



Model 3K502CT2 Shown

## 3K Series - Two Stage Stainless Steel End-Suction Centrifugal Pumps

Pump and Motor (TEFC-1P55) Models

# 3K502CT2 to 3K532CT4

Pump Mounting Kit for NEMA 56J Motors

# 3K500 to 3K530

### FEATURES

- 304SSL liquid-end construction offers corrosion resistance and increases operating life over typical cast iron models.
- Unique bulge formed components eliminates harsh radius and welds and provides greater efficiency and durability.
- Back pullout design permits easy repair of impeller and seal.
- High quality mechanical shaft seal and o-rings for chemical duty applications.
- Under casing foot mount and centerline discharge reduces misalignment and assures self-venting.
- Close coupled, motorized packages for compact and easy installation.

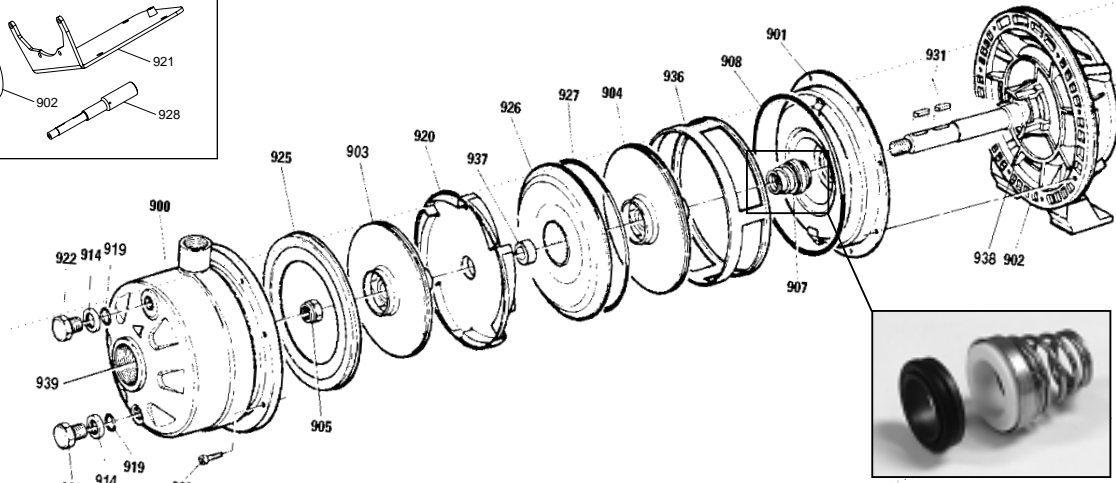
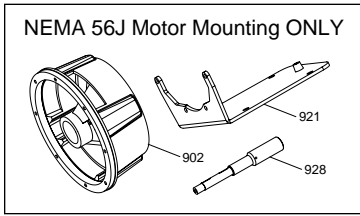
### SPECIFICATIONS

	U.S. Measure
Flow Range	.....5.5 to 66.0 GPM
Pressure Range	.....42 to 106 PSI
	.....98 to 245 Ft. Head
Max. Working Pressure	.....125 PSI
Min. Inlet Pressure to Prime	.....Flooded
RPM	.....3450 RPM
Inlet Port	3K502CT2, 3K502CT4, 3K500 .....1.25" NPT
	3K512CT4, 3K522CT4, 3K510, 3K520..1.25" NPT
	3K532CT4, 3K530 .....1.50" NPT
Discharge Port	All Models .....1" NPT
Horsepower Range	.....2 to 5 HP
Motor Options	IP55 Frame TEFC Class F or NEMA 56J
	2.0 HP .....230V, 1 PH
	2.0 HP .....230/460V, 3 PH
	3.0 HP .....230/460V, 3 PH
	5.0 HP .....230/460V, 3 PH
Cycle	.....60 HZ
Max. Temperature	Continuous .....*140°F
Weight	.....See Chart
Dimensions	.....See Chart

\*Contact CAT PUMPS for applications above 140°F.

*“Customer confidence is our greatest asset”*

# EXPLODED VIEW



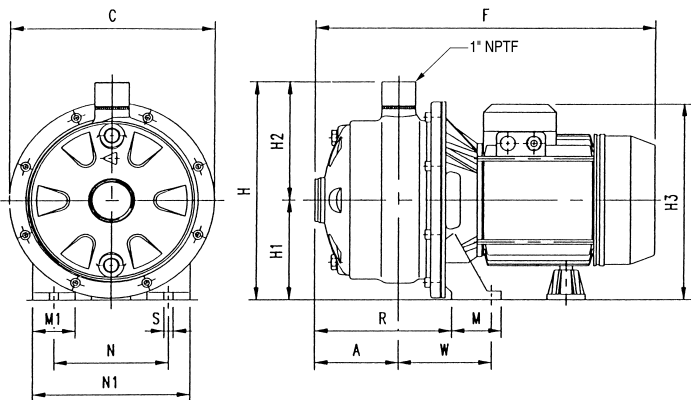
## PARTS LIST

ITEM	P/N	MATL	DESCRIPTION	QTY	ITEM	P/N	MATL	DESCRIPTION	QTY
900	899225	S	Casing, 3K502CT2, 3K502CT4, 3K512CT4, 3K500, 3K510	1	908	899249	FPM	O-Ring, Case - 75D	1
	899226	S	Casing, 3K522CT4, 3K520	1	909	—	S	Screw, Socket (M6x16)	8
	899227	S	Casing, 3K532CT4, 3K530	1	914	—	S	Washer, Plug	2
901	899228	S	Cover, Casing	1	919	899252	FPM	O-Ring, Plug - 75D	2
902	—	F	Bracket	1	920	899229	S	Diffuser	1
903	899232	S	Impeller (5.19") 3K502CT2, 3K502CT4, 3K512CT4, 3K500, 3K510	1	921	—	STL	Base	1
903	899234	S	Impeller (5.19") 3K522CT4, 3K520	1	922	—	S	Plug, Prime, Case	1
903	899235	S	Impeller (5.19") 3K532CT4, 3K530	1	923	—	S	Plug, Drain, Case	1
904	899231	S	Impeller (5.19") 3K502CT2, 3K502CT4, 3K500	1	925	899284	S	Plate, Front	1
904	899233	S	Impeller (6.00") 3K512CT4, 3K510	1	926	899286	S	Plate, Center	1
904	899234	S	Impeller (5.19") 3K522CT4, 3K520	1	927	899251	FPM	O-Ring, Center Plate - 75D	1
904	899236	S	Impeller (6.19") 3K532CT4, 3K530	1	928	—	S	Extension Shaft	1
905	—	S	Impeller, Nut (7/16-20)	1	931	—	S	Key	2
907	899000	FCC	Seal, Shaft Assy (Mild Chemical) - IP55	1	936	899239	S	Spacer	1
	899001	NCC	Seal, Shaft Assy (Standard) - NEMA 56J	1	937	899287	S	Collar	1
	899002	FCC	Seal, Shaft Assy (Mild Chemical) - NEMA 56J	1	938	899259	NBR	Seal, Lip	1
	899003	HCC	Seal, Shaft Assy (High Temp) - NEMA 56J	1	939	—	FPM	Ring, Casing	1
	899008	FSC	Seal, Shaft Assy (Strong Chemical) - NEMA 56J	1	940	899288	FPM	Kit, Seal (Incls: 905, 907, 908, 927, 931, 939)	1
					941	899282	S	Kit, Plug (Incls: 914, 919, 922, 923)	1

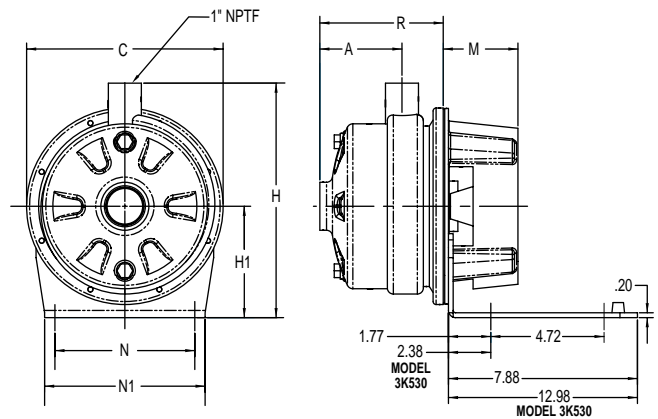
*Italics are optional items.*

MATERIAL CODES (Not Part of Part Number): F=Cast Iron FCC=Carbon/Ceramic/FPM FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N) S=304SS

## PUMP AND MOTOR DIMENSIONAL



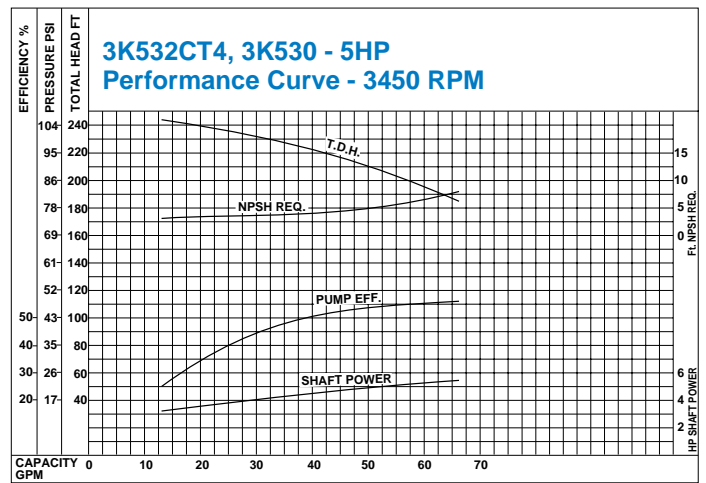
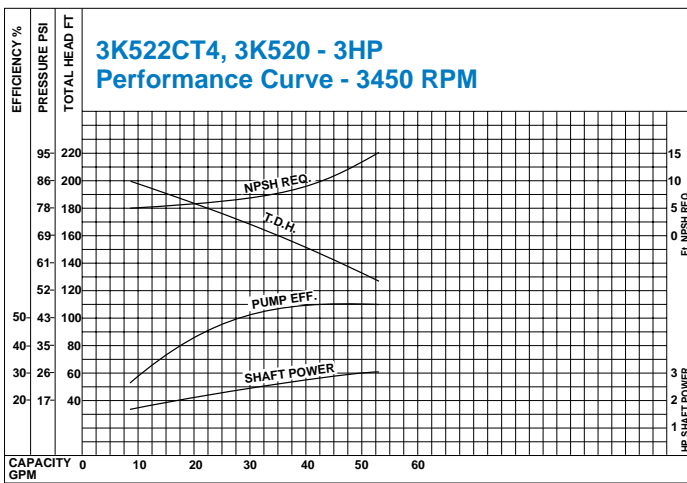
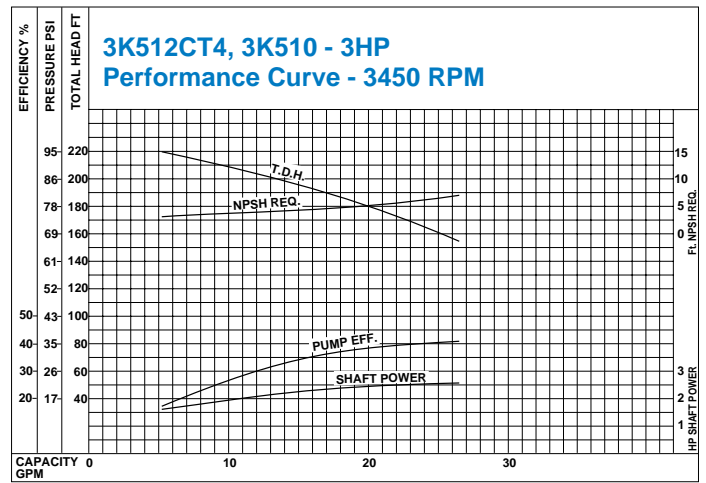
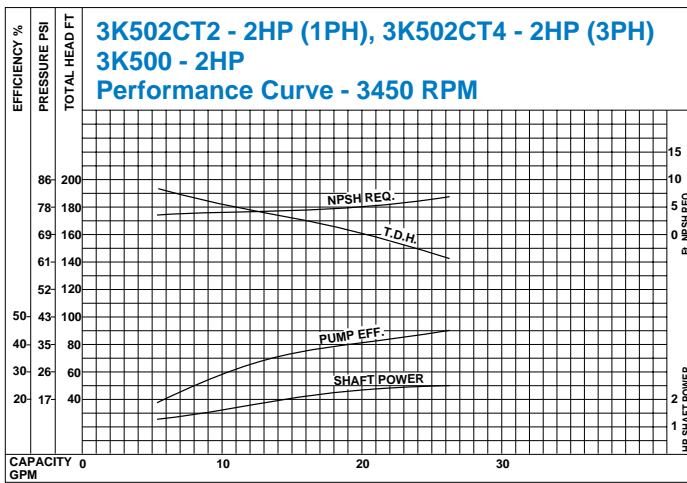
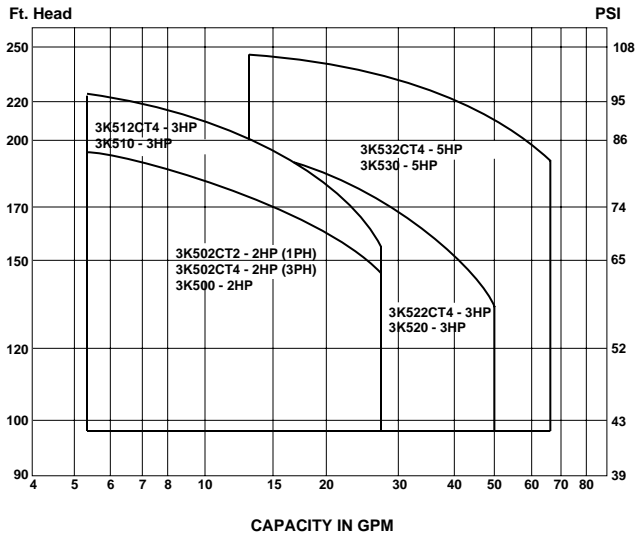
## PUMP KIT DIMENSIONAL



### Dimensions (in) and Weight (lbs)

Model	HP	Phase	A	C	F	H	H1	H2	H3	M	M1	N	N1	R	S	W	Weight
3K502CT4	2	3	3 <sup>7</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>8</sub>	14 <sup>15</sup> / <sub>16</sub>	9 <sup>13</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>	37.0
3K512CT4	3	3	3 <sup>7</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>8</sub>	14 <sup>15</sup> / <sub>16</sub>	9 <sup>13</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>	37.0
3K522CT4	3	3	3 <sup>7</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>8</sub>	14 <sup>15</sup> / <sub>16</sub>	9 <sup>13</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>	39.0
3K532CT4	5	3	3 <sup>7</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>8</sub>	17 <sup>3</sup> / <sub>8</sub>	9 <sup>13</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>	9 <sup>9</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	6 <sup>5</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>4</sub>	5 <sup>11</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>5</sup> / <sub>16</sub>	71.0
3K502CT2	2	1	3 <sup>7</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>8</sub>	15 <sup>3</sup> / <sub>8</sub>	9 <sup>13</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>16</sub>	6 <sup>11</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>	37.0
3K500	2	3	3 <sup>27</sup> / <sub>64</sub>	8 <sup>3</sup> / <sub>16</sub>	—	9 <sup>49</sup> / <sub>64</sub>	4 <sup>41</sup> / <sub>64</sub>	—	—	3 <sup>3</sup> / <sub>64</sub>	—	5 <sup>53</sup> / <sub>64</sub>	6 <sup>11</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>64</sub>	—	—	18.5
3K510	3	3	3 <sup>27</sup> / <sub>64</sub>	8 <sup>3</sup> / <sub>16</sub>	—	10 <sup>53</sup> / <sub>64</sub>	4 <sup>41</sup> / <sub>64</sub>	—	—	3 <sup>3</sup> / <sub>64</sub>	—	5 <sup>53</sup> / <sub>64</sub>	6 <sup>11</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>64</sub>	—	—	18.5
3K520	3	3	3 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>16</sub>	—	10 <sup>53</sup> / <sub>64</sub>	4 <sup>41</sup> / <sub>64</sub>	—	—	3 <sup>3</sup> / <sub>64</sub>	—	5 <sup>53</sup> / <sub>64</sub>	6 <sup>11</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>32</sub>	—	—	18.5
3K530	5	3	3 <sup>27</sup> / <sub>64</sub>	8 <sup>3</sup> / <sub>16</sub>	—	11 <sup>21</sup> / <sub>32</sub>	4 <sup>41</sup> / <sub>64</sub>	—	—	3 <sup>3</sup> / <sub>64</sub>	—	6 <sup>19</sup> / <sub>64</sub>	7 <sup>3</sup> / <sub>64</sub>	5 <sup>5</sup> / <sub>64</sub>	—	—	23.0

# SELECTION CHART - 3450 RPM



All calculations based upon water @ Spec. Gravity of 1.00

## PUMP CODES:

Last digit of Pump Kit is Seal Assembly type

- 1 = NCC Standard Seal Assy (Carbon/Ceramic/Buna) **Standard Service**
- 2 = FCC Alternate Seal Assy (Carbon/Ceramic/FPM) **Mild Chemical**
- 3 = HCC Alternate Seal Assy (Carbon/Ni/Resist/FPM) **High Temperature**
- 4 = FSC Alternate Seal Assy (FPM/Silicon Carbide) **Strong Chemical**

## MOTORIZED PUMP UNIT CODES:

Last digit of MPU is Motor Phase and Voltage

- |                  |                  |
|------------------|------------------|
| Single Phase     | Three Phase      |
| 0 = 115/208-230V | 3 = 208-230/460V |
| 1 = 115/230V     | 4 = 230/460V     |
| 2 = 230V         | 5 = 575V         |
|                  | 6 = 380V         |

# GENERAL SAFETY AND OPERATION

**SELECTION:** Review the Selection Chart to find the performance range and pump model suited to your application requirements. Then review the Performance Curve Chart to verify the most efficient performance and inlet conditions required.

**INSTALLATION:** These pumps may be installed in either a horizontal (most common) or vertical position (as installation requires). The following criteria should be considered to assure optimum performance:

- Proper alignment of plumbing
- Adequate line size to prevent starvation
- Rigid metal or plastic pipe or reinforced flexible plumbing to prevent collapsing lines
- Properly sealed connections to prevent air leaks
- Good filtration of the liquid to avoid abrasives and solids
- Foot valve may need to be installed at the inlet

**OPERATION:** The pump comes with a mild chemical-duty seal for freshwater, non harsh liquids or chemical applications. Check with CAT PUMPS for high viscosity liquids. Make certain there is sufficient liquid supply to the pump inlet before starting operation.

**MAINTENANCE:** This is a low maintenance pump. The shaft seal and impellers are the primary service items. These can be easily replaced.

## Disassembly

1. Remove the eight (8) socket head screws from the casing to bracket.
2. Insert two (2) screwdrivers on opposite sides of the seam between the casing and bracket; pry gently apart.
3. Remove the impeller nut.
4. Remove the first impeller, diffuser, collar, center plate w/o-ring, second impeller, spacer and keys by sliding over the motor shaft.
5. Remove spring and front half of seal (rotating half) from casing cover.
6. Pry the casing cover away from the bracket.

**NOTICE:** Exercise care when handling the shaft seal. It can be easily contaminated by improper handling and will not properly seal.

7. Place the casing cover on a work surface (large diameter up) and press out the back half (stationary half).
8. Examine all o-rings for cuts or deterioration and replace as needed.

## Re-assembly

1. Invert the casing cover on a work surface (small diameter up) and press the back half (stationary half) of the new shaft seal into position until completely seated in the chamber with the elastomer side down.

**NOTE:** If seal installation is tight, carefully apply a small amount of lubricant to the outer edge (non-chlorine dish soap). **DO NOT USE OIL OR GREASE.**

2. Align the casing cover with the holes on the bracket and press into position.

**NOTICE:** Exercise care when handling the shaft seal. It can be easily contaminated by improper handling and will not properly seal.

3. Carefully slide the front half of the new seal (rotating half) on the shaft with the carbon and ceramic surfaces mating. Slide spring over the shaft and press onto back side of seal.
4. Install keys on motor shaft.
5. Slide second impeller with small diameter extension towards casing cover. Ensure key way is aligned with key on motor shaft.
6. Slide collar over motor shaft.
7. Position spacer with two notches onto the tabs of casing cover.
8. Install center plate and o-ring with dish side facing outwards.
9. Position diffuser so the small blades are facing the center plate.
10. Slide first impeller with small diameter extension towards diffuser. Ensure key way is aligned with key on motor shaft.
11. Apply Loctite® 242® to threads of impeller nut and torque per chart.  
NOTE: Rotate the impellers to assure proper alignment before installing front plate and casing.
12. Place casing on work surface with flanged end facing upwards.
13. Place front plate with smaller outer diameter facing upwards.
14. Place casing to desired discharge port position and align holes with bracket. Replace eight (8) socket head screws and torque per chart.

## TORQUE CHART

	Size	Torque		
		ft. lbs.	in. lbs.	Nm
<b>Impeller Nut</b>	7/16-20	12-18	144-215	16-24
<b>Pump Casing</b> (To Motor Bracket)	M6 x 16 Socket Head Screw	3.4	41	4.6
<b>Motor Bracket</b> (To Motor)	M5 x 142 Hex Head Bolt	6.0	96	10.8

## TROUBLESHOOTING

PROBLEM	SOLUTION
• No flow or low flow	• Check rotation of pump • Check liquid supply to pump
• Leaking	• Replace shaft seal • Check case cover o-ring
• Noise	• Check liquid supply to pump • Check viscosity of liquid • Review NPSH requirements
• Vibration	• Secure plumbing to and from pump • Check impeller and replace as needed

## WARRANTY

**This pump is warranted for one year from date of purchase.**  
Improper installation and use will void the warranty.

Loctite and 242 are registered trademarks of Henkel Corporation.

## World Headquarters

### CAT PUMPS

1681 - 94th Lane N.E. Minneapolis, MN 55449-4324

Phone (763) 780-5440 — FAX (763) 780-2958

e-mail: techsupport@catpumps.com

www.catpumps.com

## International Inquiries

FAX (763) 785-4329

e-mail: intlsales@catpumps.com



*The Pumps with Nine Lives*

## CAT PUMPS (U.K.) LTD.

1 Fleet Business Park, Sandy Lane, Church Crookham

FLEET, Hampshire, GU52 8BF, England

Phone Fleet 44 1252-622031 — Fax 44 1252-626655

e-mail: sales@catpumps.co.uk www.catpumps.co.uk

## N.V. CAT PUMPS INTERNATIONAL S.A.

Heiveldekens 6A, B-2550 Kontich, Belgium

Phone 32-3-450.71.50 — Fax 32-3-450.71.51

e-mail: cpi@catpumps.be www.catpumps.be

## CAT PUMPS DEUTSCHLAND GmbH

Buchwiese 2, D-65510 Idstein, Germany

Phone 49 6126-9303 0 — Fax 49 6126-9303 33

e-mail: catpumps@t-online.de www.catpumps.de