

**SPECIFICATIONS FOR INSTALLATION OF WATER AND SEWER LINES AT
CARTER PROPERTY, LOCATED AT 823 WEST 5TH NORTH STREET,
SUMMERVILLE, SC 29483**

Scope of Work

The Contractor shall furnish all labor, tools, materials, equipment, and supervision necessary to install owner-provided water, sewer lines, and grinder pump to three recently-placed mobile units at 823 West 5th North St., Summerville, SC. The project scope includes the following:

1. Install sewer lines as indicated in attached map. A 2” line will tie-in to the manhole located on the western corner of property and will run to a grinder pump provided by County. 6” line will run from the pump along the back side of the mobile units and will “T” off to each unit.
2. Install owner-provided grinder pump package per manufacturer recommendations as shown in Section D. Pipe and pump will be provided by the County, and specifications are located in Section D. Contractor will need to advise on materials needed for water line.
3. Sewer service to the property is provided by Dorchester County, and water service is provided by CPW.
4. Obtain permitting and business license from the Town of Summerville.
5. Ensure finished work meets county’s approval.
6. Remove all debris left over.
7. Any change orders not in the scope or agreed upon prior to work beginning must be approved before it is started.
8. All work must meet all electrical and building code standards.

Time of Completion

Work will be completed within seven (7) calendar days of Notice to Proceed.

Contract Document

Contract shall be virtually identical in substance and form to the Contract which is attached and marked Section B, Sample Contract. The only anticipated changes in Section B, Sample Contract, will be to include additional exhibits, to fill in the blanks to identify the successful Offeror, and terms relating to compensation, or to revise the contract to accommodate corrections or change orders. **Offerors should raise any questions regarding the terms of the Contract, or submit requested changes in said terms.** Because the signed contract will be substantively and substantially derived from Section B, Sample Contract, Offeror is urged to seek independent legal counsel as to any questions about the terms, conditions or provisions contained in Section B, Sample Contract, before submitting a quote. Again, Section B, Sample Contract, contains important legal provisions and is considered part and parcel of this solicitation. Submittal of a quote to the County indicates agreement to these terms.

Term of Contract

The Contractor shall commence work upon a Notice to Proceed, in the form of a purchase order, from the County, and work must be completed within Seven (7) calendar days.

Damage of Property

Any damage to Dorchester County property or private property as a result of the Contractor's operation shall be immediately repaired by the Contractor. Should the repair not be instituted soon enough, or satisfactorily in the opinion of Dorchester County, County reserves the right to make the necessary repairs and deduct these costs from any monies due the Contractor. The Contractor shall rent equipment as needed to cover any equipment breakdowns.

Pricing

Offeror should provide lump-sum pricing for the work on the forms provided.

Payment

Contractor shall invoice Dorchester County after completion of project. Payment will be made within thirty (30) days from the date of invoice approval.

Location of Work

823 West 5th North Street, Summerville, SC 29483

Section A, Map, designates in various colors the areas of the property on which work is to be performed. Contractor should confirm quantities and condition of areas through an onsite visit.

Notification

The contractor will provide notification to Dorchester County of any accidents, injuries, or complaints by the public to allow the department to investigate these matters.

Business Licensing

The Contractor must possess a valid Town of Summerville business license.

Insurance Requirements

The Contractor must meet or exceed the insurance requirements of Dorchester County (see Section B, Sample Contract).

Quotes must be received by 5:00 PM on Wednesday, May 12, 2020. They can be emailed to rdantzler@dorchestercountysc.gov or mailed to the attention of Rebecca Dantzler at 201 Johnston St., St. George, SC 29477. They can also be submitted electronically to the online solicitation. Please e-mail Rebecca Dantzler with any questions.

SECTION A

REQUIRED FORMS

QUOTE FORM

When changes in the work are ordered by the Owner, and such changes involve the following items, the following unit prices will be used to calculate adjustments to the Contract Sum. These unit prices shall be for the Work as specified, including all labor, materials, equipment, accessories, shipping, preparation, insurance, testing, overhead, profit, applicable taxes, permits, fees, warranties and all other associated costs for the finished and completed Work.

This list may not include all components necessary to provide a completed product, therefore any applicable items necessary to provide a completed product should be considered in your lump-sum price response.

LUMP SUM PRICE.

| Item | Description | Total Cost |
|------|--|------------|
| 1. | Install Owner-Provided Water & Sewer Lines and Grinder Pump, Advising Material Needs for Water Lines, and Obtaining all Required Permits | \$ |

Company Name: _____

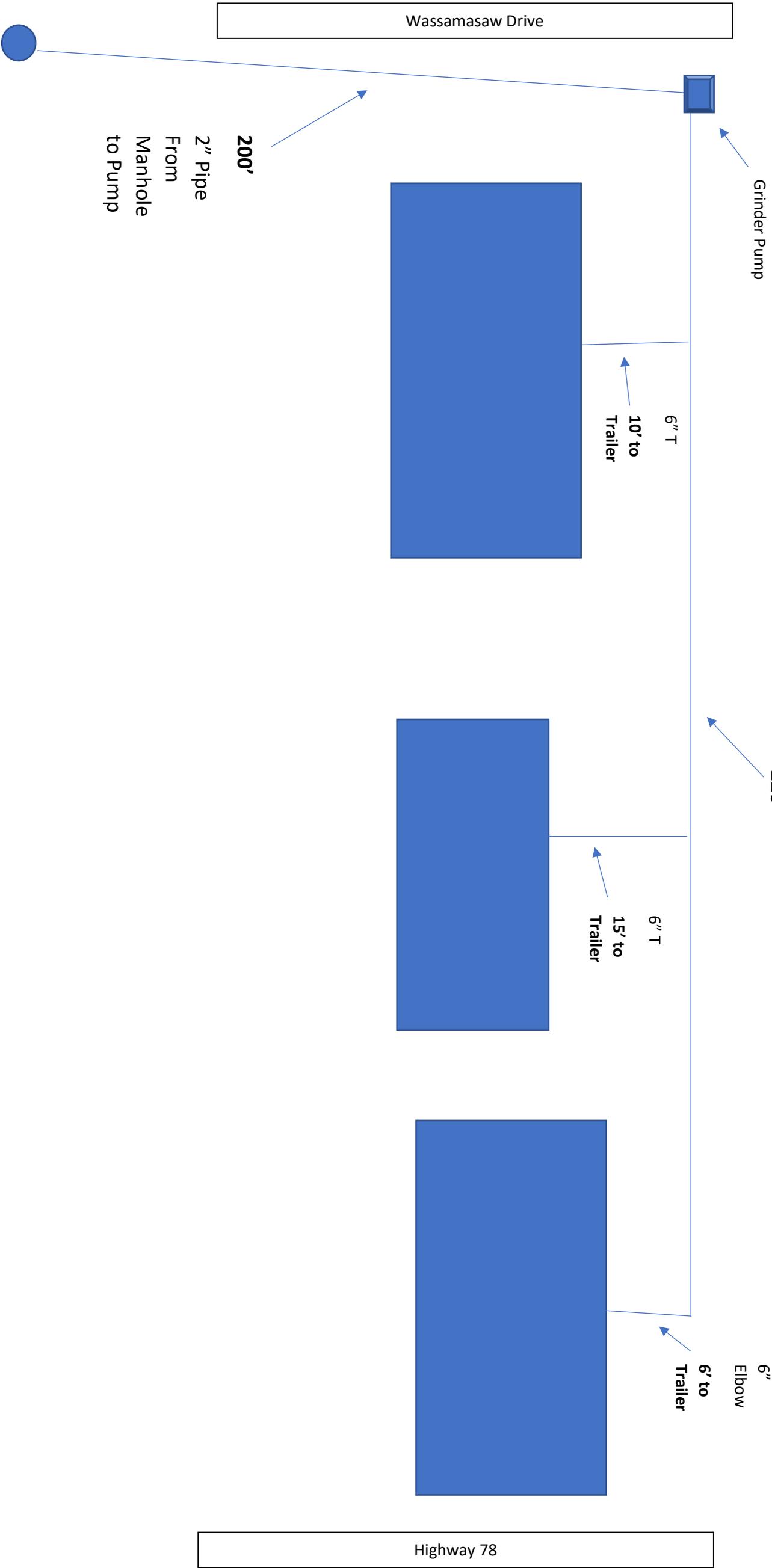
Signature: _____

Name/Title: _____

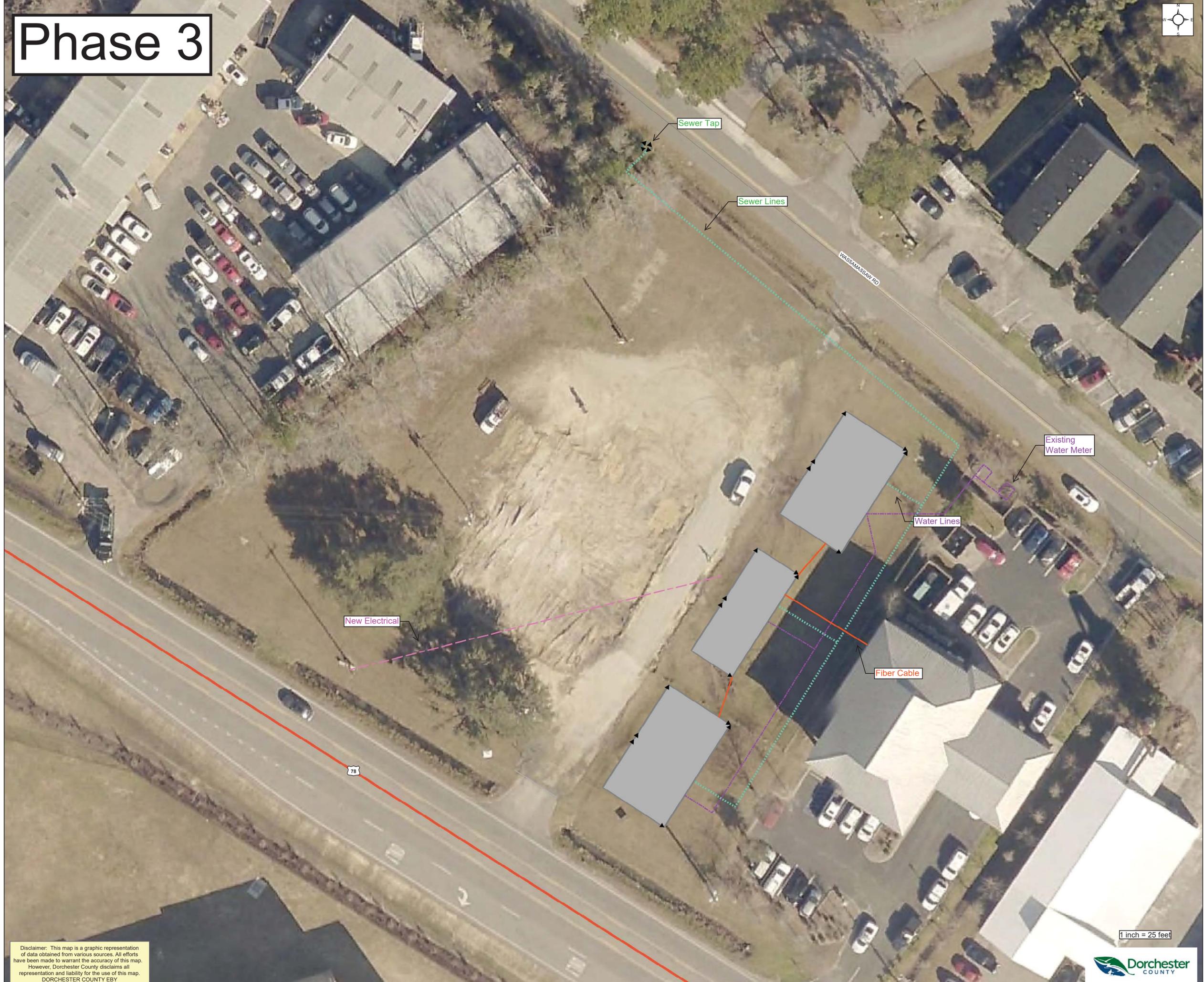
Date: _____

SECTION B

MAP



Phase 3



1 inch = 25 feet

Disclaimer: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, Dorchester County disclaims all representation and liability for the use of this map. DORCHESTER COUNTY EB



SECTION C

SAMPLE CONTRACT

STATE OF SOUTH CAROLINA)
COUNTY OF DORCHESTER)

**CONTRACT 2020-40D
WATER AND SEWER LINE
INSTALLATION**

THIS CONTRACT (“Contract”) entered into this ____day of May 2020 between the **COUNTY OF DORCHESTER**, South Carolina, a public body corporate and politic and political subdivision of the State of South Carolina, (“County”), and _____, a (Sole Proprietor) (Limited Liability Corporation) (Corporation) , the mailing address of which is _____ (“Contractor”), (“Party” as to each; collectively the “Parties”).

WHEREAS, THE County wishes to contract for the installation of the water and sewer lines at the Carter Property as described in Request for Quotes No. 2020-2936-4520-40D (“Work”); and

WHEREAS, Contractor has represented to the County that its staff is qualified to provide the Work required in this Contract in a professional, timely manner; and

WHEREAS, the County has relied upon the above representations by Contractor,

NOW, THEREFORE, in consideration of the promises and covenants set forth herein, it is agreed by and between the Parties as follows:

**SECTION ONE
SCOPE OF SERVICES**

The Contractor agrees to perform and furnish all labor, supervision, materials, equipment, transportation and supplies necessary for the completion of the Work, as described in Request for Quotes No. 2020-2936-4520-40D in a timely, workmanlike manner, professional in all aspects, and in accord with all applicable laws, rules and regulations.

**SECTION TWO
CONTRACT PRICE: PAYMENT TERMS**

Contractor shall be compensated based upon the following price:

\$_____

Invoices are to be mailed to Dorchester County, Attention: Rebecca Dantzler, 201 Johnston Street, St. George, SC 29477. Questions or concerns regarding payment may be directed to Rebecca Dantzler at rdantzler@dorchestercountysc.gov. Payment will be due within 30 days of approved invoices.

SECTION THREE
TIME: TERM OF CONTRACT

The Contractor hereby agrees with the County to provide those services specified herein upon Notice to Proceed and shall complete the Work within seven (7) calendar days.

SECTION FOUR
INSURANCE REQUIRMENTS

The Contractor, at its own expense, shall at all times during the term of the Contract, maintain insurance. The County may contact the Contractor's insurer(s) or insurer(s)' agent(s) directly at any time regarding Contractor's coverages, coverage amounts, or other such relevant and reasonable issues related to this Contract. The Contractor shall also require any subcontractors to carry the same coverages in the same amounts.

The County must be advised immediately of any changes in required coverages.

The Contractor shall procure, maintain, and provide proof of, insurance coverage for injuries to persons and/or property damage as may arise from or in conjunction with, the work performed on behalf of the County by the Contractor, his agents, representatives, employees or subcontractors. Proof of coverage as contained herein shall be submitted prior to the commencement of work and such coverage shall be maintained by the Contractor for the duration of the Contract period; for occurrence policies.

A. General Liability

Coverage shall be as broad as: Comprehensive General Liability endorsed to include Broad Form, Commercial General Liability form including Products/Completed Operations.

Minimum Limits

General Liability:

- \$1,000,000 General Aggregate Limit
- \$1,000,000 Products & Completed Operations
- \$1,000,000 Personal and Advertising Injury
- \$1,000,000 Each Occurrence Limit
- \$50,000 Fire Damage Limit
- \$5,000 Medical Expense Limit

B. Automobile Liability

Coverage sufficient to cover all vehicles owned, used, or hired by the Contractor, his agents, representatives, employees or subcontractors.

Minimum Limits

Automobile

Liability:

- \$1,000,000 Combined Single Limit

\$1,000,000 Each Occurrence Limit
\$5,000 Medical Expense Limit

C. Workers' Compensation

Limits as required by the Workers' Compensation Act of SC. Employers Liability, \$1,000,000.

D. Owners' & Contractors' Protective Liability

Policy will be in name of County. Minimum limits required are \$1,000,000.

E. Professional Liability

Minimum limits are \$1,000,000 per occurrence.

F. Coverage Provisions

1. All deductibles or self-insured retention shall appear on the certificate(s).
2. The County of Dorchester, its' officers/ officials, employees, agents and volunteers shall be added as "additional insured" as their interests may appear. This provision does not apply to Professional Liability or Workers' Compensation/Employers' Liability.
3. The offeror's insurance shall be primary over any applicable insurance or self-insurance maintained by the County.
4. Shall provide 30 days written notice to the County before any cancellation, suspension, or void of coverage in whole or part, where such provision is reasonable.
5. All coverage for subcontractors of the Contractor shall be subject to all of the requirements stated herein.
6. All deductibles or self-insured retention shall appear on the certificate(s) and shall be subject to approval by the County. At the option of the County, either; the insurer shall reduce or eliminate such deductible or self-insured retention; or the Contractor shall be required to procure a bond guaranteeing payment of losses and related claims expenses.
7. Failure to comply with any reporting provisions of the policy(s) shall not affect coverage provided the County, its officers/officials, agents, employees and volunteers.
8. The insurer shall agree to waive all rights of subrogation against the County, its' officers/officials, agents, employees or volunteers for any act, omission or condition of premises which the parties may be held liable by reason of negligence.
9. The Contractor shall furnish the County certificates of insurance including endorsements affecting coverage. The certificates are to be signed by a person authorized by the insurance company(s) to bind coverage on its' behalf, if executed by a broker, notarized copy of authorization to bind, or certify coverage must be attached.

10. All insurance shall be placed with insurers maintaining an A.M. Best rating of no less than an A:VII. If A.M. Best rating is less than A:VII, approval must be received from County's Risk Manager or Procurement Director.

SECTION FIVE
INDEPENDENT CONTRACTOR

Contractor is an independent contractor and shall not be deemed the agent or employee of the County for any purpose whatsoever. Contractor shall not hold himself out as an employee of the County and shall have no power or authority to bind or obligate the County in any manner, except the County shall make payment to Contractor for work and expenses as herein provided. Contractor shall obtain and maintain all licenses and permits required by law for performance of this Contract by him or his employees, agents, and servants. Contractor shall be liable for and pay all taxes required by local, state or federal governments, including but not limited to social security, Workers' Compensation, employment security, and any other taxes and licenses or insurance premiums required by law. No employee benefits of any kind shall be paid by the County to or for the benefit of the Contractor or its employees, agents, or servants by reason of this Contract.

SECTION SIX
INSPECTION AND ACCEPTANCE

All Work shall be subject to inspection by the County at all reasonable times and places. The Contractor shall, without charge, correct any workmanship found by the County not to conform to the Contract requirements.

SECTION SEVEN
ADDITIONAL SERVICES OUTSIDE THE SCOPE OF SERVICES

County will be charged for any additional service requested that is not outlined in the Scope of Work section of this Contract. Charges for additional services shall be agreed upon in writing prior to the commencement of any additional services.

SECTION EIGHT
TERMINATION

A. For Convenience

The Purchasing Services Manager, by advance written notice, may terminate this Contract when it is in the best interest of the County. If this Contract is so terminated, the Contractor shall be compensated for all necessary and reasonable direct costs of performing the Work actually accomplished. The Contractor will not be compensated for any other costs in connection with a termination for convenience. The Contractor will not be entitled to recover any damages in connection with a termination for convenience.

B. For Default

If the Contractor refuses or fails to perform the Work or any separable part thereof in a timely or workmanlike manner in accordance with the Contract Documents, or otherwise

fails, in the sole opinion of the County, to comply with any of the terms and conditions of the Contract Documents deemed, in the sole opinion of the County, to be material (including, without limitation, the requirement that the Contractor obtain and maintain in force all necessary permits), such refusal or failure shall be deemed a default under this Contract.

In the event of a default under this Section, the County shall have the right to terminate forthwith this Contract by written notice to the Contractor. In the event of such default, the advance notice period for termination is waived and the Contractor shall not be entitled to any costs or damages resulting from a termination under this section.

Whether or not the Contractor's right to proceed with the Work is terminated, it and its sureties shall be liable for any damage to the County resulting from Contractor's default. Any wrongful termination for default shall be deemed by the Parties a termination for convenience.

C. Termination for Non-Appropriation of Funds

The Purchasing Services Manager, by written advanced notice, may terminate this Contract in whole or in part in the event that sufficient appropriation of funds from any source (whether a federal, state, County or other source) are not made or sufficient funds are otherwise unavailable, in either case, to pay the charges under this Contract. If this Contract is so terminated, the Contractor shall be compensated for all necessary and reasonable direct costs of performing the Work actually provided to the date of such termination. The Contractor will not be compensated for any other costs in connection with a termination for non-appropriation. The Contractor will not be entitled to recover any damages in connection with a termination for non-appropriation, including, but not limited to, lost profits.

D. Rights Cumulative

The rights and remedies of the County provided in this Section are in addition to any other rights and remedies provided by law or under this Contract.

SECTION NINE **CLEANUP WORK AND REPAIR OF DAMAGES**

During the performance of the Work, the Contractor shall continuously keep the work sites and areas adjacent thereto in an orderly condition, free and clear from debris and discarded materials.

Contractor will restore or replace, when and as directed by the County, any public or private property damaged or destroyed by Contractor's work, equipment or employees to a condition at least equal to that existing immediately prior to the beginning of the Work.

SECTION TEN **DEFINITIONS**

Litter - rubbish such as wastepaper, cans, and bottles discarded in an open or public place as to be a nuisance or health concern.

Debris - scattered remains of something destroyed.

Trash - worthless or discarded material or objects.

SECTION ELEVEN ADVERSE WEATHER

There may be instances when weather conditions keep Contractor from performing services. Contractor will make every effort possible to complete services in a timely manner. Contractor shall not be liable for any damage due to acts of nature. In the event of such cases (i.e. severe winds, named storms, hurricane, tornado, etc.), Contractor agrees to remove debris, at an extra charge agreed upon between County and Contractor.

SECTION TWELVE CONTROLLING LAW

The laws of South Carolina shall govern this Contract. All litigation arising under this Contract shall be litigated only in a nonjury hearing in the Court of Common Pleas, First Judicial Circuit, Dorchester County or the Dorchester County Magistrates Court.

SECTION THIRTEEN ENTIRE AGREEMENT

This Contract constitutes the entire understanding and contract between the Parties hereto and supersedes all prior and contemporaneous written and oral contracts between the Parties and their predecessors in interest regarding the subject matter of this Contract. This Contract may not be changed, altered, amended, modified, or terminated orally, except as specifically provided, and any such change, alteration, amendment, or modification must be in writing and executed by the Parties hereto.

SECTION FOURTEEN SEVERANCE

Should any part of this Contract be determined by a Court of competent jurisdiction to be invalid, illegal, or against public policy, said offending Section shall be void and of no effect and shall not render any other Section herein, nor this Contract as a whole, invalid. Any terms which, by their nature, should survive the suspension, termination or expiration hereof shall be deemed to so survive.

SECTION FIFTEEN NON-WAIVER

Any waiver of any default by either Party to this Contract shall not constitute waiver of any subsequent default, nor shall it operate to require either Party to waive, or entitle either Party to a waiver of, any subsequent default hereunder.

SECTION SIXTEEN
SUSPENSION OF WORK

The County may order, in writing, the Contractor to suspend, delay, or interrupt all or any part of the Work for such period of time as may be determined to be appropriate for the convenience of the County. The County may suspend performance of its obligations under this Contract in good faith for the convenience of the County or to investigate matters arising in the Work.

When the County orders any suspension of the Work under the paragraph above, the Contractor shall not be entitled to any payment for Work with respect to the period during which such Work is suspended and shall not be entitled to any costs or damages resulting from such suspension.

SECTION SEVENTEEN
SAFETY, HEALTH, AND SECURITY PRECAUTIONS

The Contractor shall take proper safety, health, and security precautions to protect its workers and the County's property, workers and the public at all times during the term of this Contract.

(Signature block below)

IN WITNESS WHEREOF, the Parties hereto have executed this Contract under their several seals the day and year first written above.

CONTRACTOR

DORCHESTER COUNTY

Name:
Title:

Jason L. Ward
County Administrator

Attest:

Attest:

1)_____

1)_____

2)_____

2)_____

SECTION D

**OWNER-PROVIDED SUPPLIES AND
EQUIPMENT**



7227 Cross Park Dr, North Charleston, SC 29418
 Phone: 843-377-2900 Fax: 843-377-2904

PROPOSAL

WE ARE SC/NC WBE CERTIFIED

DATE: 04/28/2020

TO:
 Dorchester County Water and Sewer

SHIP TO:
 Misc Fittings

Quote Good For 30 Days Unless Otherwise Noted

| | | | | |
|----------|------------|-------|-------------------------------|--------|
| Ship Via | When Ship: | Terms | Quoted By: Michael Sanders | F.O.B. |
|----------|------------|-------|-------------------------------|--------|

| Qty | Unit | Description | Unit Price | Total |
|--------|------|-------------------------------|------------|-----------------|
| 250.00 | If | 6" SDR26 HW PVC Sewer Pipe | 2.44 | 610.00 |
| 30.00 | If | 4" SDR26 HW PVC Sewer Pipe | 1.15 | 34.50 |
| 200.00 | If | 2" PVC Sch 40 Pipe BE | 0.60 | 120.00 |
| 4.00 | ea | 6" SDR26 HW Wye Gskt | 44.23 | 176.92 |
| 6.00 | ea | 6" SDR26 HW 45 BXS | 16.70 | 100.20 |
| 3.00 | ea | 6" X 4" SDR26 HW Reducer SXG | 23.44 | 70.32 |
| 3.00 | ea | 4" SDR26 HW Wye Gskt | 27.88 | 83.64 |
| 3.00 | ea | 4" SDR26 HW 45 BXB | 12.32 | 36.96 |
| 2.00 | ea | 6" SDR35 Female Adapter HXFIP | 14.53 | 29.06 |
| 2.00 | ea | 6" SDR35 Male Thd Plug-Raised | 9.39 | 18.78 |
| 3.00 | ea | 4" SDR35 Female Adapter HXFIP | 3.08 | 9.24 |
| 3.00 | ea | 4" SDR35 Male Thd Plug-Raised | 1.87 | 5.61 |
| | | Subtotal | | 1,295.23 |

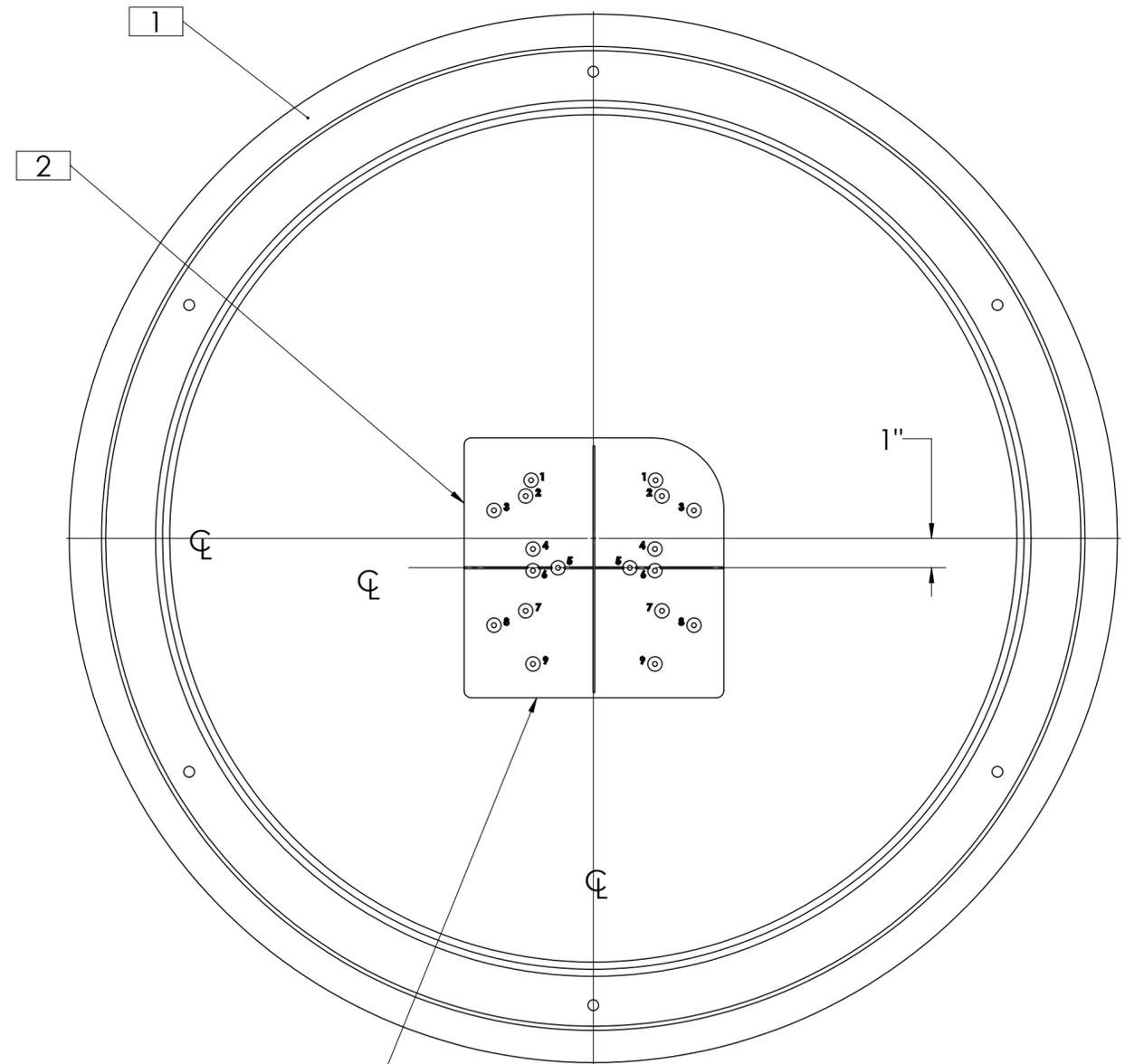
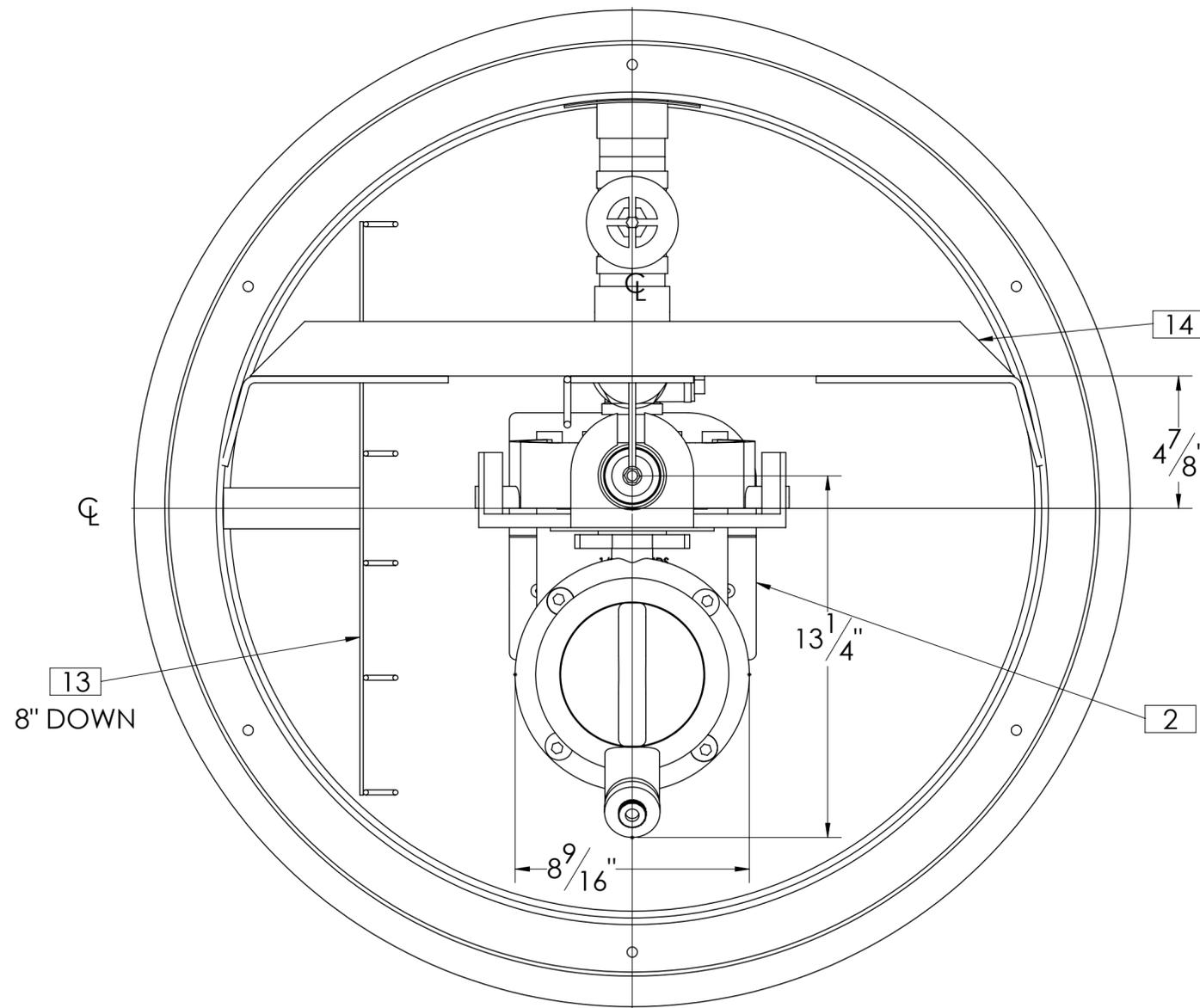
All prices are deemed to be accurate, but are not guaranteed. All materials subject to applicable taxes at time of sale.

WET WELL
 O.D. = 34"
 B.C. = 32 1/2"
 I.D. = 30"

**NOTE: MEASUREMENTS OF BASINS ARE ALL I.D.,
 IF NOT OTHERWISE SPECIFIED.**

FIBERGLASS ANTIFLOAT
 EACH STUD MUST BE SEALED
 AT BASIN FLOOR W/3M THEN
 COVERED WITH SS WASHER.

**DRILL #: 1 & 9
 BOLTS: 1/2"-13 X 1 1/2"**



**NOTE: TO BE GLUED ON TOP OF BOTTOM BOARD
 W/ 1/8" TO 1/4" BEAD OF GLUE SHOWING AROUND
 ALL SIDES OF PAD.**

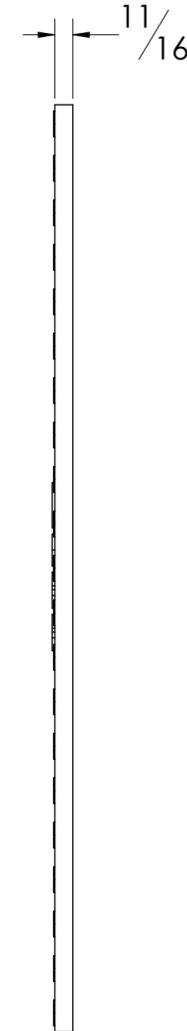
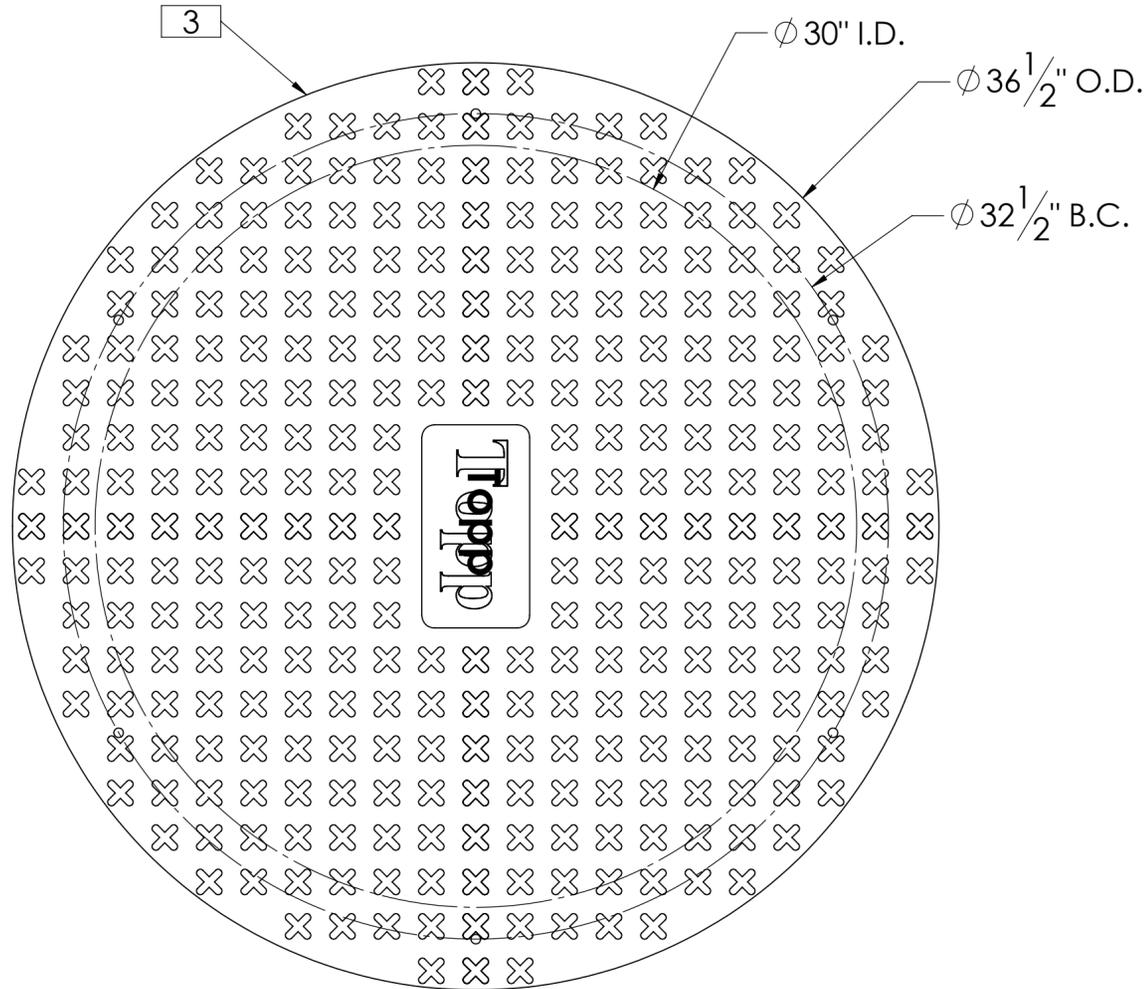
O.D. = OUTER DIAMETER
 B.C. = BOLT CIRCLE
 I.D. = INNER DIAMETER
 C.A. = CLEAR ACCESS

TOPP
 INDUSTRIES
 INCORPORATED
 P.O. BOX 420 ^ HWY. 25 N.
 ROCHESTER, IN. 46975
 (800) 354-4534 FAX: (574) 223-6106

| | | | | | |
|--|------------|---|--|------------------------|-------------|
| UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS | | PUMP & DISCONNECT: Pump: ABS Model: ABS S16 | | DO NOT SCALE DRAWING | REVISION 02 |
| SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR: | | SO: 12549-14-NS | | PETE DUTY & ASSOCIATES | |
| NAME | DATE | TITLE: | | DWG NO. 304592 | |
| DRAWN: MR | 5/23/18 | | | | |
| CHK'D: MR | 05/30/2018 | | | | |
| APP'VD: -- | -- | | | | |
| MFG: -- | -- | | | | |
| G.A: -- | -- | MATERIAL: | | SCALE: 1:16 | |
| | | WEIGHT: | | SHEET 1 OF 4 | |

COVER
 O.D. = 36 1/2"
 B.C. = 32 1/2"
 I.D. = 30"

**NOTE: MEASUREMENTS OF BASINS ARE ALL I.D.,
 IF NOT OTHERWISE SPECIFIED.**



O.D. = OUTER DIAMETER
 B.C. = BOLT CIRCLE
 I.D. = INNER DIAMETER
 C.A. = CLEAR ACCESS

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| UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS | | PUMP & DISCONNECT: Pump: ABS Model: ABS S16 | | DO NOT SCALE DRAWING | REVISION 02 |
| SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR: | | S.O.: | | PETE DUTY & ASSOCIATES | |
| DRAWN: MR | | DATE: 5/23/18 | | TITLE: | |
| CHK'D: MR | | 05/30/2018 | | DWG NO. 304592 | |
| APP'VD: -- | | -- | | SCALE: 1:16 | |
| MFG: -- | | -- | | SHEET 3 OF 4 | |
| G.A. -- | | -- | | WEIGHT: | |
| | | MATERIAL: | | | |
| | | | | | |

**NOTE: MEASUREMENTS OF BASINS ARE ALL I.D.,
IF NOT OTHERWISE SPECIFIED.**

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|---------------------------|--|------|
| 1 | FB30X72F_ | 30" X 72" FG BASIN, W/FG ANTI-FLOAT | 1 |
| 2 | sp1fg2DUP_SINGLE PAD R | PUMP PAD | 1 |
| 3 | C30WFNST | SOLID NON-SKID FIBERGLASS CVR W/ TOPP LOGO | 1 |
| 4 | C200S30 | 2" SS THREADED NPT COUPLING - DISCHARGE | 1 |
| 5 | 13-0105 | 2" 304 SS Pipe | 5 FT |
| 6 | 14-0105 | 2" PVC Sch80 Pipe | 5 FT |
| 7 | 16-0278 | 2" 316 SS Swing Check Valve | 1 |
| 8 | 16-0165 | 2" 316 SS Full Port Gate Valve | 1 |
| 9 | 14-0218 | 2" Sch80 PVC 90° Elbow (SW) | 1 |
| 10 | 13-0202 | 1 1/4" SS 90° Elbow | 1 |
| 11 | 13-0103 | 1 1/4" 304 SS Pipe Nipple | 2 |
| 12 | 14-5035 | 2" X 1 1/4" Thrded Sch80 PVC Reducing Coupling | 1 |
| 13 | SSFBH519 | SS FLT BRACKET W/(6) HOOKS | 1 |
| 14 | UGBALUM30 | UPPER ALUMINUM GUIDERAIL BRACE FOR 30" BASIN | 1 |

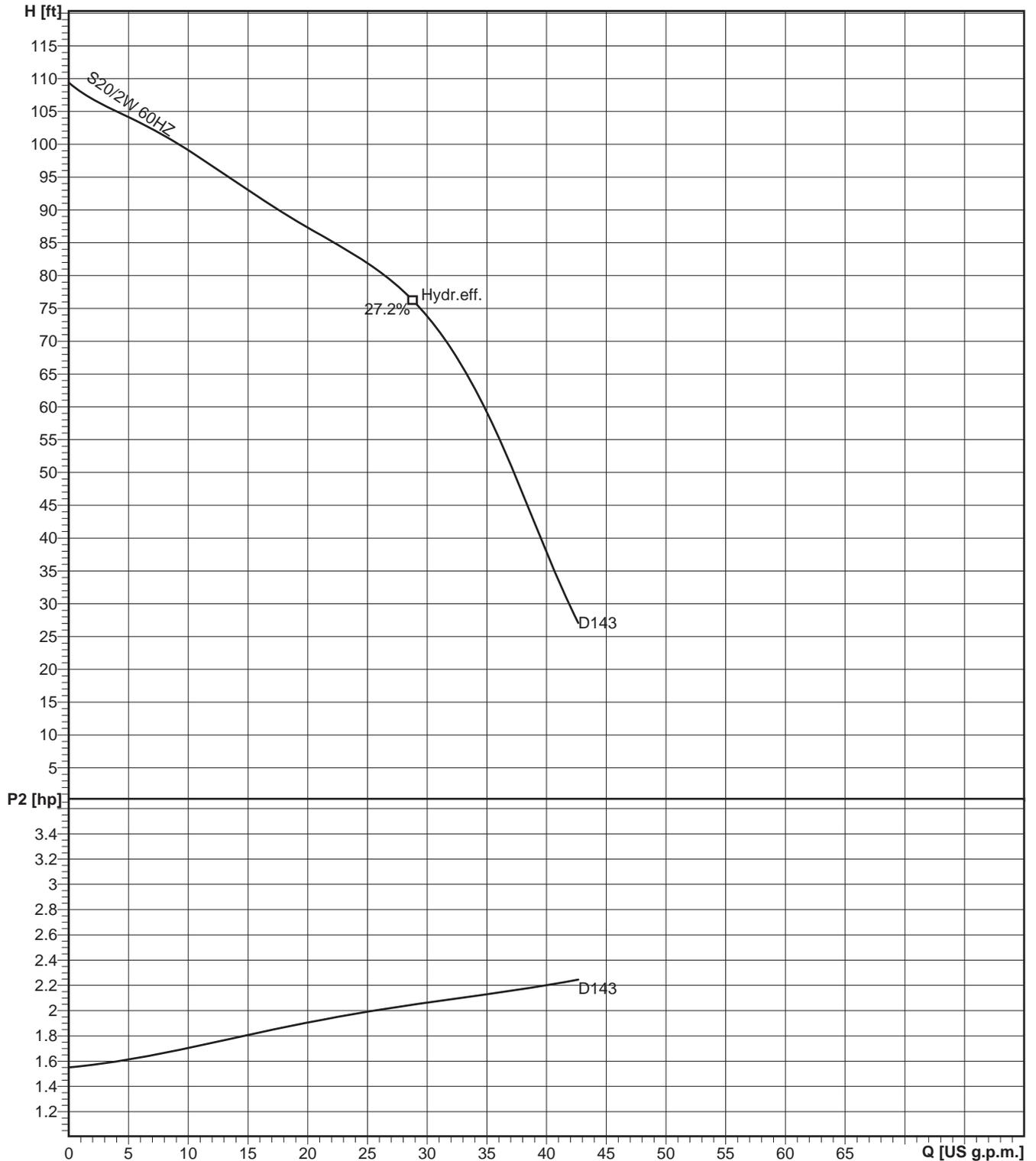
| | | CUSTOMER SUPPLIED MATERIAL | |
|----|----------------|----------------------------|---|
| 30 | ABS 4 BOLT | 1 1/4" ABS 4 BASE ELBOW | 1 |
| 31 | ABS 2in SS UGB | SS UPPER GUIDRAIL BRACKET | 1 |

| | | ITEMS SHIPPED LOOSE | |
|--|------------|--|---|
| | C200S30 | 2" SS THREADED NPT COUPLING - ELECTRICAL | 1 |
| | H403FG3672 | 4" FG HUB FOR 36" & UP | 1 |
| | H400R | 4" RUBBER GROMMET HUB | 1 |



| UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR: | PUMP & DISCONNECT: Pump: ABS Model: ABS S16 SO: 12549-14-NS | DO NOT SCALE DRAWING REVISION 02 | | | | | | | | | | | | |
|--|--|-------------------------------------|------|-----------|---------|-----------|------------|------------|----|---------|----|---------|----|---|
| <table border="1"> <thead> <tr> <th>NAME</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DRAWN: MR</td> <td>5/23/18</td> </tr> <tr> <td>CHK'D: MR</td> <td>05/30/2018</td> </tr> <tr> <td>APP'VD: --</td> <td>--</td> </tr> <tr> <td>MFG: --</td> <td>--</td> </tr> <tr> <td>G.A: --</td> <td>--</td> </tr> </tbody> </table> | | NAME | DATE | DRAWN: MR | 5/23/18 | CHK'D: MR | 05/30/2018 | APP'VD: -- | -- | MFG: -- | -- | G.A: -- | -- | TITLE: PETE DUTY & ASSOCIATES |
| NAME | DATE | | | | | | | | | | | | | |
| DRAWN: MR | 5/23/18 | | | | | | | | | | | | | |
| CHK'D: MR | 05/30/2018 | | | | | | | | | | | | | |
| APP'VD: -- | -- | | | | | | | | | | | | | |
| MFG: -- | -- | | | | | | | | | | | | | |
| G.A: -- | -- | | | | | | | | | | | | | |
| P.O. BOX 420 ^ HWY. 25 N. ROCHESTER, IN. 46975 (800) 354-4534 FAX: (574) 223-6106 | | DWG NO. 304592 | | | | | | | | | | | | |
| WEIGHT: | | SCALE:1:16 SHEET 4 OF 4 | | | | | | | | | | | | |

| | | | | |
|--------------------------------------|---|---------------------------------|--------------------------------|--------------------|
| Density 62.428 lb/ft ³ | Viscosity 0.000016813 ft ² /s | Testnorm Hydraulic Institute | Discharge G1¼" | Frequency 60 Hz |
| Flow 37.9 US g.p.m. | Head 47.2 ft | Rated power 2.17 hp | Rated speed 3520..3345 rpm | Date 2012-03-15 |
| | | | Hydraulic efficiency 20.9 % | NPSH |



| | | | | |
|----------------------------------|------------------|-----------------------|------------|------------------------|
| Impeller size 5.75..5.63 inch | N° of vanes 4 | Impeller Macerator | Solid size | Revision 2010-09-28 |
|----------------------------------|------------------|-----------------------|------------|------------------------|

TECHNICAL DATA**PIRANHA****S20/2W, S20/2**

Dwg. DS-P01-019 Rev: B Date: 12/06

Section Piranha Tab "S" Series Page

STANDARD & EXPLOSION PROOF**MOTOR SPECIFICATIONS**

| | |
|-----------------------------|---|
| Motor Design | NEMA design B, squirrel cage induction, air filled |
| Motor Type | Enclosed submersible |
| Insulation Class | Class F, rated at 279° F (155° C) |
| Motor Protection | Oil Chamber Moisture Detector, bimetallic switches embedded in each phase for thermal overload protection. Installer must conform to N.E.C. standards, 1990 Ed. Art. 430. |
| Bimetallic Temp Trip | 234° F ± 9° (130° C ± 5° C) |
| Service Factor | 1.0 |
| Voltage Tolerance | ± 10% from nominal |
| Approvals | UL, CSA (FM available as option) |

MOTOR DATA, 60Hz

| Model | Phase | Output Power bhp | Volts | Full Load Amps | Locked Rotor Amps | NEMA Code Letter | Power Factor 100% Load | Motor Efficiency 100% Load | Pole/Speed (rpm) |
|---------|-------|------------------|-------|----------------|-------------------|------------------|------------------------|----------------------------|------------------|
| S20/2W* | 1 | 2.0 | 208 | 11.9 | 32.5 | A | 0.99 | 73.1 | 2/3450 |
| S20/2W* | 1 | 2.0 | 230 | 10.8 | 29.4 | A | 0.99 | 73.1 | 2/3450 |
| S20/2 | 3 | 2.0 | 208 | 8.0 | 42.6 | G | 0.84 | 74.5 | 2/3450 |
| S20/2 | 3 | 2.0 | 230 | 7.2 | 38.5 | G | 0.84 | 74.5 | 2/3450 |
| S20/2 | 3 | 2.0 | 460 | 3.6 | 19.2 | G | 0.84 | 74.5 | 2/3450 |
| S20/2 | 3 | 2.0 | 575 | 2.9 | 15.4 | G | 0.84 | 74.5 | 2/3450 |

*Requires external start kit mounted in the control panel

MATERIALS of CONSTRUCTION

| | |
|-----------------------------|--|
| Motor Housing | Cast Iron ASTM A48 Class 30 |
| Cable Cap | Cast Iron ASTM A48 Class 30 |
| Volute | Cast Iron ASTM A48 Class 30 |
| Oil Chamber | Cast Iron ASTM A48 Class 30 |
| External Hardware | AISI 304 Stainless Steel |
| O-Rings | Buna-N |
| Motor Shaft | AISI 420 Stainless Steel |
| Cutter Disc Assembly | Chrome Molybdenum Cobalt Tool Steel 58-62 Rockwell "C" |
| Upper Bearing | Single row ball bearing. |
| Lower Bearing(s) | Single row ball bearing. |
| Upper Shaft Seal | Buna N Lip Seal |
| Lower Shaft Seal | Silicon Carbide |
| Impeller | Cast Iron, Open Multi-vane |

DIMENSIONS, WEIGHT, AND MISC.

| | |
|--|---------------|
| Pump weight (lb.) | 81 |
| Pump weight (lb.) (explosion proof) | 82 |
| Maximum submergence (feet) | 33 |
| Discharge size, standard | 1¼ Inch |
| Discharge thread type | Female NPT |
| Maximum temp. of pumped fluid | 72° F (40° C) |

CABLE SPECIFICATIONS

| MODEL | POWER CABLE Quantity, Type | LENGTH, Feet |
|--------|----------------------------|--------------|
| S20/2W | 14/7 Type SOW-A | 32 |
| S20/2D | 14/7 Type SOW-A | 32 |

Power cable suitable for all standard voltages listed in "MOTOR DATA" section.

Specifications subject to change without notice

EXPLOSION PROOF**GENERAL**

Furnish and install _____ Model PIR S _____ **ABS Piranha** Grinder Pump(s) to deliver _____ USGPM against a total head of _____ feet. The motor shall be _____ HP, 3450 RPM (1750 RPM for S10/4 model), connected for operation on a _____ volt, 60 HZ, _____ phase service. The motor shall be an integral part of the pumping unit. The pump discharge shall be 1 ¼".

The grinder unit shall be capable of shearing and reducing to a fine slurry all material normally found in domestic and commercial sewage such as sanitary napkins, disposable diapers, cloth diapers, wash rags, wood, plastic, etc. The slurry shall be capable of freely passing through a 1 ¼" piping system including check and gate valves.

GRINDER PUMP CONSTRUCTION

The pump shall be of the centrifugal type with the rotating cutter mounted on the pump shaft directly against the impeller. The stationary cutter shall be mounted in an adjustable bottom plate. The stationary cutter shall have slots to facilitate better flow. The bottom plate shall be cast with grooves threading outward from the center opening of the plate to the outer diameter. The impeller shall be a multiple vane centrifugal type. The cutter material shall be similar to an ANSI 440C stainless steel with the addition of cobalt, vanadium, and molybdenum for superior abrasion resistance and a hardness of 58-62 Rockwell C.

The common pump and motor shaft shall be 420 stainless steel supported on the impeller end by a heavy duty single row ball bearing on 1.3-2.4 hp pumps, or a heavy duty double row ball bearing on 3.5-4 hp pumps. The opposite end of the shaft is supported on a sealed single row ball bearing (all models). The cutting elements and impeller shall be designed to keep the overhung load distance to a minimum. All fasteners shall be 304 stainless steel.

Shaft Seals: Each pump shall be equipped with two (2) seals. The lower seal (pump side) shall be of the mechanical type with silicon carbide faces. The upper seal shall be a lip type seal. The seals shall be separated by an oil chamber providing cooling and lubrication of the seals, and a barrier between the pumped fluid, and the dry motor chamber.

Seal Failure Warning System: An electric probe shall be provided in the oil chamber to detect the presence of water in the oil. A solid-state device mounted in the pump control panel or in a separate enclosure shall send a low voltage, low amperage signal to the probe. If water enters the oil chamber in sufficient quantity to warrant concern, the probe shall activate a warning light in the control panel.

MOTOR CONSTRUCTION

The motor shall be of submersible type rated for _____ HP at 3450 RPM (1750 RPM for S10/4 model). The full load current shall not exceed _____ amps at _____ volts. Single phase motors shall be of the capacitor start capacitor run type for high starting and running torque.

The motor shall be air-filled and shall have Class "F" insulation. The rotor and stator shall be enclosed in a cast iron outer housing. Bi-metallic thermal switches shall be imbedded in each phase of the winding to sense high temperature. The rating of the switch shall be 130°C +/- 5°C. The control circuit shall be connected through the bi-metallic switches so the motor is shut down should a high temperature condition exist. The switches shall be self-resetting when the motor cools. Power cable shall be rated for explosion proof environment.

APPROVALS

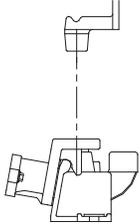
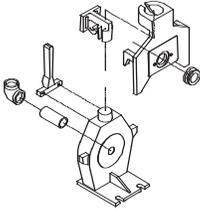
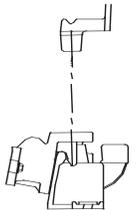
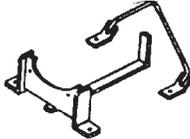
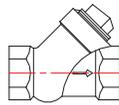
All models shall be UL and CSA approved. Explosion proof models shall be FM approved for Class I Division I Group C and D.

ACCESSORIES

PIRANHA

Dwg: DS-P00-005 Rev: D Date: 1/00

Section Piranha Tab Accessories and Controls Page

| | | Part Number | Description |
|---|---|-------------|-------------------------------------|
| Standard Guide Rail Assembly |  | 62320674 | S10/4, S16/2, S18/2, S26/2W, S30/2D |
| | | 62320674 | M35/2, M46/2, M50/2W |
| | | 62320660 | M80/2, M100/2, M120/2 |
| Heavy Duty Guide Rail Assembly |  | 62320501 | S10/4, S18/2, S20/2, S26/2W, S30/2D |
| | | 62320501 | M25/2, M35/2, M46/2, M50/2W |
| | | 62320018 | M80/2, M100/2, M125/2 |
| Ball Check Guide Rail Assembly |  | 62320536 | S10/4, S16/2, S18/2, S26/2W, S30/2D |
| | | 62320538 | M35/2, M46/2 |
| | | 62320539 | M50/2W |
| Vertical Pedestal Base |  | 4182037Y | S10/4, S16/2, S18/2, S26/2W, S30/2D |
| | | 61906003 | M35/2, M46/2, M50/2W |
| | | 61906007 | M80/2, M100/2, M120/2 |
| Horizontal Cradle Base w/ Lifting Bail |  | 61906001 | S10/4, S16/2, S18/2 |
| | | 61906002 | S26/2, S30/2 |
| | | 61906005 | M35/2, M46/2 |
| | | 61906006 | M50/2W, M80/2, M100/2, M120/2 |
| Horizontal Swing Check Valve |  | 1405125 | 1 1/4" |
| | | 1404127 | 2" |
| | | 1404128 | 3" |
| Vertical Ball Check Valve |  | 6140525 | 1 1/4" |
| | | 6140526 | 2" |
| | | 6140527 | 3" |
| Shut Off Valve, Gate |  | 1404125 | 1 1/4" |
| | | 1404150 | 1 1/2" |
| | | 1404145 | 2" |

Specifications subject to change without notice

HALLIDAY PRODUCTS, INC.
6401 EDGEWATER DRIVE
ORLANDO, FL. 32810



<http://www.hallidayproducts.com>

TOLL FREE: 800-298-1027

PHONE: 407-298-4470

FAX: 407-298-4534

U-A UPPER GUIDE RAIL BRACKET

ALL WELDED CONSTRUCTION

1/4 DIAMETER HOOK

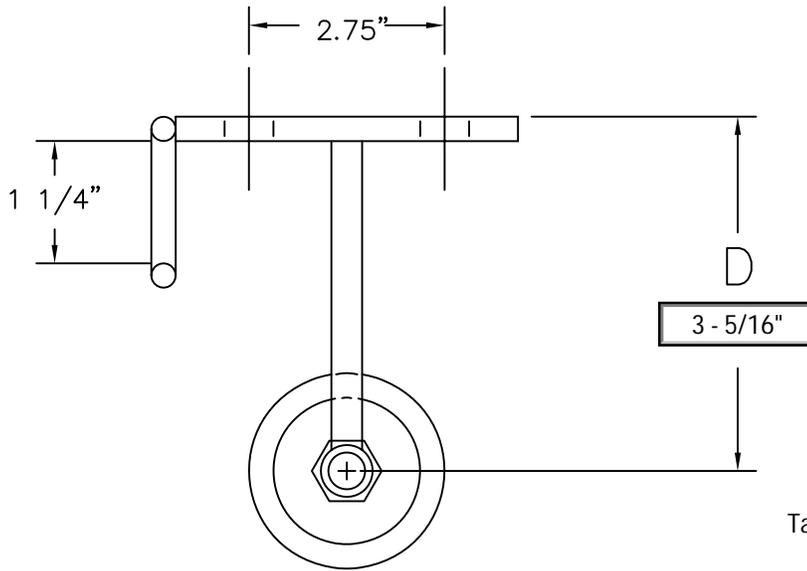
NEOPRENE BUSHING FOR QUIETER

OPERATION

BRACKET MATERIAL:

T-304 S.STL.

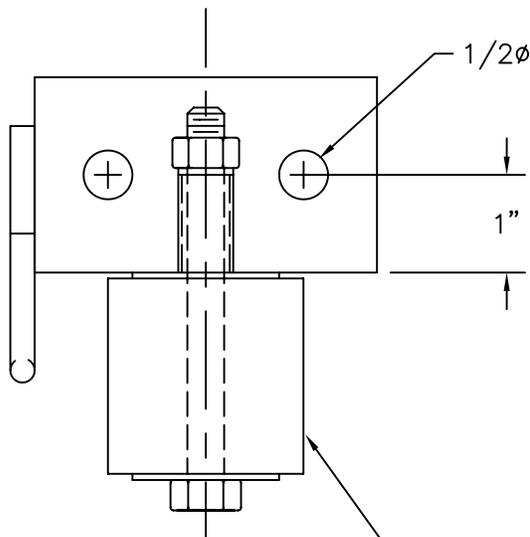
T-316 S.STL.



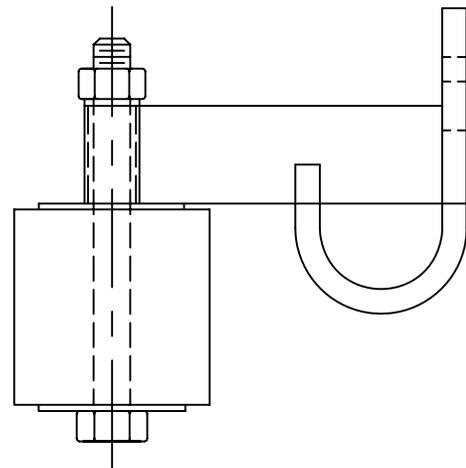
A

RAIL SIZE
(PIPE SIZE)

Tag / Notes:



NEOPRENE
BUSHING
TO FIT
RAILS



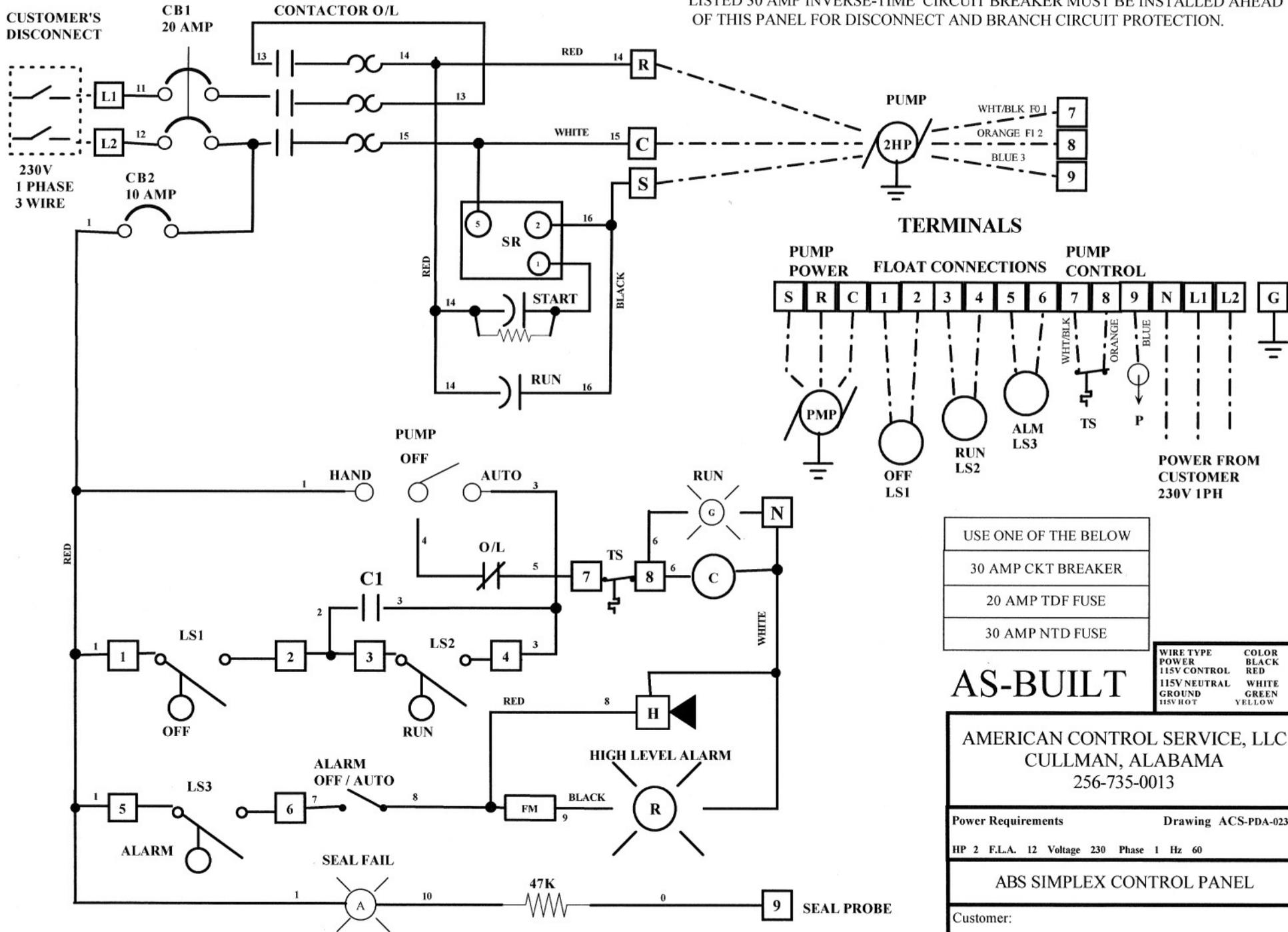
Submit by Email

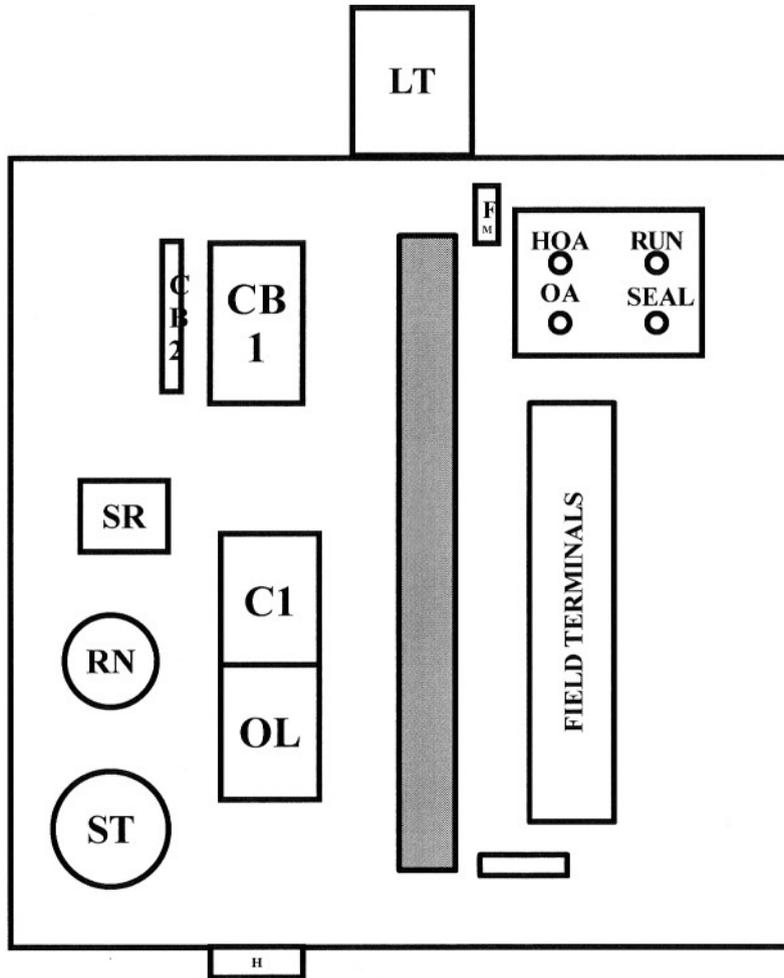
Print Form

Reset Form

SUBMIT U-A 8/27/10

CAUTION: THIS PANEL DOES NOT CONTAIN A MAIN DISCONNECT A UL LISTED 30 AMP INVERSE-TIME CIRCUIT BREAKER MUST BE INSTALLED AHEAD OF THIS PANEL FOR DISCONNECT AND BRANCH CIRCUIT PROTECTION.





LEGEND

- LT -- ALARM LIGHT
- H --- ALARM BUZZER
- CB2 -- CONTROL BREAKER
- ST -- START CAPACITOR
- RN -- RUN CAPACITOR
- SR -- START RELAY
- OL --OVERLOAD RELAY
- C --- CONTACTOR
- CB1 -- CIRCUIT BREAKER
- LS -- LEVEL SWITCH
- TS --THERMAL SWITCH
- P --- SEAL PROBE
- FM -- FLASHER MODULE

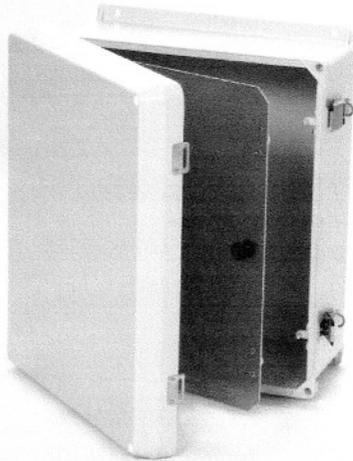
AS-BUILT

ABS SIMPLEX
CONTROL PANEL
LAYOUT

ACS

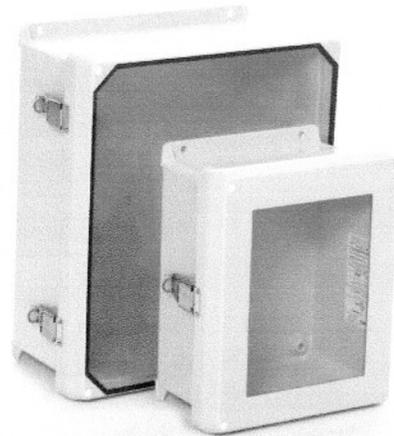
Customer:

Vynckier Enclosure Systems, Inc.



| Base Models | Inside Dimensions | | | Weight lb (kg) |
|-------------|-------------------|-------------|-------------|----------------|
| | H | W | D | |
| VJ606 (mm) | 6.00 (152) | 6.00 (152) | 4.10 (104) | 2.8 (1.27) |
| VJ806 (mm) | 8.00 (203) | 6.00 (152) | 4.10 (104) | 3.8 (1.72) |
| VJ1008 (mm) | 10.00 (254) | 8.00 (203) | 4.59 (1176) | 4.8 (2.17) |
| VJ1210 (mm) | 12.00 (305) | 10.00 (254) | 4.74 (120) | 6.3 (2.85) |
| VJ1412 (mm) | 14.00 (356) | 12.00 (305) | 5.74 (146) | 8.6 (3.90) |
| VJ1614 (mm) | 16.00 (406) | 14.00 (356) | 5.74 (146) | 10.6 (4.80) |
| VJ1816 (mm) | 18.00 (457) | 16.00 (406) | 8.62 (219) | 14.0 (6.34) |

| Base Models | Inside Dimensions | | | Weight lb (kg) |
|--------------|-------------------|-------------|-------------|----------------|
| | H | W | D | |
| RVJ1008 (mm) | 10.00 (254) | 8.00 (203) | 6.90 (157) | 4.9 (2.2) |
| RVJ1210 (mm) | 12.00 (305) | 10.00 (254) | 6.37 (162) | 6.5 (2.9) |
| RVJ1412 (mm) | 14.00 (356) | 12.00 (305) | 7.37 (187) | 8.8 (4.0) |
| RVJ1614 (mm) | 16.00 (406) | 14.00 (356) | 7.37 (187) | 10.8 (4.9) |
| RVJ1816 (mm) | 18.00 (457) | 16.00 (406) | 10.19 (259) | 14.3 (6.9) |



Options & Assessories

- Window Options
 - Bonded
 - Clear View
 - Gasketed
- Hinged Front Panels
- Hinge Options
- Latching Options
 - W • HW • HPLL • HWPL
- Vent Options
 - MEDV • Louver
- Enclosure Modifications
 - Silk screen • EMI/RFI Shielding

The "Platinum Plus" light grey color is cleaner, cooler and more aesthetically pleasing. Now users can enjoy the physical benefits of better heat reflection and better UV resistance, due to the lighter color.

Custom Colors are also available.

249 McCarty Drive • Houston, TX 77029 • Phone: 713.374.7850 • Fax: 713.672.8632

ALARM LIGHT LENSES AND COMPONENTS



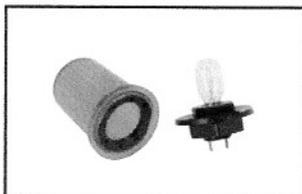
Our R7-XS, R10-SM and R15-MB lights all utilize 1/4" quick-connect terminals for faster and easier installation as well as a single hole mounting style and outside bulb replacement capabilities.

| PART # | DESCRIPTION | LIST PRICE | |
|-------------|--|------------|--|
| R7-XS | Extra Small Red Lens w/ 7-Watt Bulb and 1/4" Quick-Connect Terminals | 14.00 | <ul style="list-style-type: none"> • UL Recognized Component • NEMA Type 4X Rated • UV Stabilized GE Lexan Material • Flame Resistant Lens • 7, 10, 15, 25 and 40 Watt Models • Red, Amber, Green and Blue Models • Quick-Connect Terminal Options • Mounts on Panels up to 1/4" Thick |
| R10-SM | Small Red Lens w/ 10-Watt Bulb and 1/4" Quick-Connect Terminals | 16.00 | |
| R10-S-10 | Small Red Lens w/ 10-Watt Bulb and Pre-Wired Leads | 12.00 | |
| R15-MB-15 | Medium Red Lens w/ 15-Watt Bulb and Pre-Wired Leads | 18.00 | |
| R25-LG-15 | Large Red Lens w/ 15-Watt Bulb and Pre-Wired Leads | 20.00 | |
| R40-XLS-25 | Extra Large Red Lens w/ 25-Watt Bulb and Pre-Wired Leads | 28.00 | |
| R40-XLS-40F | Extra Large Red Lens w/ 40-Watt Bulb, Pre-Wired Leads, and Solid State Flasher | 54.00 | |

Call for alternate color options.



R7-XS & R10-SM-10



R15-MB-15



R25-LG-25



R40-XLS-25

PIEZO BUZZERS

- UL Approved Component
- NEMA Types 3, 3R, 4X, 12 and 13
- Single-Hole Panel Mount Style
- 1/4" Quick-Connect Terminals
- Warble Tone
- 95 db. @ 2 ft. and 85 db. @ 10 ft.

| PART # | DESCRIPTION | LIST PRICE |
|-----------|---------------------------|------------|
| PB-120-A | 40-125 VAC Piezo Buzzer | \$19.00 |
| PB-024-AD | 5-24 VAC/VDC Piezo Buzzer | 17.00 |



TOGGLE BOOTS

- UL Approved Component
- NEMA Type 1, 2, 3, 3R, 4, 4X, 12 and 13
- EPT Rubber
- UV and Weather Resistant
- 5/8" Hex Base
- 15/16" Long

| PART # | DESCRIPTION | LIST PRICE |
|--------|--------------------|------------|
| TB100 | RUBBER TOGGLE BOOT | \$ 4.25 |



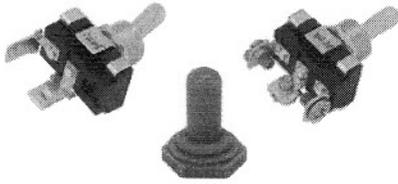
SOLID STATE FLASHERS

- UL Approved Component
- Solid State Technology
- 75 Flashes Per Minute
- 1/4" Quick-Connect Terminals
- Molded on Mounting Foot

| PART # | DESCRIPTION | LIST PRICE |
|---------|-----------------------------|------------|
| FL-120V | 120 VAC SOLID STATE FLASHER | \$19.00 |

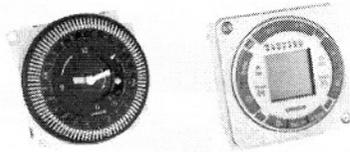


Toggle Switches, Toggle Boots & Push Buttons



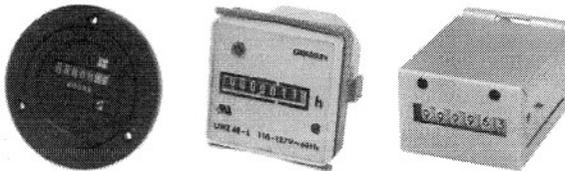
- E-Z Switch Mfg & Gaynor brands available
- UL recognition on all standard products, call for information on specials orders
- Available with either 1/4" quick-connect terminals or screw terminals
- Available as SPST, SPDT, DPST or DPDT
- Available as On, Off, Momentary On, Maintain
- Available as 3/4 HP, 1-1/2 HP or 2 HP
- Available as 3-6 Amp, 10-15 Amp or 20 Amp
- AC/DC toggle boots meet NEMA 1, 2, 3, 3R, 4, 4X, 12 and 13

Timers



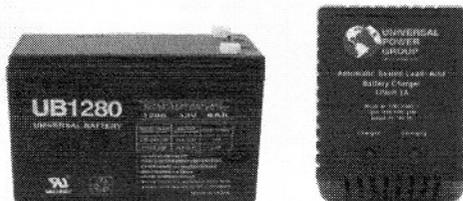
- Grasslin & Intermatic brands available
- UL recognition on all standard products, call for information on special orders
- Available with either Din Rail Mount or Surface Mount
- Manual and digital models available
- AC or DC Voltage available

Counters & Meters



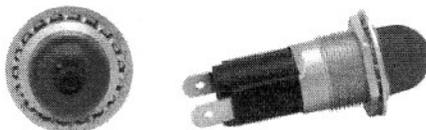
- Grasslin, Redington & ENM brands available
- UL recognition on all standard products, call for information on special orders
- Available with either Din Rail Mount or Surface Mount
- Cycle counters, hour counters available
- AC or DC Voltage available

Batteries & Chargers



- Battery – Sealed battery, 12V, 8 Amp-Hour Capacity (5-AH Available)
- Battery – Dimensions 5.94" (L) x 2.56" (W) x 3.94" (H)
- Charger – Fully-automatic charger, dual stage, 12V, 1A
- Charger – Dual LED lights indicate charging status

SI Indicator Light



- Red, amber, blue, and green lens colors available
- Incandescent or neon bulb available
- 1/4" quick-connect terminals

Warranty Information : AC/DC warrants to the original customer that this product shall be free from manufacturing defects for one year after the date of manufacture. Warranty does not apply to the misuse or improper installation of products.

Restocking Fee : AC/DC charges a standard 15% restocking fee on all returned goods. Please call for RGA information.

Minimum Order Fee : AC/DC may include a \$5.00 charge for orders that are less than \$30.00 before shipping charges.

Shipping Information : AC/DC ships all orders via UPS ground unless specified to be expedited or shipped by freight with a carrier of our choice.

QOU Miniature Circuit Breakers and Switches Application Information

APPLICATION INFORMATION

QOU Miniature Circuit Breaker Types

Miniature molded case circuit breakers are intended for use in residential and commercial applications. They are tested and listed according to UL Standard 489 and CSA Standard C22.2 No. 5-02 for molded case circuit breakers and enclosures.

QOU miniature circuit breakers are unit-mount (lug/lug) thermal-magnetic circuit breakers which:

- Provide a means to manually open a circuit.
- Automatically open a circuit under overload or short circuit conditions.
- Feature common tripping of all poles.
- Have a Visi-Trip[®] trip indicator.
- Can be flush-, surface-, or DIN rail-mounted.
- Has lugs at both ends (cable-in/cable-out construction)
- Operate in any position.
- Are fully tested, UL Listed, and CSA certified for reverse connection without restrictive line/load markings.

Non-automatic Switches

QOU non-automatic switches are intended for use as disconnect devices only. UL Standard 489 requires switches to be protected by a thermal-magnetic circuit breaker (or fuse) of equivalent rating. QOU switches are UL Listed for use on circuits capable of delivering not more than 10,000 amperes when protected by an equivalent rated circuit breaker or fuse. QOU switches contain no automatic tripping mechanisms and do not provide overcurrent protection.

Description

QOU miniature circuit breakers and switches are available for surface-, flush-, or DIN rail mounted applications in one-, two-, and three-pole constructions. QOU miniature circuit breakers are used for overcurrent protection and switching on both ac and dc electrical systems. QOU circuit breakers and switches measure 0.75 in. (19 mm) wide per pole. Two- and three-pole circuit breakers are both equipped with an internal crossbar for common tripping of all poles. QOU switches are available in one-pole, 60 ampere and two- and three-pole, 60, 100 and 125 ampere construction.

Cases for QOU miniature circuit breakers and switches are constructed of a glass-reinforced insulating material that provides high dielectric strength. Current carrying components are isolated from the handle. The handle position indicates whether the circuit breaker is off, on or tripped.

Applications

One-pole QOU miniature circuit breakers rated 120/240 Vac are UL Listed for use on 120/240 Vac single-phase, three-wire or 208Y/120 Vac three-phase, four-wire electrical systems.

Two-pole QOU circuit breakers rated 120/240 Vac are UL Listed for use on 120/240 Vac single-phase, three-wire or 208Y/120 Vac three-phase, four-wire electrical systems. They cannot be used on 240 Vac delta systems. Use QOU-H two-pole circuit breakers rated 240 Vac on 240 Vac delta and 240 Vac single-phase, two wire systems.

Three-pole QOU circuit breakers rated 240 Vac are UL Listed for use on any system where the maximum phase-to-phase or phase-to-ground voltage is 240 Vac or less.

For application information on other systems, contact your local field office

QOU Miniature Circuit Breakers and Switches Application Information

Table 1: Selection Data

| Rating | Catalog Number | | | | | | Terminal Lug Wire Size (AWG) | |
|---------------------------------|----------------|----------|-------------|-----------|-------------|------------|------------------------------------|------------------------|
| | One-Pole | | Two-Pole | | | Three-Pole | | |
| | 120/240 Vac | | 120/240 Vac | 240 Vac | 120/240 Vac | 240 Vac | | |
| | 10K AIR | 22K AIR | 10 K AIR | | 22K AIR | 10K AIR | | |
| 10 A | QOU110 | — | QOU210 | — | — | QOU310 | 1—#14—#2 Cu or Al | |
| 15 A | QOU115* | QOU115VH | QOU215* | QOU215H* | QOU215VH | QOU315* | | |
| 15 A | QOU115HM*† | — | — | — | — | — | | |
| 20 A | QOU120* | QOU120VH | QOU220* | QOU220H* | QOU220VH | QOU320* | | |
| 20 A | QOU120HM*† | — | — | — | — | — | | |
| 25 A | QOU125* | QOU125VH | QOU225* | QOU225H* | QOU225VH | QOU325* | | |
| 30 A | QOU130* | QOU130VH | QOU230* | QOU230H* | QOU230VH | QOU330* | | |
| 35 A | QOU135* | QOU135VH | QOU235* | — | QOU235VH | QOU335* | | |
| 40 A | QOU140* | QOU140VH | QOU240* | — | QOU240VH | QOU340* | | |
| 45 A | QOU145* | QOU145VH | QOU245* | — | QOU245VH | QOU345* | | |
| 50 A | QOU150* | QOU150VH | QOU250* | — | QOU250VH | QOU350* | | |
| 60 A | QOU160* | QOU160VH | QOU260* | — | QOU260VH | QOU360* | | |
| 70 A | QOU170* | — | QOU270* | — | — | QOU370‡ | | 1—#12—#2/0 Cu or Al |
| 80 A | QOU180‡ | — | QOU280‡ | — | — | QOU380‡ | | |
| 90 A | QOU190‡ | — | QOU290‡ | — | — | QOU390‡ | | |
| 100 A | QOU1100‡ | — | QOU2100‡ | — | — | QOU3100‡ | | |
| 125 A | — | — | QOU2125‡ | — | — | — | | |
| Switch—60 Amperes Max.—240 Vac | | | | QOU200 | — | QOU300 | 1—#14—#2 | |
| Switch—100 Amperes Max.—240 Vac | | | | QOU2000‡ | — | QOU3000‡ | 1—#12—#2/0 | |
| Switch—125 Amperes Max.—240 Vac | | | | QOU20001‡ | — | QOU30001‡ | | |

* UL Listed as HACR type for use with heating, air conditioning and refrigeration equipment containing motor-group combinations and marked for use with HACR type circuit breakers.

† High-magnetic trip circuit breakers. Recommended for applications where high initial inrush current can occur and for individual dimmer applications.

‡ Available as Series 1 with forward box lugs only. (No optional terminations)

Tripping Mechanisms

A tripping mechanism is an assembly within the circuit breaker molded case that causes the circuit breaker to open automatically under sustained overload or short circuit conditions.

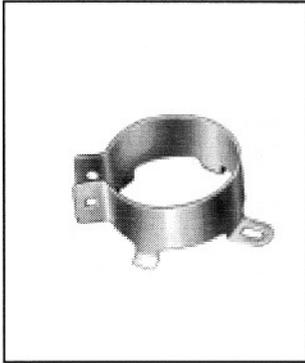
The tripping mechanisms in two- and three-pole circuit breakers operate such that an overcurrent on any pole of the circuit breaker will cause all poles of the circuit breaker to open simultaneously. Thermal and magnetic factory calibration (with current) is performed on each pole of every Square D circuit breaker.

These mechanisms operate to trip the circuit breaker:

- Thermal trip
- Magnetic trip
- Optional shunt trip accessory (see Accessories, page 12)

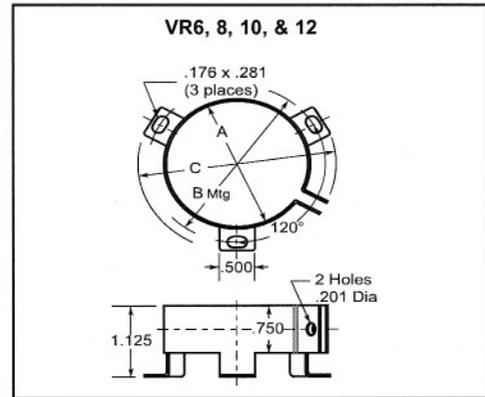
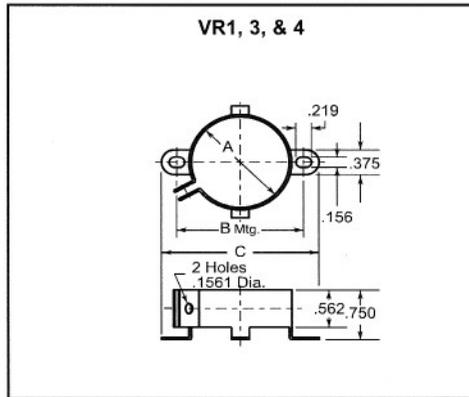
The sensing system is an integral part of a thermal-magnetic circuit breaker. The sensing system continually monitors current flowing through the circuit breaker. It detects abnormal current conditions and, depending on the magnitude of the current, initiates an inverse-time or an instantaneous tripping response. This action causes the tripping mechanism to open the circuit breaker contacts and interrupt current flow. The speed of the tripping process must be controllable and inversely matched to the severity of the overcurrent. QOU miniature circuit breakers have an over-center toggle mechanism for quick-make, quick-break action with positive handle indication. The handle assumes a position between ON (I) and OFF (O) when the circuit breaker has tripped.

TYPE VR VERTICAL MOUNTING CLAMP



| Diameter of Part to be Mounted | Catalog Number | | | Dimensions | | |
|--------------------------------|---------------------|----------------------------------|----------------------------|-------------------------------|----------|----------|
| | Without Screw & Nut | Unassembled Screw & Nut Included | Assembled with Screw & Nut | A | B | C |
| 1" to 1-1/16" | VR1B | VR1 | VR1A | 1" | 1-7/16" | 1-7/8" |
| 1-3/8" to 1-7/16" | VR3B | VR3 | VR3A | 1-3/8" | 1-25/32" | 2-7/32" |
| 1-1/2" to 1-9/16" | VR4B | VR4 | VR4A | 1-1/2" | 1-15/16" | 2-11/32" |
| 1-3/4" to 1-13/16" | VR6B | VR6 | VR6A | 1-3/4" | 2-1/4" | 2-9/16" |
| 2" to 2-1/16" | VR8B | VR8 | VR8A | 2" | 2-1/2" | 2-13/16" |
| 2-1/2" to 2-9/16" | VR10B | VR10 | VR10A | 2-1/2" | 3" | 3-5/16" |
| 3" to 3-1/8" | VR12B | VR12 | VR12A | 3" | 3-7/16" | 3-13/16" |
| Screw | VRSCREW | — | — | 9/16" long 6-32 thread NC-2A | | |
| Nut | VRNUT | — | — | Standard hex nut to fit screw | | |

NACC VR mounting clamps may be used to mount any cylindrical capacitor with a 1" to 3" diameter that is to be mounted in a vertical position. Material is 1010 CRS, commercial grade #4 temper ASI-scale. Parts are finished with .0001 (nominal) zinc chromate plating. Use for mounting CG types, PSU, HC/NP and MPD/MPF types. Material thickness is .035"



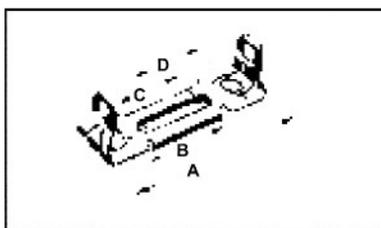
MOUNTING ACCESSORIES FOR PSU AND HC/NP TYPE CAPACITORS

Type HB Horizontal Mounting Bracket

| EIA Case Code | Dimensions | | | | Catalog Number |
|---------------|------------|----------|----------|---------|----------------|
| | A | B | C* | D | |
| 1 | 3-3/8" | 1-11/64" | 7/8" | 1.258 | HB2 |
| 2-4-6 | 4-1/64" | 1-13/16" | 1-1/2" | 1-37/64 | HB4 |
| 3-5-7-8 | 5-1/64" | 2-23/32" | 1-25/32" | 2-5/64" | HB8 |

HB brackets are used with PL or PLA end caps. The bracket is assembled to the motor or any suitable surface by two screws in line at any convenient position within the center-to-center dimension (C) shown in the chart.

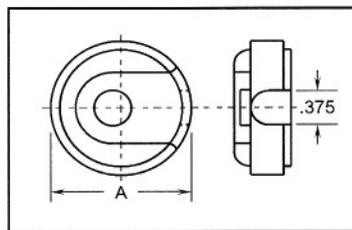
Material: .042 spring steel with black parkerized finish



*C dimension = max mounting hole center
Use 10-32" flat head screws

Type PL and PLA End Caps

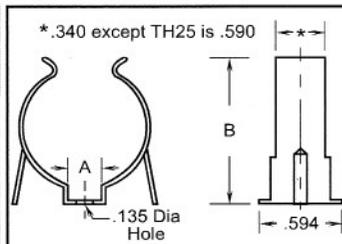
| EIA Case Code | A Dimension | Catalog Number | |
|---------------|-------------|--------------------------|-----------------------------|
| | | Wire Hole Toward Bracket | Wire Hole Away From Bracket |
| 1-2-3 | 1-7/16" | PL3 | PLA3 |
| 4-5 | 1-13/16" | PL6 | PLA6 |
| 6-7 | 2-1/16" | PL8 | PLA8 |
| 8 | 2-9/16" | PL10 | PLA10 |



PL and PLA end caps are usually used with HB type brackets. The drawing shown at left is type PL for use with the wiring through the bracket to the motor. For off motor mounting, use type PLA. See page 214 for a photo showing a capacitor and end cap mounted in a bracket.

TYPE TH HORIZONTAL MOUNTING CLIP

| Nominal Diameter of Part to be Mounted | Dimensions | | Catalog Number |
|--|------------|-------|----------------|
| | A | B | |
| .375 | .250 | .470 | TH13 |
| .500 | .250 | .620 | TH15 |
| .625 | .312 | .720 | TH17 |
| .750 | .312 | .890 | TH19 |
| .875 | .312 | 1.000 | TH21 |
| 1.000 | .312 | 1.060 | TH23 |
| 1.375 | .312 | 1.500 | TH25 |



These clips, though designed for capacitors, have varied applications to retain many cylindrical components. They are used extensively in the electrical and electronic industries to hold spindles, condensers, capacitors, tubes, rods and conduit. Clips have phosphate and oil finish.

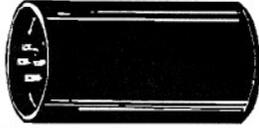
Material thickness TH13 thru TH17 is .016". TH19 thru TH25 is .020"

PACKARD MOTOR START CAPACITORS

These motor start capacitors are dry, electrolytic, non polarized types for intermittent duty in AC motor starting circuits.

The round cases are made of moisture and oil resistant molded phenolic resin or plastic.

They have standard dual blade terminals.



110-125 Volt AC 50/60 Hz

| Stock No. | MFD | Case Size | Industry No. |
|-----------|-----------|-----------|--------------|
| PMJ21 | 21-25 | 1 | 11002 |
| PMJ25 | 25-30 | 1 | 11003 |
| PMJ30 | 30-36 | 1 | 11004 |
| PMJ36 | 36-43 | 1 | 11005 |
| PMJ43 | 43-53 | 1 | 11006 |
| PMJ47 | 47-56 | 1 | - |
| PMJ56 | 56-75 | 1 | 11007 |
| PMJ64 | 67-77 | 1 | - |
| PMJ72 | 72-88 | 1 | 11008 |
| PMJ88 | 88-108 | 1 | 11009 |
| PMJ108 | 108-130 | 1 | 11010 |
| PMJ124 | 124-149 | 1 | 11112 |
| PMJ130 | 130-156 | 1 | - |
| PMJ145 | 145-174 | 1 | 11013 |
| PMJ161 | 161-193 | 1 | 11014 |
| PMJ189 | 189-227 | 1 | 11015 |
| PMJ200 | 200-240 | 1 | 11016 |
| PMJ216 | 216-259 | 1 | 11017 |
| PMJ233 | 233-280 | 1 | 11018 |
| PMJ243 | 243-292 | 1 | - |
| PMJ270 | 270-324 | 1 | 11019 |
| PMJ300 | 300-360 | 3 | 11020 |
| PMJ324 | 324-388 | 1 | 11021 |
| PMJ340 | 340-408 | 2 | 11022 |
| PMJ378 | 378-455 | 2 | 11023 |
| PMJ400 | 400-480 | 2 | 11024 |
| PMJ430 | 430-516 | 2 | - |
| PMJ460 | 460-552 | 2 | 11025 |
| PMJ540 | 540-648 | 5 | 11026 |
| PMJ540A | 540-648 | 4 | - |
| PMJ590 | 590-708 | 5 | 11027 |
| PMJ590A | 590-708 | 4 | - |
| PMJ708 | 708-850 | 5 | 11028 |
| PMJ829 | 829-995 | 5 | 11029 |
| PMJ1000 | 1000-1200 | 7 | 11030 |

* CASE DIMENSIONS

| CASE SIZE | Diameter | Height |
|-----------|----------|--------|
| 1 | 1 7/16" | 2 3/4" |
| 2 | 1 7/16" | 3 3/8" |
| 3 | 1 7/16" | 4 3/8" |
| 4 | 1 13/16" | 3 3/8" |
| 5 | 1 13/16" | 4 3/8" |
| 6 | 2 1/16" | 3 3/8" |
| 7 | 2 1/16" | 4 3/8" |
| 8 | 2 9/16" | 4 3/8" |

* Note: Check Case Sizes Closely.
Other sizes available upon request.

| Stock No. | MFD | Case Size | Industry No. |
|-----------|---------|-----------|--------------|
| PSMJ72 | 72-88 | 1 | - |
| PSMJ88 | 88-108 | 1 | - |
| PSMJ108 | 108-130 | 1 | - |
| PSMJ124 | 124-149 | 1 | 11031 |
| PSMJ130 | 130-156 | 1 | - |
| PSMJ145 | 145-174 | 1 | 11032 |
| PSMJ161 | 161-193 | 1 | 11033 |
| PSMJ189 | 189-227 | 2 | 11034 |
| PSMJ216 | 216-259 | 4 | - |
| PSMJ233 | 233-280 | 4 | 11035 |
| PSMJ243 | 243-292 | 4 | - |
| PSMJ270 | 270-324 | 4 | 11036 |
| PSMJ340 | 340-408 | 4 | - |
| PSMJ378A | 378-455 | 5 | - |
| PSMJ400 | 400-480 | 4 | 11037 |
| PSMJ540 | 540-648 | 4 | - |

| Stock No. | MFD | Case Size | Industry No. |
|-----------|---------|-----------|--------------|
| PTMJ21 | 21-25 | 1 | 11038 |
| PTMJ25 | 25-30 | 1 | 11039 |
| PTMJ30 | 30-36 | 1 | 11040 |
| PTMJ36 | 36-43 | 1 | 11041 |
| PTMJ43 | 43-53 | 1 | 11042 |
| PTMJ47 | 47-56 | 1 | - |
| PTMJ56 | 53-64 | 1 | 11043 |
| PTMJ64 | 64-77 | 1 | - |
| PTMJ72 | 72-88 | 4 | 11044 |
| PTMJ88 | 88-108 | 4 | 11045 |
| PTMJ108 | 108-130 | 4 | 11046 |
| PTMJ124 | 124-149 | 5 | 11148 |
| PTMJ130 | 130-158 | 4 | - |
| PTMJ145 | 145-174 | 4 | 11049 |
| PTMJ161 | 161-193 | 6 | 11050 |
| PTMJ189 | 189-227 | 6 | 11051 |
| PTMJ216 | 216-259 | 6 | 11052 |
| PTMJ233 | 233-280 | 6 | 11053 |
| PTMJ243 | 243-292 | 6 | - |
| PTMJ270 | 270-324 | 6 | 11054 |
| PTMJ284 | 284-333 | 8 | - |
| PTMJ320 | 320-384 | 7 | - |
| PTMJ400 | 400-480 | 7 | - |

| Stock No. | MFD | Case Size | Industry No. |
|-----------|---------|-----------|--------------|
| PRMJ21 | 21-25 | 2 | 11055 |
| PRMJ25 | 25-30 | 2 | 11056 |
| PRMJ30 | 30-36 | 2 | 11057 |
| PRMJ36 | 36-43 | 2 | 11058 |
| PRMJ43 | 43-53 | 4 | 11059 |
| PRMJ47 | 47-56 | 4 | - |
| PRMJ56 | 53-64 | 4 | 11060 |
| PRMJ64 | 64-77 | 4 | - |
| PRMJ72 | 72-88 | 4 | 11061 |
| PRMJ88 | 88-108 | 6 | 11062 |
| PRMJ108 | 108-130 | 7 | 11063 |
| PRMJ124 | 124-149 | 7 | 11165 |
| PRMJ130 | 130-158 | 7 | 11064 |
| PRMJ135 | 135-162 | 7 | - |
| PRMJ145 | 145-174 | 7 | 11066 |
| PRMJ161 | 161-193 | 7 | 11067 |
| PRMJ189 | 189-227 | 7 | 11068 |
| PRMJ216 | 216-259 | 8 | 11069 |
| PRMJ270 | 270-324 | 8 | 11070 |
| PRMJ300 | 300-360 | 8 | - |

PACKARD ROUND MOTOR RUN CAPACITORS



FEATURES:

- UL Listed / CSA Approved
- Individually Boxed
- Metal Cases
- Metallized Film
- Oil Filled
- Non PCB Oil
- Four Blade Quick Connect Terminals
- Insulated Terminals

N= NEW ITEM

| 370 VOLTS | | | | | 370 VOLTS | | | | |
|------------|------|----------------|--------|--------------|------------|--------|--------------|--------|--------------|
| UL LISTED | | CSA APPROVED | | | UL LISTED | | CSA APPROVED | | |
| ROUND CASE | | SINGLE SECTION | | | ROUND CASE | | DUAL SECTION | | |
| 50/60 HZ | | | | | 50/60 HZ | | | | |
| Stock No. | MFD | Diameter | Height | Industry No. | Stock No. | MFD | Diameter | Height | Industry No. |
| PRC5 | 5 | 1-3/4" | 2-5/8" | - | PRCD254 | 25+4 | 2" | 3.53" | 12175 |
| PRC7.5 | 7.5 | 1-3/4" | 2-5/8" | - | PRCD255 | 25+5 | 2" | 4.25" | 12261 |
| PRC10 | 10 | 1-3/4" | 2-5/8" | - | PRCD303 | 30+3 | 2" | 4.25" | - |
| PRC12.5 | 12.5 | 1-3/4" | 2-5/8" | - | N PRCD304 | 30+4 | 2" | 4.25" | - |
| PRC15 | 15 | 1-3/4" | 2-5/8" | 12210 | PRCD305 | 30+5 | 2" | 4.25" | 12264 |
| PRC17.5 | 17.5 | 1-3/4" | 2-5/8" | 12212 | PRCD353 | 35+3 | 2" | 4.25" | - |
| PRC20 | 20 | 1-3/4" | 2-5/8" | 12214 | PRCD355 | 35+5 | 2" | 4.75" | 12266 |
| PRC25 | 25 | 1-3/4" | 3" | 12215 | PRCD405 | 40+5 | 2" | 4.75" | 12178 |
| PRC30 | 30 | 1-3/4" | 3" | 12217 | PRCD4075 | 40+7.5 | 2" | 4.75" | 12268 |
| PRC35 | 35 | 1-3/4" | 3-3/4" | 12218 | PRCD455 | 45+5 | 2" | 4.75" | - |
| PRC40 | 40 | 1-3/4" | 3-3/4" | 12221 | N PRCD4575 | 45+7.5 | 2" | 4.75" | - |
| PRC45 | 45 | 2" | 3-3/4" | 12223 | PRCD505 | 50+5 | 2" | 5.25" | 12191 |
| PRC50 | 50 | 2" | 3-3/4" | 12225 | N PRCD5075 | 50+7.5 | 2" | 5.25" | 12192 |
| PRC55 | 55 | 2" | 3-3/4" | 12226 | PRCD5010 | 50+10 | 2" | 5.25" | - |
| PRC60 | 60 | 2" | 4-3/4" | 12227 | PRCD555 | 55+5 | 2.5" | 4.75" | 12193 |
| PRC70 | 70 | 2" | 4-3/4" | 12229 | PRCD5575 | 55+7.5 | 2.5" | 4.75" | 12194 |
| PRC80 | 80 | 2" | 4-3/4" | 12199 | PRCD5510 | 55+10 | 2.5" | 4.75" | - |
| | | | | | PRCD605 | 60+5 | 2.5" | 5.25" | 12195 |
| | | | | | PRCD6075 | 60+7.5 | 2.5" | 5.25" | 12196 |
| | | | | | N PRCD705 | 70+5 | 2.5" | 5.25" | - |
| | | | | | PRCD805 | 80+5 | 2.5" | 5.25" | 12197 |
| | | | | | PRCD8075 | 80+7.5 | 2.5" | 5.25" | 12198 |
| | | | | | N PRCD8010 | 80+10 | 2.5" | 5.25" | - |

| 440 VOLTS | | | | | 440 VOLTS | | | | |
|------------|------|----------------|--------|--------------|-------------|--------|--------------|--------|--------------|
| ROUND CASE | | SINGLE SECTION | | | ROUND CASE | | DUAL SECTION | | |
| 50/60 HZ | | | | | 50/60 HZ | | | | |
| Stock No. | MFD | Diameter | Height | Industry No. | Stock No. | MFD | Diameter | Height | Industry No. |
| PRCF5 | 5 | 1-3/4" | 2-5/8" | - | N PRCFD205 | 20+5 | 2" | 4.75" | - |
| PRCF7.5 | 7.5 | 1-3/4" | 2-5/8" | - | PRCFD2015 | 20+15 | 2" | 4.75" | 12277 |
| PRCF10 | 10 | 1-3/4" | 2-5/8" | 12232 | PRCFD255 | 25+5 | 2" | 4.75" | 12278 |
| PRCF12.5 | 12.5 | 1-3/4" | 2-5/8" | 12233 | PRCFD2510 | 25+10 | 2" | 4.75" | - |
| PRCF15 | 15 | 1-3/4" | 2-5/8" | 12234 | PRCFD2575 | 25+7.5 | 2" | 4.75" | 12279 |
| PRCF17.5 | 17.5 | 1-3/4" | 2-5/8" | 12236 | PRCFD2515 | 25+15 | 2" | 4.75" | - |
| PRCF20 | 20 | 1-3/4" | 3" | 12237 | N PRCFD304 | 30+4 | 2" | 4.75" | - |
| PRCF25 | 25 | 1-3/4" | 3-3/4" | 12240 | PRCFD305 | 30+5 | 2" | 4.75" | 12281 |
| PRCF30 | 30 | 1-3/4" | 3-3/4" | 12241 | PRCFD3075 | 30+7.5 | 2" | 4.75" | 12282 |
| PRCF35 | 35 | 2" | 3-3/4" | 12243 | N PRCFD353 | 35+3 | 2" | 4.75" | - |
| PRCF40 | 40 | 2" | 3-3/4" | 12245 | PRCFD354 | 35+4 | 2" | 4.75" | - |
| PRCF45 | 45 | 2" | 4-3/4" | 12248 | PRCFD355 | 35+5 | 2.5" | 4.75" | 12283 |
| PRCF50 | 50 | 2-1/2" | 4-3/4" | 12251 | PRCFD3575 | 35+7.5 | 2.5" | 4.75" | 12284 |
| PRCF55 | 55 | 2-1/2" | 4-3/4" | 12252 | PRCFD403 | 40+3 | 2.5" | 4.75" | - |
| PRCF60 | 60 | 2-1/2" | 4-3/4" | 12254 | PRCFD405 | 40+5 | 2.5" | 4.75" | 12286 |
| PRCF80 | 80 | 2-1/2" | 4-3/4" | - | PRCFD4075 | 40+7.5 | 2.5" | 4.75" | 12287 |
| N PRCF90 | 90 | 2-1/2" | 4-3/4" | - | PRCFD455 | 45+5 | 2.5" | 4.75" | 12288 |
| | | | | | PRCFD4575 | 45+7.5 | 2.5" | 4.75" | 12289 |
| | | | | | PRCFD505 | 50+5 | 2.5" | 5.25" | 12290 |
| | | | | | PRCFD5075 | 50+7.5 | 2.5" | 5.25" | 12291 |
| | | | | | PRCFD555 | 55+5 | 2.5" | 5.25" | 12292 |
| | | | | | PRCFD5575 | 55+7.5 | 2.5" | 5.25" | 12293 |
| | | | | | PRCFD605 | 60+5 | 2.5" | 5.25" | 12294 |
| | | | | | N PRCFD6075 | 60+7.5 | 2.5" | 5.25" | 12295 |
| | | | | | PRCFD6010 | 60+10 | 2.5" | 5.25" | 12296 |

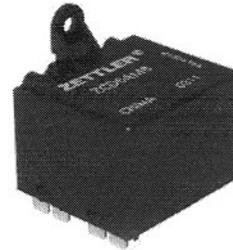
N = NEW ITEM

ZCPR Series

MOTOR START POTENTIAL RELAY

FEATURES

- 50A switching capability
- SPST-NC configurations
- .250" quick connect termination
- ISO 9001 certified
- Variety of mounting positions
- UL, CUR SA11095
- Non-position sensitive design*



ZCPRA6AM6

GENERAL DATA

| | |
|-----------------|---|
| Life Expectancy | Minimum operations |
| Mechanical | 7.5 x 10 ⁵ |
| Electrical | 5 x 10 ⁵ at 16A 400VAC 2 x 10 ⁵ at 35A 400VAC (break only) 1 x 10 ⁵ at 50A 400VAC (break only) |
| Dimensions (mm) | 51.2 x 46.6 x 36.5 |
| Construction | Unsealed |
| Weight | approx. 110 grams |

COIL

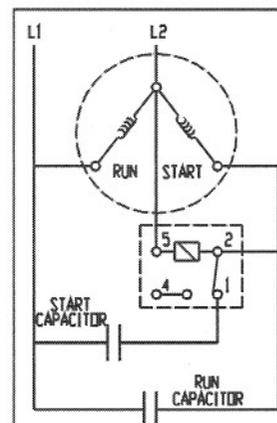
| | |
|-------------------|-----------------|
| Coil Consumption | 5VA |
| Coil Voltage | See table A & B |
| Coil Resistance | See table A & B |
| Insulation System | Class B (130°C) |

CONTACTS

| | |
|-------------|---|
| Arrangement | SPST-NC |
| Ratings | 16A (make and break), 400 VAC, $\cos \phi = 0.7$ to 0.8 35A (break only), 400 VAC $\cos \phi = 0.7$ to 0.8 50A (break only), 400 VAC $\cos \phi = 0.7$ to 0.8 |
| Material | Silver cadmium oxide |
| Resistance | < 50 milliohms at 1A 24VDC |

*Except in position #3

WIRING DIAGRAM



AMERICAN ZETTLER, INC.

www.azettler.com

75 COLUMBIA • ALISO VIEJO, CA 92656 • PHONE: (949) 831-5000 • FAX: (949) 831-8642 • E-MAIL: SALES@AZETTLER.COM

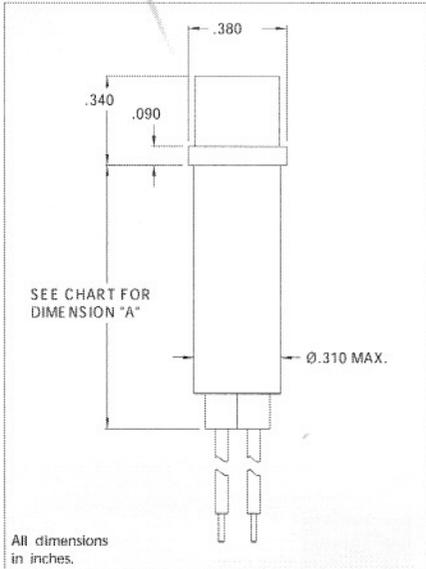
7/27/06



CML INNOVATIVE TECHNOLOGIES
WHERE INNOVATION COMES TO LIGHT

2150A, 2151A, 2112A, 2152A, 2153A and 2194A Series Non-Relampable Neon-Incandescent Indicator Lights

DESCRIPTION AND FEATURES



Mounting: Ø.310 MIN., supplied with push-on speednut SN1287.

Wire Leads: No.22 AWG (105°C) 4.40/4.80 long, stripped .430/.570

Lens: Polycarbonate-neon transparent, incandescent-translucent

Bezel: Polished stainless steel. For black finish add "X" after the series letter(s).

Housing: White Nylon

| Lens Color | Neon | | Incandescent | |
|------------|------------------------|------------------------|-----------------|-----------------|
| | Model No. (105-125VAC) | Model No. (208-250VAC) | Model No. (12V) | Model No. (28V) |
| Red | 2150A1 | 2151A1 | 2194A1-12V | 2194A1-28V |
| Clear | 2150A2 | 2151A2 | - | - |
| Amber | 2150A3 | 2151A3 | 2194A3-12V | 2194A3-28V |
| White | 2150A4 | 2151A4 | 2194A4-12V | 2194A4-28V |
| Green | 2152A5* | 2153A5* | 2194A5-12V | 2194A5-28V |
| Blue | 2152A6** | 2153A6** | - | - |
| Lamp used | C2A+Resistor | C2A+Resistor | #2162 | #2187 |
| Lead Color | Black | Black/Red | Yellow | Purple |
| "A" DIM | 1.310 | 1.310 | .830 | .830 |

* Incorporates G2B lamp and resistor.

** Incorporates T2B lamp and resistor.

Underwriters Laboratories (UL) File No. E20325

Canadian Standards Association (CSA) File No. LR13346



CML
INNOVATIVE TECHNOLOGIES
WHERE INNOVATION COMES TO LIGHT

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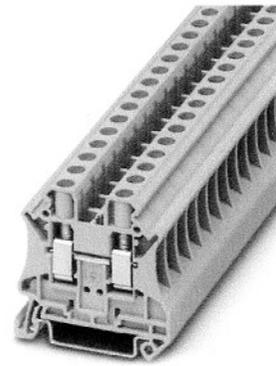
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Tel: (65)9630-5003
e-mail: asia@cml-it.com

CML-IT reserves the right to make specification revisions that enhance the design and/or performance of the product

2150A, 2151A, 2112A, 2152A, 2153A and
2194A Series Non-Relampable
Neon-Incandescent Indicator Lights

UT 6

Order No.: 3044131

<http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=3044131>Universal terminal block with screw connection, cross section: 0.2 - 6
mm², AWG: 24 - 8, width: 8.2 mm, color: Gray**Commercial data**

| | |
|--------------------------|-------------------|
| EAN | 4017918960438 |
| Pack | 50 Pcs. |
| Customs tariff | 85369010 |
| Weight/Piece | 0.01503 KG |
| Catalog page information | Page 27 (CL-2007) |

Product notesWEEE/RoHS-compliant since:
10/26/2006

[http://
www.download.phoenixcontact.com](http://www.download.phoenixcontact.com)
Please note that the data given
here has been taken from the
online catalog. For comprehensive
information and data, please refer
to the user documentation. The
General Terms and Conditions of
Use apply to Internet downloads.

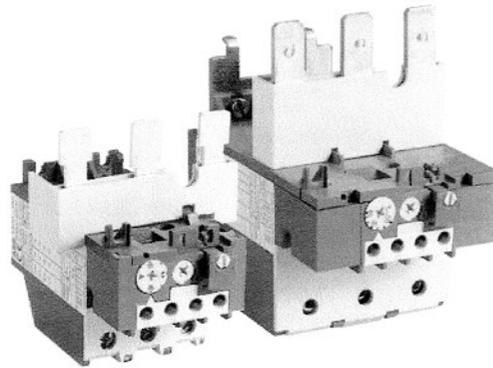
Technical data**General**

| | |
|-----------------------|------|
| Number of levels | 1 |
| Number of connections | 2 |
| Color | gray |

Thermal Overload relays



Thermal overload relays Type TA Class 10



Description

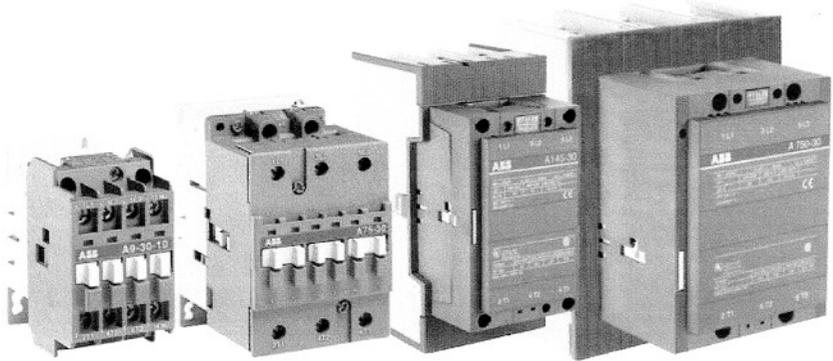
- Available for starter construction with A Line contactors and separate panel mounting
- Designed for close couple mounting
- Separate base mounting available for all overload relays
- Class 10 adjustable overload relays are standard with all ABB Line starters
- Reset can also be adjusted to function as a stop button
- Screwdriver guide holes
- All terminal screws are available from the front
- UL File No: E48139
- CSA File No: LR98336
- Trip indication
- Remote trip and reset option available
- Single phase and phase unbalance protection
- Isolated alarm circuit (N.O.) contact
- Ambient compensation: -25°C to +55°C (-13°F to +131°F)
- Manual test
- Manual or automatic reset
- Factory calibrated and tested
- Wide adjustment range

Tripping classes of the thermal overload relays

Standard classes in IEC 947-4-1 are classes: 10 A, 10, 20, 30. The tripping class indicates according to IEC 947-4-1 the maximum tripping time in seconds under specified conditions of test at 7.2 times the setting current and specifies tripping and non tripping times for 1.5 and 7.2 times the setting current. Mostly used class is 10 A.

Abstract from IEC 947-4-1

| Tripping class | 10 A | 10 | 20 | 30 |
|--|-------------|--------|--------|--------|
| Max. tripping time at 1.5 x setting current (warm state) (s) | 120 | 240 | 480 | 720 |
| Tripping time at 7.2 x setting current (cold state) (s) | 2 – 10 | 4 – 10 | 6 – 20 | 9 – 30 |
| At 1.05 x setting current | no tripping | | | |



Across the line Contactors

A9 - A110

- Maximum UL/CSA horsepower ratings according to UL508 and CSA22.2 No. 14
- Includes NEMA sizes 00 - 3
- CE mark
- Compact space saving design
- Standard auxiliary contact configurations:
 - A9 - A40 1 NO or 1 NC
 - A50 - A110 1 NO & 1 NC
- Contactor sizes A50 - A110 can be supplied without auxiliaries
- Additional auxiliary contact blocks are available
- D.C. ratings & D.C. control operation available
- Fast, snap-on DIN rail mounting
- Double break contact design
- Snap-on front mounted accessories include mechanical latch, pneumatic timer, and 1 & 4 pole auxiliary contact blocks
- Contactors ensure positive safety between their auxiliary contact blocks.
- Easy coil change
- Captive terminal screws
- NEMA, UL, IEC, CSA, VDE and most other international standards
- Touch safe design: All connection terminals are protected against accidental touch
- Terminals supplied open for ease of wiring
- Operates over an extended voltage range of 85% to 110% of rated control voltage
- Screwdriver guide holes
- UL File No: E39231 (A9 - A75); (AE9 - AE75); (AL9 - AL40); (AF50 - AF75)
- UL File No: E79416 (A95 - A110); (AE95 - AE110); (AF145 - AF750)
- CSA File No: LR56745 (A9 - A75); (AE9 - AE75); (AF50 - AF75)
- CSA File No: LR19700 (A95 - A110); (AE95 - AE110); (AF145 - AF750)
- CSA approved for elevator service

A145 - AF1650

- Maximum UL/CSA horsepower ratings according to UL508 and CSA22.2 No. 14
- Includes NEMA sizes 4 - 7
- CE mark
- 1 NO & 1 NC auxiliary contacts are standard and up to 6 additional auxiliary contacts may be added to provide a total of 8 (4 NO & 4 NC)
- Contactors ensure positive safety between their auxiliary contact blocks.
- D.C. ratings and D.C. control operation available
- Easy maintenance of main contacts and coil inspection
- Can be mounted in any position
- Operates over an extended voltage range of 85% to 110% of rated control voltage
- NEMA, UL, IEC, CSA, VDE and most other international standards
- UL File No: E79416 (A/AF145 - AF750)
- UL File No: E73397 (AF1350 - AF1650)
- CSA File No: LR19700



anchor scientific inc.

Box 378, Long Lake, MN 55356 / 612-473-7115 / FAX 612-473-6002

mini-float®

Form 2500-D

mini-float®

DESCRIPTION

Mini-floats are pilot duty devices designed for small diameter sumps and places where space is a determining factor in the selection of a level control device. Mini-floats control the function of motor load devices, such as contactors, motor starters, and power relays, to automatically cycle a pump or pumps. They can also be used for alarm signaling devices. Two Mini-Floats are needed for a one-pump operation; three for a two-pump operation.

SPECIFICATIONS

Cable 18-2 SJOW/A
 Housing Polypropylene
 Clamp Adjustable 1"-4"
 (Only on Type P models)
 Temperature Rating 60° C.

MODELS

Mini-Floats are available in a combination of mounting styles, cable lengths, and circuit configurations. Mounting styles are shown at right: pipe mounted (Type P), and suspended (Type S). 10, 15, and 25-foot cable lengths are standard, but other lengths can be special ordered. Electrical configurations must be specified; normally open, (NO), for pump out applications and normally closed, (NC), for pump in applications.

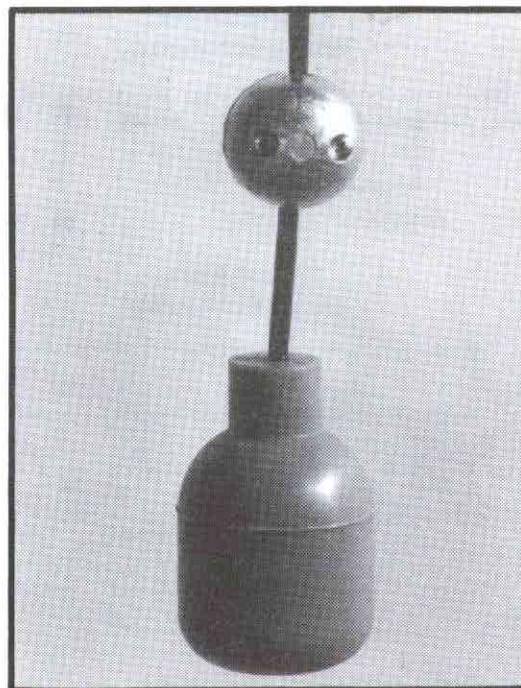
EXAMPLE:

| P | M | 10 | NO |
|--------------------------|--------------|--------------------|--------------------------|
| Mounting Style | Mini-Float | Cable Length | Electrical Configuration |
| ELECTRICAL CONFIGURATION | CABLE LENGTH | SUSPENDED TYPE 'S' | PIPE MOUNTED TYPE 'P' |
| | | MODEL NO. | MODEL NO. |
| NORMALLY OPEN | 10 | SM 10 NO | PM 10 NO |
| | 15 | SM 15 NO | PM 15 NO |
| | 20 | SM 20 NO | PM 20 NO |
| | 25 | SM 25 NO | PM 25 NO |
| | 30 | SM 30 NO | PM 30 NO |
| NORMALLY CLOSED | 10 | SM 10 NC | PM 10 NC |
| | 15 | SM 15 NC | PM 15 NC |
| | 20 | SM 20 NC | PM 20 NC |
| | 25 | SM 25 NC | PM 25 NC |
| | 30 | SM 30 NC | PM 30 NC |

MOUNTING STYLES



TYPE P - M



TYPE S - M



Type 304 welded steel chain is a general purpose, rustproof product for ordinary wastewater applications not requiring high strength or extremely corrosive environments.

Type 316 welded steel chain is a rugged, highly corrosion resistant stainless used in chemical, water, and wastewater plants worldwide.

CHAIN LENGTH:

1' 1.5' 2' 3' 4' 5' 6' 7' 8' 9' 10' 11' 12' 13' 14' 15'
 16' 18' 20' 22' 24' 25' 26' 28' 30' Other _____'

TRADE SIZE - WORKING LOAD

INCHES - LIMIT (lbs.) - MATERIAL DIA. - INSIDE LGTH. - INSIDE WIDTH - WT./100'FT

| | | | | | |
|-------|--------|------|-------|------|-------|
| 3/16" | 1,150 | .217 | .980 | .300 | 38 # |
| 1/4" | 1,860 | .275 | 1.240 | .380 | 61 # |
| 5/16" | 2,425 | .330 | 1.290 | .440 | 84 # |
| 3/8" | 3,800 | .394 | 1.380 | .550 | 140 # |
| 1/2" | 6,425 | .512 | 1.790 | .720 | 234 # |
| 5/8" | 9,725 | .630 | 2.200 | .790 | 358 # |
| 3/4" | 15,175 | .787 | 2.760 | .980 | 551 # |

DO NOT USE FOR OVERHEAD LIFTING

ABS reserves the right to change any Data and Dimensions without prior notice and can not be held responsible for the use of this information.