



**AQUA-AEROBIC SYSTEMS, INC.**  
A Metawater Company

# Section-4

# Component Information

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# Aqua-Jet<sup>®</sup> Surface Mechanical Aerator Motor Data Specification Sheet

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Reliance Electric XE

Endura<sup>®</sup> Series

Premium Efficient Motor

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## NAMEPLATE DATA

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<b>HP:</b> 75	<b>FL RPM:</b> 1185
<b>FL AMPS:</b> 86.9	<b>FRAME:</b> 405
<b>VOLTS:</b> 460	<b>DUTY:</b> CONT.
<b>PHASE:</b> 3	<b>AMBIENT:</b> 40°C
<b>CYCLES:</b> 60	<b>NEMA DESIGN:</b> B
<b>INSULATION CLASS:</b> F	<b>CODE LETTER:</b> G
<b>SERVICE FACTOR:</b> 1.15	<b>ENCLOSURE:</b> TEFC
<b>EFFICIENCY:</b> 95.0	<b>POWER FACTOR:</b> 85.0

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All motors are manufactured to Aqua-Aerobic Systems' specifications.

The above nameplate data is typical. Actual data may vary from motor to motor due to normal manufacturing tolerances.

### Energy Efficient Motor

NEMA Nominal Efficiency: 95.0%

Minimum Efficiency: 94.5%

A stainless steel nameplate shall be provided with each motor by the motor manufacturer, and shall be securely fastened thereto. The voltage, speed, phase, insulation class, amperage, service factor, wiring diagram, motor serial number, and manufacturer's name and address shall be stamped thereon or otherwise permanently marked.

Motor shall be rated and nameplated Class 1, Division 2, Group D, T2A temperature code.

Note: All of the Endura<sup>®</sup> Series motors are built with spike-resistant wire and are inverter duty compliant. Operating on a variable frequency drive (VFD) reduces the motor service factor from 1.15 to 1.0, and AASI does not recommend operating the motors below 60% of rated speed. This recommendation is not due to the abilities of the motors or VFD's to operate at lower speeds, but the expected performance of the unit at these reduced speeds.



**BALDOR® • RELIANCE**

**Product Information Packet**

**AQUA-AEROBIC SYSTEMS INC**


**A40-1168-0769**

**75HP, 1185RPM, 3PH, 60HZ, 405LPZ, A40064M, TEF**

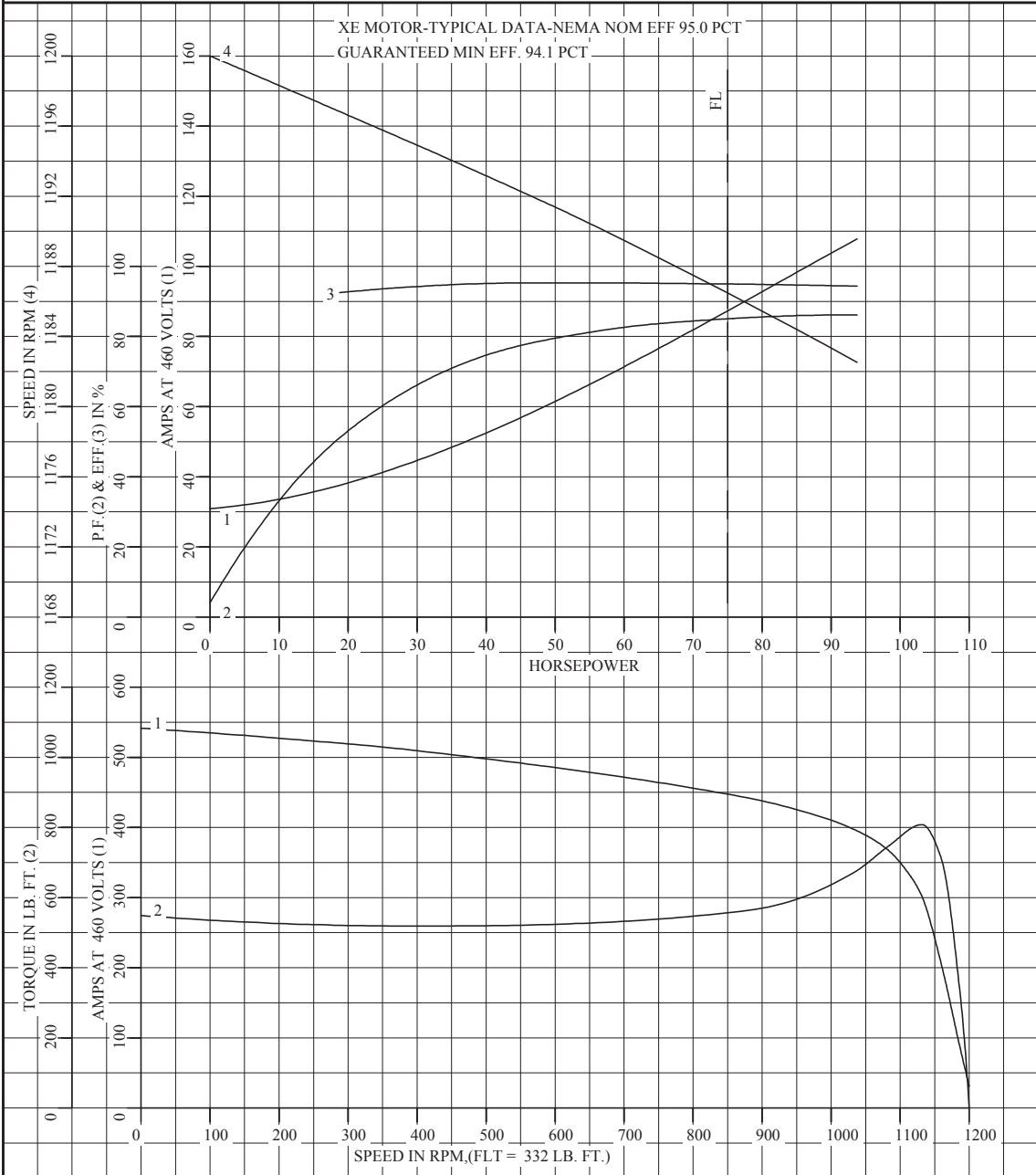
Part Detail							
Revision:	M	Status:	PRD/A	Change #:		Proprietary:	Yes
Type:	AC	Prod. Type:	A40064M	Elec. Spec:	A40WG0769	CD Diagram:	416820-036
Enclosure:	TEFC	Mfg Plant:		Mech. Spec:		Layout:	617431-751
Frame:	405LPZ	Mounting:	V1	Poles:	06	Created Date:	10-26-2012
Base:		Rotation:	R	Insulation:	B	Eff. Date:	09-09-2016
Leads:	3#2					Replaced By:	
Literature:		Elec. Diagram:					

Nameplate NP2396L									
SPEC NO.	A40-1168-0769	CAT.NO.	24H7501-L/A	FRAME	405LPZ				
HP	75	VOLTS	460	PHASE	3	DESIGN	B	TYPE	P
RPM	1185	AMPS	86.9	HZ	60	AMB	40	SF	1.15
DRIVE END BEARING	5316	DUTY	CONT	INSUL.CLASS	F				
OPP D.E. BEARING	6313	ENCL	TEFC	CODE	G				
SER.NO.		POWER FACTOR	85	NEMA-NOM-EFFICIENCY	95				
	RCP-502	MAX CORR KVAR	15	GUARANTEED EFFICIENCY	94.1				
	17-4 PH SHAFT	NEMA NOM/CSA QUOTED EFF							
		MOTOR WEIGHT		1322					

Nameplate 000692000UJ			
TCODE	T2A	TEMP	280
CL.1,ZONE 2,GR	IIA	CL II DIV 2 GR	XXX
MOTOR I.D. NO.	A40-1168-0769	CL I DIV 2 GR	DXX

REL. S.O.	FRAME	HP	TYPE	PHASE/HERTZ	RPM	VOLTS
	405T	75	P	3/60	1185	460
AMPS	DUTY	AMB °C/INSUL.	S.F.	NEMA DESIGN	CODE LETTER	ENCL.
86.9	CONT	40/F	1.15	B	G	TEFC
E/S	ROTOR	TEST S.O.	TEST DATE	STATOR RES. @25 °C OHMS (BETWEEN LINES)		
496233	418142-71-EE	---	---	.0860		
<b>PERFORMANCE</b>						
LOAD	HP	AMPERES	RPM	% POWER FACTOR	% EFFICIENCY	
NO LOAD	0	31.0	1200	4.11	0	
1/4	18.8	37.2	1197	51.1	92.5	
2/4	37.5	50.7	1194	72.9	95.0	
3/4	56.2	67.7	1190	81.6	95.3	
4/4	75.0	86.9	1187	85.0	95.0	
5/4	93.8	108	1183	86.2	94.4	
<b>SPEED TORQUE</b>						
		RPM	TORQUE % FULL LOAD	TORQUE LB.-FT.	AMPERES	
LOCKED ROTOR		0	165	549	541	
PULL UP		400	156	519	509	
BREAKDOWN		1132	243	808	302	
FULL LOAD		1187	100	332	86.9	
<p>AMPERES SHOWN FOR 460. VOLT CONNECTION. IF OTHER VOLTAGE CONNECTIONS ARE AVAILABLE, THE AMPERES WILL VARY INVERSELY WITH THE RATED VOLTAGE</p> <p>REMARKS: TYPICAL DATA                      XE MOTOR-TYPICAL DATA-NEMA NOM EFF 95.0 PCT                      GUARANTEED MIN EFF. 94.1 PCT</p>						
		DR. BY B. R. PENDLEY CK. BY W. L. SMITH APP. BY W. L. SMITH DATE 08/16/11		<b>A-C MOTOR PERFORMANCE DATA</b> <b>A40WG0769-R001</b> ISSUE DATE 05/03/16		

REL S.O.	RPM 1185	S.F. 1.15	ROTOR 418142-71-EE
FRAME 405T	VOLTS 460	NEMA DESIGN B	TEST S.O. TYPICAL DATA
HP 75	AMPS 86.9	CODE LETTER G	TEST DATE ---
TYPE P	DUTY CONT	ENCLOSURE TEFC	STATOR RES. @ 25 °C .0860
PHASE/HERTZ 3/60	AMB °C/INSUL 40/F	E/S 496233	OHMS (BETWEEN LINES)



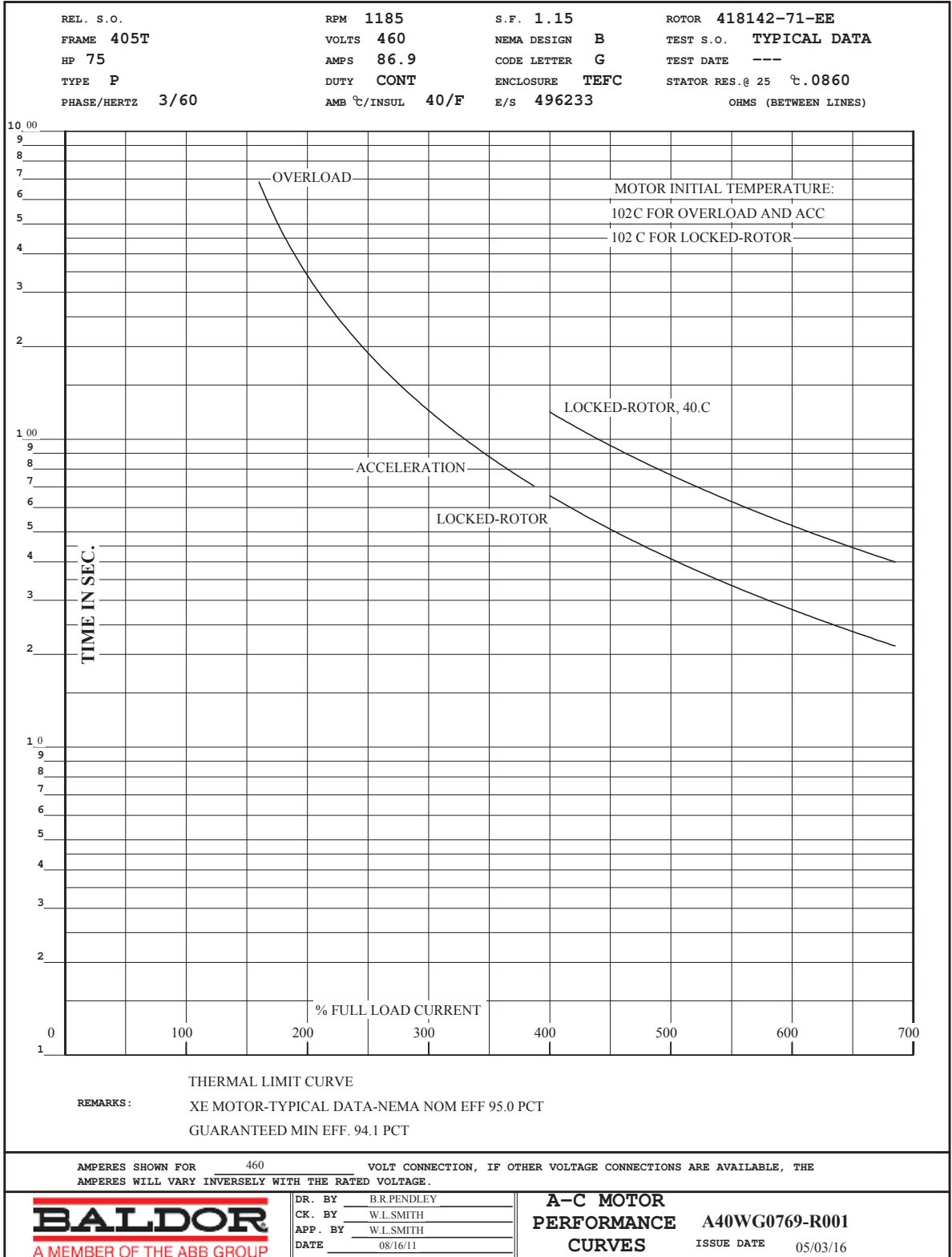
AMPERES SHOWN FOR 460 VOLT CONNECTION, IF OTHER VOLTAGE CONNECTIONS ARE AVAILABLE, THE AMPERES WILL VARY INVERSELY WITH THE RATED VOLTAGE.



DR. BY B.R.PENDLEY  
CK. BY W.L.SMITH  
APP. BY W.L.SMITH  
DATE 08/16/11

**A-C MOTOR**  
**PERFORMANCE** A40WG0769-R001  
**CURVES** ISSUE DATE 05/03/16

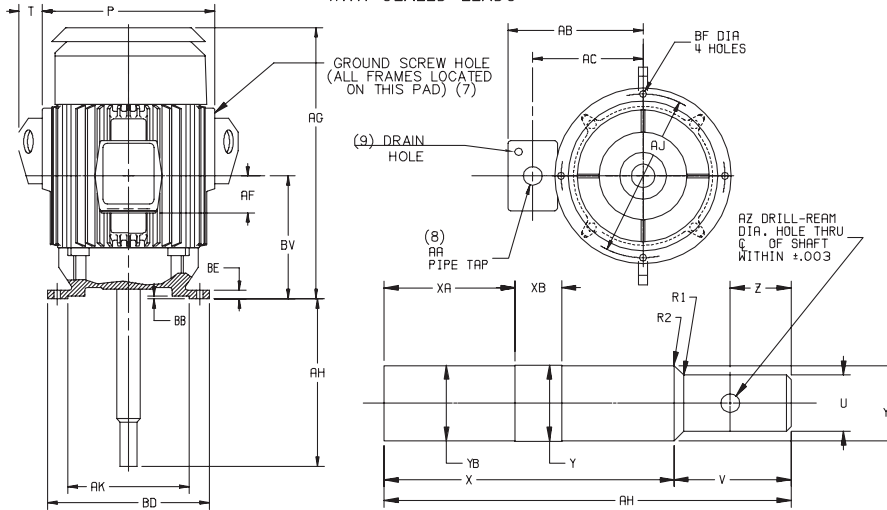




617431-751

# DUTY MASTER ALTERNATING CURRENT MOTORS

ENCLOSURE: TOTALLY ENCLOSED UNDERWRITERS LISTED MOTOR MOUNTING: NEMA LPZ IN-LINE - SOLID SHAFT  
 SQUIRREL-CAGE INDUCTION CAST IRON CONSTRUCTION COOLING: FAN COOLED  
 FRAMES 400LPZ THRU 440LPZ  
 AQUA AEROBIC DWG. NO. 2400075  
 WITH SEALED LEADS



DIMENSIONS ARE IN INCHES

FRAME	P	T	CAST IRON TERMINAL BOX							RECOM. BOLT			
			AA	AB	AC	AF	BB	BD	BE		BF	AJ	AK
404LPZ-405LPZ	22.62	2.50	3	19.87	15.68	4.12	.25	16.50	.94	.69	14.75	13.500	5/8 X 2.00
444LPZ-445LPZ	25.25	2.50	3	22.81	18.06	6.00	.25	16.50	1.06	.69	14.75	13.500	5/8 X 2.25

FRAME SIZE	AG	BV	AH(S)	SHAFT AND KEY											WEIGHT LBS. (2)	
				V(4)	X(4)	XA	XB	Z(6)	U(1)	Y	YA	YB	AZ	R1		R2
404LPZ	35.19	15.12	34.25	4.25	30.00	11.00	4.00	2.88	2.000	2.500	2.500	2.703	.500	.25	.12	1300
405LPZ	35.19	15.12	34.25	4.25	30.00	11.00	4.00	2.88	2.000	2.500	2.500	2.703	.500	.25	.12	1300
445LPZ	40.88	18.00	34.25	4.25	30.00	11.00	4.00	2.88	2.000	2.500	2.500	2.703	.500	.25	.12	2200

- (1) "U" VARIES +.000, -.001.
  - (2) MOTOR WEIGHTS MAY VARY BY 15% DEPENDING UPON RATING.
  - (3) "AK" VARIES +.005, -.000
  - (4) "V" & "X" VARY +.03, -.03.
  - (5) "AH" VARIES +.06, -.06.
  - (6) "Z" VARIES +.015, -.015.
  - (7) SUPPLIED ONLY WHEN SPECIFIED.  
GROUND SCREW HOLE 3/16 TAP 1 TO 200HP  
1/2-13 TAP 201HP & UP
  - (8) CONDUIT BOX MODIFIED PER DWG. 240JBOX, WHEN SPECIFIED.
  - (9) DRAIN HOLE WHEN REQUESTED
- IF MOUNTING CLEARANCE DETAILS ARE REQUIRED, CONSULT FACTORY.  
 MAXIMUM PERMISSIBLE SHAFT RUNOUT WHEN MEASURED AT END OF SHAFT EXTENSION IS .006 MAX. T.I.R.  
 FACE RUNOUT AND ECCENTRICITY .006 MAX. T.I.R.

FRAME-\_\_\_\_\_ TYPE-\_\_\_\_\_ CERTIFIED FOR-\_\_\_\_\_  
 ORDER-\_\_\_\_\_ ITEM-\_\_\_\_\_ HP-\_\_\_\_\_ RPM-\_\_\_\_\_ PH-\_\_\_\_\_ HZ \_\_\_\_\_ VOLTS \_\_\_\_\_  
 SALES ORDER-\_\_\_\_\_ APPROVED BY-\_\_\_\_\_ DATE \_\_\_\_\_

617431-751

CUSTOMER IS RESPONSIBLE FOR DETERMINING THAT BALDOR'S PRODUCT WILL PERFORM SUITABLY IN THE INTENDED APPLICATION.

**BALDOR**

D/S TFC XT 400-440LPZ AQUA-AEROBIC #2400075 SEAL LEADS

REV. DESC: NEW ISSUE

VERSION: 00

M/L: -

TDR: 000000888670

REVISED: 08/31/10 01/24/2015

FILE: \XPAG\00021\054

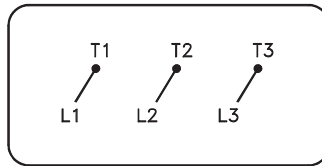
D/S TFC XT 400-440LPZ AQUA-AEROBIC #2400075 SEAL LEADS

BT: RAGGDM

SH 1 of 1

416820-036

A-C MOTOR  
CONNECTION DIAGRAM  
STANDARD 3 LEAD CONNECTED



(N.P. 1575-BA)

416820-036

REV. DESC: LOADED TO BUS, C/R 335225		
REV. LTR: -	VERSION: 00	TDR: 000000538207
FILE: \MGA\00000\682	REVISED: 11:54:06 04/30/2010	
MTL: -	BY: RAGRA	

**BALDOR**

CONN DIAG - STANDARD 3 LEAD  
SH 1 of 1

# Baldor Motor Paint Specification

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The following outlines the general procedures used in painting motors produced by Baldor Electric.

## Cast Iron Motors & Parts

### A. Preparation & Painting

1. All surfaces are chemically washed to remove dirt, oil, grease and other materials.
2. Prime coat is applied using two component spray equipment to inner and outer surfaces of all castings and steel stampings not already plated, primed, or fluidized, to a minimum of 1.5 mils dft.
3. After assembly and prior to final painting the motors are cleaned to remove loose chips, dust, oil, grease, and other matter.
4. Finish paint is applied using two component spray equipment. Coating is to provide an additional 2 mils minimum of finish coat.
5. Finished units are air dried prior to packaging. Damaged areas are touched up by spot cleaning and spraying.

### B. Paint System

- |        |    |  |
|--------|----|--|
| Primer | 1. | Wilko Paint #347-28 Yellow oxide epoxy primer<br>Type: Two part epoxy polyamide<br>Color: Yellow     |
| Finish | 2. | Wilko Paint #789-201 Gray epoxy paint<br>Type: Two part epoxy polyamide<br>Color: Dark Gray Metallic |

Total Paint and Primer Thickness is 3.5 mils (89 microns) minimum.

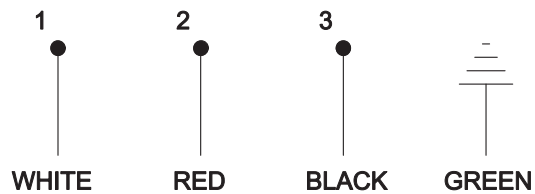
2

1

# 460 VOLT, 60 HZ MOTOR

B

B



JOB NAME:

JOB LOCATION:



AQUA-AEROBIC SYSTEMS, INC.

A

DO NOT  
SCALE  
DRAWING

UNLESS OTHERWISE SPECIFIED

FRACTIONAL DIMENSIONS	+/- 1/16
ALL TWO PLACE DECIMALS	+/- 0.010
ALL THREE PLACE DECIMALS	+/- 0.005
ALL ANGLES	+/- 12°



A

MATERIAL:

SIMILAR TO:

TYPE: **AERATOR/MIXER**

DRAWN BY: **JAK**

DATE: **1999-05-26**

CHECKED BY:

DATE:

WEIGHT:

SHEET: **1** OF **1**

DRAWING NAME:

**MOTOR WIRING DIAGRAM**

DRAWING NUMBER:

**2800973-3**

SCALE:

**N.T.S.**

SIZE:

**A**

2

1

# Bearing Life Calculation for Aqua-Jet® Aerator Motor

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## MOTOR AND LOAD DATA:

Manufacturer ----- Reliance  
Rated HP ----- **75 HP**  
Nom. Speed ----- 1200 RPM  
Thrust Load ----- 1535 LBS.  
Radial Load ----- 10%  
(% of Thrust Load)

## BEARING DATA:

Double Row, Angular Contact Ball Bearing  
Bearing Number ----- 5316  
Bearing Capacity (from Chart) --- 10170 LBS.  
(1500 Hours @ 1000 RPM)  
Rotation Factor (V) ----- 1.2

---

Total Axial Load ----- 1535.0 LBS.      Speed Factor for 1200 RPM ----- 0.9410  
Total Radial Load ---- 153.5 LBS.      Bearing Capacity (RC) ----- 9570 LBS.  
Equivalent Load (P) - 2019.4 LBS.      (1500 Hours @ 1200 RPM)  
Average Service Factor (RC/P) --- 4.74

---

## Definitions and Formulas:

Total Axial Load (T) = Thrust Load

Total Radial Load (R) = 10% of Total Axial Load

Equivalent Load (P) = VR + .78T

or (Whichever is Greater)

.63VR + 1.24T

Speed Factor = Capacity Conversion Factor for Operating Speed

Rated Capacity = Bearing Capacity (from table) \* Speed Factor

Service Factor = Rated Capacity (RC) / Equivalent Load (P)

Minimum Hours Life (L<sub>10</sub>) = 1500 \* (Service Factor)<sup>3</sup>

---

MINIMUM LIFE (L<sub>10</sub>):      159,650 HOURS

**NOTE:** This is the expected (L<sub>10</sub>) life if all causes of early failure are eliminated. In most applications, early failure from other causes other than pure fatigue does occur sufficiently often to make predictions of (L<sub>10</sub>) life greater than 30,000 hours open to some question.



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# Electrical Accessories

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Aeration & Mixing | Biological Processes | Filtration | Membranes | Oxidation & Disinfection | Process Control | Aftermarket & Customer Service

6306 N. Alpine Rd. Loves Park, IL 61111-7655 p 815.654.2501 f 815.654.2508 [www.aqua-aerobic.com](http://www.aqua-aerobic.com)

# Electrical Cable

Part # 2607465

## Coleman Cable Inc, #1/0-4, PPE ROHS, UL



Cable Size	Approx. O.D. (Inches/mm)	Weight per 100 ft (lb/kg)
#1/0-4	1.790/45.47	209.9/95.2

Power supply cable is 3-conductor with insulated ground. Voltage rating: 2000V rms, Max.

Conductors are flexible type annealed copper stranded. All conductors, including the ground conductor, are insulated, color coded (black, white, red, green) and are assembled together with a non-hygroscopic filler material in a black extruded outer jacket.

### Features:

- Durable and flexible TPE jacket
- -58°F to 194°F dry, 167°F wet (-50°C to 90°C dry, 75°C wet) temperature extremes
- Oil, sunlight, and water resistance
- Non-wicking lightweight polypropylene fillers
- Color-coded conductors for identification

### Industry Approvals:

- UL Type PPE
- PPC/TPE CSA C22.2 No. 96
- NEC Article 400
- MSHA approved



## Cord Grip, 2-1/2" NPT



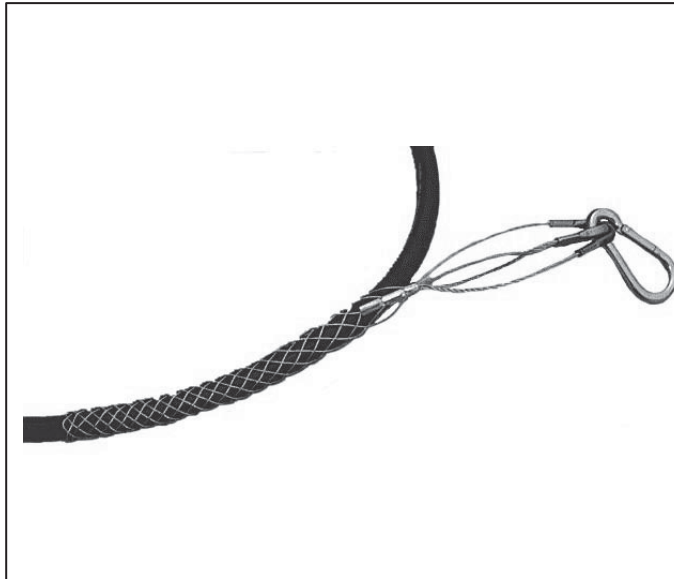
Used to seal the power cable connections at the motor junction box and the local control station or disconnect switch. Made from zinc plated malleable iron. Dual-grommet style neoprene bushing provides a wide cable diameter range. The bushing compresses easily for a liquid tight seal and added pull-out protection.

Hub size is 2 1/2" NPT and has a cable diameter range of 1.62" to 2.00"

### Typical Arrangement



## 304 Stainless Steel Wire Mesh Strain Relief Grip Assembly



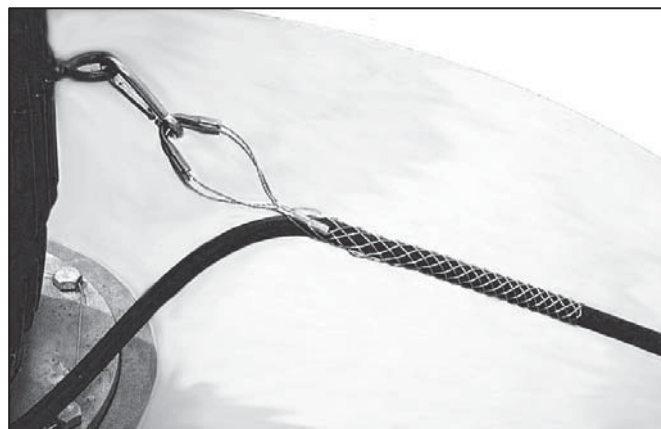
A wire mesh strain relief grip is used for strain relief. Any forces that might otherwise be placed on the cable are absorbed by the strain relief grip, thus preventing the cable from pulling out of the junction box.

It is constructed of 304 stainless steel.

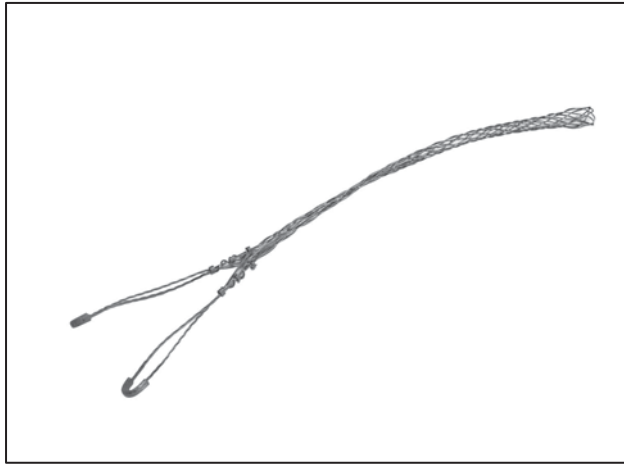
Strain relief grips are for use with electrical cable diameters shown below and include a stainless steel snaphook for attachment.

Electrical Cable Diameter Range	Style and Type	Snaphook Size
1-3/4" – 2"	Double Eye, Closed Mesh	3/8"

### Typical Arrangement



## Wire Mesh Strain Relief Grip



Used for strain relief. Any forces which might otherwise be placed on the cable are absorbed by the strain relief grip, thus preventing the cable from pulling out of the junction box.

Provided in 304 stainless steel.

This Strain relief grip is for use with electrical cable diameters shown below.

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**Electrical Cable  
Diameter Range**

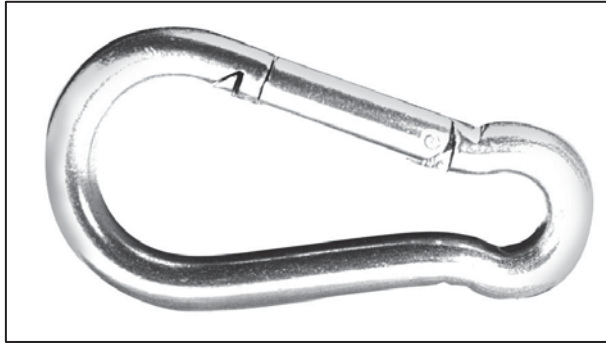
1-3/4" - 2"

**Style and Type**

Double Eye, Closed Mesh

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## 3/8" 316 Stainless Steel Snaphook



Snaphook is constructed of 316 stainless steel and provides quick disconnection of 1/4" mooring cable.

## Spiral Wrap Abrasion Protection, 1" OD



Polyethylene expandable spiral cut wrap offers abrasion protection for cables. It wraps tightly, yet maintains flexibility even when bent around tight turns. Spiral wrap twists on easily, can be removed and re-applied, and will retain its strength under repeated flexing and binding.

When installing spiral wrap, spirals should be butted tightly with little or no gap to provide maximum abrasion resistance and insulation protection for the electrical cable.

Spiral wrap should be positioned so the approximate **center** of the wrap is positioned at the edge of the float (i.e., approximately one-half of spiral wrap should be located on the electrical cable above the edge of the aerator float and the remaining one-half of spiral wrap should be located on the electrical cable below the edge of the aerator float.

### Specifications:

<b>Size</b>	1"
<b>Material</b>	Weather Resistant Polyethylene
<b>Color</b>	Black
<b>Length</b>	10 Feet
<b>Cable Diameter Range</b>	7/8" to 6"
<b>Recommended Cable</b>	#0/4 & Larger
<b>Outside Diameter</b>	1.00"
<b>Wall Thickness</b>	0.07"
<b>Temperature Range</b>	-40°F to 122°F (-40°C to 50°C)



**AQUA-AEROBIC SYSTEMS, INC.**  
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# Electrical Cable Floats

Aeration & Mixing | Biological Processes | Filtration | Membranes | Oxidation & Disinfection | Process Control | Aftermarket & Customer Service

6306 N. Alpine Rd. Loves Park, IL 61111-7655 **p** 815.654.2501 **f** 815.654.2508 [www.aqua-aerobic.com](http://www.aqua-aerobic.com)

## FRP Electrical Cable Float



An FRP cable float holds cable at water surface to avoid the possibility of the cable dragging on the bottom and becoming entangled in a unit. Each float is of fiberglass (FRP) construction and is filled with closed cell polyurethane foam. Each float is capable of supporting 20 lbs. (9.07 kg) of cable.

### Components:

One (1) 2900329 electrical cable float  
Two (2) 2600286 ty-wrap cable ties

Place one (1) ty-wrap through the eyebolt and around the cable. Pull the ty-wrap snug and cut off excess. Repeat procedure at other end.



**NOTE:** Space floats at distances as shown on installation drawings. If not shown on installation drawings, space floats evenly in wetted cable area (i.e., locate floats evenly throughout the length of cable that is in contact with the aqueous solution).

### Typical Arrangement





## Electrical Cable Float



Each float is of fiberglass reinforced polyester construction filled with closed cell polyurethane foam and is capable of supporting 20lbs (9.07kg) of electrical cable.

### Dimension:

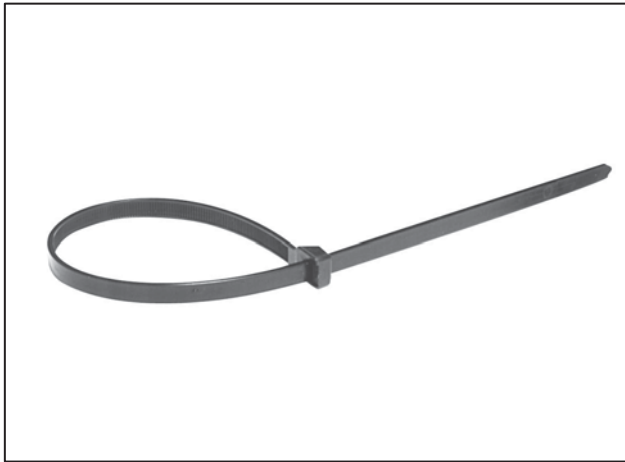
	Inch	mm
Length	14.6	370.8
Width	11.6	294.6
Height	8.2	208.3
Eye Bolt Spacing	10	254.0
Weight	6lbs	2.72kg

### Components:

- (2) 2600448 Nesting Pan – Fiberglass reinforced polyester
- (1) 2501039 Shim – Plywood
- (2) 2505871 Eye bolt, 3/8-16 – 316SS
- (4) 2600381 Flat Washer, 3/8 x 1.00 – 316SS
- (4) 2600481 Full Nut, 3/8-16 – 316SS



## Nylon Electrical (Ty-Wrap) Cable Tie



Nylon cable tie-wraps can be used to bundle multiple electrical cables together (such as cables for dual speed units as shown below or electrical cables and accessory cables). They are also used to tether electrical cable floats to the electrical cables. When used with Vinyl cable floats, two (2) cable ties should be used at each end of the cable float. The electrical cable floats are to be spaced according to size and weight of electrical cable being attached. The first cable tie-wrap should be placed approximately five (5) from the edge of the float. Refer to the Vinyl cable float Installation Instructions #EP-10488 for details.

### Typical Arrangement when Cables are Bundled Together



Ty-wrap cable tie is a heavy duty Nylon material, black in color, and is UV stable.

When electrical cable floats used with pivotal mooring arm assemblies, two (2) cable ties must be connected together and used to tether the electrical cable to the pivotal mooring arm at approximately five (5) foot intervals starting from the motor conduit box, to the wall pivot joint. Refer to the pivotal mooring arm assembly drawing within the Drawings Section-5 of the O&M Manual for additional information.