Warranty: \_\_\_\_\_

Notes: \_\_\_\_\_

\_\_\_\_\_