REQUEST FOR PROPOSAL (RFP)
General Services

NCC TENDER FILE # **AL1636**

ADDRESS ENQUIRIES TO:	**BID CLOSING:**
Allan Lapensée, Sr. Contract Officer (613)239-5051 T (613)239-5007 F Allan.lapensee@ncc-ccn.ca	**March 22, 2016 at 3pm Ottawa time**

RETURN TO:
Submit your proposal, bid bond, signed page 3 of 3 and your price envelope and return to: →

National Capital Commission
Procurement Services
40 Elgin Street
Security Office on the 2nd floor from 8am to 4:30pm
Ottawa, ON, K1P 1C7
Refer to NCC tender file # AL1636

Operation and Maintenance of Lift Stations owned by the National Capital Commission (NCC)

1. Submit a bid bond and four (4) duplicate copies of your technical proposal and one (1) fee proposal (appendices 7A1 and 7A2 and submit in a sealed envelope separate from your technical proposal) to supply services and/or goods for the National Capital Commission (referred to as the "Commission" or the "NCC"), as described in the attached Terms of Reference.

2. As a green initiative, the NCC requests that the Technical Proposal follow these green practices:
   - use recycled paper products
   - print double sided
   - use a maximum font of 11
   - no binders and/or plastic sheets (note plastic/metal spirals are acceptable)

3. Questions and requests for clarification from proponents will be accepted until 12:00 noon on March 11, 2016. Throughout the RFP bidding process, the NCC shall endeavour to provide responses to inquiries (by the issuance of addenda) deemed relevant by the NCC and received in writing by the Contracting Authority. Only information provided in addenda shall be considered to be an integral part of the RFP and any resulting contract. Your questions and requests for clarifications must be submitted in writing and addressed to Allan Lapensée at email allan.lapensee@ncc-ccn.ca

4. Bidder to provide at his own cost the following contract securities:
   (a) with your proposal to ensure entry into a contract a bid bond from an acceptable bonding company, a certified cheque made payable to the National Capital Commission, or, "Cash" in the amount of $ 5,000.00. Please DO NOT seal your bid bond in your financial proposal envelope.
   (b) upon notification of acceptance of tender if requested to do so, a Performance Bond for $ 10,000.00 .

5. The technical proposal is to include all relevant information as defined in the Terms of Reference section 7.

6. Appendices 7A1 and 7A2 (pricing sheets) of the Terms of Reference must be completed in its entirety, signed and submitted in a sealed price envelope separate from the technical proposal documents.

7. One (1) Standing Offer Agreement will also be awarded to the successful bidder for "as needed and requested" services and/or goods under a call-up purchase order.

8. A debriefing of a Proponent's Technical Proposal will be provided, if requested to the NCC Project Manager identified in the letter of notification of contract award, within 15 days of receipt of this notice. The debriefing will include an outline of the reasons the submission was not successful

9. The NCC is a Federal Crown Corporation subject to the Federal Goods and Services Tax (GST), the Ontario Harmonized Sales Tax (OHST), and the Quebec Sales Tax (QST). The successful firm will be required to indicate separately, with the request for payment, the amount of GST, OHST and QST, to the extent applicable, that the Commission will pay. These amounts will be paid to the successful Contractor who will be required to make the appropriate remittances to Revenue Canada and the respective provincial governments.

10. In order to avoid any misunderstanding and be fair to all firms, please note that proposals received after the closing time and date will not be accepted.

11. The Commission reserves the right to not accept the lowest or any of the proposals submitted, to cancel the Request for Proposal, and/or to reissue the Request for Proposal in its original or revised form. The Commission also reserves the right to negotiate with the successful proponent and/or any/all proponents.

12. Page 3 of 3 of this Request for Proposal is to be dated, signed and returned with your proposal, thereby acknowledging having read, understood and accepted the Request for Proposal which includes the Terms of Reference, the General Conditions, and any/all other attachments referred to herein.

13. Facsimile transmittal of proposals are not acceptable.

14. Proposals will be held in strict confidence. There will not be a public opening of the proposals submitted for this Request for Proposal. Notwithstanding the foregoing, proponents are advised that as a Crown Corporation, the Commission is subject to the provisions of the *Access to Information Act*. Information submitted by third parties will only be exempted from disclosure if the records or part of them qualify for an exemption under the ATI Act.

15. This Request for Proposal and any contract resulting there from is to be interpreted, construed, governed by, and the relation between parties is to be determined in accordance with the laws of the Province of Ontario and such Federal laws applicable therein.

16. The Commission shall not be obligated to reimburse or compensate any proponent, its sub-contractors or manufacturers in Request for Proposal way for any costs incurred in connection with the preparation of a response to this Request for Proposal. All copies of proposals submitted in response to this Request for Proposal shall become the property of the Commission and will not be returned.

17. This Request for Proposal and all supporting documentation have been prepared by the Commission and remain the sole property of the Commission, Ottawa, Canada. The information is provided to the proponent solely for its use in connection with the preparation of a response to this Request for Proposal and shall be considered to be the proprietary and confidential information of the Commission. These documents are not to be reproduced, copied, loaned or otherwise disclosed directly or indirectly, to any third party except those of its employees having a need to know for the preparation of the Contractor's response, and the Contractor further agrees not to use them for any purpose other than that for which they are specifically furnished.

18. The successful Contractor shall indemnify and save harmless the Commission from and against all claims, damages, costs and expenses sustained or incurred by the Commission resulting from any action or legal proceeding on infringement, made, sustained, brought, prosecuted, threatened to brought or prosecuted, by any person that was under the direction and control of the Contractor during the term of the resulting contract and which person is claiming or claims a moral right, as set out under the Copyright Act. The obligation to indemnify under this clause survives termination of the resulting contract and will remain in force for the duration of the copyright in the work created under the resulting contract. This obligation to indemnify relative to alleged moral rights infringement(s) is in addition to the Contractor's other obligations to indemnify and save harmless which are set out in the Commission's General Conditions.

ADDENDUM ACKNOWLEDGEMENT:
I/We acknowledge receipt of the following addendums _____ (Bidder to enter number of addendums issued, if any) and have included for the requirement of it/them in my/our tendered price.

We hereby OFFER to sell and/or supply to the National Capital Commission upon the terms and conditions set out herein, the supplies and/or services listed above and on any attached sheets at the submitted price(s).

Contractor's Name & Address	Print Name	Date
	Signature	
Tel: Fax: Email address :	_____	

NCC CCN

Canada

TERMS OF REFERENCE

OPERATION AND MAINTENANCE OF LIFT STATIONS OWNED BY THE NATIONAL CAPITAL COMMISSION

February 2016

NCC Tender File No. AL1636

The National Capital Commission (NCC) is seeking proposals for the delivery of operations and maintenance management services of four (4) sewage ejector systems (also called lift stations) in the National Capital region. The contract is for a three (3) year period beginning **June 1, 2016.**

The scope of work will include the maintenance, operation and emergency servicing of the electrical and mechanical systems that are essential for the operation of the sewage ejector systems. The NCC will continue to provide planning and overall management of the assets.

The NCC is requesting proposals with the objectives of supporting high standards of service and excellence at competitive prices. The NCC believes that this proposal call will result in a successful contract award; however, in the event that proposals submitted do not meet these basic objectives, the NCC will not proceed with contract award and will implement alternative service delivery approaches.

Ce document est aussi disponible en français.

Appendices

Appendix 2-D: NCC Environmental Guidelines

Appendix 6-F: Occurrence Report

Appendix 6-G: Unsatisfactory Performance Report

Appendix 7-A (1): Price Form

Appendix 7-A (2): Standing Offer Agreement Rates (SOA)

Appendix 7-B: Bid Bond Form

Appendix 7-C: Performance Bond Form

Appendix A: Barnes pumps (Manufacturers specifications)

Appendix B: Vincent Massey Park, Smith & Loveless pumps (Manufacturers specifications)

Appendix C: Smith & Loveless pumps (Manufacturers specifications)

NOTE: Contractors must have experience with the pumps, components and systems identified in the TOR. Technical specifications are provided here for reference purposes only and in the language in which the Manufacturer distributes them.

SECTION 1 - INTRODUCTION

1.0 CONTEXT

The Urban Lands and Transportation (ULT) division of the NCC manages the natural and built facilities and assets in the Nation's Capital. The Division protects and manages these assets with the objectives of providing a safe and enjoyable experience for all users.

Effective maintenance and lifecycle management is required for a diverse mix of urban assets, from urban conservation areas to naturalized meadow parkways, downtown parks and a variety of fixed assets. The overall objectives of the NCC are to ensure public health and safety, to protect and preserve assets, the environment and to provide for an enjoyable experience. The NCC is committed to planning, developing and implementing all of its programs and activities in a manner designed to minimize adverse effects on the environment and to enhance the environmental resources under its responsibility.

The National Capital Commission (NCC) is proceeding with a RFP for the Operation and Maintenance of four (4) NCC owned Sewage ejector systems (Lift stations).

The maps provided on pages 11 & 12 indicate the geographical locations of the Lift stations that form part of this Contract.

Lift stations:

1. Majors Hill Park
2. Vincent Massey Park
3. Hog's Back Park
4. Rockliffe Pavillon

1.1 SCOPE OF WORK AND DURATION

The National Capital Commission (NCC) is the owner of four (4) Sewage ejector systems in the National Capital Region – also referred to as Lift stations. In order to ensure the functionality and maintenance of these assets the NCC would like to retain the services of a mechanical-electrical contractor to provide all of the required maintenance and emergency repair services required by these assets. The Contract and associated Standing Offer Agreement (SOA) is for a period of three (3) years starting June 1st 2016 and ending on May 31st 2019.

The Contractor will be responsible for all Operation and Maintenance described in this Contract, including spring start-up and fall shut down (Preventive Maintenance), regular inspections and testing (Predictive Maintenance) and emergency servicing (Reactive Maintenance).

SECTION 1 - INTRODUCTION

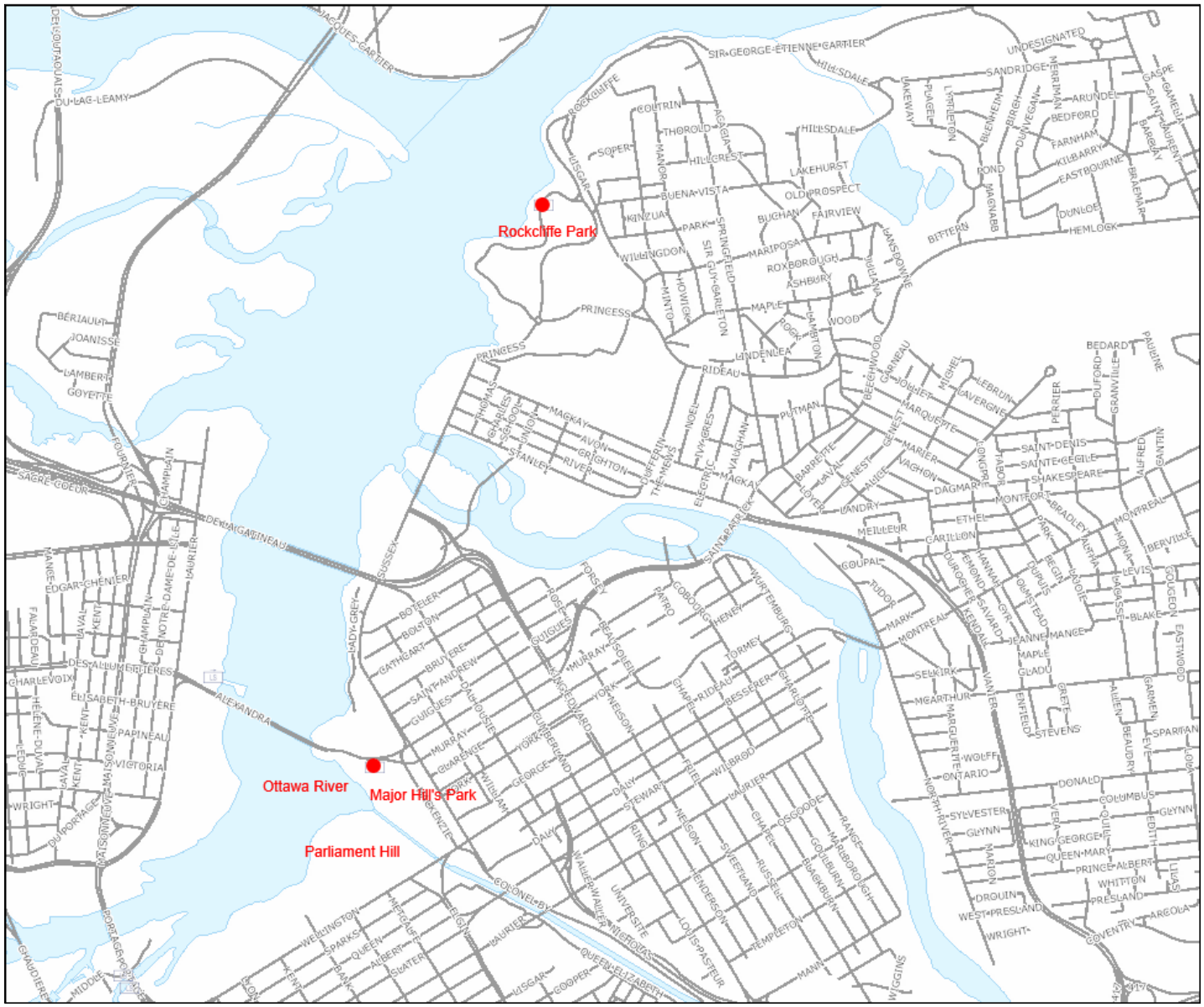
1.2 CONTRACTOR'S OBLIGATIONS

The Contractor agrees to take any and all steps required to fulfill his obligations under this Contract and to comply with the terms of this Contract at all times, completely and faithfully at his cost. The scope of the Contract is established by the body of services required in each section. The Contractor shall perform all work required to fulfill the obligations of this Contract in accordance with all industry standards. The Contractor will ensure that he provides the services required in each section of this Contract even though individual tasks are not all specifically identified, but are required to provide the services requested. Furthermore, the Contractor shall be responsible for any costs resulting from the absence or lack of Predictive, Reactive and/or Preventative Maintenance on his/her part.

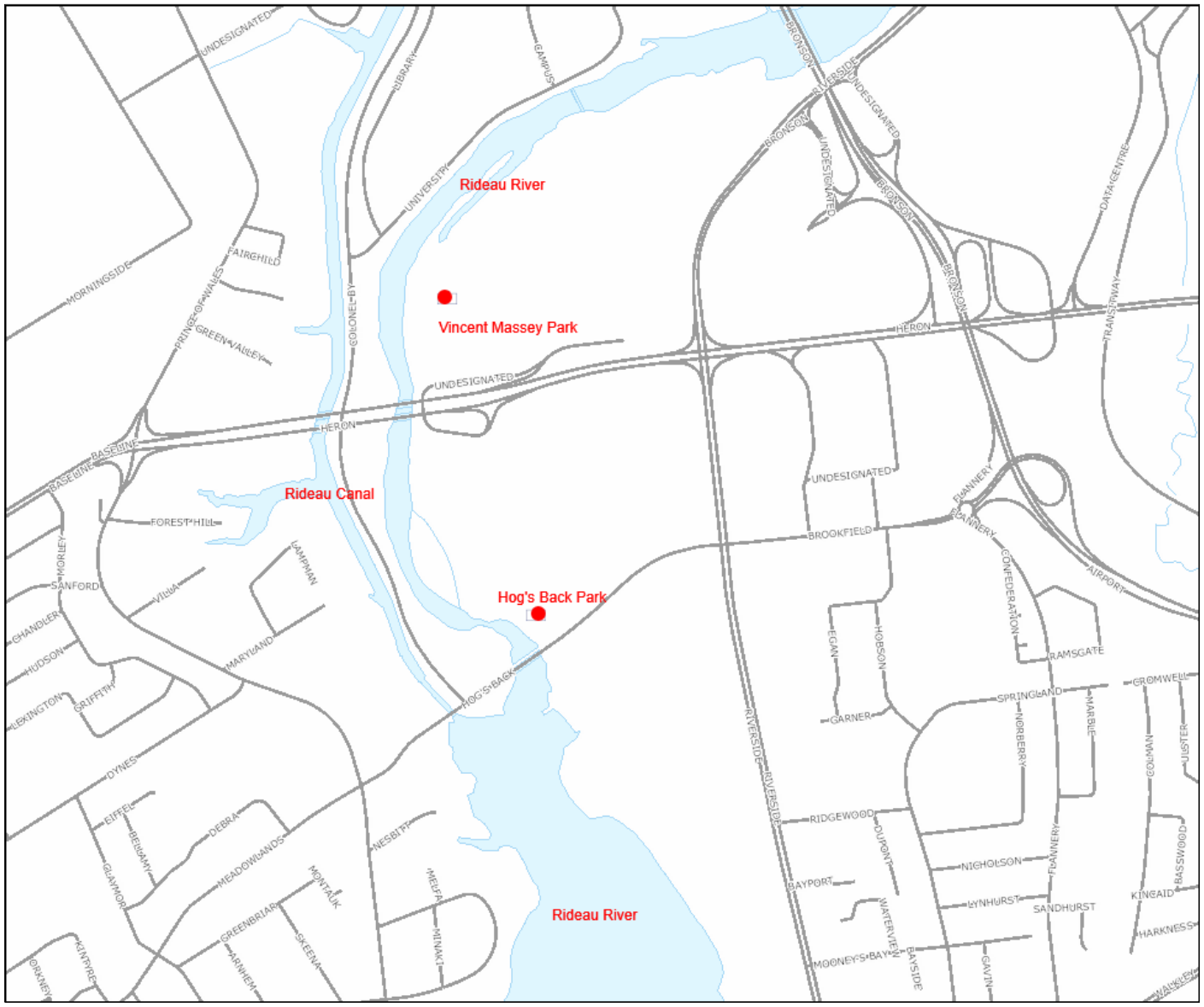
1.3 CONTRACT BOUNDARIES

The Contractor shall provide all services within the geographic boundaries as summarized on the maps that form part of these TOR.

SECTION 1 - INTRODUCTION



SECTION 1 - INTRODUCTION



SECTION 1 - INTRODUCTION

1.4 NCC RESPONSIBILITIES

The NCC is responsible for:

1. Ensuring that all contractual obligations are continuously met by the Contractor.
2. Providing a Contract Management Officer (CMO) for this Contract who shall be the Contractor's principal contact at the NCC.
3. Providing a 24 hour/7 day a week emergency telephone service.
4. Making timely decisions that facilitate the Work to be delivered by the Contractor.
5. Providing plans and specifications where and when available.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.0 DEFINITIONS

In this Contract, the following words, when presented with the first letter in upper case shall have the corresponding meaning:

"**Act**" means the National Capital Act, R.S.C. 1985, c. N-4 as amended and the regulations enacted thereunder.

"**Applicable Laws**" means, at any time, with respect to any Person, property, transaction or event, all then applicable laws, by-laws, statutes, regulations, treaties, judgements, decrees and (whether or not they have the force of law) all then applicable official directives, rules, consents, approvals, authorizations, guidelines, orders and policies of any governmental authorities or Persons having authority over any of such Person, property, transaction or event and includes all Environmental Laws.

"**Business Day**" means any Monday to Friday inclusive, statutory holidays in the Province of Ontario excepted. This definition applies to contract management, but is not applicable to the Work to be performed by the Contractor pursuant to this Contract.

"**Business Hours**" means the hours between 8 a.m. and 5 p.m. on any Business Day. This definition applies to contract management, but is not applicable to the Work to be performed by the Contractor pursuant to this Contract.

"**Component**" means a part of an asset which represents not more than 50% of the total Replacement cost of the entire asset. This includes, but is not limited to, items such as control panels, motors, pumps, etc.

"**Condition based monitoring**" or "**CBM**" means observing and reporting (monitoring, testing, etc.) the state of a system and its Components in order to determine when/if Maintenance is actually necessary.

"**Conservation Officer**" means an NCC employee with peace officer status whose functions include law enforcement and public safety.

"**Consumables**" means products that are routinely used up and purchased while a system is in operation and are intended for recurrent replacement as recommended by the original equipment manufacturer and/or industry best practices. These items include but are not limited to: gaskets, rings, seals, sealants, tapes, adhesives, lubricants, motor oil, pipe thread compounds, cleaners, screws, bolts, washers, clamps, small electrical connectors, fuses, lamps, etc.

"**Contract**" means the contract entered into between the Successful Proponent and the NCC, incorporating, with such changes as may be required by the context, all of these Terms and Conditions, pursuant to which the Successful Proponent agrees to perform all of the specific services in accordance with the standards of performance set out in the Contract and other matters arising out of the successful proposal and accepted by the NCC, if any.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

"**Contract Management Officer**" or "**CMO**" means an NCC employee or delegate whose function is to monitor the Contract on behalf of the NCC.

"**Contractor**" is synonymous with Successful Proponent.

"**Emergency Communication Services**" means, depending on the context, the NCC 24-hour Emergency Communication Service (24 HECS) available 365 days/year at 613-239-5353.

"**Employees of the Contractor**", "**Contractor's Employees**", "**Personnel of the Contractor**" and "**Contractor's Personnel**", whether in upper or lower case, all mean any person employed by the Contractor and include dependent contractors and any subcontractors of the Contractor as well as their employees.

"Environmental Laws" means:

- all federal, provincial, regional or municipal statutes and regulations with respect to environmental or occupational health and safety matters as they may be amended or replaced from time to time;
- the jurisprudence with respect to environmental law and health and safety law; and
- all environmental assessment procedures, rules, ordinances, policies (including, but not limited to, the NCC Environmental Protection Policies Statements set out in Appendix 2-D), guidelines, orders, approvals, notices, permits, judgements, directives, licences, decisions and requirements, with or without force of law, as they may be amended or replaced from time to time.

"**Equipment**" means all tools and machinery that shall be provided by the Contractor in order to fulfil the requirements of the Contract.

"**Event of Insolvency**" means any of the following events:

- if proceedings are instituted by or against the Contractor to cause it to be wound up, dissolved, liquidated and, in the case where such proceedings are instituted against the Contractor, the Contractor acquiesces in such proceedings, or the Contractor has its existence terminated or has any resolution passed therefore, or makes a general assignment for the benefit of its creditors or a proposal under any legislation dealing with insolvency or bankruptcy, or is declared bankrupt or insolvent, or files a petition or answer seeking a reorganization, arrangement, composition, readjustment, liquidation, dissolution or similar relief for itself under any present or future law relating to bankruptcy, insolvency or other relief for or against debtors;
- if a court of competent jurisdiction enters an order, judgement or decree approving a petition or proceedings filed against the Contractor seeking any reorganization, arrangement, composition, readjustment, liquidation, dissolution, winding up, termination of existence, declaration of bankruptcy or insolvency or similar relief under any present or future law relating to bankruptcy, insolvency, or other relief for or against debtors; or

SECTION 2 – TYPICAL TERMS AND CONDITIONS

- if a trustee in bankruptcy, receiver and manager, liquidator, administrator or any other officer with similar powers is appointed for the management of all or any substantial part of the property of the Contractor.

"**Fixed Fee**" means the dollar amount per annum payable by the NCC to the Contractor for each Year of the Term of the Contract.

"**Force Majeure**" means any of the following events which (i) prevents the performance by the Contractor of its obligations pursuant to this Contract, and (ii) is not caused by and is beyond the control of the Contractor: acts of God, earthquakes, tidal waves, hurricanes, windstorms of extreme violence or intensity, other exceptional climatic condition of extreme violence or intensity, lightning, wars (whether declared or not), riots, insurrections, rebellions, civil commotions, sabotage, partial or entire failure of Utilities, strikes or other labour disruptions, shortage of and inability to procure labour, materials and supplies (after best efforts have been made by the Contractor to obtain replacements for such labour, materials and supplies) or orders, legislation, regulations and directives of any governmental authorities. With respect to: partial or entire failure of Utilities, strikes or other labour disruptions, shortages of and inability to procure labour, materials and supplies, or orders, legislation, regulations and directives of any governmental authorities, an increase in the cost on an annual basis of any such factor of less than twenty-five per cent (25%) compared to the amount budgeted for such factor in any approved payment schedule, or a delay of less than two weeks in the time for performance of any services required under the Contract, shall be deemed not to be, and shall not be claimed to constitute an event of Force Majeure.

"**Hourly Rate/Unit Price**" means cost allocated to the services described in Appendix 7-A (2) of the TOR to be provided by the Contractor in conformity with the standards of performance contained in this Contract.

"**Lift station**" or "**Sewage ejector system**" means a component of the sanitary sewage collection system that collects and conveys water, waste water or sewage, by means of pumps, valves and electrical equipment, from a low to high elevation in order for this material to be disposed of at a treatment facility.

"**Maintenance**" means any action taken to keep an asset in a state where it may be safely utilized for its designed or designated purpose. Notwithstanding the generality of the aforementioned, Maintenance also includes:

"**Predictive Maintenance**" means the application of Condition-based monitoring (see definition) or testing of assets for the purpose of early detection and elimination of equipment defects that could lead to unplanned downtime or unnecessary expenditures. Generally speaking, this type of Maintenance is conducted while the equipment is in normal operation, with little or no process interruption. The purpose of this type of Maintenance is to determine the condition of in-service equipment in order to predict when Maintenance should be performed.

"**Preventive Maintenance**" means all systematic, predetermined Work performed to a schedule with the aim of preventing the premature wear and tear or sudden failure of assets

or Components. This type of Maintenance is proactive and usually involves the planned replacement of Consumables or Components based on specifications provided by the manufacturer and/or the NCC and/or as specified in this Contract. For the purposes of this Contract, Preventive Maintenance shall include without limitation such activities as winter protection, regular inspections, start-up and shutdown of systems, spring clean-up, etc.

"**Reactive Maintenance**" means the Maintenance required after an event, malfunction or failure of an asset or a Component. This type of Maintenance is usually (but not exclusively) triggered by equipment failure and requires immediate response and action from the Contractor as defined in this contract.

"**National Capital Region**" (NCR) has the meaning ascribed thereto in the Act.

"**NCC**" means the National Capital Commission.

"**NCC Lands or Buildings**" means lands or buildings owned and maintained by the NCC..

"**NCC Records**" means any records in the custody of the NCC in existence on the commencement date of the Term, pertaining to the Subject Matter and all information, data and records prepared by the Contractor during the Term in relation to the Subject Matter and all reports of same including any correspondence, memorandum, book, plan, map, drawing, diagram, pictorial or graphic work, photograph, film, microfilm, sound recording, videotape, digitally recorded data, and any other documentary material, regardless of physical form or characteristics.

"**Non NCC Sites or Lands**" means lands maintained by the NCC but not owned by the NCC.

"**Operation and Maintenance (O&M)**" means the totality of services, materials, Components and Equipment provided by the Contractor in order to meet the requirements of this Contract.

"**Person**" means any individual, corporation, partnership, trust, other legal entity, other incorporated association or a government or political body.

"**Proponent**" means the party submitting a Proposal in response to these TOR.

"**Proposal**" means a proposal submitted by a Proponent in response to the tender issued by the NCC that shall be subject to evaluation by the NCC for the purpose of selecting a Successful Proponent.

''Standing offer agreement'' (SOA) is an agreement by which a Contractor agrees to supply goods and/or services, as requested by the NCC, for a specific period of time, at prearranged prices and as per the applicable terms and conditions set out in the agreement.

"**Subject Matter**" means the fixed and portable assets and all duties and/or services related thereto, to be performed pursuant to the Contract.

"**Successful Proponent**" means the Contractor, if any, to whom the NCC has awarded the Contract.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

"**Term**" means the period commencing June 1, 2016 and terminating May 31, 2019.

"**Terms and Conditions**" means the Contract and the expressions hereof, herein, hereto, hereunder, hereby and similar expressions referring to these Terms and Conditions; unless otherwise indicated, references to articles, sections and recitals are to articles, sections and recitals in these Terms and Conditions.

"**UPR**" means Unsatisfactory Performance Report. See Appendix 6-G

"**Work**" means the whole of the goods, services, materials, equipment, software, matters and things required to be done, furnished or performed by the Contractor with respect to the Subject Matter in accordance with the terms of this Contract.

"**Year**" means a period of twelve consecutive months during the Term extending from April 1st of one calendar year to March 31st in the next calendar year.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.2 EXTENDED MEANINGS

2.2.1 GOVERNING LAWS AND FORUM

This Agreement shall be governed by, construed and interpreted in accordance with the applicable laws in force in the province of Ontario.

Any dispute arising out of this Agreement shall be subject to the exclusive jurisdiction of the courts of the province of Ontario (Canada).

2.2.2 CURRENCY

Except where expressly provided to the contrary herein, all monetary amounts in this Contract are stated and shall be paid in Canadian dollars.

2.2.3 SEVERABILITY OF PROVISIONS

Each of the provisions contained in this Contract is distinct and severable and a declaration of invalidity or unenforceability of any such provision or part thereof by a court of competent jurisdiction shall not affect the validity or enforceability of any other provision hereof.

2.2.4 ENTIRE CONTRACT

When duly executed by the Contractor and the NCC, the Contract shall constitute the entire Contract between the parties pertaining to the Subject Matter. There shall be no warranties, representations or agreements between the parties in connection with such Subject Matter except as specifically set forth or referred to in the Contract. All the provisions of the Contract shall be construed as covenants and agreements. Except as expressly provided in the Contract, no amendment, or waiver of any provision of such agreement shall be binding unless executed in writing by the party to be bound thereby. No waiver of any provision of the Contract shall constitute a waiver of any other provision and no waiver of any provision of such Contract shall constitute a continuing waiver unless otherwise expressly provided.

2.2.5 HEADINGS & TABLE OF CONTENTS

The inclusion of headings and table of contents in this Contract is for convenience of reference only and shall not affect the construction or interpretation of the provisions set out in this Contract.

2.3 ALTERATIONS

2.3.1 NCC TERMINATION RIGHT

Pursuant to section 40 of the Financial Administration Act, it is a term of every contract for the payment of any money by the NCC, that payment under the Contract is subject to there being a parliamentary appropriation for the fiscal year in which any commitment under the

SECTION 2 – TYPICAL TERMS AND CONDITIONS

Contract is due and payable. If there is no parliamentary appropriation, the NCC shall have the right to deliver notice in writing to the Contractor terminating this Contract in its entirety and the NCC shall not be liable for any damages suffered by the Contractor as a result of such termination.

2.3.2 ALTERATIONS TO SCOPE OF CONTRACT

The NCC reserves the right to make alterations to any part of the Subject Matter at any time or times during the Term by delivery of notice in writing to that effect to be effective from the date stipulated which shall not be earlier than ten (10) Business Days after the deemed delivery date of the written notice.

2.3.2.1 WITHDRAWALS TO CONTRACT – GENERAL

In addition to 2.3.2 and in the event that the NCC elects to permanently or temporarily withdraw any site/service/activity/sub-activity, then the Contractor shall be relieved of any further rights or obligations hereunder in respect of such site/program/service/activity/sub-activity, including without limitation the right to recover any part of the Fixed Fee of the Contract that would otherwise have been payable to the Contractor in respect of such withdrawal. The Contractor acknowledges that should the NCC withdraw any site/program/service/activity/sub-activity, then the Contractor shall have no recourse or any entitlement to damages or any other remedies pursuant to this Contract or otherwise in respect of such decision made by the NCC.

2.4 CONTRACTOR'S OBLIGATIONS

See 1.2 and 1.3

2.4.1 PAYMENT SCHEDULE

The monthly allocation of the annual amounts for purposes of establishing the amount payable to the Contractor for any given month during the Term is subject to the review and approval of the NCC.

2.4.1.1 PREPARATION OF PAYMENT SCHEDULE

The Contractor agrees to prepare and submit a monthly invoicing schedule to the NCC. Once approved by the NCC, the schedule will apply to all invoices for the regular O&M services contained in Appendix 7-A(1). Invoices received by the NCC, once validated and approved, will be paid within 30 days.

2.4.1.2 APPROVED PAYMENT SCHEDULE UNAMENDABLE

Upon receipt of NCC approval of the payment schedule, the allocation of the amounts set out therein shall be fixed for the relevant Year of the Term unless amended as per the permitted alterations to the scope of the Contract (see 2.3.2).

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.4.1.3 LIMITATION ON NCC FINANCIAL OBLIGATIONS

The NCC shall have no obligation, and the Contractor shall not represent to third parties that the NCC has any such obligation, on account of reimbursement of expenses, overhead costs, administrative expenses, or salaries and benefits of employees, except to the extent that such amounts are included in amounts payable pursuant to the payment schedule.

2.4.1.4 HOLDBACK ON FINAL PAYMENT

Upon the expiry or earlier termination of the Term, the NCC shall withhold 50% of the final payment due. The said holdback shall be returned to the Contractor once a physical inspection of Contract assets confirms that they are returned in a condition satisfactory to the NCC.

2.4.1.5 DIRECT DEPOSIT

Payments by direct deposit are presently available to all companies doing business with the NCC. Should your firm be awarded a contract with the NCC and be interested in this method of payment, a completed "SUPPLIER – DIRECT PAYMENT AND TAX INFORMATION FORM" will be required prior to award of contract.

2.4.2 CONDITIONS COMMON TO PERFORMANCE OF ALL MAINTENANCE DUTIES

In addition to the obligations imposed in 2.4.1, the Contractor agrees that it shall comply with each of the following conditions:

2.4.2.1 PERMITTED USES

The Contractor shall not, without the written approval of the NCC, use any part or parts of the Subject Matter or permit them to be used in whole or in part for any purpose or purposes other than those approved by the NCC.

2.4.2.2 DUTY TO ACT IN GOOD FAITH

The Contractor shall act diligently, efficiently, in good faith, in conformity with the requirement of insurers and in accordance with the standards applicable to a prudent owner in performing the duties and services required of it hereunder.

2.4.2.3 WARRANTY

The Contractor warrants that it is competent to perform the Work required under this Contract in that it has the necessary qualifications including, without limitation any licensing or certification requirements imposed by the applicable laws as well as the knowledge, skill and ability to perform the Work.

Any work and/or service provided by the Contractor must be consistent with the established and generally accepted standards for supplies and services of the type covered by this Contract, in full compliance with the requirements and free from defect in material and workmanship. The Contractor agrees that this warranty shall survive the acceptance of and payment for the Work and agrees that the Contractor's obligation under it includes repairing

or replacing any part or parts thereof which shall, within twelve (12) months from the date of delivery or date of completion of the Work, become defective as a result of faulty design, material or workmanship.

2.4.2.4 COMMITMENTS MADE IN CONTRACTOR'S PROPOSAL

In addition to the obligations contained in this Contract, the Contractor hereby undertakes to fulfil the commitments made in its Proposal which is incorporated by reference into this Contract. If there are any inconsistencies between the terms and conditions of this Contract and those set out in the Proposal, the document containing the most extensive obligations on the part of the Contractor shall prevail.

2.4.2.5 SECURITY RISKS

The Contractor shall ensure that none of the Employees of the Contractor and others for whom the Contractor is responsible and who are to perform the Contractor's obligations under this Contract constitute a security risk and shall ensure that all Employees of the Contractor and others for whom the Contractor is responsible who are to perform the Contractor's obligations under this Contract complete the NCC's security screening process in order that the NCC may obtain a security assessment of that person before accessing any site included in this Contract. The security requirements are more specifically described in 2.15.15.

2.5 CONTRACTING

2.5.1 LIMITATIONS ON CONTRACTING AUTHORITY

The Contractor shall not have, and shall not represent that it has, the authority to pledge the credit of the NCC nor purport to create any security interest in any property of the NCC in favour of a third party.

2.5.1.2 PROHIBITION

The Contractor shall not incur any expenditure or enter into any contract on behalf of the NCC except on an arm's length basis.

2.5.2 SUB-CONTRACTING

The Contractor shall advise the NCC of any part of the Work that it wishes to subcontract prior to contracting for such Work and shall allow the NCC to review the terms of reference for such contract. If the scope of Work identified in the terms of reference for such contract or any other part of such contract is not satisfactory to the NCC, the Contractor shall make any modifications that the NCC requires. Any subcontractor used by the Contractor for the purpose of providing services hereunder shall respect all requirements of this Contract.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.6 TREATMENT OF PAYMENTS & RECEIPTS

2.6.1 TREATMENT OF PAYMENTS

2.6.1.1 LIABILITY FOR FIXED FEE

The only amount which the NCC shall be obliged to pay to the Contractor or otherwise in respect of the obligations created by this Contract is the Fixed Fee of the Contract stipulated in the proposal submitted by the Successful Proponent and accepted by the NCC subject to any other amounts mutually agreed upon by the parties.

2.6.1.2 MANNER OF PAYMENT TO CONTRACTOR

Provided that the Contractor is not in default hereunder and subject always to the provisions dealing with set-off or withholding of payments and the provision of 2.6.1.3 below, the NCC shall pay to the Contractor the pertinent monthly amounts set out in the payment schedule approved pursuant to 2.4.1.3 on a thirty day net basis for the work performed in the previous month.

2.6.1.3 DEDUCTION WHERE SERVICES OMITTED OWING TO FORCE MAJEURE OR DEFAULT

Notwithstanding the provisions of 2.6.1.2, in the event that any of the Contractor's obligations hereunder are not performed because of the occurrence of an event of Force Majeure or default, then there shall be a corresponding deduction from the Fixed Fee of the Contract.

2.6.2 OBLIGATION TO VACATE LIENS

The Contractor covenants that it shall not, during the Term, permit any construction lien to be, or to remain registered against the title to any lands included in the Subject Matter by any of its contractors or subcontractors by reason of work, labour, services or material supplied or claimed to have been supplied to the Contractor or to anyone using any part of the Subject Matter through or under the authority of the Contractor. The Contractor shall take all steps necessary to cause any construction lien to be discharged or vacated, as the case may be, at the Contractor's sole expense within thirty (30) days of receiving notice that such lien has been registered, except where such construction lien has arisen in respect of Capital Works that have been performed by third parties pursuant to 2.4.2. Nothing herein shall prevent the Contractor from contesting any liability to a Person for any claim for lien or the validity of any construction lien.

2.7 ACCOUNTING & REPORTING REQUIREMENTS

2.7.1 MAINTENANCE OF OFFICE & RECORDS

The Contractor shall keep and maintain at the head or branch office of the Contractor, in the National Capital Region, full and complete information, data and records of its activities and all financial transactions related to the management and operation of the Subject Matter.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.7.2 OWNERSHIP & ACCESS

All information, data and records prepared by the Contractor during the Term in relation to the Subject Matter, and all reports of same shall be the property of the NCC. The NCC shall have the right at any time or times during the Term and thereafter to unrestricted access to all such information, data, records and reports.

2.7.3 NCC RECORDS

2.7.3.1 OWNERSHIP

The NCC retains ownership of all NCC Records during the Term. For the purpose of clauses 2.7.3.1 to 2.7.3.2, the term “Records” will have the same meaning as is ascribed to the term “Record” in section 1 of the Access to Information Act, R.S.C. 1985, c. A-1, as amended.

2.7.3.2 RETURN OF NCC RECORDS ON TERMINATION

On the expiry of the Term or earlier termination of the Contract, the Contractor shall return the NCC Records, updates thereto, all original leases or agreements and all other documents created during the Term to the custody of the NCC.

2.8

Section 2.8 does not apply to this Contract.

2.9

Section 2.9 does not apply to this Contract.

2.10 INDEMNITIES

2.10.1 UNCONDITIONAL OBLIGATION TO PERFORM

The Contractor covenants and agrees to take, or cause to be taken, such action as may be necessary to cause the Contractor, at all times fully and faithfully, to perform and discharge its obligations under this Contract and each part hereof, and to comply with the Terms and Conditions hereof.

2.10.2 LIABILITY FOR PAYMENTS

The Contractor shall duly perform and observe each and every covenant, proviso or condition in this Contract on the part of the Contractor to be performed and observed, including any and all payments agreed to be paid or payable under the Contract, on the days and at the times and in the manner herein specified. If any default shall be made by the Contractor, in payment of any sums from time to time falling due hereunder as and when the same become due and payable, or in the performance or observance of any of the covenants, provisos or conditions which under the terms of the Contract are to be performed, observed or kept by the Contractor, then the Contractor shall forthwith pay to

the NCC on demand such sums in respect of which such default shall have occurred and all damages that may arise in consequence of the non-observance or non-performance of any of the said covenants, provisos, or conditions.

2.10.3 FORBEARANCE NOT TO CONSTITUTE ESTOPPEL

No neglect or forbearance of the NCC in endeavouring to obtain payment of any amount required to be made under the provisions of the Contract as and when the same become due, no delay of the NCC in taking steps to enforce performance or observance of the several covenants, provisos or conditions contained in the Contract to be performed or observed by the Contractor, no extension or extensions of time which may be given by the NCC from time to time to the Contractor, and no other act or failure to act of or by the NCC shall release, discharge or in any way reduce the obligations of the Contractor hereunder.

2.10.4 INDEMNITY SURVIVES DISCLAIMER OR OTHER DETERMINATION

(This section is only applicable if the NCC requests an indemnifier)

In the event of a determination of this Contract other than by a mutual release in writing between the NCC and the Contractor, or in the event of the determination of this Contract by reason of bankruptcy or by reason of any statutory provision similar thereto, or in the event of a disclaimer of the Contract pursuant to any statute, then the Indemnifiers, at the option of the NCC, shall forthwith execute a new Contract between the NCC as owner and the Indemnifiers as Contractor in respect of the liabilities and obligations that remain unperformed at the date of such termination or such disclaimer. Such Contract shall contain the same owner and Contractor obligations respectively and the like covenants, provisos, agreements and conditions in all respects (including the rights of termination) as are contained in the Contract.

2.10.5 PRIMARY LIABILITY

(This section is only applicable if the NCC requests an indemnifier)

The Indemnifiers are primarily liable, jointly and severally, with the Contractor and not as mere sureties or guarantors. The Indemnifiers shall not be released nor will their liability hereunder be limited or lessened by the NCC granting time, taking or giving securities, accepting proposals, or by time being given to the Contractor, or by any amendment of this Contract, or by any compromise, arrangement, composition or plan of reorganization affecting the Contractor or the Indemnifiers, or by release of any party liable directly as surety or otherwise, or by failure to declare a default under this Contract, or by any dealings whatsoever between the NCC and the Contractor, or by or with any other parties or Persons whomsoever, or by any other act, omission or proceedings in relation to this Contract whereby the Indemnifiers might otherwise be released or exonerated or the liabilities and obligations of the Indemnifiers hereunder effected. The Indemnifiers hereby expressly waive notice of the granting of time, the taking or giving of securities, and any other matter whatsoever referred to in this Contract. No waiver by the NCC of any rights under this Contract shall be effective unless in writing and no such waiver shall be taken in any manner whatsoever to affect those rights or any other rights, except as expressly so

provided in such waiver, and only for such time periods as are provided in such waiver. Nothing except for the performance of all obligations of the Contractor and the Indemnifiers under or contained in this Contract will discharge the Indemnifiers.

2.10.6 NO OBLIGATION TO EXHAUST OTHER REMEDIES

(This section is only applicable if the NCC requests an indemnifier)

The NCC shall not be bound to have recourse to or exhaust its recourse against the Contractor, or in respect of the Letter of Credit, letter of guarantee, performance bond or otherwise before enforcing the NCC's rights against the Indemnifiers under clauses 2.10.4 and 2.10.5. If there be more than one Indemnifier, the obligations of the Indemnifier under clauses 2.10.4 and 2.10.5 shall be joint and several.

2.10.7 INSURANCE

2.10.7.1 MINIMUM COVERAGE

The Contractor shall purchase, provide and maintain in force throughout the Term insurance in the following amounts and containing at least the following endorsements:

Liability Insurance:

Minimum Amounts of Coverage Required:

$5,000,000 per occurrence

Endorsements:

- Premises and operations
- Broad form products and completed operations liability
- Broad form property damage
- Personal injury
- Blanket contractual liability
- Occurrence coverage
- Non-owned automobile, including contractual
- Contingent employers liability
- Employees as additional insured's
- Cross liability
- Severability of interests
- Employers Liability

The insurance policy must cover all activities and/or services that are to be performed by the Contractor to respect its obligations under this Contract. The policy must also include a deductible portion not to exceed $5,000 and the policy must satisfy the NCC in all respect.

2.10.7.2 ASSIGNMENT OF INSURANCE

The Contractor shall have the right to assign its interest in all such insurance to any secured lender. Without limiting the foregoing, any such assignment shall be subject to the requirements of this Contract.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.10.7.3 PREMIUMS

The Contractor shall duly and punctually pay all premiums and other sums of money payable for maintaining the insurance required hereunder.

2.10.7.4 NON-CANCELLATION

Each of the policies for such insurance required herein shall contain a condition to the effect that the insurer shall not cancel such policy or materially alter the coverage afforded by such policy except after sixty (60) Business Days prior written notice to the NCC. The Contractor covenants not to do anything, omit to do anything, or permit anything to be done, or omitted to be done, which shall invalidate, adversely affect or limit any insurance policy referred to herein.

2.10.7.5 EVIDENCE OF INSURANCE

The Contractor shall, concurrently with the execution of the Contract and each subsequent March 15 during the Term and at other times upon the request of the NCC, provide certified copies of the policies of insurance and certificates of insurance required under this Contract as well as satisfactory evidence that such policies are in full force and effect (see 6.1.3).

2.10.7.6 ACKNOWLEDGEMENT OF RELEASE BY CONTRACTOR OF CLAIMS & INDEMNITY

The Contractor hereby releases the NCC, its servants, agents, and those for whom the NCC is in law responsible, from all liabilities, claims, actions, damages, loss and expenses arising out of the Contractor's negligence. The parties acknowledge that the Contractor has agreed that the NCC shall not be liable or responsible in any way for any injury or death to any person or for any loss or damage to any property at any time in, on or related to the Subject Matter, arising out of the Contractor's negligence.

2.10.7.7 ADDITIONAL INSURED'S

All insurance policies to be maintained by the Contractor hereunder shall include the NCC as an additional insured and shall contain a waiver of subrogation in favour of the NCC.

2.10.7.8 INDEMNITY

The parties acknowledge that both during and after the Term, the Contractor agrees to indemnify and save harmless the NCC, its successors and assigns, and all of its heirs and their servants, agents, employees and persons for whom they are responsible at law, in respect of any and all claims actions, causes of action, suits, debts, costs (including all legal fees and disbursements on a solicitor and his/her own clients basis), expenses, losses, claims or demands whatsoever, at law or in equity arising out of the Contractor's negligence and related to the Subject Matter. The Contractor further acknowledges that every indemnity, exclusion of liability, and waiver of subrogation contained for the benefit of the NCC herein or in any insurance policy required to be maintained by the Contractor hereunder, or otherwise maintained by the Contractor, shall extend to and benefit all of the NCC's servants, agents, employees and other persons for whom the NCC is in law responsible.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.10.8 CO-INSURANCE

If any policies of insurance contemplated in this Contract shall contain any co-insurance clause, the Contractor shall maintain at all times a sufficient amount of such insurance to meet the requirements of any such co-insurance clause so as to prevent the Contractor and/or the NCC from becoming a co-insurer under the Terms of such policy or policies and to permit full recovery up to the amount insured in the event of loss.

2.10.9 COVERAGE NOT AVAILABLE

Notwithstanding anything contained in 2.10, in the event that any specific obligation contained in 2.10 shall become obsolete or that insurance to meet such obligation is not available, then the Contractor shall obtain insurance providing for similar coverage which shall be satisfactory to the NCC acting reasonably. In the event the Contractor is unable or unwilling to provide such other similar coverage, then the NCC may obtain such other coverage and recover the cost thereof from the Contractor. If no such similar coverage is available, then a mutually agreeable replacement for such coverage shall be effected by the Contractor. Until the replacement policy is put into effect, the NCC may, at its risk and expense, place such coverage as it deems advisable and in the event, failing agreement, it is later determined by a court or other tribunal having jurisdiction that such coverage is reasonable, the Contractor shall reimburse the NCC the cost of such coverage.

2.10.10 EXCLUSION OF LIMITATIONS ON CONTRACTOR'S LIABILITY

The Contractor's liabilities and obligations shall not be restricted to any sums mentioned as minimums in any of the insurance clauses contained herein nor by any approval of the NCC pursuant to 2.10.9.

2.10.11 LIMITS OF INSURANCE

2.10.11.1 PERIODIC REVIEW

The required limits of insurance shall be reviewed at the request of the NCC and shall be increased at the NCC's request which request shall reflect current experience and appropriate indexing as deemed reasonable by a prudent owner.

2.11 PROHIBITION ON ASSIGNMENT

2.11.1 OUTRIGHT ASSIGNMENT PROHIBITED

The Contractor shall not assign any of its rights and benefits, or any of its duties or obligations hereunder or arising out of this Contract without the prior written consent of the NCC, which consent may be arbitrarily withheld. Every assignment or sub-contract, if any, shall incorporate all the Terms and Conditions of this Contract which can reasonably be applied thereto.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.11.2 EXCEPTIONS

Notwithstanding the provisions of clause 2.11.1, the Contractor may assign its interest in the amounts to be paid by the NCC to the Contractor hereunder as security for a borrowing related to the financing of the activities contemplated herein. The right to give such assignment as security is subject to the Contractor being in good standing hereunder at the time of such assignment as security.

2.12

Section 2.12 does not apply to this Contract.

2.13 TERMINATION

2.13.1 TERMINATION

The Contract shall terminate on the expiry of the Term or any extension thereof provided that on the occurrence of an Event of Insolvency or any other default hereunder, the NCC, in addition to such other remedies that it may have hereunder or at law or in equity, may elect to terminate the Contract.

In accordance with section 40 of the Financial Administration Act, R.S.C. 1985, c.F-11, this Contract is subject to there being a parliamentary appropriation for the fiscal year in which a commitment is made under this Contract. If there is no parliamentary appropriation, the NCC shall have the right to deliver notice in writing to the Contractor terminating this Contract in its entirety and the NCC shall not be liable for any damages suffered by the Contractor as a result of such termination.

2.13.2 DELIVERIES ON TERMINATION

On termination:

a) The Contractor shall within fifteen days thereof deliver a final accounting to the NCC;
b) The Contractor shall immediately surrender to the NCC all NCC Records and keys;
c) The Contractor shall immediately return to the NCC all portable and operational assets, equipment and miscellaneous assets owned by the NCC together with an inventory of same;
d) The Contractor shall immediately return in good working order to the NCC all fixed assets owned by the NCC including any additions or replacements to such inventory.

2.13.3 RIGHTS ON TERMINATION

Any termination of the Contract shall release the parties from any further obligations hereunder except rights and obligations in respect of amounts owing, or to remedies with respect to any defaults or to matters with respect to which indemnities have been given hereunder.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.14 DEFAULT PROVISIONS

2.14.1 DEFAULT

If the Contractor:

a) Fails to keep, perform or observe any of the covenants, agreements, conditions or provisions contained in this Contract that are to be kept, performed or observed by the Contractor and such failure continues for, or is not remedied within:

2 hours verbal notice for emergencies;

24 hours written notice for all others.

If the Contractor has recurrent failures related to the same activity, covenant, agreement, condition or provision of this Contract the NCC only needs to notify the Contractor of the first incident before having recourse to the default and remedy provisions set out in this Contract.

b) Suffers an Event of Insolvency;
c) Purports to make any transfer or assignment of this Contract other than in compliance with the terms of this Contract; or
d) Delays in the performance of one of a series of periodic services that result in a loss for the NCC of all or substantially all of the value attributable to such performance. (Where one of a series of periodic services is delayed, the eventual resumption of performance means that the Contractor's obligations have effectively been reduced with no corresponding savings to the NCC;

then the NCC shall have the following rights and remedies, which are cumulative and not alternative, and are in addition to and not in substitution for any rights or remedies that the NCC may have hereunder and/or pursuant to Applicable Laws:

i) To remedy or attempt to remedy any default of the Contractor under the Contract for the account of the Contractor. The NCC shall not be liable to the Contractor for any loss, injury or damage caused by acts of the NCC in remedying or attempting to remedy such default and the Contractor shall pay to the NCC all expenses incurred by the NCC in connection with remedying or attempting to remedy such default, together with all of the NCC's reasonable administrative expenses;
ii) To recover from the Contractor all damages and expenses incurred by the NCC as a result of any breach by the Contractor;
iii) To terminate the Contract without further notice to the Contractor;
iv) To withhold, in whole or in part, any payments otherwise due to the Contractor hereunder until such default has been remedied;
v) To set-off from the Fixed Fee of the Contract an amount equal to the value of any obligations not performed or periodic obligations delayed by the Contractor;

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.14.2 REMEDIES GENERALLY

Mention in this Contract of any particular remedy of the NCC in respect of the default by the Contractor does not preclude the NCC from any other remedy in respect thereof, whether available at law or in equity or expressly provided for in this Contract. No remedy shall be exclusive of or dependent upon any other remedy, but the NCC may from time to time exercise any one or more of such remedies generally or in combination, such remedies being cumulative and not alternative.

2.14.3 EXTENDED MEANINGS

Unless otherwise indicated, references to articles, sections and recitals are to articles, sections and recitals in this Contract. Changes in grammar, gender, number and syntax required by the identity, structure or nature of the parties shall in all cases be assumed as though in each case fully expressed.

2.15 GENERAL PROVISIONS

2.15.1 NOTICE

Any notice or other communication required or permitted to be given hereunder shall be in writing and shall be given by priority post, personal delivery, facsimile transmission, or electronic mail as hereinafter provided. Any such notice or other communication, if delivered by post at any time other than during a general discontinuance of postal service due to strike, lockout or otherwise, shall be deemed to have been received on the fifth Business Day following the day on which the notice was sent, if personally delivered shall be deemed to have been received at the time it is delivered to the applicable address noted below either to the individual designated below or to an individual at such address having apparent authority to accept deliveries on behalf of the addressee, and if transmitted by facsimile transmission or by electronic mail on the next Business Day following the date of transmission. Notice of change of address shall also be governed by this section. In the event of a general discontinuance of postal service due to strike, lockout or otherwise, notices or other communications shall be personally delivered or sent by fax or e-mail and shall be deemed to have been received in accordance with this section. Notices and other communications shall be addressed as follows:

a) if to the NCC:

National Capital Commission,

40 Elgin Street, Ottawa,

Ontario, K1P 1C7

Attention: Director, Urban Lands and Transportation

b) if to the Contractor: At the address and to the person specified in the Contractor's Proposal.

The word "notice" in this paragraph shall be deemed to include any request, statement or other writing in these Terms and Conditions provided or permitted to be given by the NCC to the Contractor or by the Contractor to the NCC.

2.15.2 TIME OF THE ESSENCE

Time is of the essence of these Terms and Conditions and of the Contract.

2.15.3 JOINT & SEVERAL LIABILITY

If the Contractor comprises more than one Person, the liability of each such Person shall be joint and several.

2.15.4 TAXES & FEES

The NCC shall receive all benefit from input tax credits or rebates attributable to goods and services tax, Quebec sales tax and Ontario harmonized sales tax if applicable.

2.15.5 INFLATION

The NCC shall not allow for any revisions nor modifications to any of the Contractor's fees for reasons of inflationary cost increases.

2.15.6 PARAMOUNCY OF FEDERAL AUTHORITY

Notwithstanding anything contained in this Contract relating to any provincial or municipal statute, by-law, regulation or other enactment, the NCC hereby declares that no such reference shall be interpreted or implied as recognition by the NCC that the Province of Ontario, any municipality, or any other provincial or municipal statute, by-law, regulation or other enactment, has any jurisdiction over the NCC, or the Subject Matter, provided, however, that nothing in this section shall release the Contractor from compliance with any provincial or municipal law as it applies to the Contractor.

2.15.7 DENIAL OF PARTNERSHIP

It is understood and agreed that neither the provisions contained herein nor any acts of the parties hereto shall be deemed to create any relationship of agency, partnership, joint venture or common enterprise other than a contractual one. In all respects the Contractor is acting in its own capacity and all debts and liabilities to third parties incurred are and shall be exclusively for the account of the Contractor.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.15.8 SUCCESSORS

The rights created by this Contract extend to the permitted successors and assigns of each of the NCC and the Contractor, and the liabilities created herein extend to and bind all successors and assigns of each of the NCC and the Contractor.

2.15.9 REPRESENTATION & WARRANTY REGARDING AUTHORITY

The NCC and the Contractor each represent and warrant to the other party that they have full right, power and authority to enter into the Contract and to perform its obligations thereunder.

2.15.10 ACCESS TO INFORMATION

The Contractor acknowledges that the NCC is subject to the provisions of the Access to Information Act (Canada) and may therefore be required to release information pertaining to these Terms and Conditions and the Contract which is the subject of a formal request under that Act and which is not exempt from disclosure under the provisions of that Act.

2.15.11 NO OFFER

No contractual or other rights shall exist between the NCC and the Contractor as a result of the negotiation of the Contract until all parties have executed and delivered the Contract, notwithstanding that the NCC may have delivered to the Contractor an unexecuted copy of the Contract. Such delivery shall be for examination purposes only and does not and shall not create any interest by the Contractor in these Terms and Conditions and the Contract, or raise any estoppel against the NCC. Execution of the Contract by the Contractor and its return to the NCC shall not create any obligation on the NCC, notwithstanding the lapse of any time interval, until the NCC has in fact executed and delivered the Contract to the Contractor.

2.15.12 DISPUTES

It is the non-binding intention of the parties that where a dispute arises between the parties in connection with the Contract, the parties shall attempt to resolve the dispute by negotiating in good faith and where possible by retaining an expert to help resolve the dispute, provided that failure to do so shall in no way affect the jurisdiction of an arbitrator to arbitrate such a dispute. Notwithstanding the intention of the parties to negotiate, any bona fide dispute or question arising over any of the provisions of the Contract, its interpretation or effects shall be submitted to arbitration and not to any other forum. Any arbitration proceeding initiated in relation to these Terms and Conditions and the Contract shall be held in Ottawa, and in accordance with the provisions of the Commercial Arbitrations Act (Canada) as it may be amended from time to time, and any legislation in replacement thereof. The arbitrators shall determine the process of the arbitration having due regard to the intention of the NCC and the Contractor that the arbitration be completed as expeditiously as possible in all the circumstances. An award by the sole arbitrator or panel of arbitrators, as the case may be, shall be final and binding upon the parties. The parties will each pay 50% of the arbitrator's fee unless the arbitrator finds that one of the

parties acted in bad faith throughout the arbitration process, in which case the arbitrator may determine how the payment should be apportioned between the parties.

2.15.13 SECURITY REQUIREMENTS

The NCC complies with Treasury Board's *Policy on Government Security* and consequently, it will require that the Contractor's employees submit to a personal security screening process (Security Clearance Form TBS/SCT 330-60E). The NCC may also perform a credit check when the duties or tasks to be performed require it or in the event of a criminal record containing a charge/offence of a financial nature.

The NCC reserves the right to not award the Contract until such time as the Contractor's employees have obtained the required level of security screening as identified by the NCC's Corporate Security. In this case the level of clearance required will be **reliability.**

The NCC also reserves the right to request that the Contractor submit to a *Designated Organisation Screening* and/or *Facility Security Clearance* – depending on the nature of the information it will be entrusted with. In the event that the Contractor does not meet the requirements to obtain the requested clearance, the Contractor shall take the corrective measures recommended by the Canadian Industrial Security Directorate (of PWGSC) or by the NCC's Corporate Security in order to meet these requirements. If no corrective measures are possible or if the Contractor fails to take the recommended measures, then the Contractor shall be in default of its obligations under this Contract and the NCC shall have the rights and remedies listed in section 2.14, including the right to terminate the Contract without further notice to the Contractor.

As part of their personal screening, individuals may be required to provide evidence of their status as a Canadian citizen or permanent resident as well as any other information/documentation requested by the NCC's Corporate Security in order to complete the screening. The NCC reserves the right to refuse access to personnel who fail to obtain the required level of security screening. The NCC reserves the right to impose additional security measures with respect to this Contract as the need arises.

The Contractor shall appoint one Company Security Representative (CSR) as well as one alternate (for companies who have more than five employees). Selection criteria for the CSR and the alternate are the following:

- They must be employees of the Contractor;
- They must have a security clearance (the NCC will process the clearances once the individuals have been identified).

Responsibilities of the Company Security Representative are as follows:

- Act as liaison between the NCC's Corporate Security and the Contractor to ensure coordination;

SECTION 2 – TYPICAL TERMS AND CONDITIONS

- In collaboration with the NCC's Corporate Security, identify the Contractor's employees who will require access to NCC information/assets as well as any recurring subcontractors (and their employees) who will require similar access and may not be supervised by the Contractor at all times during such access. Ensure that accurate and complete Personnel Security Screening documentation is submitted to the NCC's Corporate Security for the employees/subcontractors who have been identified;
- Ensure that employees/subcontractors, upon notification of having been granted a reliability status, sign the *Security Screening Certificate and Briefing Form* and return it to the NCC's Corporate Security;
- Ensure that only persons who have been security screened to the appropriate level and who are on a "need-to-know basis" will have access to information and assets;
- Maintain a current list of security screened employees/subcontractors;
- Ensure proper safeguard of all information and assets, including any information/assets entrusted to subcontractors;
- If a security incident or suspected breach of security occurs, prepare and submit to the NCC an occurrence report as soon as possible.

2.15.14 OCCURRENCE REPORTS

In the event that any breach or suspected breach of security occurs, then the Contractor shall, in accordance with 6.1.10:

a) In emergency situations such as fire, accident, criminal activity, or serious injury or illness, advise the appropriate authorities of such event such as the fire department or the police; and
b) Forthwith after advising the appropriate authorities, provide a detailed written report of the occurrence to the NCC Conservation Officers and the CMO (see 6.1.10).

2.15.15 TAX STATUS OF THE NATIONAL CAPITAL COMMISSION AND INCOME TAX REQUIREMENTS

2.15.15.1 SALES TAXES

The NCC is a federal crown corporation subject to Federal Goods and Services Tax (GST), Quebec Sales Tax (QST) and/or Ontario Harmonized Sales Tax (HST). These taxes are to be included in all prices quoted by the Contractor. Furthermore, each invoice sent to the NCC must provide and must show the price before taxes. The HST or the GST and QST must be added to each invoice or claim for payment and those taxes are to be shown separately on the invoices. Concurrently, with the execution and delivery of the Contract, the Contractor shall provide the NCC with the Contractor's registration numbers.

2.15.15.2 INCOME TAX REQUIREMENTS

Pursuant to paragraph 221 (1) (d) of the Income Tax Act, the NCC must report on a T1204 supplementary slip payments made under services contracts (including contracts involving a mix of goods and services). The Contractor must provide the NCC with his/her tax account identifiers and supply all other information as requested by the NCC.

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.15.16 INSPECTION RIGHTS

The NCC shall have access at all times during the Term to all parts of the Subject Matter for the purpose of conducting inspections to ensure that all Maintenance duties are being performed in accordance with the Terms of the Contract.

2.15.17 FURTHER ASSURANCES

The parties covenant to execute and provide such further assurances as may reasonably be required to give effect to any provision of the Contract.

2.15.18 CONFLICT BETWEEN PROVISIONS

In case of any discrepancy whatsoever between parts of this Contract or, within a particular section of Parts I or II, the part containing the more extensive obligations on the part of the Contractor shall prevail.

2.15.19 LAWS, REGULATIONS, BY-LAWS

All Work pursuant to this Contract shall be performed in accordance with all existing and future federal, provincial and municipal laws, regulations and by-laws. The Contractor shall be responsible for any charges imposed by such laws, regulations and by-laws, and shall be unable to recover any amounts therefore from the NCC. Without limiting the generality of the foregoing, the Contractor shall be registered and comply with all regulations related to work place health and safety and worker's insurance. The NCC reserves the right to terminate this Contract if the Contractor does not have all the necessary permits and licenses for the execution of the Work. The Contractor shall also ensure that all Work accomplished to meet the requirements of this Contract is in accordance with the latest of the applicable codes and standards (especially Canadian Standards Association) and that any specialized work, such as electricity and plumbing be done by licensed workers.

2.15.20 NO BRIBES

The Contractor warrants that no bribe, gift or other inducement has been paid, given, promised or offered to any official or employee of the NCC for, or with a view to the obtaining of the Contract by the Contractor.

2.15.21 APPLICABLE TRADE CONTRACTS

This procurement is subject to chapter five of the Agreement on Internal Trade (AIT) and is considered excluded coverage, which is not subject to the North American Free Trade Agreement (NAFTA).

2.15.22 OCCUPATIONAL HEALTH AND SAFETY

In this contract, "OHS" refers to occupational health and safety.

2.15.22.1 GENERAL INFORMATION

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.15.22.1.1 With respect to the work to be performed under the terms of the Contract, the Contractor agrees and accepts to perform work equivalent or superior to the standards and best practices prevailing in the industry on the current date and/or to enforce observance of the said standards and best practices.

The Contractor acknowledges that neither the Contractor nor its employees are employees of the NCC or the Crown. Consequently, the Contractor is liable for all health and safety issues concerning its employees.

The Contractor acknowledges that it is responsible for the health and safety of persons on the site insofar as they are affected by the performance of the work, for the safety of property on the site and for the protection of persons adjacent to the site.

2.15.22.1.2 Without limiting the generality of the preceding sections, the Contractor acknowledges, agrees and accepts that it shall comply with the following provisions and that it is obliged to enforce compliance with the said provisions:

a) The provisions of the *Occupational Health and Safety Act* of Ontario and all related regulations, policies or guidelines issued under the said Act for work performed in Ontario;
b) The *Act Respecting Occupational Health and Safety* of Quebec and all related regulations, policies or guidelines issued under the said Act for work performed in Quebec;
c) The applicable provisions of the *Canada Labour Code,* Part II;
d) The laws regarding work standards in the province or provinces where the work is performed;
e) Management and disposal of contaminated soils as per applicable regulations and guidelines;
f) All policies or guidelines issued by the NCC relating to the Contract.

2.15.22.1.3 By entering into a contract with the NCC, the Contractor represents and warrants that it has reviewed and is aware of the obligations imposed by the legislative measures contained in subsection 2.15.22.1.2 above.

2.15.22.1.4 After being informed that its bid has been retained and prior to and as a condition of contract award, the Contractor shall, at its own expense, submit to the NCC its health and safety plan, including:

(a) Its health and safety plan for the work required under this Contract. This plan shall include, but shall not be limited to:

i. A list of known and/or foreseeable health and safety risks to which persons participating in the work may be exposed because of the nature, location or method of performing the work;
ii. For each identified risk, the control measures the Contractor intends to take (including work organization, job hazard analysis, safe work method and work supervision);

iii. The list of regulatory safety materials, equipment, devices and clothing required because of the nature, location or method of performing the work;
iv. Instructions indicating when and how the above-mentioned regulatory safety materials, equipment, devices and clothing must be used;
v. Procedures for work involving contaminated soils;
vi. The Contractor's related training and communication plan;
vii. Its site inspection and equipment and vehicle preventive maintenance program;
viii. Its accident notification and investigation protocol.

NCC approval of the Contractor's OHS plan does not modify the Contract provisions relating to establishing responsibility for performance or non-performance of the OHS obligations. Notwithstanding the said approval, the Contractor must meet its obligations.

(b) The inventory of dangerous products and material safety data sheets for all products it intends to use;

(c) A clearance certificate from the Workplace Safety and Insurance Board (WSIB) and/or a confirmation of registration from the Commission de la Santé et de la Sécurité du Travail confirming that the Contractor is registered and that its file is in good standing.

2.15.22.1.5 Without restricting the scope of subsection 2.15.22.1.3 **prior to commencing work**, the Contractor must, at its own expense:

(a) Take all necessary precautions to bring health and safety risks to the attention of persons participating in the performance of the work and other persons admitted to the site or place of work;

(b) Supply the regulatory safety materials, equipment, devices and clothing to persons participating in the performance of the work and other persons admitted to the site or place of work;

(c) Ensure that persons participating in the performance of the work and other persons admitted to the site or place of work are familiar with the use of the regulatory safety materials, equipment, devices and clothing;

(d) Ensure that persons participating in the performance of the work are trained and competent in their field in order to control health and safety risks;

(e) Ensure that persons participating in the performance of the work and other persons admitted to the site or place of work are familiar with the relevant occupational health and safety policies and procedures of the NCC or other authorities.

2.15.22.1.6 It is understood that the Contractor shall not start work before satisfying the requirements of subsections 2.15.22.1.3 and 2.15.22.1.4. During the Term of the Contract, the Contractor must provide the NCC with up-to-date clearance certificates from the Workplace Safety and Insurance Board and/or certificate of compliance from the Commission de la Santé et de la Sécurité du Travail confirming that it is registered and that its file is in good standing. Such certificates shall be delivered every sixty (60) days in the case of Ontario and twice annually in the case of Quebec. If the Contractor does not provide

up-to-date certificates the NCC may immediately terminate the Contract without notice and without contractual liability toward the Contractor.

2.15.22.1.7 For the purposes of subsections 2.15.22.1.1 to 2.15.24.1.6, "regulatory" means determined in conformity with *Canada Labour Code* regulations.

2.15.23 Standing Offer Agreement (SOA)

The Contractor must provide an Hourly Rate/Unit Price for Reactive Maintenance as indicated in Appendix 7-A(2). These Hourly Rates/Unit Prices must be representative of the calculations used in establishing the financial component of the proposal where applicable. In the absence of provisions specifically dealing with a particular site or activity, these rates may be used as a basis to calculate any increase or savings resulting from additions, adjustments or deletions from this Contract (see 2.3 Alterations). In addition, the NCC intends to award a Standing Offer Agreement (SOA) to the Successful Proponent for the provision of additional services and Maintenance not specifically mentioned in the Contract. The SOA shall be based on the rates provided in the Hourly Rate/Unit Price form (see Appendix 7-A (2). Note the SOA rates will also be amended as per the CPI process shown below in item 2.16

Note: Appendix 7-A (2) must be submitted in the Fee Proposal envelope described in Section 7.

2.16 Yearly Adjustment to Fixed Fee of Contract

The NCC shall use the Consumer Price Index (CPI) to adjust on a yearly basis the Fixed Fee of the Contract. The Fixed Fee for the first Year of the Contract shall be the amount as provided by the Contractor and indicated in Appendix 7-A (1) and (2). For subsequent Years of the Contract, the Fixed Fee shall be established as follows:

2.16.1 Year Two of Contract (April 1, 2017 to March 31, 2018)

The annual Fixed Fee (excluding taxes) for the second Year shall be based on the annual Fixed Fee (excluding taxes) during the first Year (June 1, 2016 to March 31, 2017) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2016 and December 2017, plus applicable taxes.

Example only:

CPI-by city (monthly) for Ottawa-Gatineau for December 2009 is 133.9.

CPI-by city (monthly) for Ottawa-Gatineau for December 2008 was 131.6.

% difference = ((133.9/131.6) x 100) - 100 = 1.7% increase

(decrease if % difference is negative)

SECTION 2 – TYPICAL TERMS AND CONDITIONS

2.16.2 YEAR THREE OF CONTRACT (APRIL 1, 2018 TO MARCH 31, 2019)

The annual Fixed Fee (excluding taxes) for the third Year shall be based on the annual Fixed Fee (excluding taxes) established for the second Year (April 1, 2017 to March 31, 2018) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of December 2017 and December 2018, plus applicable taxes.

Note: The Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau is available on Statistics Canada's website at http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/cpis02a-eng.htm,in table "Consumer Price Index by city (monthly) All items for Ottawa-Gatineau".

2.16.3 YEAR THREE OF CONTRACT – SPRING ONLY (APRIL 1, 2019 TO MAY 31, 2019)

The annual Fixed Fee (excluding taxes) for the third Year shall be based on the annual Fixed Fee (excluding taxes) established for the third Year (April 1, 2018 to March 31, 2019) plus or minus a price adjustment based on the Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau (AIOG), specifically the percentage difference between the CPI – AIOG of January 2019 and March 2019, plus applicable taxes.

Note: The Consumer Price Index (CPI) – by city (monthly) All items for Ottawa-Gatineau is available on Statistics Canada's website at http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/cpis02a-eng.htm,in table "Consumer Price Index by city (monthly) All items for Ottawa-Gatineau".

SECTION 3-GENERAL REQUIREMENTS

3.0 INTRODUCTION

This section identifies the general requirements of the Contract. These activities support the provision of services described in sections 4 (Operational Services) and 6 (Reporting) of the Contract.

3.1 EMPLOYEES

3.1.1 GENERAL

Any employee hired by the Contractor shall be fluent in one of the two official languages of Canada, respect all safety requirements and act in a manner that does not adversely affect the reputation of the Subject Matter and/or the NCC.

3.1.2 EXPERIENCE

The Contractor shall ensure that the following requirements are met and maintained by his/her employees for the duration of the Term of the Contract:

- Any person in a supervisory capacity shall have at least five (5) years experience in the areas relative to the Subject Matter of this Contract.
- Field employees shall have appropriate experience and skills to perform the duties of the Contract. New seasonal workers shall be supervised at all times by experienced employees.
- All employees must, when applicable, have appropriate safety training, security clearances and trade certifications (see article 2.15).

The Contractor shall ensure that he/she is able to demonstrate at any time to the NCC that he/she is in compliance with the experience requirements as indicated above by providing any and all proof of work experience for all of his/her employees.

3.1.3 WORK DRESS

All field employees of the Contractor shall be dressed, at the Contractor's expense, in a neat presentable fashion and wear approved safety equipment when required. All employees shall wear an appropriate standard uniform adapted to their area of activity with the company name prominently displayed.

3.1.4 REPLACEMENT OF EMPLOYEES

Any employee hired by the Contractor will be relieved of his/her duties and immediately replaced by the Contractor, if in the opinion of the NCC, this employee is unqualified or is acting in a manner contrary to the best interests of the NCC or if the employee does not meet the requirements stated above.

3.1.5 ART OF TRADE AND CERTIFICATION

Furthermore, the Contractor shall respect all trade certification when required by law.

SECTION 3-GENERAL REQUIREMENTS

Any work to be performed by the Contractor or by a subcontractor working on behalf of the Contractor must be done in accordance with the art of the trade and must follow any and all guidelines, requirements and specifications as set out by such trade.

The Contractor will operate in accordance with all federal, provincial and municipal codes and standards. Proper safety precautions must be exercised at all times, with extra precautions taken to protect the general public.

3.1.6 NCC REGULATIONS AND ENVIRONMENTAL GUIDELINES

The Contractor shall ensure its agents and employees are familiar with and comply with the NCC Environmental Guidelines and other specific directives relating to its facilities and services.

3.2 HOURS OF WORK

All applicable municipal by-laws with respect to hours of work, including those related to noise or other issues, must be followed except in emergency situations.

3.3 RESPONSE TIMES

The Contractor will provide a 24/7 service for Reactive Maintenance. The said service shall include a dedicated telephone line to respond to any and all emergency situations that relate to the Subject Matter of the Contract. The Contractor must return all calls received within 30 minutes. The telephone number for the Reactive Maintenance service shall remain the same for the duration of the Term of this Contract and shall be given to the NCC Call Centre and to the NCC 24-hour emergency service centre. The Contractor will respond to requests for Reactive Maintenance services within the following time requirements:

i. Return all calls received within 30 minutes.

ii. 60 minutes on-site response time[1] between 5:00 a.m. and 8:00 p.m.

iii. 90 minutes on-site response time between 8:00 p.m. and 5:00 a.m.

[1] Response time as set out in 4.2.1.3 ii & iii are calculated from the time the Contractor returns the call to the appropriate NCC representative.

SECTION 3-GENERAL REQUIREMENTS

3.4 VEHICLES, MATERIALS & ASSETS

3.4.1 VEHICLES

The Contractor shall provide all vehicles required to fulfill the contractual obligations of this Contract. This includes any vehicles required for transportation purposes and/or for providing Maintenance services as requested in this Contract. The Contractor shall assume all risks inherent to the use of general or specialized vehicles. All vehicles used by the Contractor shall be kept in a clean and presentable condition, exempt of rust, and shall meet all provincial safety standards. The company name shall be prominently displayed on vehicles. Contractor vehicles shall be parked only in designated areas.

To the extent possible the Contractor will minimize unnecessary idling of vehicles which can result in the creation of greenhouse gases (refer to municipal by-laws). When replacing fleet vehicles, the NCC encourages the Contractor to select energy efficient and environmentally responsible equipment (small pick-ups, 4-stroke motors, alternate fuels, etc.).

3.4.2 MATERIALS

3.4.2.1 STANDARDS

All materials and parts supplied by the Contractor must be new and conform to applicable standards of Canada Government Standards Board, Standards Council of Canada, Canadian Standards Association (CSA), Underwriters Laboratory of Canada (ULC), National Building Code. The Contractor shall not use an alternate type or lower quality material on any given site, nor shall the Contractor mix types or qualities of material on any site.

3.4.2.2 SUBSTITUTION

When the material to be used is in question and/or if the Contractor is unable to find materials and equipment identical to those specified or being replaced, the Contractor shall present samples to the NCC for prior approval.

3.5 MONITORING

3.5.1 MONITORING & EVALUATION

3.5.1.1 CONTRACTOR

The Contractor must identify a supervisor and/or foreman who shall be equipped with a cellular phone and a digital camera and be available to take all calls from the NCC, 24 hours a day, seven days a week for the duration of the Contract (note: supervisor “availability” does not entail “on-site availability” 24 hours a day, seven days a week).

SECTION 3-GENERAL REQUIREMENTS

3.5.1.2 CONTRACT MANAGEMENT OFFICER (CMO)

The NCC shall provide a Contract Management Officer (CMO) for this Contract who shall be the Contractor's principal contact at the NCC (see 1.4.1). The CMO shall make random inspections to ensure that all Contractual obligations are met. The CMO shall inform the Contractor of his/her observations. A formal evaluation shall be conducted twice yearly. The purpose of the evaluation is to identify areas of improvement.

3.5.2 UNRESOLVED OR RECURRENT ISSUES

In the case of any unresolved or recurrent issues, the NCC may at its own discretion record the matter on an unsatisfactory performance report (UPR; see Appendix 6-G). The Contractor shall respect and implement all recommendations indicated on the UPR to the full satisfaction of the NCC (for any unresolved or recurrent issues, the NCC may also wish to exercise its rights and remedies under the default clause – see 2.14).

The NCC reminds the Contractor of the importance of compliance with all of the performance standards associated with each of the required services outlined in the Contract.

3.6 COMMUNICATION DEVICES AND TECHNOLOGIES

The Contractor shall be required to provide as part of this Contract, all of the following communication devices: telephones, cellular phones, voice mail, fax machines, E-mail and digital cameras. The Contractor shall be responsible for purchasing all necessary equipment (including installation fees) and for all costs related to their use (including long distance charges). The cellular phone number shall remain the same for the entire Term and shall be given to the NCC before June 1, 2016.

3.7 CHANGE OF DATES

The NCC may, at its sole discretion, change deadlines for any O&M requirements which are weather dependant, i.e.; the spring start-up. The NCC shall notify the Contractor in advance of any changes of deadlines. The Contractor shall modify his/her work plan accordingly and provide all O&M services respecting the revised deadlines as determined by the NCC.

3.8 EMERGENCY INTERVENTION

The Contractor will provide a 24 hour/7 days a week Reactive Maintenance service. The said service is described in detail in 4.2.1.3.

3.9 PUBLIC SAFETY

The Contractor shall take all necessary precautions and/or measures to ensure that all work, activities or operations undertaken by the Contractor to fulfil the obligations of this Contract are accomplished in a manner that does not compromise public safety.

SECTION 3-GENERAL REQUIREMENTS

3.10 LOCKING DEVICES

The NCC has an established hierarchical lock and key system. At the beginning of the Contract, the NCC will provide the Contractor with three copies of each key required for the execution of the duties described in this Contract. The Contractor shall be responsible for maintaining, replacing and providing at his/her own expense any stolen or lost keys. The Contractor must also control the distribution of keys in his/her possession. To do so, the Contractor shall maintain a register (date, name, telephone number, number of keys and signature) of all employees, subcontractors and users to whom he/she has provided keys. The Contractor could be required to provide the said register to the NCC upon request.

3.11 DAMAGE CAUSED BY CONTRACTOR

3.11.1 GENERAL

The Contractor shall be responsible for any damages that it causes to NCC property. Any damage is to be reported immediately to the NCC on an occurrence report.

3.12 ENVIRONMENTAL REQUIREMENTS

The Contractor shall comply with all relevant federal, provincial and municipal environmental legislation. The Contractor shall also comply with the additional environmental requirements as listed in NCC Environmental Guidelines (Appendix 2-D). The Contractor will establish a response plan for toxic spills (see 6.1.8 for reporting). **This plan will be submitted to the NCC for approval within thirty days of Contract commencement**. Should there be a spill of toxic products (e.g. motor oil), the Contractor will immediately stop the further release of the contaminant, apply absorbent material to contain the spill and advise the NCC Emergency Service (24 hours) at 613-239-5353. The Contractor will be responsible for returning the contaminated site to its original condition according to NCC specifications. Any contaminated material will be removed and disposed of at an approved site outside of NCC Lands and an appropriate chain of responsibility document will be filed with the NCC.

3.13 MEDIA RELATIONS

The Contractor shall not act as a spokesperson for the NCC in dealing with the media. All requests for interviews or information on NCC matters made by the media must be forwarded to the NCC. The Contractor shall not give interviews without prior written approval from the NCC.

3.14 TRANSITION

The Contractor shall ensure a seamless transition at the beginning, renewal (if any), and termination of this Contract. Furthermore, the Contractor shall provide assistance to the future contractor as well as to the NCC by ensuring continued services during the transition period. The Contractor shall make himself available, at no additional cost to the NCC, until

at least 60 working days after the termination of the Contract for any post evaluation reports, special meetings or other tasks requested by the NCC.

3.15 SITE ACCESSIBILITY

The Contractor shall provide assistance to any third party requiring access to any of the Lift station sites. In many cases, the type of assistance required is limited to opening and closing a site or facility to a third party. This entails dispatching one of his/her own employees to a designated location to allow access to personnel authorized by the NCC. The designated Contractor employee shall also close and lock the door once access is no longer required. In other cases, it also includes remaining on site with the third party until the work or the inspection is completed. The NCC shall provide reasonable notice to the Contractor. Most requests for access are during regular work hours.

SECTION 4-OPERATIONAL SERVICE REQUIREMENTS

4.0 OPERATIONAL SERVICE REQUIREMENTS

The objective of section 4 is to provide a detailed description of the O & M requirements of the Contract.

4.1 WORK STANDARDS

The Contractor agrees to use best practices and to comply with the Terms and Conditions of this Contract and with all applicable laws in effect during the Term. The Contractor shall perform all work required to fulfill the obligations of this Contract in accordance with all industry standards. Any work performed by the Contractor that does not respect the O & M requirements of Section 4 is considered non-compliant and constitutes an event of default under 2.14 of this Contract.

4.2 O&M REQUIREMENTS

The Contractor shall provide at his/her own expense O&M services to assets and Components as indicated in this section.

4.2.1 WORK COMMONLY REQUIRED FOR ALL SITES;

4.2.1.1 PREVENTIVE MAINTENANCE

Annual Preventive Maintenance is performed once yearly during the month of April, or as scheduled by the NCC. This task is also sometimes referred to as the **spring start-up**. Annual Preventive Maintenance must include, but is not limited to testing, cleaning and maintaining;

- All pump(s) functions
- Floats and float systems
- High water alarm(s)
- Junction box(es) and control systems
- Amperage draw
- Valve(s)
- Piping
- Tank integrity
- Access and egress components (hatches, doors, locks, etc)
- Interior tank surfaces
- Component(s) surfaces
- Fire extinguisher(s)
- Other Components that are integral to the operation of the system(s)

As part of the annual Preventive maintenance, the Contractor must supply all Consumables required. The results and findings of the Predictive Maintenance must be communicated to the NCC in the form of a report, whose content and format are described in 6.1.7.

SECTION 4-OPERATIONAL SERVICE REQUIREMENTS

The **fall shut-down** procedures described below are to be performed only at Lift stations that do not function year round, as per 4.2.2. The fall shut-down must include, but is not limited to;

- CBM of all systems and Components
- Winterizing of systems and Components, as per the manufacturers specifications or as per the directions given by the NCC.
- De-activation of alarm systems, where and as necessary.
- Although no written report is required as part of the fall shut down, the Contractor must report to the NCC any findings which may affect the systems and Components at each location.

4.2.1.2 PREDICTIVE MAINTENANCE

Performed once weekly with no more than 9 days between inspections, Predictive Maintenance must include, but is not limited to, CBM of;

- Pump(s) and their associated functions
- Amperage draw of Components
- Access and egress Components (hatches, doors, locks, etc)
- Visual and aural inspection of system Component(s)

The results and findings of the Predictive Maintenance must be communicated to the NCC in the form of a report, whose content and format are described in 6.1.9

4.2.1.3 REACTIVE MAINTENANCE

The Contractor will provide a 24/7 service for Reactive Maintenance. The said service shall include a dedicated telephone line to respond to any and all emergency situations that relate to the Subject Matter of the Contract. The Contractor must return all calls received within 30 minutes. The telephone number for the Reactive Maintenance service shall remain the same for the duration of the Term of this Contract and shall be given to the NCC Call Centre and to the NCC 24-hour emergency service centre.

The Contractor will respond to requests for Reactive Maintenance services within the following time requirements:

iv. Return all calls received within 30 minutes.
v. 60 minutes on-site response time[2] between 5:00 a.m. and 8:00 p.m.
vi. 90 minutes on-site response time between 8:00 p.m. and 5:00 a.m.

[2] Response time as set out in 4.2.1.3 ii & iii are calculated from the time the Contractor returns the call to the appropriate NCC representative.

SECTION 4-OPERATIONAL SERVICE REQUIREMENTS

4.2.2 SITE SPECIFIC REQUIREMENTS

4.2.2.1 MAJORS HILL PARK

This location has two submersible Barnes pumps (2hp) with a rail system. The estimated pit/ sewage tank capacity is 4,000 U.S. Gallons. The lift station is operational from May to mid-October. See Appendix A.

4.2.2.2 VINCENT MASSEY PARK

This location has two Smith and Loveless 2B2 pumps. The estimated pit/ sewage tank capacity is 2,873 U.S. Gallons. The lift station is operational from May to mid-October. See Appendix B.

4.2.2.3 HOG'S BACK PARK

This location has two Smith and Loveless Mon-O-Ject pumps. The estimated pit/ sewage tank capacity is 5,000 U.S. Gallons. The lift station is operational from May to mid-October. See Appendix C.

4.2.2.4 ROCKLIFFE PAVILLON

This location has two Smith and Loveless Mon-O-Ject pumps. The estimated pit/ sewage tank capacity is 5,000 U.S. Gallons. The lift station is operational from May to mid-October. See Appendix C.

SECTION 5

Section 5 does not apply to this Contract.

SECTION 6 – REPORTING

6.0 REPORTING

The following section describes all administrative, financial and operational reporting requirements of this Contract. The Contractor must prepare and deliver the reports indicated below (at the times specified) and others that the NCC may consider to be required. The NCC shall provide the template for some, but not all of the reports. All reports shall be electronically mailed to the NCC on or before their respective deadline. The Contractor shall be required to make corrections or prepare a new report in cases where the initial report does not meet NCC requirements. The Contractor shall have an extension of 10 Business Days after the deadline to provide a revised or new report satisfactory to the NCC. Without restricting the generality of the foregoing, the Contractor shall deliver reports containing information sufficient to enable the NCC to make informed decisions on the management of its assets.

6.1 ADMINISTRATIVE, FINANCIAL AND OPERATIONAL REPORTS

6.1.1 INSURANCE CERTIFICATE

Proof of insurance must be provided each March 15th during the Term of the Contract (see 2.10.7). At the same time, the Contractor shall submit proof of liability insurance.

6.1.2 WSIB CERTIFICATE

WSIB certificate is a document confirming that the Contractor is registered and that his/her file is in order. Such certificates shall be delivered to the NCC every sixty (60) days in the case of Ontario (April 1st, June 1st, August 1st, October 1st, December 1st and February 1st of each Contract Year) (see 2.15.22).

6.1.3 HEALTH AND SAFETY PLAN

After being informed that his/her proposal has been retained and prior to and as a condition of Contract award, the Contractor shall, at his/her own expense, submit to the NCC his/her health and safety plan See 2.15.22.

6.1.4 ASSET CONDITION REPORT

Within the first ninety days of the Contract the Contractor will, jointly with the CMO, complete an inspection of the assets in order to determine the existing condition of NCC assets. The Contractor must prepare and submit a report following the inspection. The report must contain information that allows the NCC to make timely decisions about the decommissioning of assets and/or their lifecycle replacement and/or Maintenance. The Contractor will propose the content and format of this report. The NCC reserves the right to request additions or modifications to the proposed content and format, following discussions with the Contractor.

No longer than ninety days before the end of the Contract Term, the Contractor must complete and submit a second Asset Condition Report, similar in scope to the report

SECTION 6 – REPORTING

described above. This report will be co-signed by the Contractor and the NCC. The fieldwork for this report may be undertaken jointly, at the sole discretion of the NCC.

The end of Contract report must be formatted in the following way:

- It must be in its own vinyl hard cover 3 ring loose-leaf binder (219mmx279mm);
- It must include one electronic copy on CD, in Adobe Acrobat (pdf) format. The CD must be clearly labelled.
- The report must be neatly printed and logically arranged, each site having its own clearly labelled section.

The report must contain the following information for each site:

- A summary.
- The results of any CBM, measurements, tests, observations or other forms of data collection.
- A list of the Preventive Maintenance measures implemented.
- A detailed deficiency list, with recommendations and suggested corrective measures.
- Photographs to help support and illustrate (where useful or necessary) the observations or recommendations.

6.1.5 Preventive Maintenance Report

The Preventive Maintenance report must be completed and submitted to the NCC once yearly. The report is the result of the CBM conducted during the procedure of the same name described in section 4.2. This is also sometimes referred to as the spring start-up. The Contractor will propose the content and format of this report. The NCC reserves the right to request additions or modifications to the proposed content and format, following discussions with the Contractor.

6.1.6 Response Plan for Toxic Spills

The Contractor will establish a response plan for toxic spills. This plan will be submitted to the NCC for approval within thirty days of Contract commencement. Any modifications to this plan must be presented to the NCC. A report for each toxic spill must be forwarded to the NCC as soon as possible.

6.1.7 Predictive Maintenance reports

The Predictive Maintenance reports must be completed and submitted to the NCC on a weekly basis. The report is the result of tasks and CBM conducted during the procedure of the same name described in section 4.2. The Contractor will propose the content and format of this report. The NCC reserves the right to request additions or modifications to the proposed content and format, following discussions with the Contractor.

6.1.8 Occurrence Report (see Appendix 6-F)

The occurrence report is to be submitted by the Contractor for any issues, emergency situations, observations, public complaints, etc. concerning any of the NCC assets contained

SECTION 6 – REPORTING

in this Contract. Occurrence reports must be forwarded preferably by electronic mail (e-mail) to the NCC within 24 hours of the observation of an incident. Security related occurrences shall be reported as per 2.15.14.

6.1.9 UNSATISFACTORY PERFORMANCE REPORT (SEE APPENDIX 6-G)

The unsatisfactory performance report is to be commented on by the Contractor each time the NCC completes one for any work included in the Contract that has not been provided or has been provided in an unsatisfactory manner.

6.1.10 SECURITY CLEARANCE

Provide all information required to obtain the appropriate security clearance for all Contractor's employees at the beginning of the Contract and when new employees are hired. See 2.15.13.

SECTION 7 – PROCESS FOR SUBMITTING A PROPOSAL

7.0 General Instructions to Proponent

This section of the TOR provides information about documents which must be submitted with the Proposal in response to this tender.

7.1 Identification and Delivery of Proposals

Each Proposal shall consist of the following:

A) Mandatory requirements
- The bid security (see 7.5)
- A brief description of the Company and its staff. Proposals will be evaluated on the specified rated requirements. See 7.6.2.

B) Financial proposal: To be submitted in **a separate sealed envelope**. It must include:
- One (1) original of the **signed** Fee proposal (Appendix 7-A (1) and (2);

The Financial Proposal must be submitted in **a separately sealed and clearly marked "financial envelope"** (do not insert any other document in this envelope). The Fee and cost breakdowns and any other financial information identified in the said Financial Proposal must ***not*** appear in the Proposal nor anywhere else in the documents submitted by the Contractor.

All components of the Proposal package, including the separately sealed financial proposal envelope, shall be submitted together in a large envelope. The Proposal envelope shall be properly identified and delivered, without exception, prior to the closing date and time for submission of proposals.

All Proposal envelopes received on time will be kept in a secure place from the time of receipt to the time of opening.

It is the Proponents responsibility to ensure Proposals and all related documents are received at the specified address prior to the closing date and time. Proponents may request a receipt upon delivery.

Facsimile or electronically transmitted Proposals will be treated as non-responsive and will receive no further consideration. However, where a formal Proposal has been received on time at the specified address, amendments thereto by facsimile are acceptable provided that such amendments be also received prior to the closing date and time and only at the facsimile number 613-239-5012, be on company letterhead and be signed and dated. All such amendments shall be addressed to the Contracting Authority and shall set forth complete details of all changes in order to be considered as an integral part of the Proposal.

SECTION 7 – PROCESS FOR SUBMITTING A PROPOSAL

7.2 LANGUAGE OF THE PROPOSAL AND SUPPORTING DOCUMENTATION

The Proposal and any supporting documents may be submitted in either English or French.

7.3 CURRENCY

It is mandatory that all fees, hourly rates/unit prices and taxes submitted in this Financial Proposal be in Canadian Dollars in order to be considered compliant and responsive to the RFP.

7.4 SIGNING PROCEDURES FOR THE PROPOSAL

The form identified as Appendix 7-A (1) and (2) shall be properly completed and signed, where signatures are indicated and necessary, in full compliance with the requirements indicated herein:

7.4.1 The signature of person(s) submitting a Proposal shall be in their respective handwriting.

7.4.2 Corporation: If this Proposal is made by a corporation, the full name of the company shall be accurately PRINTED in the space provided for that purpose (name of Proponent), the form shall be signed by the duly authorized representatives of the company.

7.4.3 Partnership: If this Proposal is made by a Partnership, the firm name or the business name shall be accurately PRINTED in the space provided for that purpose (Name of Proponent) and the names of all partners shall be PRINTED immediately under their respective signatures.

7.4.4 Sole Proprietorship: If this Proposal is made by an individual carrying on business under a name other than his/her own, his/her business name together with the name of the sole proprietor shall be accurately PRINTED in the space provided for that purpose (Name of Proponent). In the event that the sole proprietor carries on business in his/her own name, he/she shall merely PRINT his/her name where indicated.

7.4.5 Joint Venture: not applicable.

7.4.6 Proposals received without signed forms, where signatures are indicated and necessary, shall render the Proposal non-responsive and it shall receive no further consideration.

7.5 MANDATORY BID SECURITY REQUIREMENTS

7.5.1 Proponents must submit, with the Proposal, the following mandatory bid security as an integral part of any Proposal submission. Failure to submit bid security shall render the Proposal as non-responsive and it shall receive no further consideration.

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7.5.2 ACCEPTABLE FORMS OF BID SECURITY

The following link to Treasury Board's website provides a list of insurance companies whose bonds may be accepted as security by the government.

http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494

Please use form inserted in Appendix 7-B.

7.5.2.1 An unconditional irrevocable letter of credit or a letter of guarantee issued by one of the five largest Canadian chartered banks in a form acceptable to the NCC for the sum of $5,000.00 or;

7.5.2.2 A certified cheque drawn on a bank to which the Bank Act or in Québec the Credit Union Act applies, and made payable to the order of the National Capital Commission for the sum of $5,000.00 or;

7.5.2.3 A bid bond from a company acceptable to the NCC (see 7.7.2 and Appendix 7-B) and in terms satisfactory to the NCC for the sum of $5,000.00 or;

7.5.2.4 Bonds of the Government of Canada unconditionally guaranteed as to principal and interest by the Government of Canada and having a par value of $5,000.00 if such bonds are:

Payable to the bearer; and

Accompanied by a written instrument of transfer, duly executed by the registered owner, whose signature shall be guaranteed by a chartered bank or financial institution satisfactory to the NCC. Coupon bonds shall have attached thereto all coupons unmatured at the time the bonds are delivered to the NCC. Coupons maturing during the retention of the security by the NCC shall be returned to the Proponent upon request. Coupons which matured prior to submitting a Proposal are to be detached by the Proponent.

7.5.3 The bid security shall remain in place for 90 working days after the closing date and time of the RFP, until Contract award or until notification by the NCC that a Proponent is unsuccessful, whichever date is later. The NCC reserves the right to request extensions for additional 60 day periods as required.

7.5.4 The bid security shall be forfeited if the Proponent withdraws or amends all or any part or parts of its Proposal at any time after the specified RFP closing date and time and prior to the award of a Contract or refuses to enter into a Contract when called upon to do so. The NCC may, if, in its discretion, it is in the public interest to do so, waive this right.

7.5.5 Bid security in the form of, letters of credit, certified cheques or Bonds of the Government of Canada, of the unsuccessful Proponents or, if no Proposals are accepted, of all Proponents, will be returned.

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7.5.6 The bid security of the Successful Proponent will be returned once the Successful Proponent has entered into a Contract with the NCC and provided the requested performance security.

7.6 EVALUATION PROCESS

Proposal will follow a three-stage process as follows:

Stage 1 – verifies that the Proposal meets the mandatory requirement of the Bid Security (see 7.5).

Stage 2 – evaluates all proposals that pass stage 1 according to the rated requirements specified in 7.6.2.

Stage 3 – evaluates the financial requirements of qualified Proponents.

7.6.1 PROPOSAL REQUIREMENTS REVIEW (STAGE 1)

All Proposals that are received on time will be reviewed to ensure that the mandatory requirements have been met. Proposals complying with the mandatory requirement shall be considered compliant and will proceed to stage 2 of the evaluation process. Proposals that are not in compliance with the mandatory requirement shall be treated as non-responsive and receive no further consideration.

7.6.2 PROPOSAL EVALUATION – RATED REQUIREMENTS (STAGE 2) AND EVALUATION CRITERIA

Each proposal in compliance with stage 1 will be evaluated and rated according to the prescribed criteria identified below.

The evaluation and point breakdown will be as follows:

- Company Profile: 15 points;
- Company Experience: 30 points;
- References: 15 points.

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EVALUATION CRITERIA
Excellent. Exceeds all of our requirements (100% of the weighted factor).
A sound response. Fully meets our requirements (80% of the weighted factor).
Acceptable minimum level. Meets our basic requirements (66.6% of the weighted factor).
Falls short of meeting basic expectations (50% of the weighted factor).
It's a response but doesn't address our needs (20% of the weighted factor).
The response is completely unacceptable or the information is missing altogether (0% of the weighted factor).

In order to qualify, Contractors must obtain a minimum of 40 points out of a possible 60 points (66.6%). Price envelopes of qualified contractors only will be opened.

Proponents must clearly demonstrate that their organization and team possess the necessary experience and quality of workmanship to deliver the full range of services stipulated in the TOR. Proponents shall provide the following information:

Company Profile

- Name and describe the legal entity with which the NCC will be dealing;
- Provide the address of the Proponent's head office and those of any additional locations;
- Indicate the number of years the company has been in business;

Company Experience

- List and describe previous Contracts (minimum 2, maximum 4) carried out by the Proponent. Said Contracts must demonstrate that the Proponent has the accumulated experience and expertise needed to provide the services requested in the TOR:
- List the Contracts, identify their monetary value and year in which they began and ended;
- Identify the various types of O&M services provided by the Proponent to his/her former and current clients;

References

- Provide a list of at least 3 clients and/or corporate references indicating the name, telephone number and e-mail address of the contact person. Also provide the name

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and full corporate address of the corporation he/she represents (do not provide any letters of reference). The requirements of these references are as follows:

- Only one reference per Contract and/or project;
- The references must be from clients for which the Proponent most recently or currently does business with. The business must be comparable to the Work described in the TOR.

Notes

- References will be contacted and the information provided will be evaluated;
- For Proponents with past or current NCC Contracts, the NCC reserves the right to auto-reference (e.g., NCC Contract files to be used as part of the evaluation).
- Proposals that do not meet the 66.6% passing score shall be deemed non-responsive and receive no further consideration. In such cases, the financial proposal envelopes shall be returned unopened to the Proponent.

7.6.3 FINANCIAL PROPOSAL REVIEW (STAGE 3)

The financial proposal envelope (containing appendices 7-A-1 and 7-A-2) of compliant proposals shall be opened, reviewed to ensure that it is compliant with the mandatory requirements in 7.5 and evaluated to establish the lowest Grand Total amount for the first year including SOA total.

7.7 BASIS OF AWARD

Subject to 7.8.1, the Proponent whose proposal meets or exceeds the minimum requirements specified in 7.6 and who has submitted the lowest Total Fee for the first year of the Term including SOA total (appendix 7-A-1) shall be deemed the successful Proponent. The lowest Total Fee for the first year of the Term including SOA total shall be the grand total amount quoted by the Proponent in Appendix 7-A-1.

7.8 ACCEPTANCE OF PROPOSAL

7.8.1 The NCC reserves the right to not accept any of the proposals submitted, to cancel the Request for Proposal and/or to reissue the Request for Proposal in its original or revised form. The NCC also reserves the right to negotiate with the Successful Proponent and/or any/all Proponents.

7.8.2 Without limiting the generality of 7.8.1, the NCC may reject any proposal, based on an unfavourable assessment as to:

7.8.2.1 The adequacy of the proposed price to carry out the work;

7.8.2.2 The Proponent's performance on other Contracts, including but not limited to, the Contracts the Proponent may have had or may still have with the NCC.

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7.8.3 In assessing the Proponent's performance on other Contracts pursuant to 7.8.2.2, the NCC may consider, but shall not be limited to, such matters as:

7.8.3.1 The efficiency and workmanship of the Proponent in performing the work; and

7.8.3.2 The extent to which the Proponent executed the work in accordance with the Terms and Conditions of the Contract.

7.8.3.3 Vendor Performance Background:

The NCC may reject a bid where any of the following circumstances are present:

- The Proponent or any employee or subcontractor included as part of the proposal, has been convicted under section 121 ("Frauds on the government" & "Contractor subscribing to election fund"), 418 ("Selling defective stores to Her Majesty") of the Criminal Code; or

With respect to current or prior Contracts with the NCC or the Government of Canada

- The Proponent is bankrupt or where, for whatever reason, its activities are rendered inoperable for an extended period;
- The NCC has evidence, satisfactory to the NCC, of fraud, bribery, fraudulent misrepresentation or failure to comply with any law protecting individuals against any matter of discrimination, on the part of the Proponent, any of its employees or any subcontractor included as part of its proposal;
- The NCC has exercised its Contractual remedies of suspension, setting off or termination for default with respect to a Contract with the Proponent, any of its employees or any subcontractor included as part of its bid; or
- The Proponent's performance on current or prior Contracts, including the efficiency and workmanship as well as the level of compliance with Contractual Terms and Conditions is, unsatisfactory to the NCC and has been documented as such.
- Where the NCC intends to reject a proposal pursuant to a provision to paragraph 1, the Contracting Authority shall so inform the Proponent and provide the Proponent ten (10) days within which to make representations, prior to making a final decision on the rejection of the proposal.

7.9 CONDITIONS OF CONTRACT AWARD

Prior to Contract award, the successful Proponent shall provide the following:

7.9.1 PERFORMANCE BOND (APPENDIX 7-C)

Submit a $10,000 performance bond from an acceptable bonding company.

7.9.2 PROOF OF INSURANCE

The Successful Proponent shall provide proof of insurance in accordance with the requirements specified in 2.10.7 of this RFP.

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7.9.3 SUPPLIER – DIRECT PAYMENT AND TAX INFORMATION FORM

The Proponent shall complete and submit to the NCC the Direct Payment and Tax Information Form prior to Contract award. The direct payment service will facilitate the transfer of amounts payable by the NCC to suppliers. The tax information section of the form is a requirement of the *Income Tax Act*.

7.9.4 CSST OR WSIB CERTIFICATE

The Successful Proponent shall provide a CSST or WSIB certificate as applicable. This is a document confirming that the Contractor is registered and that his/her file is in good standing order (see 2.15.22 of this RFP).

7.9.5 SECURITY REPRESENTATIVE

The Successful Proponent shall provide the name of his/her security representative (see 2.15.13 of this RFP).

7.9.6 HEALTH AND SAFETY PLAN

The Successful Proponent shall provide his/her health and safety plan (see 2.15.22 of this RFP).

7.10 ADDITIONAL TERMS AND CONDITIONS OF THE RFP

7.10.1 OWNERSHIP OF RFP DOCUMENTS

7.10.1.1 All documents submitted or prepared by the Contractor under the terms of the Contract shall become the property of the NCC, which shall become the owner of the copyright.

7.10.1.2 All documents and records, and the information contained therein, provided to the Contractor related to or for the purposes of this Contract shall be treated as confidential. The Contractor shall take all necessary steps to ensure that the documents and records, or any information contained therein, are not copied, provided to, discussed or disclosed in any manner whatsoever, to any person or entity, other than NCC personnel, unless expressly authorized by the NCC. The Contractor shall ensure that only its authorized employees are given access to the said documents or records and that these employees treat these documents and records, and the information contained therein, as confidential.

7.10.1.3 As may be directed in writing by the NCC upon the expiry, termination or completion of the Contract, the Contractor shall either return to the NCC forthwith all documents or records provided to it by the NCC or destroy all documents and records, together with satisfactory proof of such destruction.

7.10.1.4 The NCC shall have unrestricted access to all documents and records provided to the Contractor during the Term of the Contract.

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7.10.2 ACCESS TO INFORMATION

Proposals shall be held in strict confidence. However, Proponents are reminded that the NCC, as a Crown corporation, is subject to the provisions of the *Access to Information Act*. Information submitted may be eligible for disclosure in accordance with the requirements of the *Access to Information Act*. In such circumstances, the NCC shall be relieved of its obligation thereunder to keep such information confidential. Such information is usually not released without consent of the pertinent Proponent, unless there is an order made pursuant to the *Act*. However, the Proponent consents to the public disclosure of its Grand Total by the NCC, and further agrees that it will have no right to claim against the NCC, its employees, agents or servants, or any of them, in relation to such public disclosure.

7.10.3 LIMITATIONS & CAUTIONS

7.10.3.1 Proposals shall be irrevocable and remain unchanged in all aspects, including price, during the period of time between the closing date of this RFP and the identification of the Successful Proponent unless expressly agreed to by both the NCC and the Proponent.

7.10.3.2 The NCC reserves the right to request clarification from the Proponent for a mandatory requirement submitted in response to the RFP that in the sole opinion of the NCC, is marginally responsive or vague. Any information previously submitted to the NCC may not be incorporated in this RFP by reference but shall be resubmitted with the Proposal nor shall the NCC accept additional information after the closing date of the RFP.

7.10.3.3 Nothing, including but not limited to, this RFP or the Proponent's response hereto, shall in any way impose a legal obligation on the NCC to purchase or otherwise acquire any product or service from any of the Successful Proponents, unless and until the RFP has received all requisite external approvals and has been executed by the NCC and the Proponent.

7.10.3.4 The NCC shall not be obligated to reimburse or compensate any Proponent, its subcontractors or manufacturers for any costs incurred in connection with the preparation of a response to this Request for Proposal. All copies of proposals submitted in response to this Request for Proposal shall become the property of the NCC and shall not be returned.

7.10.3.5 The successful Contractor shall indemnify and save harmless the NCC from and against all claims, damages, costs and expenses sustained or incurred by the NCC resulting from any action or legal proceeding on infringement, made, sustained, brought, prosecuted, threatened to or prosecuted, by any Person that was under the direction and control of the Contractor during the Term of the resulting Contract and which Person is claiming or claims a moral right, as set out under the *Copyright Act*. The obligation to indemnify under this clause survives termination of the resulting Contract and shall remain in force for the duration of the copyright in the work created under the resulting Contract. This obligation to indemnify relative to alleged moral rights infringement(s) is in addition to the Contractor's other obligations to indemnify and save harmless which are set out in the Contract.

National Capital Commission (NCC)
Environmental Guidelines for Maintenance Contracts

This document summarizes the mitigation measures to be implemented during the various activities that will be undertaken as part of Maintenance contracts on National Capital Commission (NCC) lands. This document fulfills the requirements under the *Canadian Environmental Assessment Act 2012 (CEAA, 2012)* to determine whether projects on federal lands are likely to cause significant adverse environmental effects[1]. If the mitigation measures outlined within this document are implemented, then the activities described below which are conducted on NCC lands will be unlikely to cause significant adverse environmental effects. This table also takes into account the other legal obligations the NCC has under both provincial and federal environmental legislation (e.g. *Species at Risk Act, Migratory Birds Convention Act, Canadian Environmental Protection Act, etc*). This document complements the NCC's Environmental Strategy and Master Plans.

The NCC Environmental Strategy outlines 5 areas for action: reducing waste, protecting biodiversity, preventing pollution, leading in environmental practices and combating climate change. One of the objectives under the *leading in environmental practices* area is to incorporate environmentally sensitive practices into all Maintenance contracts. This document reflects the NCC's commitment to meeting this objective.

All contractors and contract management officers will be required to have basic training in the use of these environmental guidelines. It is important that these guidelines be strictly followed, as fines may be issued by the provincial or federal government in the event of noncompliance. Repaying these fines will be the responsibility of the contractor.

Environmental Guidelines to be followed for All Maintenance Activities

The following measures and principles must be followed throughout all Maintenance work on NCC lands. Mitigation measures marked with an asterisk (*) will require approval from the NCC prior to the start of the Maintenance activity, or will require the contractor to notify the NCC in the case of an accident or emergency. When a mitigation measure is marked with an asterisk (*), contact the Contract Management Officer (CMO) to inform them of the type of work you are doing. The CMO will then be responsible to contact relevant NCC specialists (e.g. arborist, contaminated site specialists, biologists, archaeologist, etc.) to obtain their recommendations.

Air Emissions

- To the extent possible the Contractor will minimize unnecessary idling of vehicles which can result in wasted fuel and the creation of greenhouse gases (refer to municipal by-laws).
- All air emissions must meet regulatory requirements. Where required, a certificate of approval must be obtained from provincial authorities for stationary sources of air pollution (e.g. stacks, boilers, fume hoods).
- Use low-sulphur diesel or ethanol-based fuel wherever possible to reduce vehicle emissions.
- Regularly service vehicles and practice preventive maintenance to reduce vehicle emissions.
- The use of energy efficient vehicles and machinery is encouraged to reduce carbon emissions.
- Whenever possible, it is recommended to use renewable sources of electricity to prevent unnecessary emissions.

Archaeological Resources

[1] The determination of whether an adverse environmental effect is significant is based on several criteria : magnitude, geographic extent, duration and frequency, reversibility and ecological context as per the Canadian Environmental Assessment Agency guidelines

- *If any archaeological resources or human remains are discovered during Maintenance activities, all work at the location concerned must be halted immediately and Ian Badgley, Archaeologist, NCC Heritage Program (613-239-5678, Ext. 5751, ian.badgley@ncc-ccn.ca) must be notified forthwith. Work shall not be resumed at that location until measures for the protection of those resources or remains have been put in place.

Cleaning of Equipment, Machinery, and Vehicles

- Before transporting all-terrain vehicles or other tracked vehicles into and out of an NCC valued ecosystem or valued habitat, ensure appropriate measures have been taken to clean away sludge, dirt, and plant material, the latter to minimize the spread of invasive species.

Contaminated Soils

- *No soils from a contaminated site may be reused elsewhere.
- Management and disposal of contaminated soils will follow all applicable regulations and guidelines.

Designated Substances

- *Prior to entering a site, contact the NCC to determine if any designated substances[2] are present.
- Handle and dispose of all designated substances in accordance with all federal, provincial, and municipal requirements.
- Ensure employees are trained on the identification and handling of designated substances.

Pesticides

- In 2012, the NCC developed and approved a policy to eliminate the cosmetic use of pesticides on its lands. All activities that take place on NCC lands must be in full compliance with all federal pesticides legislation and regulations as well as be in full compliance with the requirements under the *Ontario Pesticide Act* and the *Quebec Pesticide Act*, depending on the province where the activity is taking place.

Fauna and Wildlife

- Workers will avoid wilfully disturbing any wildlife at the site.
- If the animal is found inside a structure, contact the CMO who will be advised by the NCC environmental services on the best course of action.
- Workers must keep the work site clean and must not leave behind garbage or food scraps that could attract animals or alter their behaviour.

Site Reinstatement

- To prevent weed germination and establishment, retain native vegetation in and around project activity and keep soil disturbance to a minimum consistent with project objectives.
- All materials should be removed at the end of the works, and the site should be reinstated to its original conditions, or better, including the restoration of both topsoil and native vegetation. Seed mixtures are to follow the NCC portfolio approved seeding, sodding or mulch.

[2] As per *Ontario Regulation 490/09 Designated Substances* definition

- Revegetation must be done as soon as possible within the growing season. If unfeasible, the Contractor must stabilize disturbed areas with erosion control blankets to keep the soil in place and prevent erosion in water bodies. Blankets must be removed only at the end of the revegetation work.

Spills Procedure & Emergency Response

The NCC has developed a Spills Procedure to ensure that appropriate and consistent responses are implemented to deal with emergencies or accidents. All individuals performing work on NCC property are expected to be familiar with the general requirements for reporting and responding to environmental emergencies on NCC property. In addition, the following requirements must be met.

- **All emergency situations MUST be reported immediately to 911and then to the NCC 24 Hour Emergency Communications Service at 613 239-5353**. Any environmental spills (biological, chemical or petroleum based) must be reported to the NCC 24 Hour Emergency Communication Service at 613-239-5353.
- Spill response materials should be available wherever hazardous materials are used or stored. These spill response materials should be suitable in type and quantity to the type and quantity of hazardous materials being used at that location.
- Employees must be trained on how to use the spill material and equipment.
- All used absorbent material must be disposed of in accordance with applicable regulatory requirements.
- *Any release of potential contaminants, such as fuel, chemicals, or other hazardous materials, must be reported to the NCC immediately.
- All spills must also be reported to the appropriate provincial authority where a spill: discharges to air, land or water, is in excess of normal usage, has escaped its means of containment, or has been combined with other products affecting its chemical stability which could cause an adverse effect (i.e. negative impact on health, environment or property).
- Spills must be contained and cleaned up in accordance with all federal, provincial, and local regulatory requirements.
- A spill report form has been prepared by the NCC and must be completed and sent to Environmental Services within 24 hours of the spill. The spill form is included in the reporting section of this contract. The Spill Report, Response and Review Log must be completed by following the Spill Procedure in place. The Spill Report, Response and Review Log should be submitted to the NCC Contract Manager and it should provide details on the spill.

Trees

- *No tree (with a diameter at breast height (DBH) of 10cm or greater) may be cut without prior authorization from the NCC.
- Respect a minimum distance of 2 meters from any trees (species at risk such as Butternut, Rock Elm, or Black Maple may require greater distance) when excavating or installing structures. Install protectors around all trees susceptible of being damaged by machinery. *If damages are done to a tree, it must be reported to the CMO who will decide of the applicable mitigation measures (e.g. proper pruning of the branch, replacement of the tree, report to applicable authorities, etc.) to be implemented by the contractor.
- When feasible, do not park vehicles or machinery or store any materials within the dripline of any trees.
- Any federally or provincially protected tree species (seedling, sapling or tree) must be protected and precautionary measures such as flagging the tree or installing protectors at the dripline of the tree must be taken to ensure they are not damaged or cut, including the critical root zone. These species include, but are not limited to Butternut (Juglans cinerea) in both Quebec and Ontario and Rock Elm (Ulmus thomasii) and Black Maple (Acer nigrum) in Quebec. Any flagging tape used must be removed once work is completed.

Water Quality, Fish, and Fish Habitat

- Any activity that takes place within 30 m of a watercourse or wetland and may release sediment, soil, or any other potentially polluting chemical or product will require the development and implementation of an Erosion and Sediment Control Plan and an Emergency Response Plan.
- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals do not enter the watercourse.

- Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
- Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed. Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks.
- Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.
- Limit machinery fording of the watercourse to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.
- Use temporary crossing structures or other practices to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.
- Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.

Weather

- Avoid performing Maintenance activities that have the potential to release dust or other particles during periods of heavy rainfall or high winds.

Table 1: Mitigation Measures for Maintenance Contracts

To use this table, find the Maintenance activity you are performing on the leftmost column, and apply the mitigation measures specified. Mitigation measures marked with an asterisk (*) will require approval from the NCC prior to the start of the Maintenance activity, or will require the contractor to notify the NCC in the case of an accident or emergency. When a mitigation measure is marked with an asterisk (*), contact the Contract Management Officer (CMO) to inform them of the type of work you are doing. The CMO will then be responsible to contact relevant NCC specialists (e.g. arborist, contaminated site specialists, biologists, archaeologist, etc.) to obtain their recommendations.

Important note: The installation or construction of new fixtures, structures, or systems (e.g. culverts, electrical conduits, underground pipes, etc.) is not covered under this guide, and must be reviewed separately under the *Canadian Environmental Assessment Act, 2012*. If your work involves new construction, make sure to contact the CMO.

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
Landscape Management				
Turf: machine and manual cutting, trimming, watering, edging, top dressing, seeding or overseeding, aerating, fertilizing, etc.	No	• Excess or improper application of fertilizers can cause environmental degradation of water bodies. • Potential damage to species protected under the *Species at Risk Act* or provincial legislation during cutting. • Potential destruction of migratory bird nests which are protected under the *Migratory Bird Conventions Act* during cutting.	• Do not apply fertilizers or other products containing phosphorus or nitrogen within 15m of a watercourse or water body. • In 2012, the NCC developed and approved a policy to eliminate the cosmetic use of pesticides on its lands. All activities that take place on NCC lands must be in full compliance with all federal pesticides legislation and regulations as well as be in full compliance with the requirements under the *Ontario Pesticide Act* and the *Quebec Pesticide Act*, depending on the province where the activity is taking place. • Turf cuttings are to be collected and composted on site, where possible. • *When clearing naturalized meadows (e.g. Class C), the NCC will need to verify the presence of any species at risk prior to undertaking the activity. • *To minimize harm to migratory birds, naturalized meadows (e.g. Class C) may not be cut between April 15th and August 15th, which corresponds to the core migratory bird breeding and nesting season. If, by exception or for health and safety reasons (fire breaks), the NCC requires that naturalized meadows or class C areas be cut prior to August 15th, the NCC will be required to conduct an area search for evidence of nesting. Environment Canada recommends that these surveys be carried out by skilled and experienced observers using appropriate methodology[3]	• If activities must be conducted in a naturalized meadow between April 15th and August 15th , conduct area search for evidence of nesting.
Tree/shrub: safety and Maintenance, pruning, trimming, cultivating, edging, mulching,	Yes, when carried out in relation to a	• Potential damage to trees or shrubs protected under the *Species at Risk Act* or provincial legislation. • Potential destruction of migratory bird nests	• *Any federally or provincially protected tree species (seedling, sapling or tree) must be properly flagged and protected to prevent damage or accidental removal. Highly visible flagging tape (using a pre-determined colour) should be used to clearly identify the tree and removed once work is completed. Presence of such species should be reported to the CMO.	• NCC approval prior to tree pruning, cutting or removal. • If activities must be conducted in a naturalized

[3] Environment Canada. Specific considerations related to determining the presence of nests. [http://ec.gc.ca/paom-itmb/default.asp?lang=En&n=8D910CAC-1#_004]. Online December 10, 2013.

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
removal, winter protection, etc.	physical work (e.g. pathway Maintenance)	which are protected under the *Migratory Bird Conventions Act*. • Improper disposal of diseased trees or shrubs may spread invasive pests, diseases or pathogens. • Improper pruning may decrease tree health.	These species include **Butternut** (*Juglans cinerea*), **Rock Elm** (*Ulmus thomasii*)) and **Black Maple** (*Acer nigrum*). • *It is prohibited to prune or fell any at risk tree species (live or dead) protected by provincial and/or federal law, unless a permit was first obtained from the appropriate agency, either Environment Canada or MDDEFP, depending on the case. A permit request to these agencies must first be obtained by the NCC. Protected tree species include **Butternut** *(Juglans cinerea*) in both Quebec and Ontario, **Rock Elm** (*Ulmus thomasii*) and **Black Maple** (*Acer nigrum*) in Quebec. • *To minimize harm to migratory birds, no tree or shrub cutting or removal may take place between April 15th and August 15th, which corresponds to the core migratory bird breeding and nesting season. Alternatively, consider conducting an area search for evidence of nesting. Environment Canada recommends that these surveys be carried out by skilled and experienced observers using appropriate methodology[2] • Trees or shrub clippings, branches, or log pieces that show signs of disease or pests must be appropriately disposed of following all federal, provincial, and municipal regulations in order to minimize spread of the disease or pest (e.g. Dutch elm disease, emerald ash borer, etc). Healthy material will be collected and composted on-site, where possible. • Minimize vegetation cutting (DBH < 10 cm), limiting it to vegetation that interferes with the movement of machinery and work. • All tree or vegetation debris that may fall or enter any water bodies must be removed immediately with as little disturbance as possible. • If working in Gatineau Park, any sapling or tree that has to be cut should be cut in 1 meter lengths and dispersed in the surrounding forest on NCC property. • *When removing tree stumps, contact your CMO because the associated excavation may affect archaeological resources and may require testing and disposal if it is located on a contaminated site. • All tree pruning should follow the International Society of Arboriculture (ISA) best practices for tree pruning.	meadow between April 15th and August 15th , conduct area search for evidence of nesting. • Obtain required authorization to prune or fell a protected tree species. • Monitor compliance of conditions set out in the permit and/or authorization for cutting of protected trees. • Verification of soil and groundwater contamination and archaeological potential when removing stumps.
Annual, bulb, and perennial: mowing of daffodils, planting/removing, watering, fertilizing, cultivating, edging,	No	• Excess or improper application of fertilizers can cause environmental degradation of water bodies and aquatic life. • Improper disposal of flowers may spread invasive pests, diseases or pathogens.	• Do not apply fertilizers or other products containing phosphorus or nitrogen within 15m of a watercourse or water body. • Flowers that are removed and show signs of disease or pests must be appropriately disposed of following all federal, provincial, and municipal regulations in order to minimize spread of the disease or pest. Healthy clippings are to be collected and composted on-site, where	

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
hang weeding, pinching, roguing, winter protection, plant division, etc.			possible. • Use non-invasive plant species and preferably native species for ornamental purposes. Consult invasive alien species lists before the introduction of a new ornamental species.	
Non-desirable vegetation / nest / small animal control[4]: inspecting and removing as needed.	Yes	• Potential damage to species protected under the *Species at Risk Act* or provincial legislation. • Potential destruction of migratory bird nests which are protected under the *Migratory Bird Conventions Act*. • Pesticides, herbicides, insecticides, or fungicides may kill non-target species. • Accidental spread of invasive species.	• Ensure that the small nuisance animal is not a species protected under the *Species at Risk Act*, the Ontario *Endangered Species Act*, Quebec *Loi sur les espèces menacées ou vulnérables* or the *Migratory Birds Convention Act*. • *No active bird nests may be disturbed or destroyed. Generally, if migratory birds nesting in buildings are a cause for concern, it is recommended that contractors identify how the birds enter the building and block those entries after nesting is completed and before the birds come back to nest the following season. • Where the presence or effects of the nuisance animal(s) may create a dangerous situation, the Contractor is to contact the CMO who will be advised by the NCC environmental services on the best course of action. • In 2012, the NCC developed and approved a policy to eliminate the cosmetic use of pesticides on its lands. All activities that take place on NCC lands must be in full compliance with all federal pesticides legislation and regulations as well as be in full compliance with the requirements under the *Ontario Pesticide Act* and the *Quebec Pesticide Act*, depending on the province where the activity is taking place. • Only products registered by Agriculture and Agri-Food Canada under the *Pest Control Products Act* may be used. • *The contractor must receive written authorization from the NCC for any exceptional circumstances requiring application of pesticides, herbicides, insecticides or fungicides. • *When removing invasive plant species, ensure that plant material is appropriately disposed of to minimize spread. Consult the NCC for information on the best disposal requirements based on the invasive species you are working with. • Clean sludge, dirt, and plant material from equipment and tools before leaving a site infested with invasive species. High pressure air hoses, mobile cleaning stations which retain water runoff, and brushes or brooms are acceptable cleaning methods.	• Approval of pesticide application. • Verification of appropriate disposal methods for invasive species. • Confirmation of the animal species.
Civil Maintenance				
All surfaces:	Yes	• Accidental spills may degrade environmental	• Refer to the Spills Procedure and Emergency Response mitigation measures on page 2.	

[4] Animals causing material damage to the NCC's Assets

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
Inspecting, reporting, sweeping, removing hazards (e.g. leaves, encroaching vegetation, etc.), providing emergency services such as accident clean-ups, etc.		quality and have the potential to spread contamination.	• *Work performed in or near water may require a permit from the Ontario or Quebec provincial and/or federal government. The contractor must contact the CMO to verify permit requirements with the NCC environmental services. • Any activity that takes place within 30 m of a watercourse or wetland and may release sediment, soil, or any other potentially polluting chemical or product will require the development and implementation of an Erosion and Sediment Control Plan and an Emergency Response Plan.	
Asphalt surfaces: daily inspection, reporting, and secure any deficiencies (e.g. bumps, cracking, culvert and ditch problems, drainage problems, erosion, manhole and catch basin problems, etc), provide emergency pothole/sinkhole fillings.	Yes	• Accidental spills will degrade environmental quality and have the potential to spread contamination. • The release of sediment and/or chemicals during Maintenance activities that take place in or near water may adversely affect fish, fish habitat, and/or water quality.	• Refer to the Spills Procedure and Emergency Response mitigation measures on page 2. • Asphalt should either be mixed away from the site or should be prepared on paved surfaces to minimize the effects of a spill. Excess asphalt must be disposed off-site at a location that meets all regulatory requirements.	• Receive authorization to work near water. • Monitor compliance of conditions set out in the permit and/or authorization to perform in-water or near-water works. • Periodically inspect the erosion and sediment control measures to ensure proper installation and functioning, especially prior to, and after rainfall events.
Concrete/masonry surfaces (curbs, gutters, concrete steps, exposed aggregate, granite sets, pavers, interlocks, flag stones, cobblestones, patio stones, etc.): re-setting, correcting, etc.	Yes	• Accidental spills will degrade environmental quality and have the potential to spread contamination.	• Concrete should either be mixed away from the site or should be prepared on paved surfaces if only small quantities (e.g. for minor repairs) are required. Excess concrete must be disposed off-site at a location that meets all regulatory requirements. • The washing of concrete trucks and other equipment used for mixing concrete should not be carried out within 30 m of a watercourse or wetland and should take place outside of the work site. • All concrete trucks should collect their wash water and recycle it back into their trucks for disposal off-site at a location meeting all regulatory requirements. • When performing gutter repairs or cleaning, ensure that no deleterious substance or debris falls into the gutter system.	
Gravel / granular /	Yes	• The release of sediment and/or chemicals	• Implement dust control measures.	• Periodically inspect the

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
stone dust / natural / decorative surfaces: levelling, grading, etc.		during Maintenance activities that take place in or near water may adversely affect fish, fish habitat, and/or water quality. • The release of particulate matter may adversely affect air quality.	• *No increase in footprint below the High Water Mark • *No new fill placed below the High Water Mark	erosion and sediment control devices to ensure proper installation and functioning, especially after heavy rainfall.
Wood surfaces: repairing, maintaining structural integrity, sanding, painting, etc.	Yes	• Accidental spills will degrade environmental quality and have the potential to spread contamination.	• Ensure proper storage, management and use of materials to minimize spills. • Implement dust control measures when sanding. • Do not use treated wood in or near water (minimum distance is 15m). • Do not use treated wood on surfaces used in the preparation or consumption of food (picnic tables, bird feeders), that would be in direct contact with drinking water or that will be used by people (benches, wooden structures for children). • Refer to the Spills Procedure and Emergency Response mitigation measures on page 2.	
Lighting and electrical (distribution boxes, electrical panels, aboveground and underground electrical conduits and wiring, light standards, etc.): inspecting, repairing, securing, replacing, providing line locates, providing immediate repairs, reporting.	Yes	• Spread of contaminated groundwater or soils during excavation. • Health and safety effects from the exposure of contaminated soils. • Damage to archaeological resources as a result of excavation. • Damage to tree roots or trees as a result of excavation. • Accidental erosion of soil that is stored near water may adversely affect fish, fish habitat, and/or water quality. • Improper disposal of hazardous materials could degrade environmental quality and have an impact on health and safety.	• *Prior to the start of any digging or excavation for the repair of electrical conduits or any other subsurface lighting and electrical fixture, contact the CMO to verify the presence of soil or groundwater contamination and archaeological potential. Provide the CMO with details on the location of the digging, and the type of work to be performed (e.g. will the trench be deepened or widened compared to what was previously excavated?). o If soil or groundwater contamination is present, testing prior to off-site disposal may be required. o Management and disposal of contaminated soils will follow all applicable regulations and guidelines. o In the case of new excavation or excavation that will widen, deepen or otherwise alter the footprint of previous excavation in zones of elevated archaeological potential, an archaeologist may need to be called on site to monitor that work. o If the excavation does not involve any alteration to the footprint of previous excavation, then no archaeological investigation or monitoring is required. • *If any suspected soil or groundwater contamination at the site is discovered, the NCC must be notified immediately. • Any activity that takes place within 30 m of a watercourse or wetland and may release sediment, soil, or any other potentially polluting chemical or product will require the development and implementation of an Erosion and Sediment Control Plan and an Emergency Response Plan. • If soils must be stored overnight, they should be covered with a tarp.	• Periodically inspect the erosion and sediment control fences to ensure proper installation and functioning, especially after heavy rainfall. • May require testing of soils prior to off-site disposal. • May require monitoring by qualified archaeologist. • Attain permit to excavate near Butternut.

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
			• *Excavation within the dripline of a Butternut tree cannot proceed without a permit from Environment Canada. • *Excavation within the dripline of any tree is discouraged. If excavation must be performed, then contact the CMO so that they can verify mitigation measures for potential damage to trees. • Ensure proper disposal of hazardous materials (e.g. lamps, ballasts) in accordance with provincial and federal regulations.	
Drainage (catch basins, manholes, underground pipes, ditches, side slopes, embankments, culverts, drainage channels, tiles drains, subsurface drains, bridges, tunnels, etc.): inspecting, reporting, cleaning, erosion / flood control prevention, providing line locates, water level control, removing surface water, etc.	Yes	• Spread of contaminated groundwater or soils during excavation. • Health and safety effects from the exposure of contaminated soils. • Damage to archaeological resources as a result of excavation. • Damage to tree roots or trees as a result of excavation. • The release of sediment and/or chemicals during Maintenance activities that take place in or near water may adversely affect fish, fish habitat, and/or water quality. • Potential destruction of migratory bird nests which are protected under the *Migratory Bird Conventions Act*.	• *Prior to the start of any digging or excavation, contact the CMO to verify the presence of soil or groundwater contamination and archaeological potential. Provide the CMO with details on the location of the digging, and the type of work to be performed (e.g. will the trench be deepened or widened compared to what was previously excavated?). • If soil or groundwater contamination is present, testing prior to off-site disposal may be required. • Management and disposal of contaminated soils will follow all applicable regulations and guidelines. • In the case of new excavation or excavation that will widen, deepen or otherwise alter the footprint of previous excavation in zones of elevated archaeological potential, an archaeologist may need to be called on site to monitor that work. • If the excavation does not involve any alteration to the footprint of previous excavation, then no archaeological investigation or monitoring is required. • *If any suspected contamination at the site is discovered, the NCC must be notified immediately. • Any activity that takes place within 30 m of a watercourse or wetland and may release sediment, soil, or any other potentially polluting chemical or product will require the development and implementation of an Erosion and Sediment Control Plan and an Emergency Response Plan. • If soils must be stored overnight, they should be covered with a tarp. • *Excavation within the dripline of a Butternut tree cannot proceed without a permit from Environment Canada. Contact the CMO prior to excavation in order to obtain the necessary permit. • *Excavation within the dripline of any tree is discouraged. If excavation must be performed, then contact the CMO so that they can verify mitigation measures for potential damage to trees.	• Periodically inspect the erosion and sediment control devices to ensure proper functioning, especially after heavy rainfall. • May require testing of soils prior to off-site disposal. • May require monitoring by qualified archaeologist. • Monitor compliance of conditions set out in the permit and/or authorization to perform in-water or near-water works. • If activities must be conducted in a naturalized meadow within April 15th and August 15th, install temporary netting or other appropriate systems prior to the arrival of birds in the spring, in order to prevent birds from initiating nesting on the structure.

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
			• *Where Maintenance activities must take place during the the core migratory bird breeding and nesting season season (April 15th to August 15th), netting or other appropriate systems may be temporarily installed prior to the arrival of birds in the spring, in order to prevent birds from initiating nesting on the structure (e.g. bridges and culverts). • *No increase in footprint below the High Water Mark. • *No new fill placed below the High Water Mark. Routine clean-out of drainage channels work has to be done in the dry[5] • When cleaning culverts, follow the requirements set out in **Appendix A.** • The following measures should be applied during bridge cleaning: • Adequately seal drains and open joints before sweeping to prevent material from falling into the watercourse. Sweep bridges thoroughly before washing. • Clean and remove debris and sediment from drainage devices and dispose of the material in a way that will prevent it from entering the watercourse. • Direct wash-water past the ends of the bridge deck to a vegetated area to remove suspended solids, dissipate velocity and prevent sediment and other deleterious substances from entering the watercourse. If this cannot be achieved, use silt fences or other sediment and erosion control measures to prevent wash-water from entering the watercourse. • When extracting water from a watercourse, ensure the intakes of pumping hoses are equipped with an appropriate device to avoid entraining and impinging fish. • Remove paint or protective coatings in a manner that prevents any paints, paint flakes, primers, blasting abrasives, rust, solvents, degreasers or other waste material from entering the watercourse. • Use measures such as barges or shrouding to trap and prevent blasting abrasives, protective coatings, rust and grease from entering the watercourse. • Contain paint flakes, abrasives, and other waste materials for safe disposal. • Store, mix and transfer paints and solvents on land and not on the bridge to prevent these materials from entering the watercourse in the event of a spill. • Do not clean equipment in the watercourse or where the wash-water can enter the	

[5] The recommended method for ditches cleaning and maintenance is the “methode du tiers inférieur” formally adopted by the Quebec Ministry of Transportation [http://www.mtq.gouv.qc.ca/portal/page/portal/Librairie/bpm/Publication_entretien_des_fosses_routiers.pdf]

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
			watercourse. • Unless the debris accumulation is an immediate threat to the integrity of the piers and abutments, time debris removal to avoid disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the Ontario In-Water Construction Timing Windows), with the exception of ice build-up removal. • Limit the removal of material to that which is necessary to protect piers and abutments. • Remove debris by hand or with machinery operating from shore or a floating barge.	
Plumbing, irrigation, and water (decorative fountains, drinking fountains, outdoor faucets, underground and aboveground water and sewer lines, pit toilets, washroom facilities, pump systems, irrigation controls, lines, heads, control panels, etc.): inspecting, installing, cleaning, testing, repairing, maintaining, replacing, water testing, providing portable toilets, providing locates, etc.	Yes	• Spread of contaminated groundwater or soils during excavation. • Damage to archaeological resources as a result of excavation. • Damage to tree roots or trees as a result of excavation. • Accidental erosion of soil that is stored near water may adversely affect fish, fish habitat, and/or water quality. • Accidental spills will degrade environmental quality.	• *Prior to the start of any digging or excavation for the repair of water and sewer lines, irrigation lines or heads, or any other subsurface plumbing, irrigation, or water fixture, contact the CMO to verify the presence of soil or groundwater contamination and archaeological potential. Provide the CMO with details on the location of the digging, and the type of work to be performed (e.g. will the trench be deepened or widened compared to what was previously excavated?). o If soil or groundwater contamination is present, testing prior to off-site disposal may be required. o Management and disposal of contaminated soils will follow all applicable regulations and guidelines. o In the case of new excavation or excavation that will widen, deepen or otherwise alter the footprint of previous excavation in zones of elevated archaeological potential, an archaeologist may need to be called on site to monitor that work. o If the excavation does not involve any alteration to the footprint of previous excavation, then no archaeological investigation or monitoring is required. • If any suspected contamination at the site is discovered, the NCC must be notified immediately. • Any activity that takes place within 30 m of a watercourse or wetland and may release sediment, soil, or any other potentially polluting chemical or product will require the development and implementation of an Erosion and Sediment Control Plan and an Emergency Response Plan. • If soils must be stored overnight, they should be covered with a tarp. • *Excavation within the dripline of a Butternut tree cannot proceed without a permit from Environment Canada. Contact the CMO prior to excavation in order to obtain the necessary permit. • *Excavation within the dripline of any tree is discouraged. If excavation must be performed,	• Periodically inspect the erosion and sediment control fences to ensure proper functioning, especially after heavy rainfall. • May require testing of soils prior to off-site disposal. • May require monitoring by qualified archaeologist.

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
			then contact the CMO so that they can verify mitigation measures for potential damage to trees. • Refer to the Spills Procedure and Emergency Response mitigation measures on page 2.	
Fixtures, furniture and buildings (NCC furniture only – fences, stone walls, guardrails, barricades, flags, bollards, garbage receptacles, signs, NCC buildings, kiosks, etc.): inspecting, repairing, replacing, cleaning, removing graffiti, painting, staining, displacing furniture, etc.	Yes	• Spread of contaminated groundwater or soils during excavation. • Damage to archaeological resources as a result of excavation. • Accidental spills will degrade environmental quality. • Potential destruction of migratory bird nests which are protected under the *Migratory Bird Conventions Act*. • Dispersion of hazardous and designated substances (e.g. asbestos, lead, mercury, silica, urea formaldehyde foam insulation, vinyl chloride, PCBs, arsenic, etc.) in the environmental and potential adverse human health effects	• *Prior to the start of any digging or excavation for the installation of new fixtures or furniture, contact the CMO to verify the presence of soil or groundwater contamination and archaeological potential. Provide the CMO with details on the location of the digging, and the type of work to be performed (e.g. will the trench be deepened or widened compared to what was previously excavated?). o If soil or groundwater contamination is present, testing prior to off-site disposal may be required. o Management and disposal of contaminated soils will follow all applicable regulations and guidelines. o In the case of new excavation or excavation that will widen, deepen or otherwise alter the footprint of previous excavation in zones of elevated archaeological potential, an archaeologist may need to be called on site to monitor that work. o If the excavation does not involve any alteration to the footprint of previous excavation, then no archaeological investigation or monitoring is required. • *If any suspected contamination at the site is discovered, the NCC must be notified immediately. • Soils from excavation may not be stored within 30m of a watercourse or wetland. If no other staging area is available, a silt fence should be erected around the material to minimize erosion. If soils must be stored overnight, they should be covered with a tarp. • Refer to the Spills Procedure and Emergency Response mitigation measures on page 2. • *Where Maintenance activities must take place during the the core migratory bird breeding and nesting season season (April 15th to August 15th), netting or other appropriate systems may be temporarily installed prior to the arrival of birds in the spring, in order to prevent birds from initiating nesting on the structure (e.g. buildings, kiosks, chimneys, roofs, etc.). • Provide the building Designated Substances Survey report to the contractors and ensure recommendations are implemented. If no Designated Substances Survey report exists for the building to be repaired or maintained, contact NCC Contaminated Sites Team (Eric Soulard, Senior Manager, at eric.soulard@ncc-ccn.ca ext. 5418).	• Periodically inspect the erosion and sediment control fences to ensure proper functioning, especially after heavy rainfall. • May require testing of soils prior to off-site disposal. • May require monitoring by qualified archaeologist. • If activities must be conducted in a naturalized meadow within April 15th and August 15th, install temporary netting or other appropriate systems prior to the arrival of birds in the spring, in order to prevent birds from initiating nesting on the structure.
Snow and Ice Control				

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
Snow and ice control (roadways and parking lots, walkways, pathways, sidewalks, steps and building access, buildings, utility service access, trails, lanes, fire lanes, open spaces, fields, etc.): providing equipment and supplies, removing, blowing, plowing, shoveling, clearing, cleaning, sweeping, de-icing, stockpiling, transporting, disposing, providing floor control and emergency services, etc.	Yes	• Salt and sand from de-icing may adversely affect fish, fish habitat, and/or water quality. • Accidental damage to trees.	• Snow that is removed and transported for disposal must be disposed of at an authorized snow dumping facility. • No snow dumping is permitted on NCC property.Snow storage sites should be located such that meltwater that may contain salt is not directed towards salt vulnerable areas[6].Contractors should implement Environment Canada *Best Management Practices for Salt Use on Private Roads, Parking Lots and Sidewalks*[7]. • Install snow fencing around trees susceptible to damage from snow removal and transport activities. • Do not blow, plow, store, or shovel snow against trees or shrubs.	
Waste / Recycling / Cleaning Operations				
Litter / recycling pick-	Yes	• Improper disposal of waste will degrade	• All solid waste must be disposed of in accordance with all applicable environmental laws.	

[6] For a definition of "salt vulnerable areas" please consult Environment Canada *Code of practice for the Environmental Management of Road Salts* [http://www.ec.gc.ca/nopp/roadsalt/cop/en/guide.htm]. Due to concerns about the large quantities of chlorides being released to the environment, road salts underwent a comprehensive five-year scientific assessment under the *Canadian Environmental Protection Act, 1999* beginning in 1995. The road salts assessment covered the chloride salts — sodium chloride (NaCl), calcium chloride ($CaCl_2$), magnesium chloride ($MgCl_2$) and potassium chloride (KCl) — as well as brines used in road de-icing/anti-icing and dust suppression, the salt portion of abrasive mixtures and ferrocyanide additives. Road salts enter the environment through losses at salt storage and snow disposal sites and through runoff and splash from roadways. The assessment report, published on December 1, 2001 concluded that high releases of road salts were having an adverse effect on freshwater ecosystems, soil, vegetation and wildlife.

[7] Available on the following Website: http://www.ec.gc.ca/nopp/roadsalt/reports/ParkingLot/EN/p5.cfm#section. See footnote 4 for rationale.

Maintenance Activity	Project Under CEAA, 2012?	Environmental Effects	Mitigation Measures	Responsibilities of NCC Environmental Experts (e.g. monitoring, permitting, approval, terms of reference, etc.)
up and cleaning: collecting litter and debris, emptying waste receptacles, cleaning fixtures and furniture, sweeping and flushing hard surfaces, bridges and tunnels, removing graffiti and posters from all assets, removing vegetative and non-vegetative material in spring, removing spills.		environmental quality.	The contractor must be aware of any restrictions or prohibitions in force at the disposal site. Where in effect, all municipal recycling and composting procedures shall be respected. • In general, burning of waste is prohibited on NCC property. Branches and cuttings may only be burned on NCC property with prior NCC authorization and with appropriate municipal permits for burning. • Contractors that provide services to the NCC for waste, recycling and composting disposal might be required to report the total weights for specific periods[8]. • Litter or debris must never be swept or pushed into water courses or wetlands. • All hazardous materials on NCC property must be stored in accordance with applicable regulations, standards and guidelines. Flammable materials must be stored in accordance with the National Fire Code of Canada. • Material Safety Data Sheets (MSDS) must be readily available for all hazardous materials brought on to NCC property. All employees handling these materials must have received training on the Workplace Hazardous Materials Information System (WHMIS) and on proper handling, storage and disposal of these materials. • All hazardous materials must be labelled in accordance with WHMIS requirements. • Absorbent material must be available whenever liquid hazardous materials are being used on NCC property. Staff must be trained on how to use and dispose of this material in the event of a spill. • When transporting hazardous materials, these materials must be labelled and transported in accordance with provincial and federal regulations regarding the transportation of dangerous goods. • Hazardous wastes and containers which previously contained hazardous materials must be disposed of in accordance with provincial and federal regulations.	

Appendix A. Culvert Cleaning - Mitigation Measures

The below requirements and mitigation measures apply to the cleaning of culverts by use of a vacuum truck system. All measures should be reviewed and understood prior to commencement of any work.

Culvert Access

[8] Request for these numbers would come from the Environmental Strategy team in the context of meeting NCC Environmental Strategy objectives and would first be discussed with CMO.

- Vacuum truck must remain within paved area of the road to the extent possible or limit encroachment onto road shoulder. It is prohibited to circulate outside of the limits of the road shoulder in order to avoid damage to vegetation.
- Use existing trails, roads, or cut lines wherever possible to avoid disturbance to the riparian vegetation.
- Machinery is prohibited to circulate within the watercourse
- Do not store material or equipment within 30 meters of all water bodies.

Vegetation Removal

- All trees within 2 m of equipment in operation and susceptible to being damaged will have protectors installed around their drip line (e.g. protective fencing);
- No tree (DBH > 10cm) may be cut. If trees with a DBH of 10 cm or higher were to be cut, an authorization from the Contract Management Officer is required.
- These trees will have to be replaced, at a 2:1 ratio, with non-invasive indigenous species, approved by the NCC portfolio. The contractor's tree planting plan must be approved by NCC prior to the tree planting.
- Minimize vegetation cutting (DBH < 10 cm), limiting it to vegetation that interferes with the movement of machinery and work.
- Any federally or provincially protected tree species (seedling, sapling or tree) must be properly flagged and protected to ensure these trees are not damaged, harmed or cut. Highly visible flagging tape (using a pre-determined colour) should be used to clearly identify the tree.
- Trees or shrub clippings, branches, or log pieces that show signs of disease or pests must be appropriately disposed of following all federal, provincial, and municipal regulations in order to minimize spread of the disease or pest (e.g. Dutch elm disease, emerald ash borer, etc).

Migratory Birds

- No activities susceptible to disturb or destroy the nest of a migratory bird can occur during the core migratory bird nesting period as per the *Migratory Bird Convention Act.*

Sediment and Erosion Control

- Install effective sediment and erosion control measures before starting work to prevent sediment from entering the watercourse. Inspect them regularly during the course of debris removal and make all necessary repairs if any damage occurs.
- Maintain existing riparian vegetation in order to help reduce erosion.

Timing of Removal of Accumulated Material

- *Work should be undertaken outside of the fish spawning period and periods of high flooding. Timing windows to conduct projects in or around water may vary by province, species or watercourse and are established by Fisheries and Oceans Canada (DFO) to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed[9]. Avoid Maintenance activities during wet and rainy periods.
- Unless accumulated material (i.e., branches, stumps, other woody materials, garbage, ice build-up, etc.) is preventing the passage of water and/or fish through the structure, time material and debris removal to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see above).

[9] Timing windows by province are available on DFO website [http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/index-eng.html] and must be confirmed with CMO.

Debris Removal

- Limit the removal of accumulated material (i.e., branches, stumps, other woody materials, garbage, etc.) to the area within the culvert, immediately upstream of the culvert and to that which is necessary to maintain culvert function and fish passage.
- Remove accumulated material and debris slowly to allow clean water to pass, to prevent downstream flooding and reduce the amount of sediment-laden water going downstream. Gradual dewatering will also reduce the potential for stranding fish in upstream areas.
- When water (from the truck) is flushed through the culvert, it must be done at a slow speed (gently) as to prevent sedimentation and impacts downstream.
- Depending on the sensitivity of the downstream fish habitat and amount of sediment in the culvert, installing cofferdams and working in the dry prior to vacuuming should be considered.
- Temporary structures and environmental protection devices must ensure sufficient free movement of water at all times to maintain fish habitat functions (feeding, fry rearing, spawning) downstream from the work site. Take the necessary measures to prevent impacts (e.g. flooding, dewatering, suspended solids, erosion) upstream and downstream of the work site.

Machinery Maintenance

- The smallest possible machinery and equipment suitable for the bearing capacity of the soil should be used.
- Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
- It is prohibited to circulate beyond the boundaries of the work site and leave equipment, waste or other materials, even temporarily without the prior authorization of the NCC.
- Wash, refuel and service machinery and store fuel and other materials for the machinery at least 60m away from the high water mark to prevent any deleterious substance from entering the water.
- Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

Site Reinstatement (if required)

- Disturbed surfaces will be rehabilitated at the end of the work using the portfolio approved seed mixture and topsoil.
- Revegetation must be done as soon as possible within the growing season. If unfeasible, the Contractor must stabilize disturbed areas with erosion control blankets to keep the soil in place and prevent erosion in water bodies. Blankets must be removed only at the end of the revegetation work.
- All tree or vegetation debris that may fall or enter any water bodies must be removed immediately.

Management of Material

- All sludge, dirt, sand, rocks, grease, and any other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream end of the culvert being cleaned (either manually or with suction). The Contractor shall maintain record of the amount and type of material removed for each culvert in a format approved by the NCC.
- Debris shall be kept in totally enclosed containers at all times and shall be removed from the site at the end of each day or when the containers are full. Under no circumstances will the Contractor be allowed to accumulate debris, etc. on site of work beyond the stated time. All debris shall be removed from the site and disposed by the Contractor at no additional cost to the NCC.

Fauna

- In order to minimize the impact on wildlife, all work will be completed within a reasonable time frame.
- Use caution when driving to and from the work site – watch out for turtles and other small animals on the road surface and shoulder. Avoid hitting them, provided that it is safe to do so.
- Workers must keep the work site clean and must not leave behind garbage or food scraps that could attract animals or alter their behavior.

- Any fauna (mammals, amphibians, reptiles) that are encountered within the work site should not be harmed or harassed. Allow the animal to move away on its own by slowly walking toward it in the direction you want it to move. If necessary to move the animal out of the work area, carefully move it into a similar habitat next to site (within same area).

Appendix 6-F: Occurrence Report

Occurrence Report (emergency, observation, complaint) #_____ - _____

(attach photo/map whenever possible – use back of form as needed)

Initial report forwarded to:					
Completed report returned to:					
Date:		Time:			
Site:					
Occurrence Type	_____	Region	_____	Atlas Sheet	_____
Category	_____	Sector	_____	Component Id.	_____
Details (description of incident/complaint/observation, estimate):					
Action taken/required (service contacted):					
Reported by:		Phone #:			
Date:		Fax #:			
Follow-up Action required:					
Date completed:					
Comments:					
Signature:		Date:			

Shaded Portion for NCC use only

NCC CCN Canada

Supplier no. / N°. de fournisseur

UNSATISFACTORY PERFORMANCE REPORT
RAPPORT DE RENDEMENT INSATISFAISANT

Date of report / Date du rapport :

Project Officer / Agent de projet :	Contract no. / N°. de marché :

Description of work : (building, equipment or type of work being reported on)
Description du travail : (immeuble, matériel ou travaux visés faisant état du rapport)

Contractor / Entrepreneur :	Address / Adresse :
	Postal code / Code postal :

Supporting data : (additional supporting data, including photographs if applicable)
Pièces justificatives : (renseignements supplémentaires incluant les photographies, s'il y a lieu)

Description of unsatisfactory performance : (summary of problem, duration, cause, remedial action attempted)
Description du rendement insatisfaisant : (brève description du problème, durée, cause, mesures envoyées)

Recommendations of Project Officer / Recommandations de l'agent de projet :

Project Officer's signature / Signature de l'agent de projet	Telephone number / Numéro de téléphone	Date

For Procurement Officers use only / À l'usage des agents d'approvisionnement seulement :

Comments :

		Spring start up (once yearly)	Fall shut down (once yearly)	Every week for 26 weeks per year	As called	**Sub-totals**
		Preventive Maintenance	**Preventive Maintenance**	**Predictive Maintenance**	**Reactive Maintenance**	
		A	**B**	**C**	**D**	**E = (A + B + C)**
1	Majors Hill Park				As per SOA rates	
2	Vincent Massey Park				As per SOA rates	
3	Hog's Back Park				As per SOA rates	
4	Rockliffe Pavillon				As per SOA rates	

	Sub-total of column E for items 1 to 4
	13% OHST on sub-total
	Sub-total incl. taxes = Yearly Total of main contract
	Insert SOA total here (form 7-A-2)
	Grand Total of main contract & SOA for basis of award

Company name: _____

Signature: _____ Date: _____

APPENDIX 7-A-2 FEE PROPOSAL FOR
STANDING OFFER AGREEMENT RATES

	A	B	C	D	E	F	H	
	Item	**Description**	**Bid evaluation quantities for D**	**Regular hourly rate**	**Bid evaluation quantities for F**	**Premium hourly rate**	**Evaluation totals**	
1	Senior Service Technician with tools and vehicle.	Hourly rate for one senior Service Technician, with tools of the trade and service vehicle.	20		10			H=(C x D)+(E x F)
2	Service Technician with tools and vehicle.	Hourly rate for one Service Technician, with tools of the trade and service vehicle.	20		10			H=(C x D)+(E x F)
3	Service Technician	Hourly rate for one Service Technician.	30		15			H=(C x D)+(E x F)
4	Response time to any site for Reactive Maintenance call.	The NCC will reimburse a maximum equivalent to one hour at the Senior Service Technician rate for travel time from the Contractors place of business to any of the sites in this Contract.	20		**N/A**	**N/A**		H= (C x D)
	Note: Travel time from the NCC site to the Contractors place of business following a Reactive Maintenance call. The NCC will NOT reimburse the Contractor for travel time following a Reactive Maintenance call.		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
				Your mark up %			**Evaluation totals**	
5	Markup on any parts or materials required and approved by the NCC.	With the exception of Consumables (see 2.1.1), the NCC will pay a fixed percentage markup for any materials invoiced by the Contractor. Only materials for which a written estimate was provided will be subject to this provision.	$500		%			H= C + (C X D %)
								SOA Total (items 1,2,3,4,5)

Special considerations	Personnel supplied by the Contractor must respect the terms & conditions of the Contract (see 3.1)
	The premium hourly rate will apply only to work performed between the hours of 20:00 and 05:00 and work performed on Sundays. For the purposes of this Contract, Sunday will be deemed to begin at 05:00 and end at 20:00.
	The Contractor may not invoice the NCC for any more than one Senior Service Technician on any one site, at any one time.

Company name: _____

Signature: _____ Date: _____

BID BOND

Bond Number _____

Amount $ 5,000

KNOW ALL MEN BY THESE PRESENTS, that _____ as Principal, hereinafter called the Principal, and _____ as Surety, hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto the National Capital Commission as Obligee, hereinafter called the NCC, In the amount of _____ dollars ($ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____ , _____ . WHEREAS, the Principal has submitted a written tender to the NCC, dated the _____ day of _____ , _____ , for: _____ .

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that if:

(a) The Principal, should his tender be accepted within the period be specified by the NCC, or, if no period be specified, within sixty (60) days after closing date of the tender:

1. does execute within a period specified by the NCC, or, if no period be specified therein, within fourteen (14) days after the prescribed forms are presented to him for signature, execute such further contractual documents, if any, as may be required by the terms of the tender as accepted; and does

2. furnish a Performance Bond in the amount of 50% of the Contract price and satisfactory to the NCC, or other security acceptable to the NCC; or

(b) the Principal does pay to the NCC the difference between the amount of the Principal's tender and the amount of the Contract entered into by the NCC for the work, supplies and services which were specified in the said tender, if the latter amount be in excess of the former,

then, this obligation shall be void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that the Surety and the Principal shall not be liable to the NCC for an amount greater than the amount specified in the bond.

PROVIDED FURTHER that the Surety shall not be subject to any suit or action unless such suit or action is instituted and process therefore served upon the Surety at its Head Office in Canada, within twelve (12) months from the date of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal _____

Witness _____

Surety _____

Note: Affix Corporate seal if applicable.

PERFORMANCE BOND

Bond Number _____

Amount $ 10,000.00

KNOW ALL MEN BY THESE PRESENTS, that _____ as Principal, hereinafter called the Principal, and _____ as Surety, hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto the National Capital Commission as Obligee, hereinafter called the NCC, In the amount of _____ dollars ($ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____ , _____ . WHEREAS, the Principal has entered into a Contract with the NCC, dated the _____ day of _____ , _____ , for: _____ .

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that if the Principal shall well and faithfully observe and perform all the obligations on the part of the Principal to be observed and performed in connection with the Contract, then this obligation shall be void, otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. Whenever the Principal shall be, and declared by the NCC to be, in default under the Contract, the Surety shall
   (a) if the work is not taken out of the Principal's hands, remedy the default of the Principal,
   (b) if the work is taken out of the Principal's hands and the NCC directs the Surety to undertake the completion of the work, complete the work in accordance with the Contract provided that if a contract is entered into for the completion of the work,
      (i) it shall be between the Surety and the completing contractor, and
      (ii) the selection of such completing contractor shall be subject to the approval of the NCC,
   (c) if the work is taken out of the Principal's hands and the NCC, after reasonable notice to the Surety, does not direct the Surety to undertake the completion of the work, assume the financial responsibility for the cost of completion in excess of the moneys available to the NCC under the Contract,
   (d) be liable for and pay all the excess costs of completion of the Contract, and
   (e) not be entitled to any Contract moneys earned by the Principal, up to the date of his default on the Contract and any holdbacks relating to such earned Contract moneys held by the NCC, and the liability of the Surety under this Bond shall remain unchanged provided, however, and without restricting the generality of the foregoing, upon the completion of the Contract to the satisfaction of the NCC, any Contract moneys earned by the Principal or holdbacks related thereto held by the NCC may be paid to the Surety by the NCC.

2. The Surety shall not be liable for a greater sum than the amount specified in this Bond.

3. No suit or action shall be instituted by the NCC herein against the Surety pursuant to these presents after the expiration of two (2) years from the date on which final payment under the Contract is payable.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal _____

Witness _____

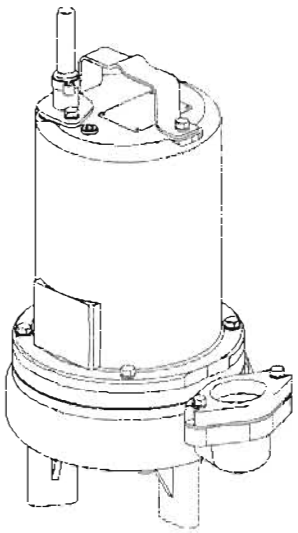
Surety _____

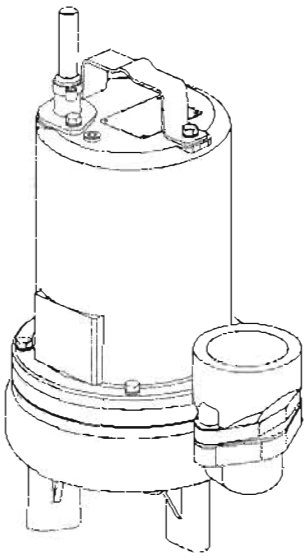
Note: Affix Corporate seal if applicable.

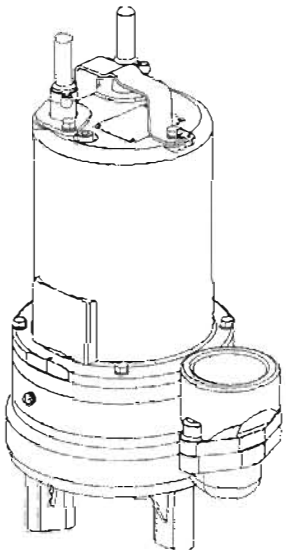
APPENDIX D

BARNES®

INSTALLATION and OPERATION MANUAL
Submersible Sewage Ejector







Series: *SE & 3SE-L & DS
.5, .75 & 1 HP, 1750RPM, 60 Hz.

Single and Double Seal
***(Standard and High Temperature)**

IMPORTANT! *Read all instructions in this manual before operating pump. As a result of Crane Pumps & Systems, Inc., constant product improvement program, product changes may occur. As such Crane Pumps & Systems reserves the right to change product without prior written notification.*

CRANE
A Crane Co. Company

PUMPS & SYSTEMS

420 Third Street
Piqua, Ohio 45356
Phone: (937) 778-8947
Fax: (937) 773-7157
www.cranepumps.com

83 West Drive, Bramton
Ontario, Canada L6T 2J6
Phone: (905) 457-6223
Fax. (905) 457-2650

Submersible Wastewater Pump Association SWPA MEMBER

Form No. 105240-Rev. P

TABLE OF CONTENTS

SAFETY FIRST!

Please Read This Before Installing Or Operating Pump.
This information is provided for **SAFETY and to PREVENT EQUIPMENT PROBLEMS.** To help recognize this information, observe the following symbols:

IMPORTANT! Warns about hazards that can result in personal injury or indicates factors concerned with assembly, installation, operation, or maintenance which could result in damage to the machine or equipment if ignored.

CAUTION ! Warns about hazards that can or will cause minor personal injury or property damage if ignored. Used with symbols below.

WARNING ! Warns about hazards that can or will cause serious personal injury, death, or major property damage if ignored. Used with symbols below


Hazardous fluids can cause fire or explosions, burnes or death could result.


Extremely hot - Severe burnes can occur on contact.


Biohazard can cause serious personal injury.


Hazardous fluids can Hazardous pressure, eruptions or explosions could cause personal injury or property damage.


Rotating machinery Amputation or severe laceration can result.


Hazardous voltage can shock, burn or cause death.

Only qualified personnel should install, operate and repair pump. Any wiring of pumps should be performed by a qualified electrician.

WARNING ! - To reduce risk of electrical shock, pumps and control panels must be properly grounded in accordance with the National Electric Code (NEC) or the Canadian Electrical Code (CEC) and all applicable state, province, local codes and ordinances.

WARNING! - To reduce risk of electrical shock, always disconnect the pump from the power source before handling or servicing. Lock out power and tag.

WARNING! Operation against a closed discharge valve will cause premature bearing and seal failure on any pump, and on end suction and self priming pump the heat build may cause the generation of steam with resulting dangerous pressures. It is recommended that a high case temperature switch or pressure relief valve be installed on the pump body.

CAUTION ! Never operate a pump with a plug-in type power cord without a ground fault circuit interrupter

CAUTION! Pumps build up heat and pressure during operation-allow time for pumps to cool before handling or servicing.

WARNING! - DO NOT pump hazardous materials (flammable, caustic, etc.) unless the pump is specifically designed and designated to handle them.

Do not block or restrict discharge hose, as discharge hose may whip under pressure.

WARNING! - DO NOT wear loose clothing that may become entangled in the impeller or other moving parts.

WARNING! - Keep clear of suction and discharge openings **DO NOT** insert fingers in pump with power connected.

Always wear eye protection when working on pumps.

Make sure lifting handles are securely fastened each time before lifting. **DO NOT** operate pump without safety devices in place. Always replace safety devices that have been removed during service or repair. Secure the pump in its operating position so it can not tip over, fall or slide.

DO NOT exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.

DO NOT remove cord and strain relief Do not connect conduit to pump.

WARNING! Cable should be protected at all times to avoid punctures, cut, bruises and abrasions - inspect frequently. Never handle connected power cords with wet hands.

WARNING! To reduce risk of electrical shock, all wiring and junction connections should be made per the NEC or CEC and applicable state or province and local codes. Requirements may vary depending on usage and location.

WARNING! Submersible Pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.

WARNING! Products Returned Must Be Cleaned, Sanitized, Or Decontaminated As Necessary Prior To Shipment, To Insure That Employees Will Not Be Exposed To Health Hazards In Handling Said Material. All Applicable Laws And Regulations Shall Apply.

Bronze/brass and bronze/brass fitted pumps may contain lead levels higher than considered safe for potable water systems. Lead is known to cause cancer and birth defects or other reproductive harm. Various government agencies have determined that leaded copper alloys should not be used in potable water applications. For non-leaded copper alloy materials of construction, please contact factory.

IMPORTANT! - Crane Pumps & Systems, Inc. is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment

SECTION: A - PUMP SPECIFICATIONS:

2" Pumps (Standard & High Temperature)

DISCHARGE.....2" NPT, Female, Vertical, Bolt-on Flange
LIQUID TEMPERATURE:
Standard.....104°F (40°C) Continuous
High Temp.....200°F (93°C) Continuous
VOLUTE.....Cast Iron ASTM A-48, Class 30
MOTOR HOUSING ...Cast Iron ASTM A-48, Class 30
SEAL PLATE .....Cast Iron ASTM A-48, Class 30
IMPELLER:
Design.....2 Vane, open, with pump out vanes on back side. Dynamically balanced, ISO G6.3
Material.....Cast Iron ASTM A-48, Class 30
SHAFT.....416 Stainless Steel
SQUARE RINGS.....Buna-N
HARDWARE .....300 Series Stainless Steel
PAINT.....Air Dry Enamel
SEAL:
Design.....Single Mechanical
Material.....Carbon/Ceramic/Buna-N Hardware -300 Series Stainless
CORD ENTRY.....30 ft (9.1m) Cord with plug on 120 volt & .5HP, 240 volt, 1 phase. Quick connect custom molded for sealing and strain relief
SPEED .....1750 RPM (Nominal)
UPPER BEARING.....Single Row, Ball, Oil lubricated
Load.....Radial
LOWER BEARING....Single Row, Ball, Oil lubricated
Load.....Radial & Thrust
MOTOR:
Design.....NEMA L -Single Phase, NEMA B -Three phase Torque Curve, Oil Filled. Squirrel Cage Induction
Insulation.....Class B, Class F for High Temp.
SINGLE PHASE.....Permanent Split Capacitor (PSC) Includes Overload Protection in Motor
THREE PHASE.....200-240/480 is Tri-Voltage notor 600V. Requires overload Protection to be included in control panel
LEVEL CONTROL ....**"A"** - Wide Angle, PVC, Mechanical, 15 ft (5m) cord with Piggy-Back Plug, N/O
"AU"- Wide Angle, Polypropylene, Mechanical, N/O Integral to pump. ON and OFF Points are adjustable

OPTIONAL EQUIPMENT Seal Material, Impeller Trims, Additional cord, Normally Closed Temperature Sensors with cord for 3 phase pumps (Requires relay in control panel), Inlet Strainer for High Temperature Models.

(*) 3/4" Spherical solids handling with optional inlet stainer.

IMPORTANT ! - High Temperature

1.) PUMP MAY BE OPERATED "DRY" FOR EXTENDED PERIODS WITHOUT DAMAGE TO MOTOR AND/OR SEALS.
2.) THIS PUMP IS NOT APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION I HAZARDOUS LOCATIONS.
3.) INSTALLATIONS SUCH AS DECORATIVE FOUNTAINS OR WATER FEATURES PROVIDED FOR VISUAL ENJOYMENT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ANSI/NFPA 70 AND/OR THE AUTHORITY HAVING JURISDICTION. THIS PUMP IS NOT INTENDED FOR USE IN SWIMMING POOLS, RECREATIONAL WATER PARKS, OR INSTALLATIONS IN WHICH HUMAN CONTACT WITH PUMPED MEDIA IS A COMMON OCCURRENCE
4.) MUST USE A **HIGH TEMPERATURE** WIDE ANGLE LEVEL CONTROL IN HIGH TEMPERATURE APPLICATIONS

3" Pumps

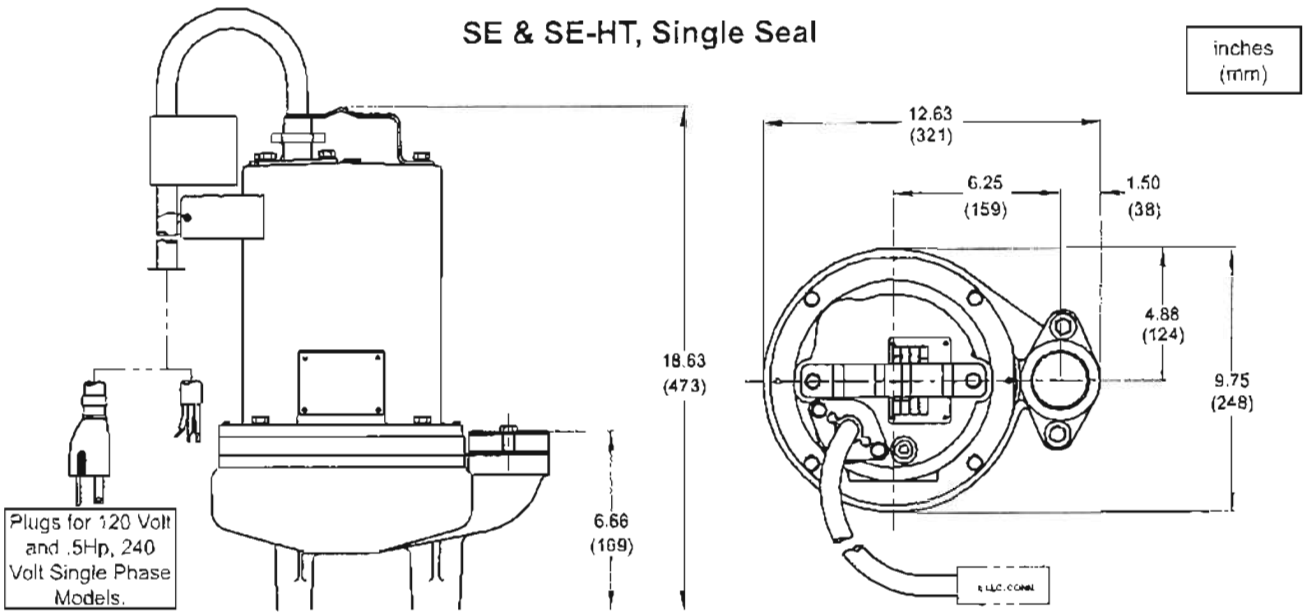
DISCHARGE .....3" NPT, Female, Vertical, Bolt-on Flange
LIQUID TEMP .....104°F (40°C) Continuous
VOLUTE.....Cast Iron ASTM A-48, Class 30
MOTOR HOUSING ...Cast Iron ASTM A-48, Class 30
SEAL PLATE .....Cast Iron ASTM A-48, Class 30
IMPELLER:
Design.....2 Vane, open, with pump out vanes on back side. Dynamically balanced, ISO G6.3
Material.....Cast Iron ASTM A-48, Class 30
SHAFT .....416 Stainless Steel
SQUARE RINGS.....Buna-N
HARDWARE .....300 Series Stainless Steel
PAINT.....Air Dry Enamel
SEAL:
Design.....Single Mechanical or Tandem Mechanical with Oil Filled Reservoir
Material.....Carbon/Ceramic/Buna-N Hardware -300 Series Stainless
CORD ENTRY.....30 ft. (9.1m) Cord. Plug on 120 Volt & .5HP, 240 Volt 1 Phase. Quick connect custom molded for sealing and strain relief
SPEED .....1750 RPM (Nominal)
UPPER BEARING.....Single Row, Ball, Oil lubricated
Load.....Radial
LOWER BEARING....Single Row, Ball, Oil lubricated
Load.....Radial & Thrust
MOTOR:
Design.....NEMA L -Single Phase, NEMA B -Three phase Torque Curve, Oil Filled, Squirrel Cage Induction
Insulation.....Class B
SINGLE PHASE.....Permanent Split Capacitor (PSC) Includes Overload Protection in Motor
THREE PHASE .....200-240/480 is Tri-Voltage. 600V. Requires Overload Protection to be included in control panel
OPTIONAL EQUIPMENT.....Seal Material, Impeller Trims, Additional cord, Normally Closed Temperature Sensors with cord for 3 phase pumps (Requires relay in control panel), Normally Open Moisture Sensor with cord for DS pumps.

IMPORTANT ! - Standard Temperature

1.) PUMP MAY BE OPERATED "DRY" FOR EXTENDED PERIODS WITHOUT DAMAGE TO MOTOR AND/OR SEALS.
2.) THIS PUMP IS APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION II HAZARDOUS LOCATIONS.
3.) THIS PUMP IS NOT APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION I HAZARDOUS LOCATIONS.
4.) INSTALLATIONS SUCH AS DECORATIVE FOUNTAINS OR WATER FEATURES PROVIDED FOR VISUAL ENJOYMENT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ANSI/NFPA 70 AND/OR THE AUTHORITY HAVING JURISDICTION. THIS PUMP IS NOT INTENDED FOR USE IN SWIMMING POOLS, RECREATIONAL WATER PARKS, OR INSTALLATIONS IN WHICH HUMAN CONTACT WITH PUMPED MEDIA IS A COMMON OCCURRENCE

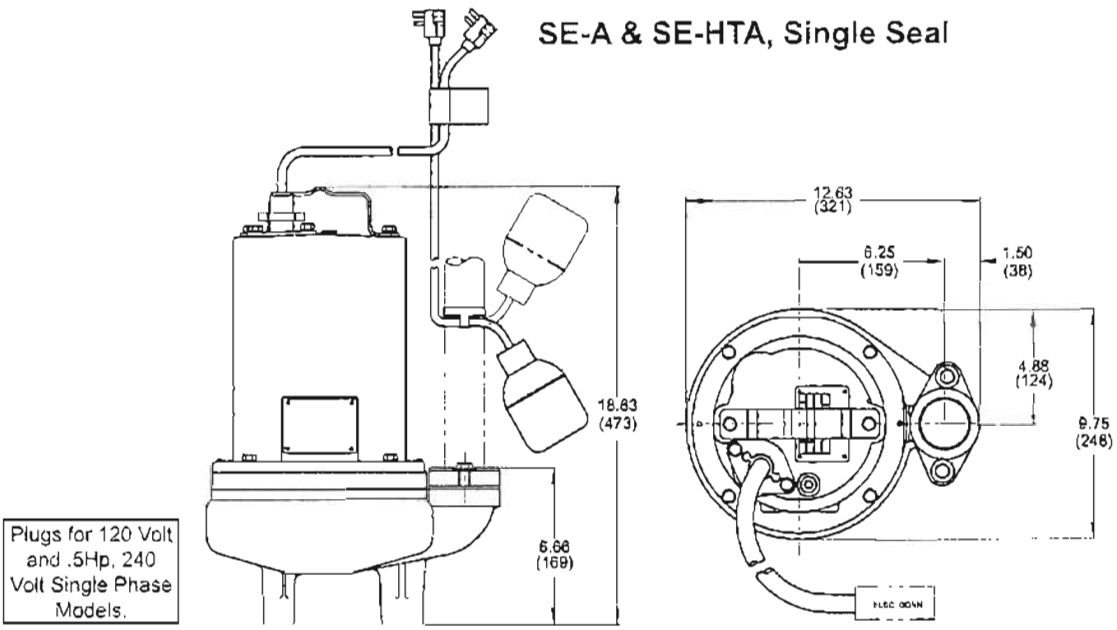
SE & SE-HT, Single Seal

inches (mm)



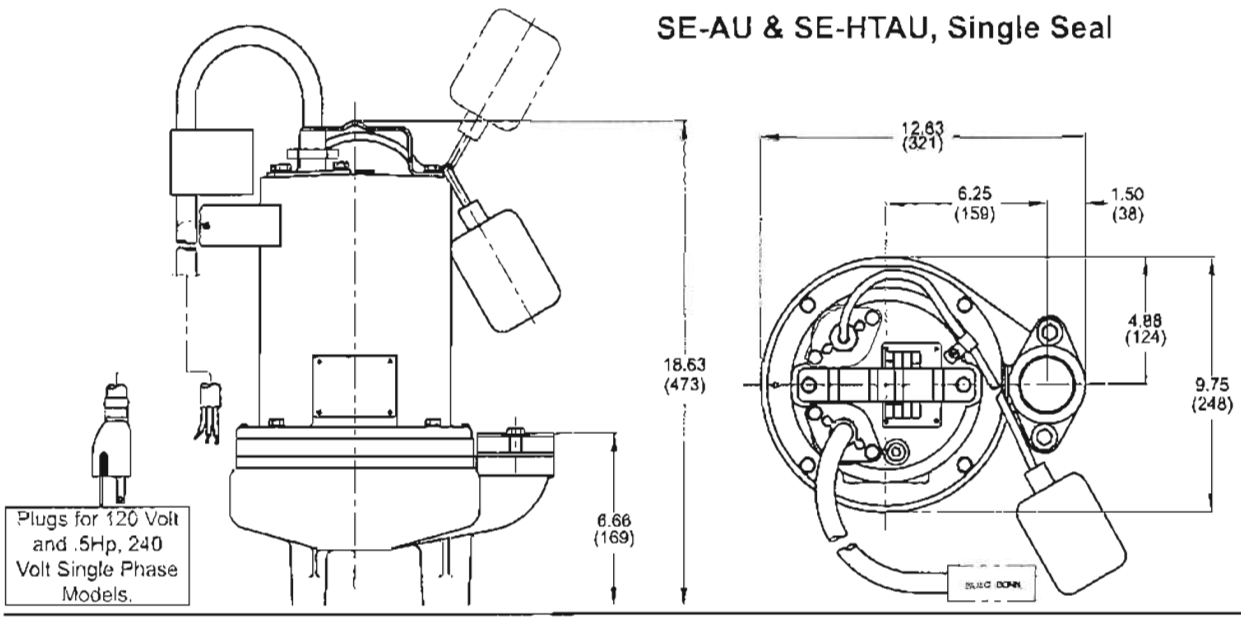
Plugs for 120 Volt and .5Hp, 240 Volt Single Phase Models.

SE-A & SE-HTA, Single Seal



Plugs for 120 Volt and .5Hp, 240 Volt Single Phase Models.

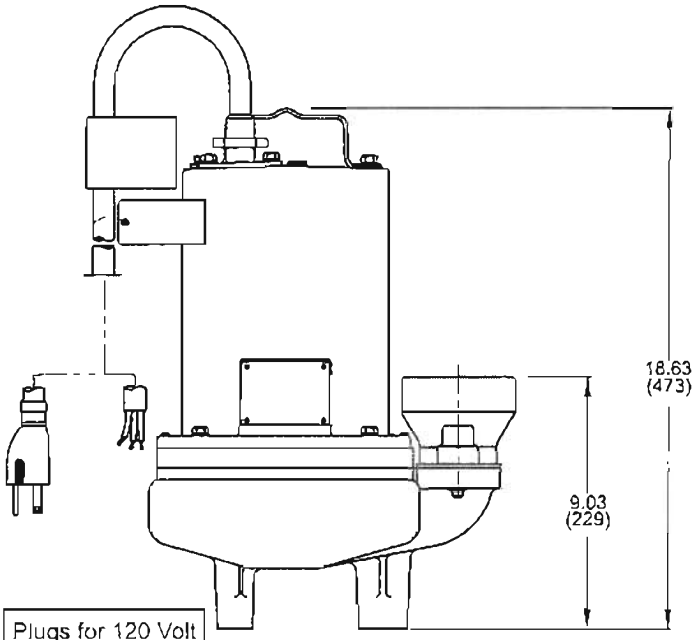
SE-AU & SE-HTAU, Single Seal

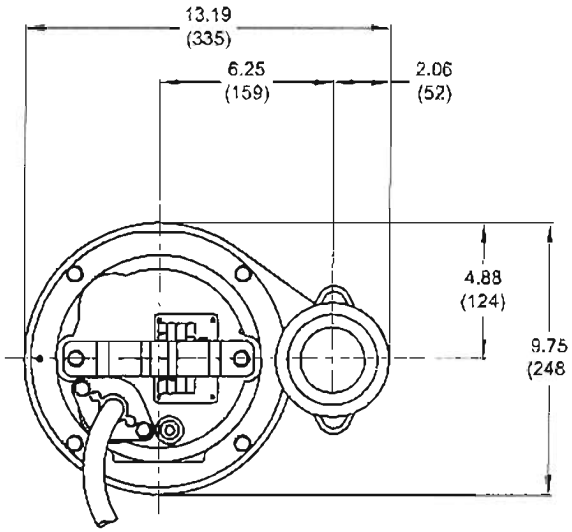


Plugs for 120 Volt and .5Hp, 240 Volt Single Phase Models.

3SE-L, Single Seal

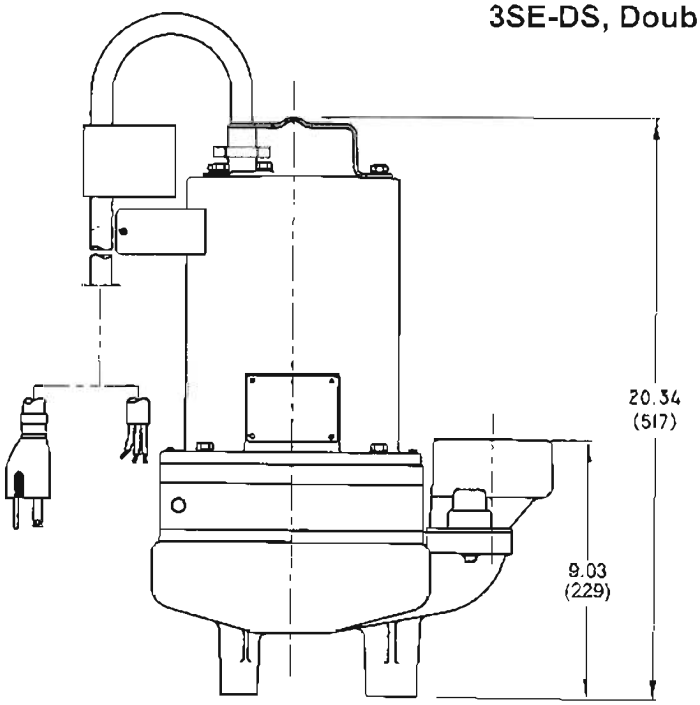
inches
(mm)

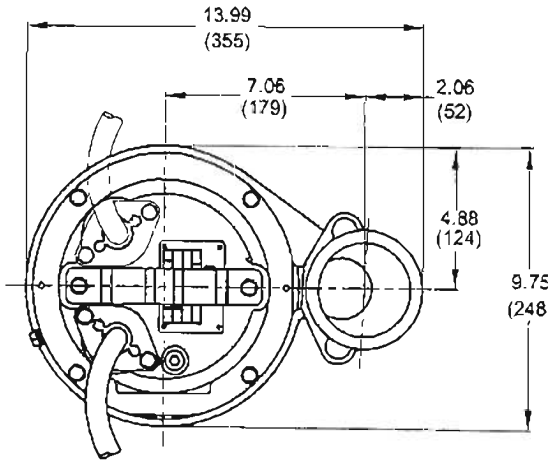




Plugs for 120 Volt and .5Hp, 240 Volt Single Phase Models.

3SE-DS, Double Seal





Plugs for 120 Volt and .5Hp, 240 Volt Single Phase Models.

SECTION B: GENERAL INFORMATION

B-1) To the Purchaser:

Congratulations! You are the owner of one of the finest pumps on the market today. CP&S pumps are products engineered and manufactured of high quality components. Over one hundred years of pump building experience along with a continuing quality assurance program combine to produce a pump which will stand up to the toughest applications. This manual will provide helpful information concerning installation, maintenance, and proper service guidelines.

B-2) Receiving:

Upon receiving the pump, it should be inspected for damage or shortages. If damage has occurred, file a claim immediately with the company that delivered the pump. If the manual is removed from the packaging, do not lose or misplace.

B-3) Storage:

Short Term- CP&S Pumps are manufactured for efficient performance following short inoperative periods in storage. For best results, pumps can be retained in storage, as factory assembled, in a dry atmosphere with constant temperatures for up to six (6) months. Long Term- Any length of time exceeding six (6) months, but not more than twenty-four (24) months. The unit should be stored in a temperature controlled area, a roofed over walled enclosure that provides protection from the elements (rain, snow, wind-blown dust, etc.), and whose temperature can be maintained between +40 deg. F and +120 deg. F. (4.4 - 49°C). Pump should be stored in its original shipping container. On initial start up, rotate impeller by hand to assure seal and impeller rotate freely. If it is required that the pump be installed and tested before the long term storage begins, such installation will be allowed provided:

1.) The pump is not installed under water for more than one (1) month.
2.) Immediately upon satisfactory completion of the test, the pump is removed, thoroughly dried, repacked in the original shipping container, and placed in a temperature controlled storage area.

B-4) Service Centers:

For the location of the nearest Barnes Service Center, check your Barnes representative or Crane Pumps & Systems, Inc., Service Department in Piqua, Ohio, telephone (937) 778-8947 or Crane Pumps & Systems Canada, in Brampton, Ontario, (905) 457-6223.

SECTION C: INSTALLATION

C-1) Location:

These pumping units are self-contained and are recommended for use in a sump, lift station or basin. The sump, lift station or basin shall be vented in accordance with local plumbing codes. This pump is designed to pump sewage, effluent, or other nonexplosive or noncorrosive wastewater, and shall **NOT** be installed in locations classified as hazardous in accordance with the National Electrical Code (NEC), ANSI/NFPA 70 or the Canadian Electrical Code (CEC). Never install the pump in a trench, ditch or hole with a dirt bottom; the legs will sink into the dirt and the suction will become plugged.

C-1.1) Submergence:

It is recommended that the pump be operated in the submerged condition and the sump liquid level should never be less than 10 inches above the pump bottom (see Fig. 1).

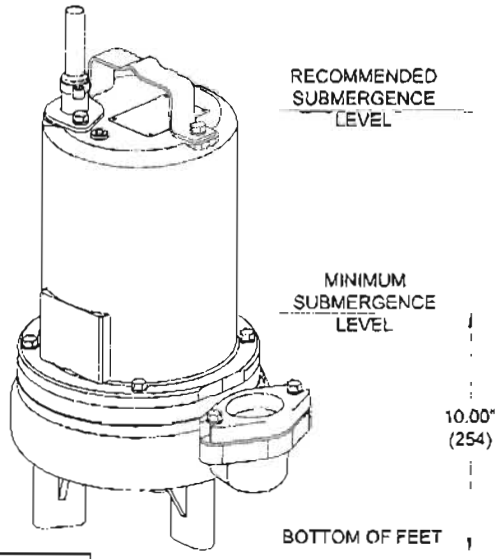


FIGURE 1

C-2) Discharge:

Discharge piping should be as short as possible. Both a check valve and a shut-off valve are recommended for each pump being used. The check valve is used to prevent backflow into the sump. Excessive backflow can cause flooding and/or damage to the pump. The shut-off valve is used to stop system flow during pump or check valve servicing.

Barnes Pumps supplies a Stainless Rail Package for the 2" models and also a variety of 2" and 3" break-away fitting discharge systems designed to allow the submersible wastewater pump to be installed or removed without requiring personnel to enter the wet well. Contact your local Barnes Pumps distributor for complete details.

Stainless Rail Package (Not Shown) - The package system comes complete and ready to place into the ground as outlined in the project specifications. The moveable portion of the Break Away Fitting (BAF), check valve, piping and guide bracket comes assembled on the pump along with the lifting cord. Insert pump bracket and moveable portion of BAF into the guide channel and lower pump into basin **(DO NOT DROP)**. Now connect power and control cords to the junction box or control panel depending on system design.

C-3) Liquid Level Controls:

The level controls are to be supported by a mounting bracket that is attached to the sump wall, cover or junction box. Cord grips are used to hold the cords in place on the mounting bracket. The control level can be changed by loosening the grip and adjusting the cord length as per the plans and specifications. Be certain that the level controls cannot hang up or foul in it's swing and that the pump is completely submerged when the level control is in the "Off" mode.

Figure 2 shows a typical installation of an "A" version float, (an "AU" version will attach to the pump), using a piggy-back plug.

TYPICAL INSTALLATION WITH WIDE ANGLE LEVEL CONTROL

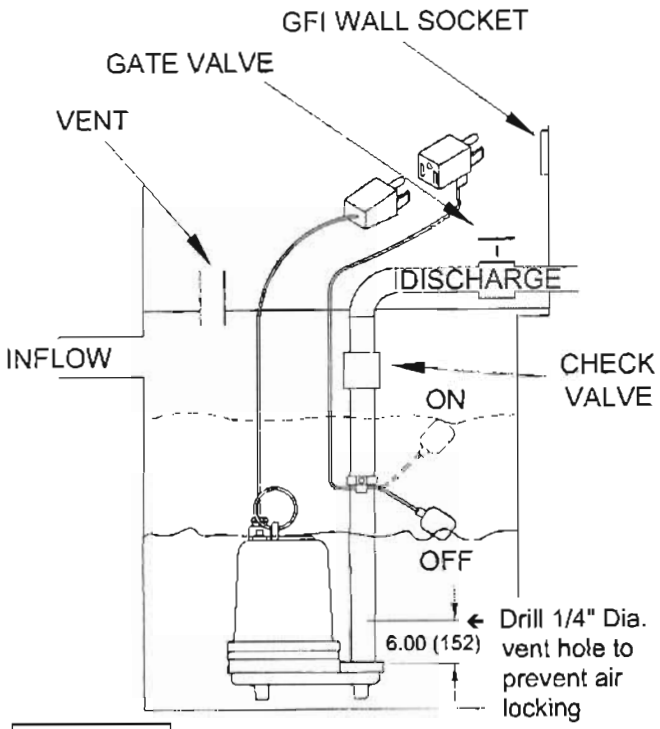


FIGURE 2

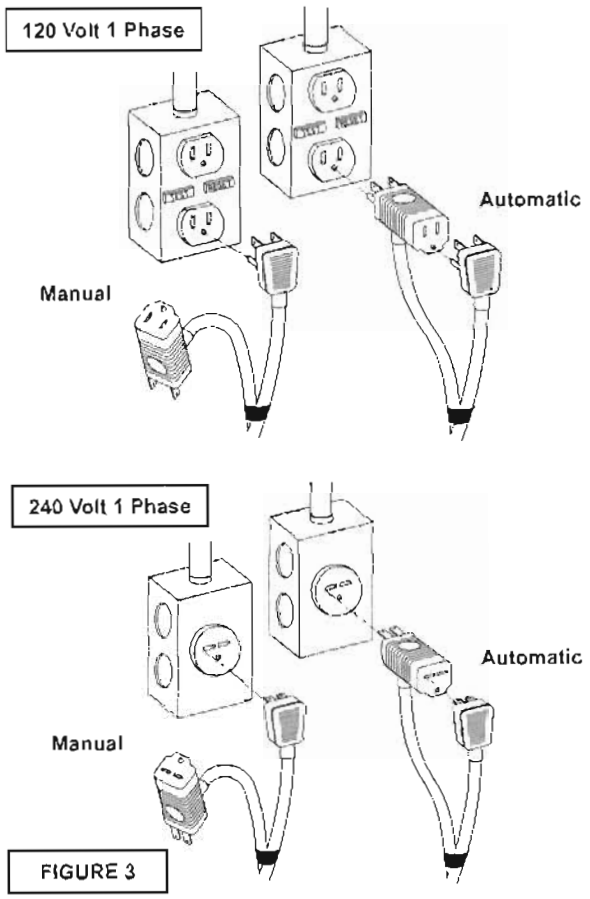


FIGURE 3

General Comments:

1) Never work in the sump with the power on.

2) Level controls are factory set for a pumping differential of 9 inches. If that is the cycle desired, simply circle the discharge pipe with the pipe mounting strap, feed the end through the worm drive, and tighten with a screwdriver. Be certain that the level control cannot hang up or foul in it's swing. Also, make certain the pump impeller is still submerged when the level control is in the 'off' mode.

3) If a higher pump differential is needed, grip the cord near the neck of the float, then using the other hand, exert a steady force on the lower edge of the cable clamp. The cable clamp should slide up to the new pivot point. Attach the level control to the discharge hose in the manner described above.

4) Plug the level control plug into the receptacle, then plug the pump into the piggyback plug. One cycle of operation should be observed, so that any potential problems can be corrected.

5) It is recommended that the float should be set to insure that the sump well liquid level never drops below the top of the motor housing.

6.) Figure 3 shows a typical connection for pumps with the wide angle float and piggy-back plug. For manual and automatic operations.

Automatic - Plug float cord into outlet, then plug pump cord into float cord.

Manual - Plug pump cord directly int outlet.

C-4) Electrical Connections:

C-4.1) Power and Control Cable:

The cord assembly mounted to the pump must not be modified in any way except for shortening to a specific application. Any splice between the pump and the control panel must be made in accordance with all applicable electric codes. It is recommended that a junction box, if used, be mounted outside the sump or be of at least Nema 4 (EEMAC-4) construction if located within the wet well. **Do not use the power or control cable to lift pump. NOTE: The white wire is NOT a neutral or ground lead, but a power carrying conductor.**

C-4.2) Overload Protection :

C-4.2-1) Three Phase (Optional) - The normally closed (N/C) thermal sensor is embedded in the motor windings and will detect excessive heat in the event an overload condition occurs. The thermal sensor will trip when the windings become too hot and will automatically reset itself when the pump motor cools to a safe temperature. It is recommended that the thermal sensor be connected in series to an alarm device to alert the operator of an overload condition, and/or the motor starter coil to stop the pump. In the event of an overload, the source of this condition should be determined and rectified immediately. **DO NOT LET THE PUMP CYCLE OR RUN IF AN OVERLOAD CONDITION OCCURS !**

C-4.2-2) Single Phase (Standard) - The type of in-winding overload protector used is referred to as an inherent overheating protector and operates on the combined effect of temperature and current. This means that the overload protector will trip out and shut the pump off if the windings become too hot, or the load current passing through them becomes too high. It will then automatically reset and start the pump up after the motor cools to a safe temperature. In the event of an overload, the source of this condition should be determined and rectified immediately. **DO NOT LET THE PUMP CYCLE OR RUN IF AN OVERLOAD CONDITION OCCURS !**

If current through the temperature sensor exceeds the values listed, an intermediate control circuit relay must be used to reduce the current or the sensor will not work properly.

TEMPERATURE SENSOR ELECTRICAL RATINGS		
Volts	Continuous Amperes	Inrush Amperes
110-120	3.00	30.0
220-240	1.50	15.0
440-480	0.75	7.5
600	0.60	6.0

C-4.3) Moisture Sensors- DS Models: (Optional)
A normally open (N/O) detector is installed in the pump seal chamber which will detect any moisture present. It is recommended that this detector be connected in series to an alarm device or the motor started coil to alert the operator that a moisture detect has occurred. In the event of a moisture detect, check the individual moisture sensor probe leads for continuity, (∞ resistance = no moisture) and the junction box/control box for moisture content. The above situations may induce a false signal in the moisture detecting circuit. If none of the above tests prove conclusive, the pump(s) should be pulled and the source of the failure identified and repaired. **IF A MOISTURE DETECT HAS OCCURRED SCHEDULE MAINTENANCE AS SOON AS POSSIBLE.**

C-4.4) Wire Size:
Consult a qualified electrician for proper wire size if additional power cord length is required. See table on pages 9 and 10 for electrical information.

SECTION: D START-UP OPERATION

D-1) Check Voltage and Phase:
Before operating pump, compare the voltage and phase information stamped on the pump identification plate to the available power.

D-2) Check Pump Rotation:
Before putting pump into service for the first time, the motor rotation must be checked. Improper motor rotation can result in poor pump performance and can damage the motor and/or pump. To check the rotation, suspend the pump freely, momentarily apply power and observe the "kickback". "Kickback" should always be in a counter-clockwise direction as viewed from the top of the pump motor housing

D-2.1) Incorrect Rotation for Three-Phase Pumps:
In the event that the rotation is incorrect for a three-phase installation, interchange any two power cord leads at the control box. **DO NOT** change leads in the cord housing in the motor. Recheck the "kickback" rotation again by momentarily applying power.

D-2.2) Incorrect Rotation for Single-Phase Pumps:
In the unlikely event that the rotation is incorrect for a single phase pump, contact a Barnes Pumps Service Center.

D-3) Start-Up Report:
Included at the end of this manual is a start-up report form, this form is to be completed as applicord. Return one copy to Barnes Pumps, Inc. and store a copy in the control panel or with the pump manual if no control panel is used. It is important to record this data at initial start-up since it will be useful to refer to should servicing the pump be required in the future.

D-3.1) Identification Plate:
Record the numbers from the pump identification plate on both START-UP REPORT provided at the end of the manual for future reference.

D-3.2) Insulation Test:
Before the pump is put into service, an insulation (megger) test should be performed on the motor. The resistance values (ohms) as well as the voltage (volts) and current (amps) should be recorded on the start-up report.

D-3.3) Pump-Down Test:
After the pump has been properly wired and lowered into the basin, sump or lift station, it is advisable to check the system by filling with liquid and allowing the pump to operate through its pumping cycle. The time needed to empty the system, or pump-down time along with the volume of water, should be recorded on the start-up report.

Winding Resistance ± 5%, measured from terminal block.
Pump rated for operation at ± 10% voltage at motor.

2" Pumps ONLY:
Mechanical Switch on SE51A, Cable 16/2, SJOW, 0.320 (8.1 mm) O.D Piggy-Back Plug.

Mechanical Switch on SE51AU & SE52AU, Cable 14/2, SJOW, 0.345 (8.8 mm) O.D.

OPTIONAL - Moisture Sensor cable for DS models is 18/5, SOW, 0.470 (11.9 mm) O.D.

OPTIONAL - Temperature Sensor cable for 3 phase models is 14/3 SOW, 0.530 (13.5 mm) O.D.

OPTIONAL - Moisture & Temperature Sensor cable for 3 phase DS models is 18/5, SOW, 0.470 (11.9 mm) O.D.

FRANKLIN MOTOR:
(*) When checking winding resistance of these motors, disconnect leads to solid state switch. Once leads have been disconnected, resistance should read as follows:

(2MAINS) Yellow & Blue = 1.79 ohms
Grey & Orange = 1.79 ohms
(START WINDINGS) Red & Orange = 5.99 ohms.

G.E. MOTORS:
(*) When checking winding resistance of these motors, resistance should read as follows:

(2MAINS) White (T2) & Brown (P2) = 1.64
Orange (T3) & Yellow (T4) = 1.64
(START WINDINGS) Orange (T3) & Black (T5) = 3.05

MODEL NO	HP	VOLT/PH	Hz	RPM (Nom)	NEMA START CODE	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE	CORD TYPE	CORD O.D inch (mm)	WINDING RESISTANCE		
											Emerson Main-Start	Franklin Main-Start	G.E. Main-Start
SE51	0 5	120/1	60	1750	F	11 6	21.3	14/3	SJTOW	0.375 (9.5)			1.51 - 16.10
SE51A	0.5	120/1	60	1750	F	11.6	21.3	14/3	SJTOW	0.375 (9.5)			1.51 - 16.10
SE51AU	0.5	120/1	60	1750	F	11.6	21.3	14/3	SJTOW	0 375 (9.5)			1.51 - 16.10
SE52	0.5	240/1	60	1750	J	5.9	14.9	14/3	SOW	0.530 (13.5)	3.38 - 9.30		5.69 - 18.74
SE52AU	0.5	240/1	60	1750	J	5.9	14.9	14/3	SOW	0.530 (13.5)	3.38 - 9.30		5.69 - 18.74
SE594L	0.5	200-240/3	60	1750	H/L	3.2/3.0	9.8/11.0	14/4	SOW	0.570 (14.5)	10.20	13.00	
SE544L	0.5	480/3	60	1750	K	1.5	5.3	14/4	SOW	0.570 (14.5)	40.80	52.00	
SE554L	0.5	600/3	60	1750	H	1.0	3.4	14/4	SOW	0.570 (14.5)		77.60	89.76
SE774L	0.75	200-240/1	60	1750	G/K	7.4/7.0	21.5/25.8	14/3	SOW	0.530 (13.5)	1.86 - 10.20		2.74 - 10.56
SE794L	0.75	200-240/3	60	1750	H/K	4.8/4 5	13 7/15.4	14/4	SOW	0.570 (14.5)		5.49	6.28
SE744L	0.75	480/3	60	1750	K	2.2	7.7	14/4	SOW	0.570 (14.5)		21.96	24.51
SE754L	0.75	600/3	60	1750	L	1.5	7.2	14/4	SOW	0.570 (14.5)		34.36	36.60
SE1074L	1.0	200-240/1	60	1750	D/G	8.8/8.3	21.5/25.8	14/3	SOW	0.530 (13.5)	1.86 - 10.20		2.74 - 10 56
SE1094L	1.0	200-240/3	60	1750	E/H	5.1/4.9	13.7/15.4	14/4	SOW	0.570 (14.5)		5.49	6.28
SE1044L	1.0	480/3	60	1750	H	2.4	7.7	14/4	SOW	0.570 (14.5)		21.96	24.51
SE1054L	1.0	600/3	60	1750	J	1.9	7.2	14/4	SOW	0.570 (14.5)		34.36	36.60
SE51HT	0.5	120/1	60	1750	R	17.0	63.8	14/3	SOW	0.530 (13.5)		*	*
SE51HTA	0.5	120/1	60	1750	R	17.0	63.8	14/3	SOW	0.530 (13.5)		*	*
SE51HTAU	0.5	120/1	60	1750	R	17.0	63.8	14/3	SOW	0.530 (13.5)		*	*
SE52HT	0.5	240/1	60	1750	R	8.5	30.1	14/3	SOW	0.530 (13.5)		*	*
SE52HTAU	0.5	240/1	60	1750	R	8.5	30.1	14/3	SOW	0.530 (13.5)		*	*
3SE514L	0.5	120/1	60	1750	F	11.6	21.3	14/3	SJTOW	0.375 (9.5)			1.51 - 16 10
3SE524L	0.5	240/1	60	1750	J	5.9	14.9	14/3	SOW	0.530 (13.5)	3.38 - 9.30		5.69 - 18.74
3SE594L	0.5	200-240/3	60	1750	H/L	3.2/3.0	9.8/11.0	14/4	SOW	0.570 (14.5)	10.20	13.00	
3SE544L	0.5	480/3	60	1750	K	1.5	5.3	14/4	SOW	0.570 (14.5)	40.80	52.00	
3SE554L	0.5	600/3	60	1750	H	1.0	3.4	14/4	SOW	0.570 (14.5)		77.60	89.76
3SE774L	0.75	200-240/1	60	1750	G/K	7.4/7 0	21.5/25.8	14/3	SOW	0.530 (13.5)	1.86 - 10.20		2.74 - 10.56
3SE794L	0.75	200-240/3	60	1750	H/K	4.8/4 5	13.7/15.4	14/4	SOW	0.570 (14.5)		5.49	6.28
3SE744L	0.75	480/3	60	1750	K	2.2	7.7	14/4	SOW	0.570 (14 5)		21.96	24.51
3SE754L	0.75	600/3	60	1750	L	1.5	7.2	14/4	SOW	0.570 (14.5)		34.36	36.60
3SE1074L	1.0	200-240/1	60	1750	D/G	8.8/8.3	21.5/25.8	14/3	SOW	0.530 (13.5)	1.86 - 10.20		2.74 - 10.56
3SE1094L	1.0	200-240/3	60	1750	E/H	5 14/4.9	13.7/15.4	14/3	SOW	0.570 (14.5)		5.49	6.28
3SE1044L	1.0	480/3	60	1750	H	2.4	7.7	14/4	SOW	0.570 (14.5)		21.96	24.51
3SE1054L	1.0	600/3	60	1750	J	1.9	7 2	14/4	SOW	0.570 (14.5)		34 36	36.60
3SE514DS	0.5	120/1	60	1750	F	11.6	21.3	14/3	SJTOW	0.375 (9.5)			1.51 - 16.10
3SE524DS	0 5	240/1	60	1750	J	5.9	14.9	14/3	SOW	0.530 (13.5)	3.38 - 9.30		5.69 - 18.74
3SE594DS	0.5	200-240/3	60	1750	H/L	3.2/3 0	9.8/11.0	14/4	SOW	0.570 (14.5)	10.20	13.00	
3SE544DS	0.5	480/3	60	1750	K	1.5	5.3	14/4	SOW	0.570 (14.5)	40.80	52 00	
3SE554DS	0 5	600/3	60	1750	H	1.0	3.4	14/4	SOW	0.570 (14.5)		77.60	89.76
3SE774DS	0.75	200-240/1	60	1750	G/K	7.4/7.0	21.5/25 8	14/3	SOW	0.530 (13.5)	1.86 - 10.20		2.74 - 10.56
3SE794DS	0.75	200-240/3	60	1750	H/K	4.8/4.5	13.7/15 4	14/4	SOW	0.570 (14.5)		5.49	6.28
3SE744DS	0 75	480/3	60	1750	K	2.2	7.7	14/4	SOW	0.570 (14.5)		21.96	24.51
3SE754DS	0.75	600/3	60	1750	L	1.5	7.2	14/4	SOW	0.570 (14.5)		34.36	36.60
3SE1074DS	1.0	200-240/1	60	1750	D/G	8.8/8 3	21.5/25.8	14/3	SOW	0.530 (13.5)	1.86 - 10.20		2.74 - 10.56
3SE1094DS	1.0	200-240/3	60	1750	E/H	5.14/4.9	13 7/15.4	14/3	SOW	0.570 (14.5)		5.49	6.28
3SE1044DS	1.0	480/3	60	1750	H	2 4	7.7	14/4	SOW	0.570 (14.5)		21.96	24.51
3SE1054DS	1.0	600/3	60	1750	J	1.9	7.2	14/4	SOW	0.570 (14.5)		34.36	36.60

(*) See page 9

SECTION E: PREVENTATIVE MAINTENANCE

As the motor is oil filled, no lubrication or other maintenance is required, and generally Barnes Pumps will give very reliable service and can be expected to operate for years on normal sewage pumping without failing. However as with any mechanical piece of equipment a preventive maintenance program is recommended and suggested to include the following checks:

1) Inspect motor chamber for oil level and contamination and repair as required per section F-1.
2) Inspect impeller and body for excessive build-up or clogging and repair as required per section F-2.
3) Inspect motor and bearings and replace as required per section F-3.
4) Inspect seal for wear or leakage and repair as required per section F-4.

SECTION F: SERVICE AND REPAIR

NOTE: All item numbers in ( ) refer to Figures 16 thru 21.

F-1) Lubrication:

Anytime the pump is removed from operation, the cooling oil in the motor housing (6) should be checked visually for oil level and contamination.

F-1.1) Checking Oil:

Motor Housing - To check oil, set unit upright. Remove pipe plug (39) from housing (6). With a flashlight, visually inspect the oil in the motor housing (6) to make sure it is clean and clear, light amber in color and free from suspended particles. Milky white oil indicates the presence of water. Oil level should be just above the motor when pump is in vertical position.

F-1.2) Testing Oil:

1.) Place pump on it's side, remove pipe plug (39), from motor housing (6) and drain oil into a clean, dry container.
2.) Check oil for contamination using an oil tester with a range to 30 Kilovolts breakdown.
3.) If oil is found to be clean and uncontaminated (measuring above 15 KV. breakdown), refill the motor housing as per section F-1.4.
4.) If oil is found to be dirty or contaminated (or measures below 15 KV breakdown), the the pump must be carefully inspected for leaks at the shaft seal (28), cable assemblies (16) and (56 if used), square ring (27) and pipe plug (39), before refilling with oil. To locate the leak, perform a pressure test as per section F-1.3. After leak is repaired, dispose of old oil properly, and refill with new oil as per section F-1.4.

F-1.3) Pressure Test:

Pumps that have been disassembled, Motor Housing - If the pump has been disassembled, the oil should be drained before a pressure test, as described in section F-1.1. Remove pipe plug (39) from motor housing (6). Apply pipe sealant to pressure gauge assembly and tighten into hole (See Figure 4). Pressurize motor housing to 10 P.S.I. Use soap solution around the sealed areas and inspect joints for "air bubbles". If, after five minutes, the pressure is still holding constant, and no "bubbles" are observed, slowly bleed the pressure and remove the gauge assembly. Replace oil as described in section F-1.4. If the pressure does not hold, then the leak must be located and repaired.

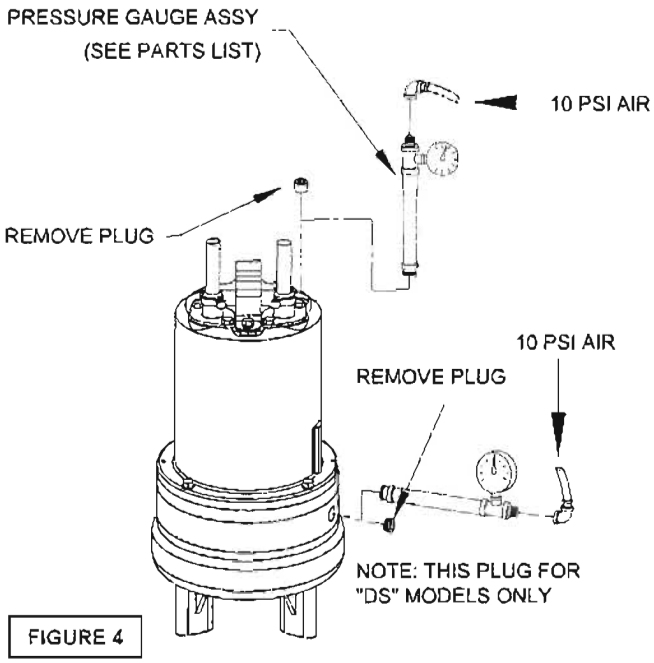


FIGURE 4

Pumps that have NOT been disassembled, Motor Housing - The pressure test may be done with the oil at its normal level. Remove pipe plug (39) from motor housing (6). Apply pipe sealant to pressure gauge assembly and tighten into hole (see Figure 4). Pressurize motor housing to 10 P.S.I. Use soap solution around the sealed areas above the oil level and inspect joints for "air bubbles". For sealed areas below the oil level, leaks will seep oil.

If, after five minutes, the pressure is still holding constant, and no "bubbles"/oil seepage is observed, slowly bleed the pressure and remove the gauge assembly. If the pressure does not hold, then the leak must be located and repaired.

Seal Chamber (DS Units Only)- Set unit on its side with fill plug (44) downward, remove plug (44) and drain all oil from seal chamber. Apply pipe sealant to pressure gauge assembly and tighten into hole in outer seal plate (29). Pressurize seal chamber to 10 P.S.I. and check for leaks as outlined above.

CAUTION ! - Pressure builds up extremely fast, increase pressure by "TAPPING" air nozzle. Too much pressure will damage seal. DO NOT exceed 10 P.S.I.

F-1.4) Replacing Oil:

Motor Housing- Set unit upright and refill with new cooling oil as per Table 1 (see parts list for amount). Fill to just above motor as an air space must remain in the top of the motor housing to compensate for oil expansion (see Fig 16, 18 or 20). Apply pipe thread compound to threads of pipe plug (39) then assemble to motor housing (6).

IMPORTANT! - For single phase units, oil level should be below capacitor.

Seal Chamber (DS Units Only)- Set unit on its side, with plug (44) upward, and refill with new oil as per Table 1 (see parts list for amount). Apply pipe thread compound to threads of pipe plug (44) and assemble to outer seal plate (29).

WARNING ! - DO NOT overfill oil. Overfilling of motor housing with oil can create excessive and dangerous hydraulic pressure which can destroy the pump and create a hazard. OVerfilling oil voids warranty.

TABLE 1 - COOLING OIL - Dielectric	
SUPPLIER	GRADE
BP	Enerpar SE100
Conoco	Pale Paraffin 22
Mobile	D.T.E. Oil Light
G & G Oil	Circulating 22
Imperial Oil	Voltesso-35
Shell Canada	Transformer-10
Texaco	Diala-Oil-AX
Woco	Premium 100

F-2) Impeller and Volute Service:

F-2.1) Disassembly and Inspection:

To clean out volute (1) or replace impeller (33), disconnect power, remove hex bolts (26), and lockwashers (12), vertically lift motor and seal plate assembly from volute (1) see Figure 5. Clean out body if necessary. Clean and examine impeller (33), for pitting or wear and replace if required, inspect gasket (36) and replace if cut or damaged. If the impeller (33) needs replacing, place a flat screwdriver in the slot of the end of the shaft to hold the shaft stationary while unscrewing the impeller (33).

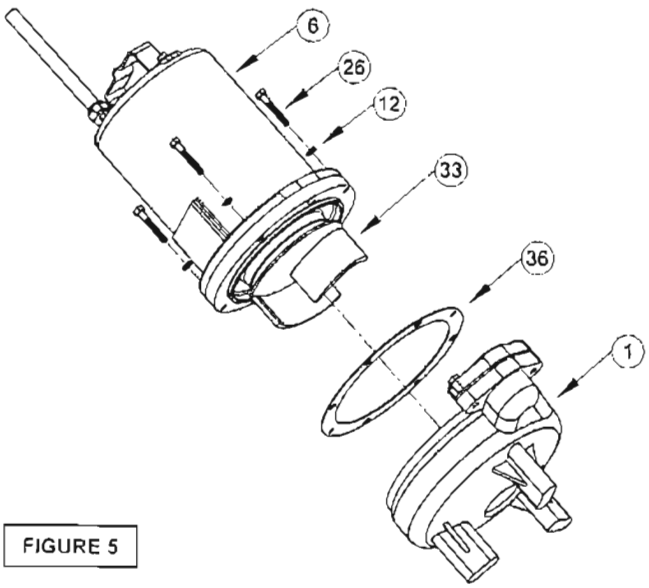


FIGURE 5

F-2.2) Reassembly:

To install impeller (33), clean the threads with thread locking compound cleaner. Apply removable Loctite® 609 or equivalent to shaft threads. Screw impeller onto the shaft hand tight while using a screwdriver in the slot at the end of the shaft to hold it stationary.

It is important that the spring of the lower shaft seal (28) seats in the hub of the impeller (33). Rotate impeller to check for binding. Position gasket (36) on volute flange and position impeller and motor housing on volute (1). Position lockwasher (12) on cap screw (26) and screw into volute (1). Torque to 100 in-lbs. Check for free rotation of motor and impeller.

F-3) Shaft Seal Service:

CAUTION ! - Handle seal parts with extreme care. DO NOT scratch or mar lapped surfaces.

F-3.1) Disassembly and Inspection:

Outer Seal (All Units) - To expose shaft seal (28) for examination, disassemble volute and impeller as outlined in paragraph F-2.1. If further repair is required, remove retaining ring (28d), spring (28c) and rotating member (28b) from shaft (see Figure 6 & 7). Examine all seal parts and especially contact faces. Inspect seal for signs of wear such as uneven wear pattern on stationary members, chips and scratches on either seal face. **DO NOT** interchange seal components, replace the entire shaft seal (28). If replacing seal, remove stationary (28a) by prying out with flat screwdriver.

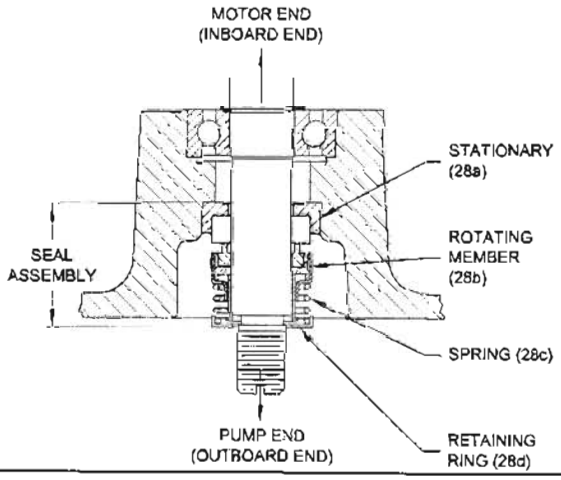


FIGURE 6 - SINGLE SEAL

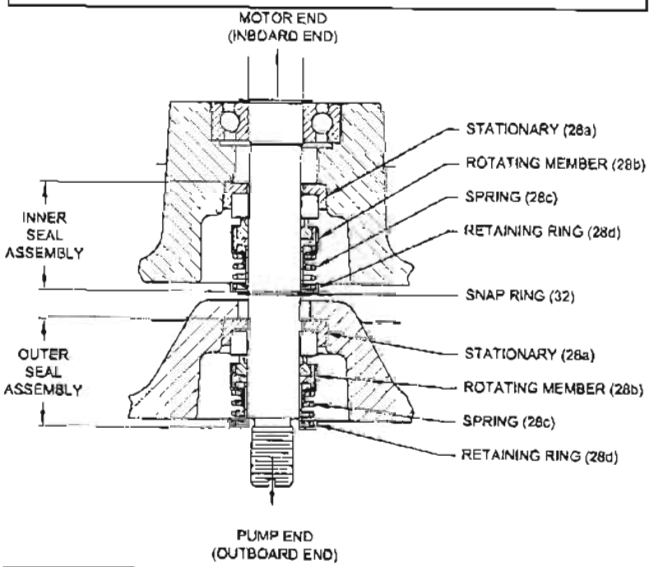


FIGURE 6 - DOUBLE SEAL

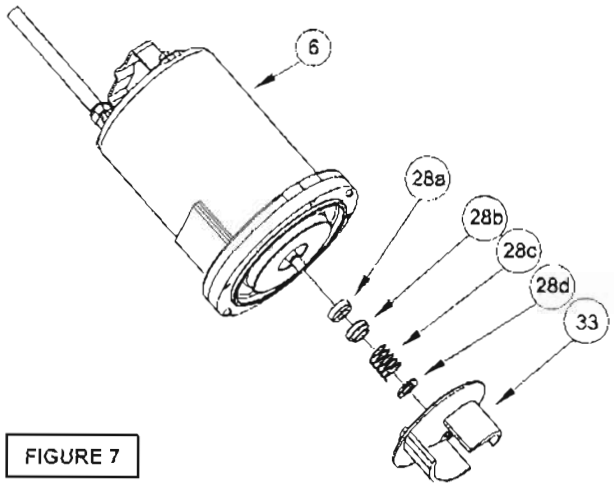


FIGURE 7

Inner Seal (DS Units Only)- To expose inner shaft seal (28) for examination, remove outer seal as outlined above. Remove socket head cap screws (64). Lift outer seal plate (29) and square-ring (27) from inner seal plate (5) see Figure 8. If further repair is required, remove snap ring (32), retaining ring (28d), spring (28c) and rotating member (28b) from shaft. Examine as outlined in outer seal paragraph. If replacing seal, remove stationary (28a) by prying out with flat screwdriver.

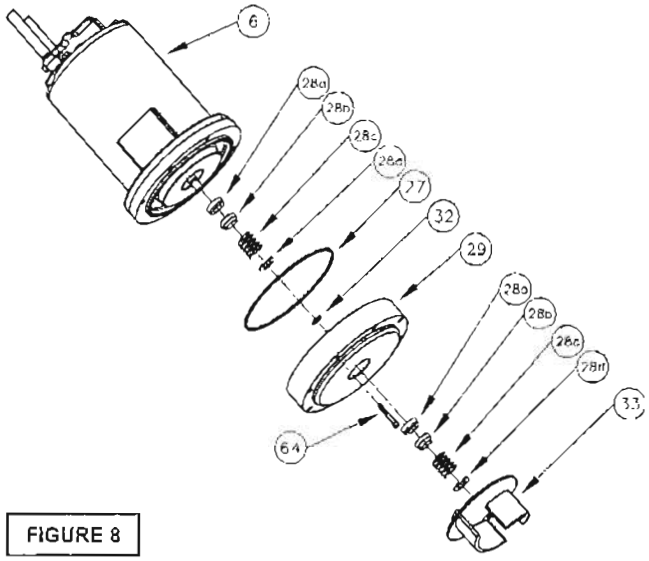


FIGURE 8

F-3.2) Reassembly:

Inner Seal (DS Units Only)- Clean and oil seal cavities in seal plates (5, 29). Lightly oil **(DO NOT use grease)** outer surface of stationary member (28a). Press stationary member (28a) firmly into inner seal plate (5), using a seal pusher (see parts list - seal tool kit). Nothing but the seal pusher is to come in contact with seal face (see Fig 9).

IMPORTANT! - DO NOT hammer on the seal pusher- it will damage the seal face.

Make sure the stationary member is in straight. Slide a bullet (see parts list - seal tool kit) over motor shaft. Lightly oil **(DO NOT use grease)** shaft, bullet and inner surface of bellows on rotating member (28b) see Figure 10. With lapped surface of rotating member (28b) facing inward toward stationary member, slide rotating member over bullet and onto shaft, using seal pusher, until lapped faces of (28a) and (28b) are together (see Figure 9).

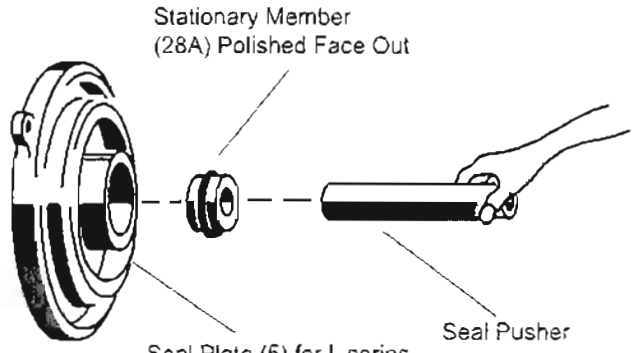


FIGURE 9

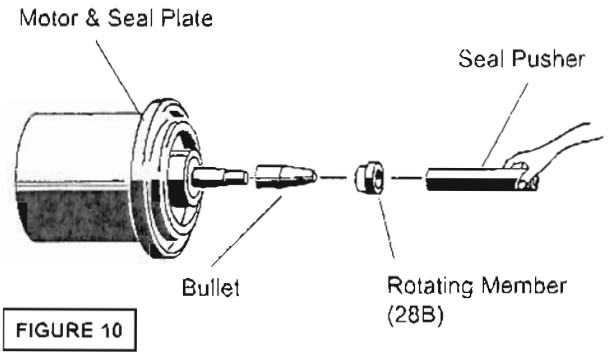


FIGURE 10

It is extremely important to keep seal faces clean during assembly. Dirt particles lodged between these faces will cause the seal to leak. Place spring (28c) over shaft and in place on rotating member (28b), making sure it is seated on retainer and not cocked or resting on bellows tail. Slide retaining ring (28d) over shaft and let rest on spring (28c). Replace snap ring (32) in groove of shaft. Set square-ring (27) in groove on outer seal plate (29) and place outer seal plate (29) onto inner seal plate (5). Replace socket head cap screws (64) and torque to 60 in-lbs.

Outer Seal (All Units)- Press stationary member (28a) firmly into outer seal plate (5, or 29 on DS Units) as described above. Slide rotating member (28b) onto stationary member using seal pusher as described above. Place spring (28c) and retaining ring (28d) onto rotating member (28b). Assemble impeller and volute as outlined in paragraph F-2.2. Replace oil as outlined in paragraph F-1.4.

F-4) Motor and Bearing Service

F-4.1) Disassembly and Inspection:

To examine or replace the motor (7), capacitor (9, single phase units), controls (55, 56, optional), and bearing (25), drain oil from motor as outlined in paragraph F-1.1. Disassemble volute and impeller as outlined in paragraph F-2.1 and disassemble shaft seal as outlined in paragraph F-3.1.

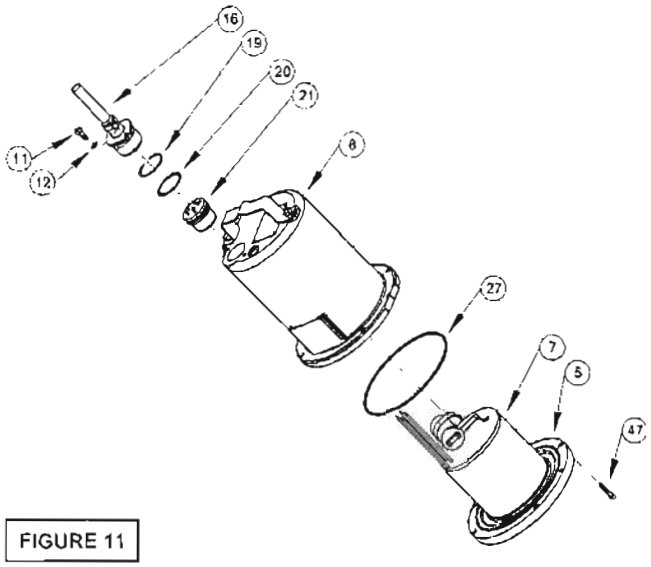


FIGURE 11

Position unit upright, using blocks to avoid resting unit on shaft. Unscrew cable hex bolts (11) and remove compression flange (16a) and power cord (16). Remove snap ring (19) with a flat head screwdriver. Pull the terminal block (21) out of the housing (6) using a T-bolt or pair of pliers and a .25-20 screw in the threads of the terminal block (21). Be sure to leave slack on the motor leads connected underneath. Use needle nose pliers to pull each female connector off of the pins on the underside of the terminal block (21) see Figure 11. The unit voltage should be noted. Repeat cable and terminal block removal procedure for any control cables (56) if equipped. Remove socket head cap screws (47). Vertically lift the motor housing (6) from seal plate (5) by lifting handle (13). Inspect square ring (27) for damage or cuts. Remove the motor bolts and lift motor stator from seal plate (5). Disconnect capacitor leads from capacitor (9, single phase units). Examine bearing (25) and replace if required. If replacement is required, remove bearing (25) from motor shaft using a wheel puller or arbor press, see Figure 12

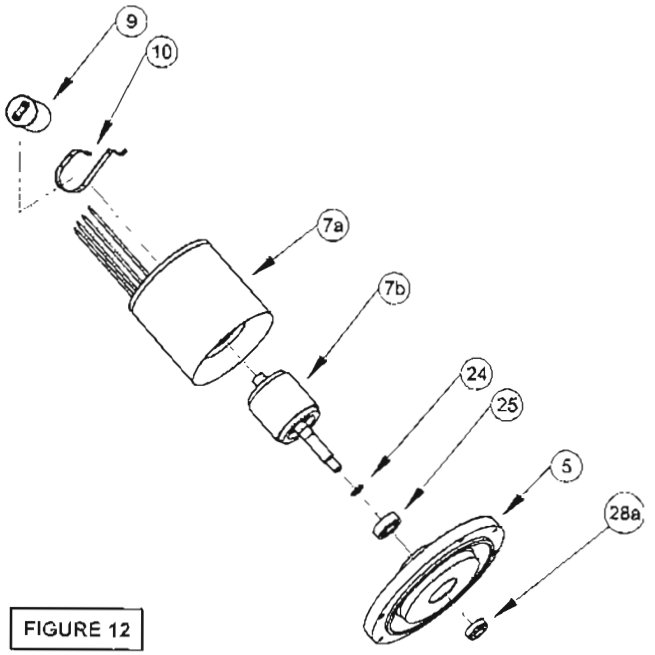


FIGURE 12

Check motor capacitor (9, single phase units) with an Ohm meter by first grounding the capacitor by placing a screwdriver across both terminals and then removing screwdriver. Connect Ohm meter (set on high scale) to terminals. If needle moves to infinity (∞) then drifts back, the capacitor is good. If needle does not move or moves to infinity (∞) and does not drift back, replace capacitor (9). To test the float switch (55 or 56 optional), check for continuity between the pin receptacles of the cord with the float in an "up" position. There should be no continuity with the switch in the "down" position. Replace switch (55 or 56) if malfunctioning. If moisture sensors (4, optional) are damaged, disconnect leads by removing machine screws (45) and washers (46) from probes (4). Remove probes (4) from seal plate (5). To test the temperature sensor (50, optional), check for continuity between the black and white wires. If found to be defective, contact a motor service station or Barnes Pumps Service department. Inspect motor winding for shorts and check resistance values. Check rotor for wear. If rotor or the stator windings are defective, the complete motor must be replaced.

IMPORTANT! - All parts must be clean before reassembly.

F-4.2) Reassembly:

Moisture Sensors, DS Models - If pump is equipped with optional moisture sensors, reassemble by applying thread compound to threads on probes (4) and install in upper seal plate (5), see Figure 20 & 21. Connect wire assemblies (53) to probes (4) with washers (46) and machine screws (45).

Thermal Sensors - If pump is equipped with optional thermal sensors, use terminal connectors (52) to connect wire assemblies (51) to sensor leads. If sensor is not functioning, contact factory approved Service Center or Contact factory Service Department.

Bearings - When replacing bearing, be careful not to damage the rotor or shaft threads. Clean the shaft thoroughly. Press bearing (25) on the motor shaft, position squarely onto the shaft applying force to the inner race of the bearing only, until bearing seats against the retaining ring (24).

Motor - Slide lower bearing (25) and motor shaft squarely into the seal plate (5) until bearing seats on the bottom. Place stator over rotor, lining up motor bolts with holes in seal plate (5). Position capacitor (9, single phase units) so that it will lay on the opposite side of the cable entry bosses of the motor housing (6). Reconnect capacitor leads. Torque motor tie bolts to 17 in-lbs. Set square ring (27) in grove on seal plate (5).

F-4.3) Wiring Connections:

Check power cables (16) and control cable (56, if used), for cracks or damage and replace if required (see Figure 14). Make internal wiring connections which are independent of the terminal block as shown, using connectors (48) and wire assemblies (49) and (63) as required. Do not use wire nuts. Slip motor leads and groud wire through fiberglass sleeve. Lower motor housing (6) down onto seal plate (5) while aligning holes and stringing motor leads through the cable entry bore(s). (Slipping cords inside a 1 ft. length of .5" conduit makes this easier). Place socket head cap screws (47) through seal plate (5) into motor housing (6) and torque to 60 in-lbs.

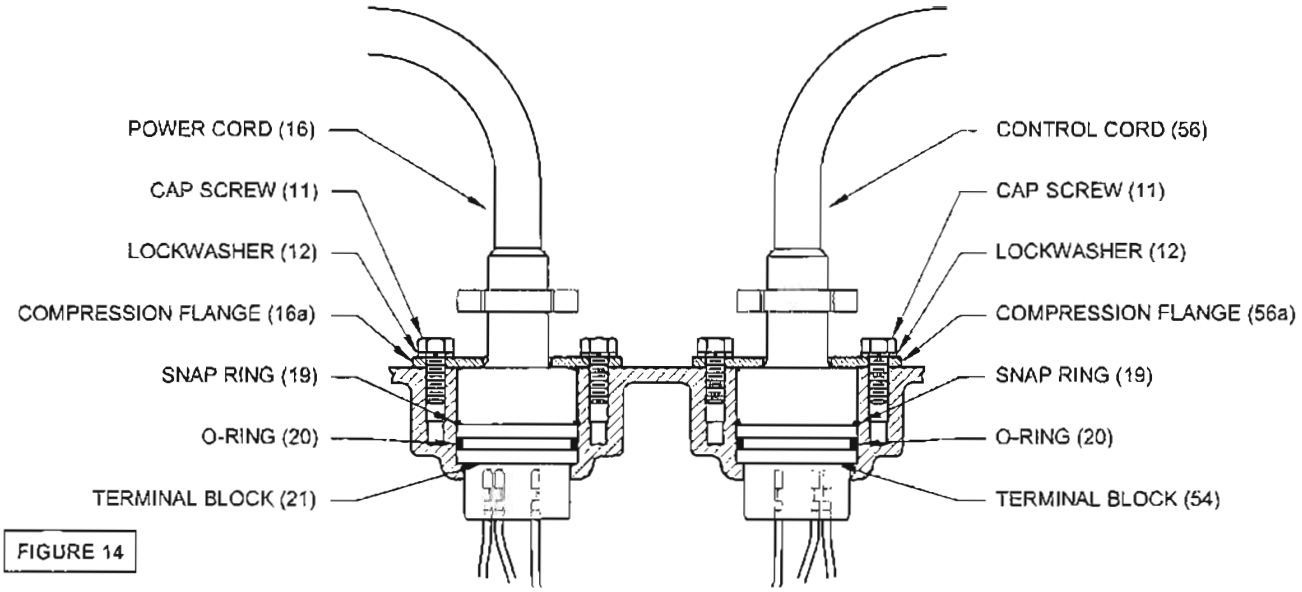


FIGURE 14

Reconnect motor and optional control leads to the underside of the terminal block(s) (21), (54 optional) as shown in Figure 13. Note that the pins are numbered underneath the terminal block. Place o-ring (20) into groove in terminal block and lubricate with dielectric oil. Press the terminal block (21) into the housing so it seats completely below the snap ring groove. Place snap ring (19) into groove in cable entry bore of housing. Repeat terminal block installation for control cable, if equipped.

F-4.4) Cable Assemblies:
Power/Control Cable- Refill the cooling oil as outlined in paragraph F-1.3. Make wire connections as outlined in paragraph F-4.3. Insert female end of cable plug into housing bore aligning timing mark with hole in terminal block (21) see Figure 15. Compress cable plug with compression flange (16a) by tightening hex bolts (11) into the housing (6). Torque to 132 in-lbs.

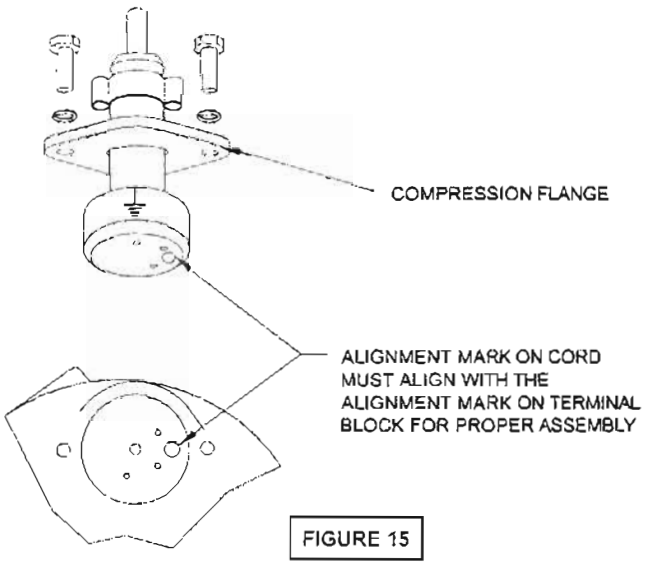
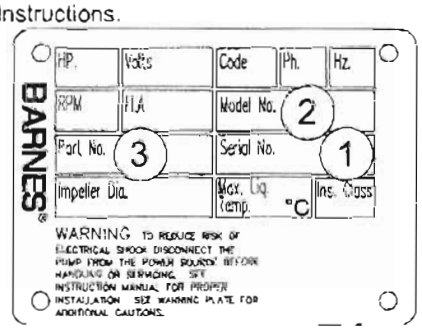


FIGURE 15

SECTION: G REPLACEMENT PARTS

G-1 ORDERING REPLACEMENT PARTS:
When ordering replacement parts, ALWAYS furnish the following information:
1. Pump serial number and date code. (Paragraph G-4)
2. Pump model number (Paragraph G-3)
3. Pump part number. (Paragraph G-2)
4. Part description.
5. Item part number.
6. Quantity required.
7. Shipping instructions.
8. Billing Instructions.

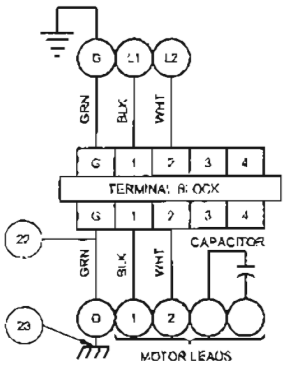


G-2 PART NUMBER:
The part number consists of a six (6) digit number, which appears in the catalog. A one or two letter suffix may follow this number to designate the design configuration. This number is used for ordering and obtaining information.

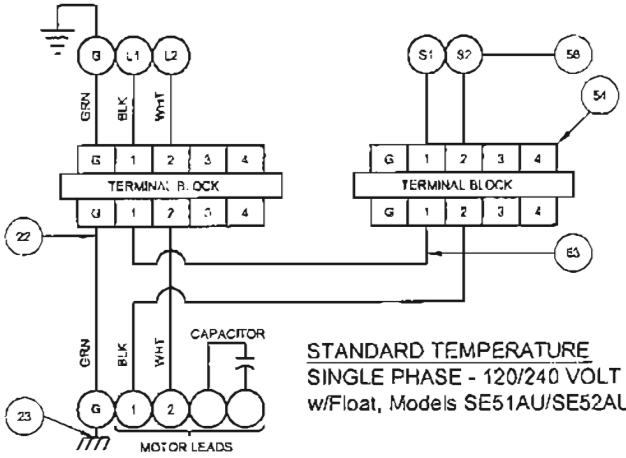
G-3 MODEL NUMBER:
This designation consists of numbers and letters which represent the discharge size, series, horsepower, motor phase and voltage, speed and pump design. This number is used for ordering and obtaining information.

G-4 SERIAL NUMBER:
The serial number block will consist of a six digit number, which is specific to each pump and may be preceded by a alpha character, which indicates the plant location. This number will also be suffixed with a four digit number, which indicates the date the unit was built (Date Code)
EXAMPLE: A012345 0490.

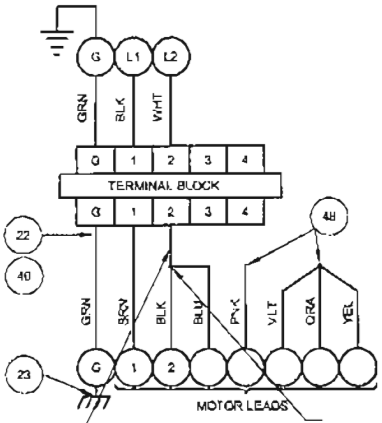
Reference the six digit portion (Serial Number) of this number when referring to the product.



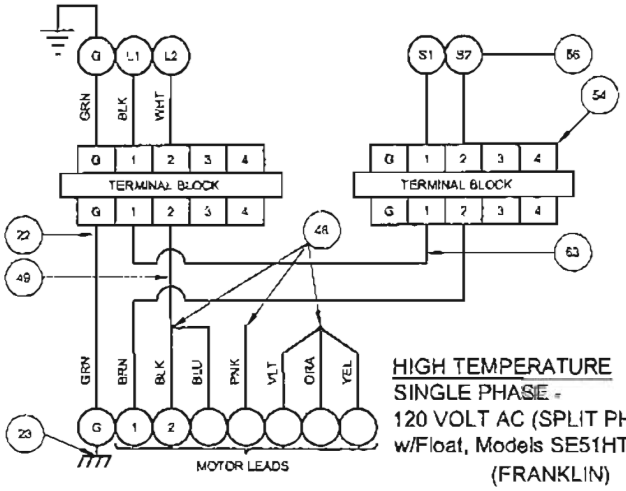
STANDARD TEMPERATURE
SINGLE PHASE - 120/240 VOLT AC (PSC)



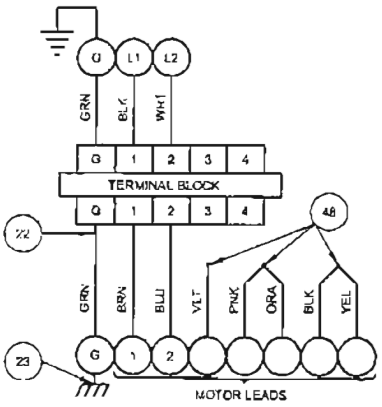
STANDARD TEMPERATURE
SINGLE PHASE - 120/240 VOLT AC (PSC)
w/Float, Models SE51AU/SE52AU



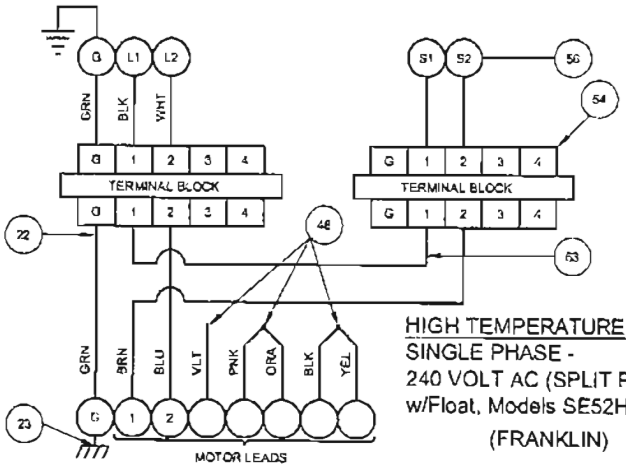
HIGH TEMPERATURE
SINGLE PHASE - 120 VOLT AC (SPLIT PHASE)
(FRANKLIN)



HIGH TEMPERATURE
SINGLE PHASE -
120 VOLT AC (SPLIT PHASE)
w/Float, Models SE51HTAU
(FRANKLIN)

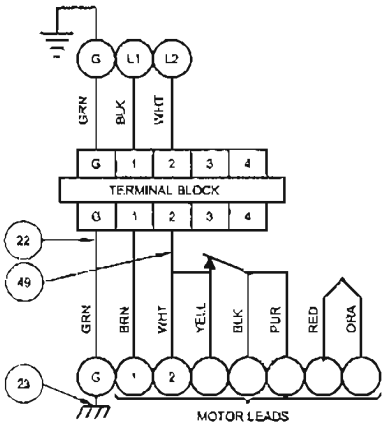


HIGH TEMPERATURE
SINGLE PHASE - 240 VOLT AC (SPLIT PHASE)
(FRANKLIN)

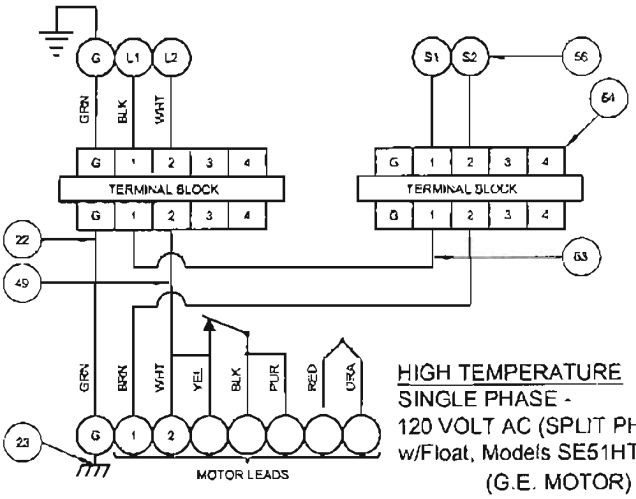


HIGH TEMPERATURE
SINGLE PHASE -
240 VOLT AC (SPLIT PHASE)
w/Float, Models SE52HTAU
(FRANKLIN)

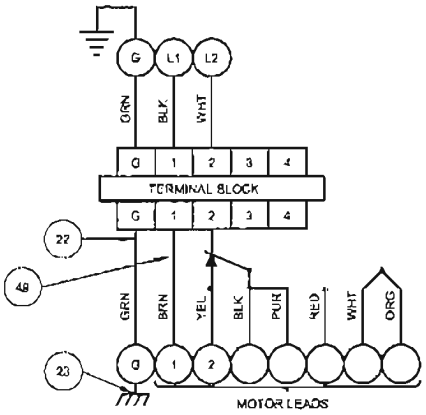
FIGURE 13



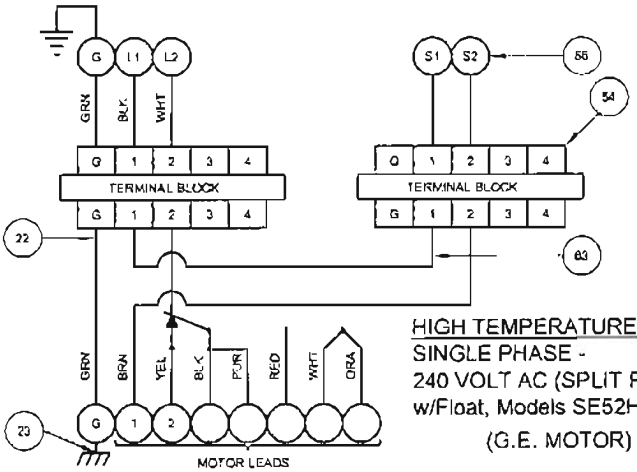
HIGH TEMPERATURE
SINGLE PHASE - 120 VOLT AC (SPLIT PHASE)
(G.E. MOTOR)



HIGH TEMPERATURE
SINGLE PHASE -
120 VOLT AC (SPLIT PHASE)
w/Float, Models SE51HTAU
(G.E. MOTOR)

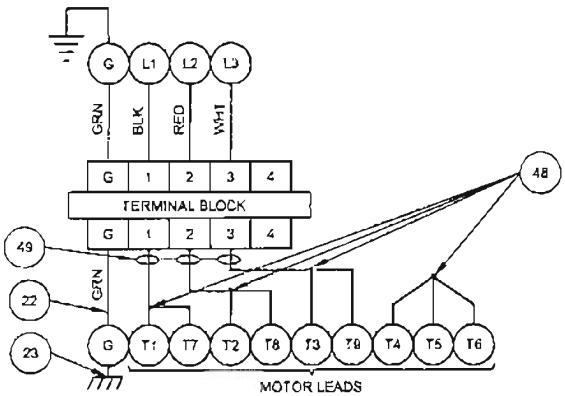


HIGH TEMPERATURE
SINGLE PHASE - 240 VOLT AC (SPLIT PHASE)
(G.E.MOTOR)

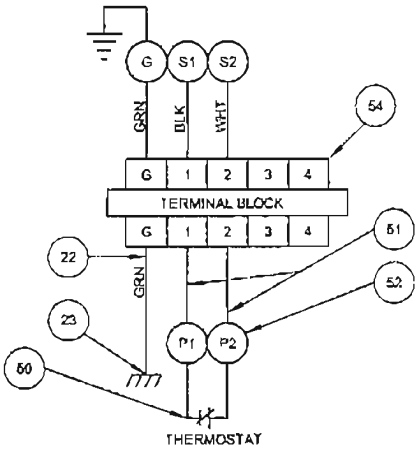


HIGH TEMPERATURE
SINGLE PHASE -
240 VOLT AC (SPLIT PHASE)
w/Float, Models SE52HTAU
(G.E. MOTOR)

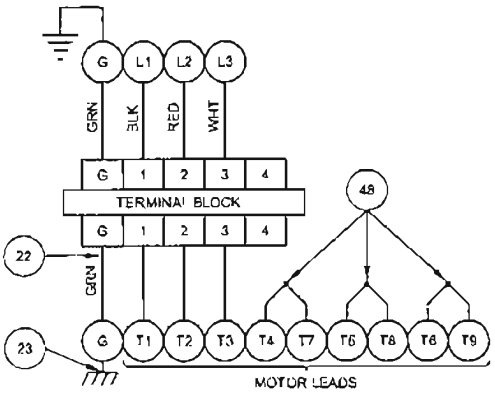
FIGURE 13



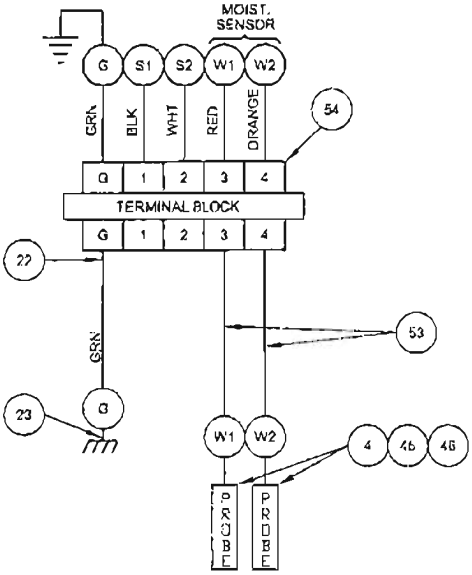
THREE PHASE - 200/240 VOLT AC



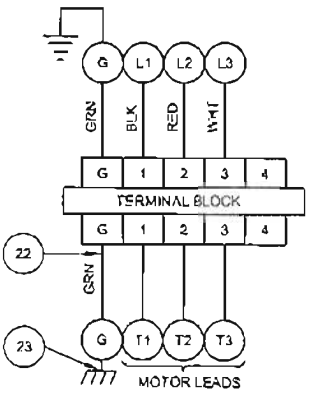
TEMPERATURE SENSORS:
Three Phase (Optional)



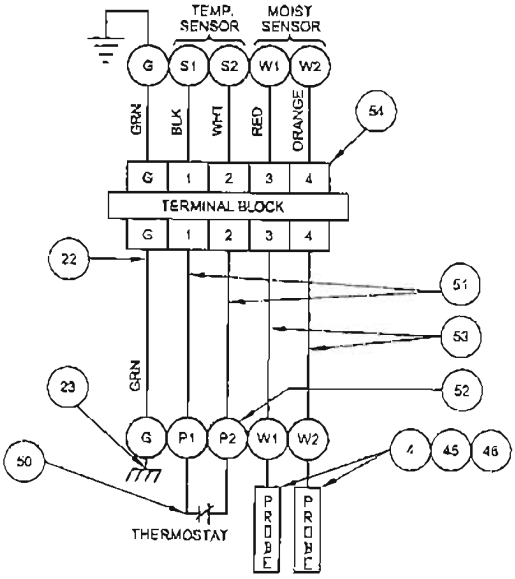
THREE PHASE - 480 VOLT AC



MOISTURE SENSORS
DS MODELS (Optional)



THREE PHASE - 600 VOLT AC



MOISTURE AND TEMPERATURE SENORS:
Three Phase DS Models (Optional)

FIGURE 13 - CONTIUED

TROUBLE SHOOTING

CAUTION ! Always disconnect the pump from the electrical power source before handling

If the system fails to operate properly, carefully read instructions and perform maintenance recommendations.

If operating problems persist, the following chart may be of assistance in identifying and correcting them:

MATCH "CAUSE" NUMBER WITH CORRELATING "CORRECTION" NUMBER.

NOTE: Not all problems and corrections will apply to each pump model.

PROBLEM	CAUSE	CORRECTION
Pump will not run	1. Poor electrical connection, blown fuse, tripped breaker or other interruption of power, improper power supply. 2. Motor or switch inoperative (to isolate cause, go to manual operation of pump). 2a. Float movement restricted. 2b. Switch will not activate pump or is defective. 3. Insufficient liquid level.	1. Check all electrical connections for security. Have electrician measure current in motor leads, if current is within ±20% of locked rotor Amps, impelier is probably locked. If current is 0, overload may be tripped. Remove power, allow pump to cool, then recheck current. 2a. Reposition pump or clean basin as required to provide adequate clearance for float. 2b. Disconnect level control. Set ohmmeter for a low range, such as 100 ohms full scale and connect to level control leads. Actuate level control manually and check to see that ohmmeter shows zero ohms for closed switch and full scale for open switch. (Float Switch). 3. Make sure liquid level is at least equal to suggested turn-on point. 4. Recheck all sizing calculations to determine proper pump size. 5. Check discharge line for restrictions, including ice if line passes through or into cold areas. 6. Remove and examine check valve for proper installation and freedom of operation. 7. Open valve. 8. Check cutter for freedom of operation, security and condition. Clean cutter and inlet of any obstruction. 9. Loosen union slightly to allow trapped air to escape.Verify that turn-off level of switch is set so that the suction is always flooded. Clean vent hole. 10. Remove & examine for damage. Replace pump stator if required. 11. Repair fixtures as required to eliminate leakage. 12. Check pump temperature limits & fluid temperature. 13. Replace portion of discharge pipe with flexible connector. 14. Turn to automatic position. 15. Check for leaks around basin inlet and outlets.
Pump will not turn off	2a. Float movement restricted. 2b. Switch will not activate pump or is defective. 4. Excessive inflow or pump not properly sized for application. 9. Pump may be airlocked. 14. H-O-A switch on panel is in "HAND" position	
Pump hums but does not run	1. Incorrect voltage 8. Cutter jammed or loose on shaft, worn or damaged, inlet plugged.	
Pump delivers insufficient capacity	1. Incorrect voltage. 4. Excessive inflow or pump not properly sized for application. 5. Discharge restricted. 6. Check valve stuck closed or installed backwards. 7. Shut-off valve closed. 8. Cutter jammed or loose on shaft, worn or damaged, inlet plugged. 9. Pump may be airlocked. 10. Pump stator damaged/torn.	
Pump cycles too frequently or runs periodically when fixtures are not in use	6. Check valve stuck closed or installed backwards. 11. Fixtures are leaking. 15. Ground water entering basin.	
Pump shuts off and turns on independent of switch, (trips thermal overload protector). **CAUTION!** Pump may start unexpectedly. Disconnect power supply.	1. Incorrect voltage. 4. Excessive inflow or pump not properly sized for application. 8. Cutter jammed, loose on shaft, worn or damaged, inlet plugged. 12. Excessive water temperature.	
Pump operates noisily or vibrates excessively	4. Operating at too high a pressure. 5. Discharge restricted. 8. Cutter broken. 13. Piping attachments to building structure too rigid or too loose.	

SE- L & 3SE- L Series, Single Seal

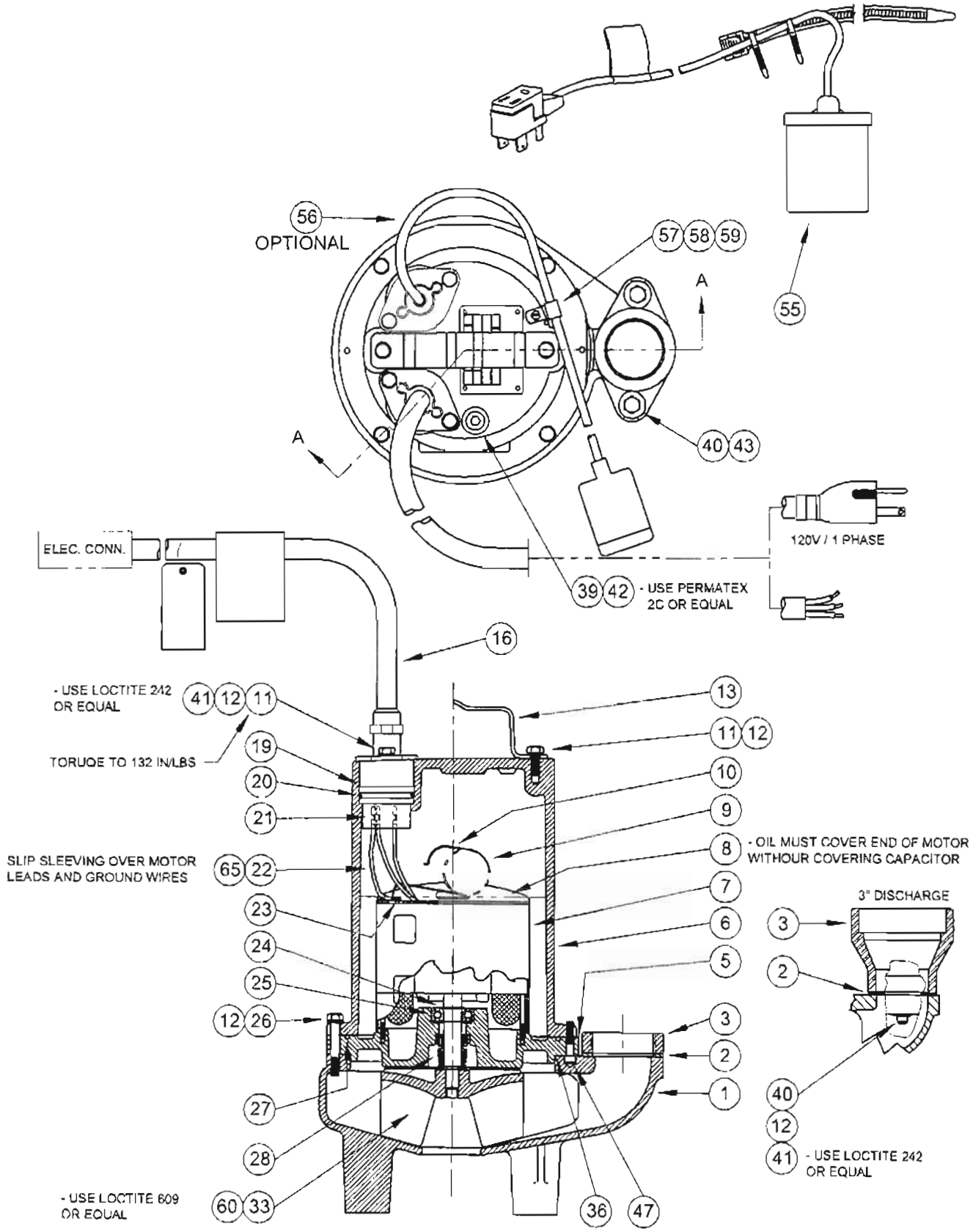


FIGURE 16

SE- L & 3SE- L Series, Single Seal

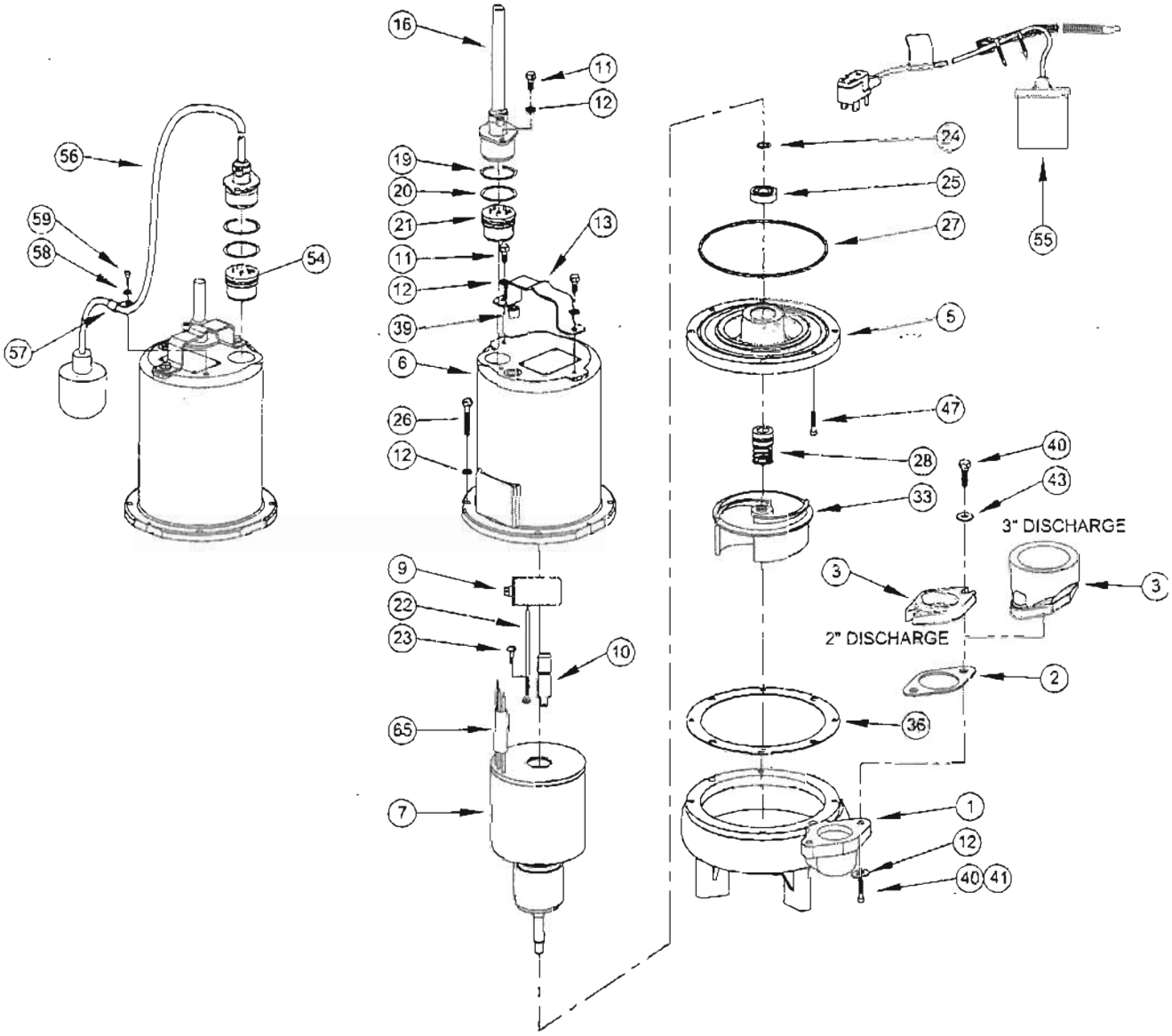


FIGURE 17

SE-HT (High Temp) Series - Single Seal

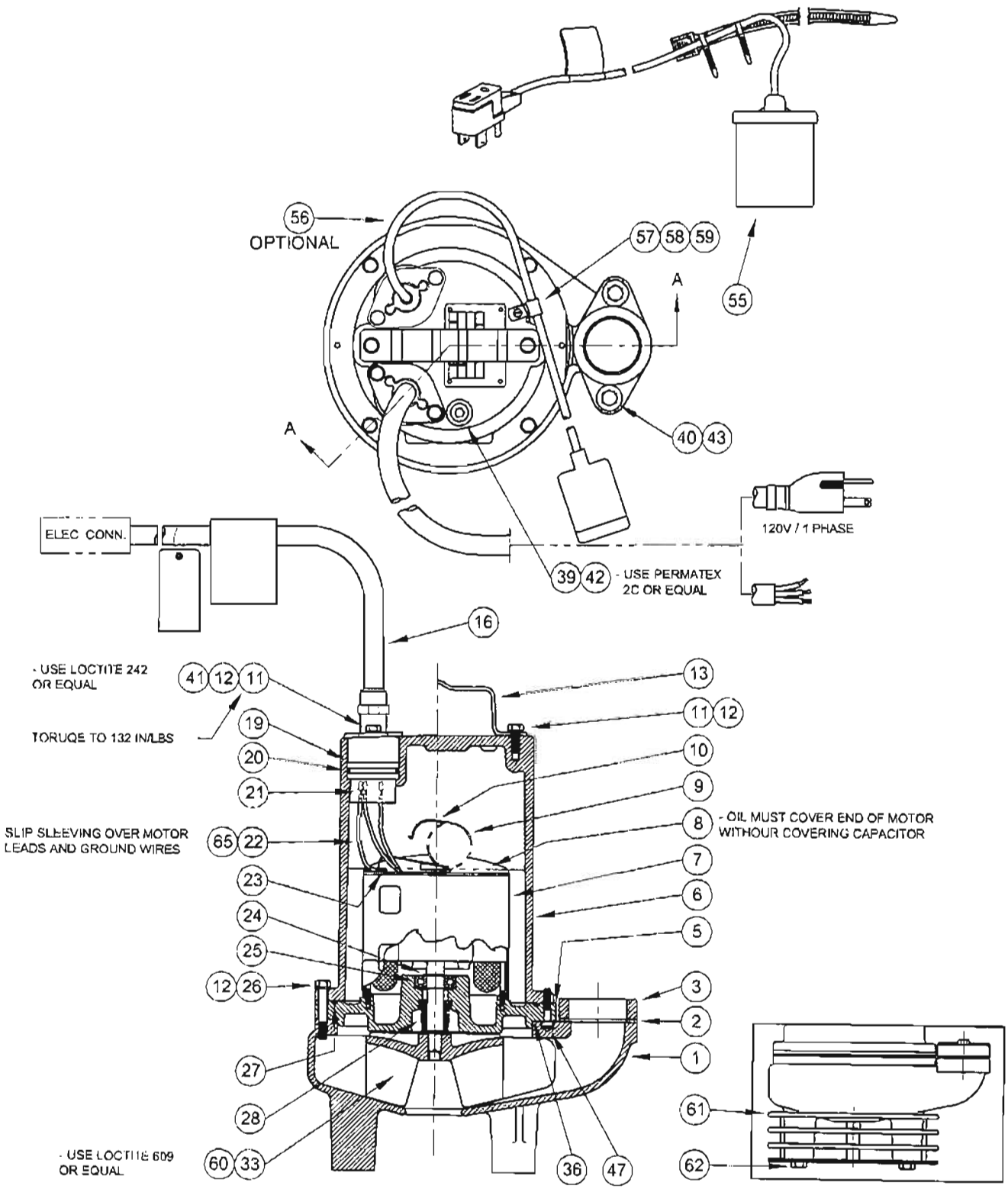


FIGURE 18

SE-HT (High Temp) Series - Single Seal

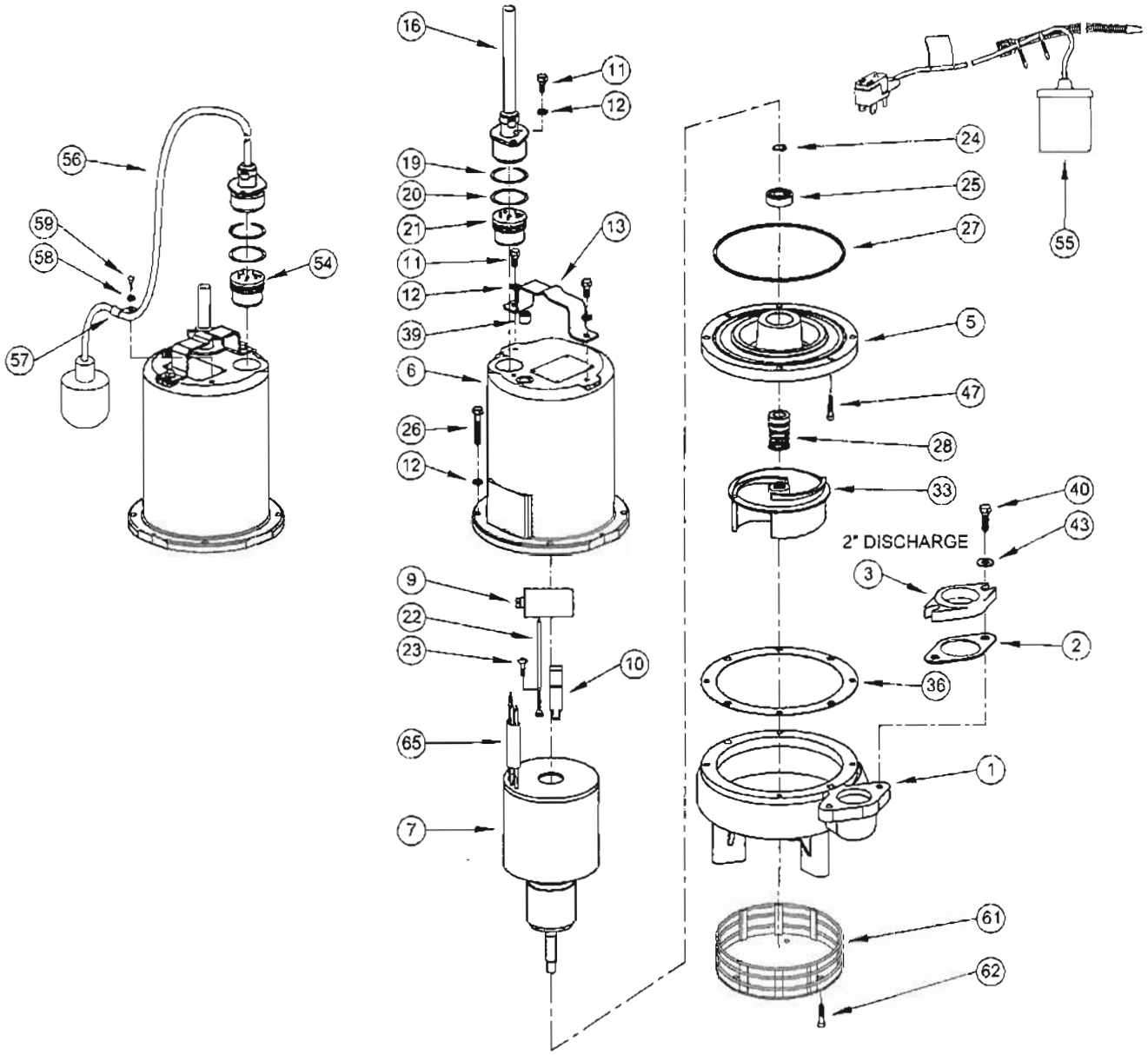


FIGURE 19

3SE-DS Series - Double Seal

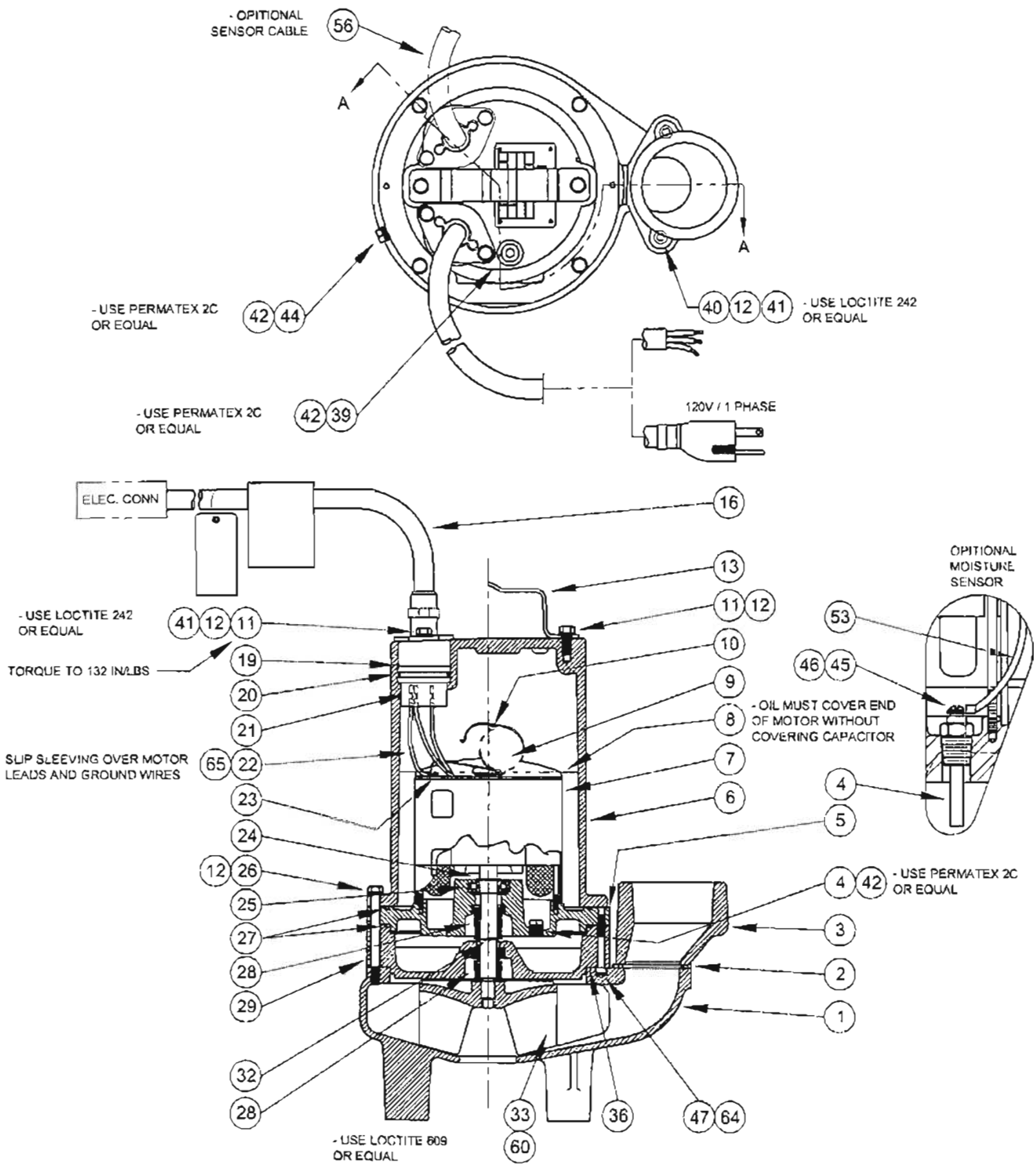


FIGURE 20

3SE-DS Series - Double Seal

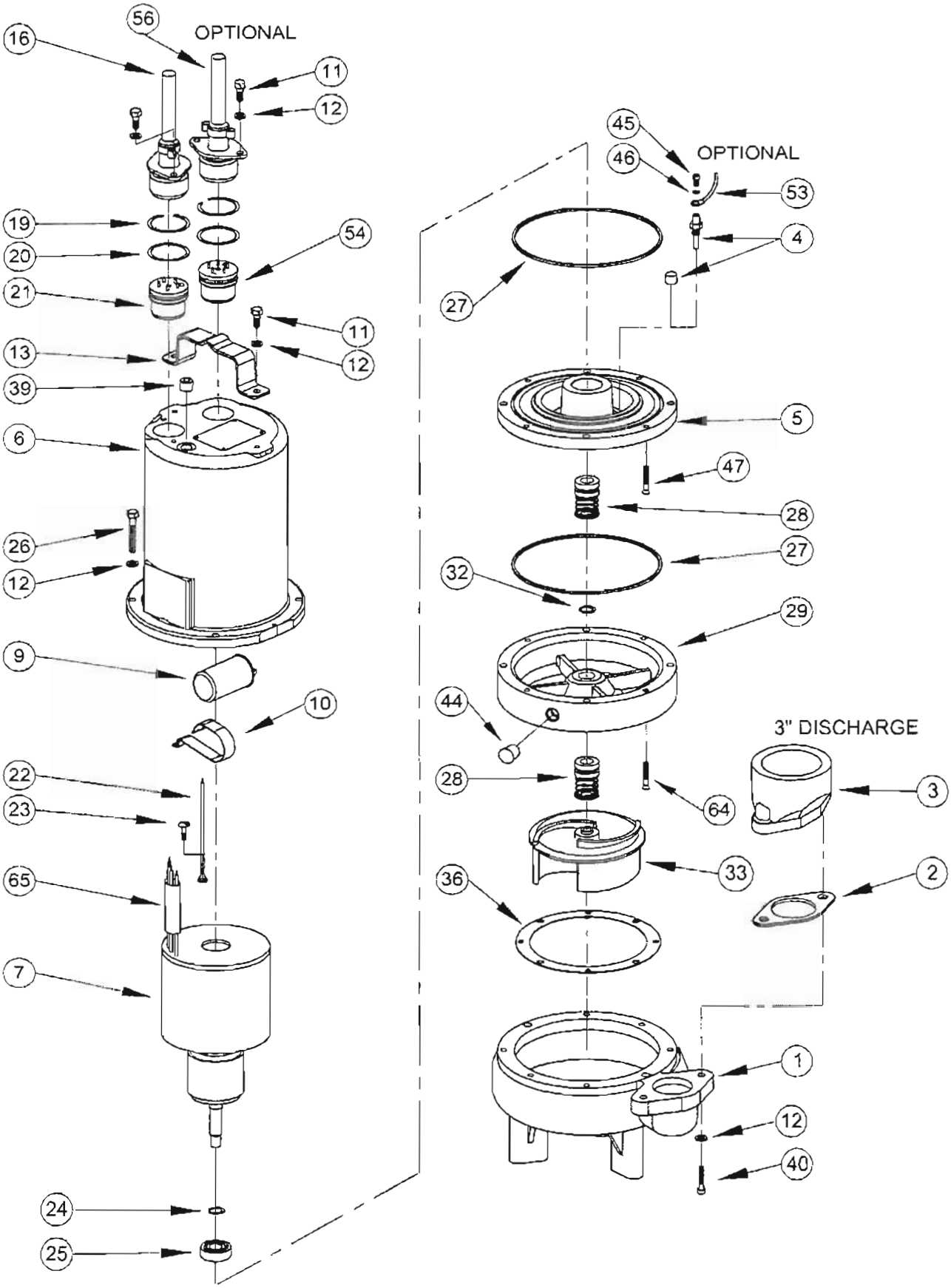


FIGURE 21

PARTS KITS

Seal Repair Kits:

Single Seal .....P/N - 107272 (†) 2, 27, 28, 36

Double Seal .....P/N - 107273 (◊) 2, 27, 28, 32, 36

Overhaul Kits:

Single Seal .....P/N - 111521 (♦) 2, 19, 20, 24, 25, 27, 28, 36, 49, 65

Double Seal .....P/N - 111522 (+) 2, 19, 20, 24, 25, 27, 28, 32, 36, 44, 49, 65

Seal Tool Kit .....P/N - 107271

Pressure Gauge Kit .....P/N - 085343

PARTS LIST

ITEM	QTY.	PART NO.		DESCRIPTION	
1	1	055400		Volute	(Std)
	1	071114		Volute	(For use with Optional Strainer)
2	1	069140	†◊♦+	Gasket	
3	1	026210		Flange	2" Discharge
		074498			3" Discharge - Single Seal
		105153			3" Discharge - Double seal
4	2	003217		Pipe Plug	All double seal (Std), .25" NPT, ZP
	2	039383		Moisture Sensor Probes (Optional) moisture sensor	
5	1	084532		Seal Plate	All single seal
		084906			All double seal
6	1	105196		Motor Housing	(Std)
		105196HA			(Optional) for all AU and HTAU, moisture and temp. sensors
7	1	**Motor:**		**Capacitor (item 9):**	
		030369BS		034964	SE51, SE51A, SE51AU, 3SE514L
		030369BD		070963	3SE514DS
		030370BS		070963	SE52, SE52AU, 3SE524L
		030370BD		070963	3SE524DS
		085472BS		None	SE51HT, SE51HTA, SE51HTAU, SE52HT, SE52HTAU
		071352BS		None	SE594L, 3SE594L, SE544L, 3SE544L
		071352BD		None	3SE594DS, 3SE544DS
		092854BS		None	SE554L, 3SE554L
		092854BD		None	3SE554DS
		029792BS		070963	SE774L, 3SE774L, SE1074L, 3SE1074L
		029792BD		070963	3SE774DS, 3SE1074DS
		071354BS		None	SE794L, SE744L, 3SE794L, 3SE744L, SE1094L,
				None	SE1044L, 3SE1094L, 3SE1044L
		071354BD		None	3SE794DS, 3SE744DS, 3SE1094DS, 3SE1044DS
		092855BS		None	SE754L, 3SE754L, SE1054L, 3SE1054L
		092855BD		None	3SE754DS, 3SE1054DS
8	96 oz	029034		Oil	All single seal
	120oz	029034		Oil	All double seal (Includes 24 oz. in Seal Chamber)
9	1	034964	*	Capacitor (30MFD)	1 Phase
	1	070963		Capacitor (20 MFD)	1 Phase
10	1	039858		Capacitor Bracket	1 Phase
11	4	1-156-1		Hex. Hd. Cap Screw	(Std), 5/16-18 x 1.00" Lg., Stainless
	6	1-156-1		Hex. Hd. Cap Screw	(Optional) for all AU and HTAU, moisture and temp. sensors
12	10	026322		Lockwasher	(Std), 5/16, Stainless
	12	026322		Lockwasher	(Optional) for all AU and HTAU, moisture and temp. sensors
13	1	103503		Handle	
16	1	See Table 2		Power Cable Set	
16a	1	103582		Compression Flange, Included with Cable Set	
19	1	105197	♦+	Snap Ring	(Std)
	2	105197		Snap Ring	(Optional) for all AU and HTAU, moisture and temp. sensors
20	1	2-31051-224	♦+	O-ring	(Std)
	2	2-31051-224		O-ring	(Optional) for all AU and HTAU, moisture and temp. sensors

** Units with build code date (see section G-4) before -0901 may use capacitor part number, 070963 or the 034964 part number.*

21	1	103584		Terminal Block	1 Phase
		103583			3 Phase
22	1	105111		Ground Wire Assembly	(Std)
	2	105111		Ground Wire Assembly	(Optional) for moisture and temp. sensors
23	1	016660		Screw, Self Tapping	#8-32 x .375" Lg.
24	1	085326	♦✦	Retaining Ring	
25	1	017414	♦✦	Bearing	
26	4	1-135-1		Cap Screw	All single seal, 5/16-18 x 1.75" Lg., Stainless
		1-168-1		Cap Screw	All double seal, 5/16-18 x 3.50" Lg. Stainless
27	1	027269	†◊♦✦	Square Ring	All single seal
	2	027269	◊	Square Ring	All double seal
28	1		†◊♦✦	Shaft Seal - (Qty 2 for DS)	
		005080		Carbon/Ceramic/Buna-N (STD)	
		005080SB		Tungsten/Tungsten/Buna-N	
		005080SD		Silicon Carbide/Silicon Carbide/Buna-N	
		005080SF		Carbon/Ceramic/Viton	
		005080SH		Tungsten/Tungsten/Viton	
		005080SK		Silicon Carbide/Silicon Carbide/Viton	
		005080SM		Silicon Carbide/Tungsten/Buna-N	
		005080SN		Carbon/Ni-Resistant/Buna-N	
		005080SP		Carbon/Ni-Resistant/Neoprene	
		082850		Carbon/Ni-Resistant/Viton	
29	1	103587		Seal Housing	All double seal
32	1	2-27008-62	◊✦	Retaining Ring	All double seal
33	1			Impeller, Cast Iron	
		084346		6.00 Dia. (STD for 1 HP)	
		084346TA		5.88 Dia.	
		084346TB		5.75 Dia.	
		084346TC		5.63 Dia. (STD for .75 HP)	
		084346TD		5.50 Dia.	
		084346TE		5.38 Dia.	
		084346TF		5.25 Dia. (STD for .5 HP)	
		084346TG		5.13 Dia.	
		084346TH		5.00 Dia.	
		084346TJ		4.88 Dia.	
		084346TK		4.75 Dia.	
		084346TL		4.63 Dia.	
		084346TM		4.50 Dia.	
		084346TN		4.38 Dia.	
		084346TP		4.25 Dia.	
		084346TQ		4.13 Dia.	
		084346TR		4.00 Dia.	
36	1	027344	†◊♦✦	Gasket	
39	1	014270		Pipe Plug	.375" NPT
40	2	1-36-1	✦	Hex. Hd. Cap Screw	2" Discharge, 3/8-16 x 1.25" Lg., Stainless
		2-23030-59		Hex. Hd. Cap Screw	3" Discharge, 5/16-18 x 1.50" Lg., Stainless
41	A/R	----		Loctite 242	
42	A/R	----		Permatex 2C	
43	2	082727		Washer	2" Discharge, 3/8" Stainless
44	1	003217	✦	Pipe Plug	All double seal, .25" NPT
45	2	5-32-6		Screw	(Optional) moisture sensor, #6-32 x .25" Lg., ZP
46	2	052563		Lockwasher	(Optional) moisture sensor, #6 Stl.
47	2	084948		Socket Head Cap Screw	1/4-20 x 1.25" Lg., Stainless
48	3	074449		Terminal Connector	HT Only
	4	105150		Terminal Connector	200-240V, 3Ph
	3	625-00163		Terminal Connector	480V, 3PH
49	1	105149	♦✦	Wire Assembly	120V HT
	3	105149		Wire Assembly	200-240V, 3Ph
50	1	051621		Thermal Sensor	Optional for temperature sensor (Not Shown)
51	2	105155		Wire Assembly	Optional for temperature sensor (Not Shown)
52	2	625-00163		Terminal Connector	Optional for temperature sensor (Not Shown)
53	2	105106		Wire Assembly	Optional for moisture sensor

54	1	103759		Terminal Block	All AU and HTAU
		103584			Optional for temperature sensor only
		103585			Optional for moisture and temp. sensors
55	1	See Table 2		Float Switch w/Plug Piggyback	
56	1	103746		Float Switch	SE51AU, SE52AU
	1	103755		Float Switch, High Temp.	SE51HTAU, SE52HTAU
	1	See Table 2		Control Cable	Optional for moisture and/or temp. sensors
56a	1	103582		Compression Flange	Included with Cable Set
57	1	090516		Cord Clip,	(For SE51AU, SE52AU, SE51HTAU & SE52HTAU)
58	1	20-12-1		Washer,	(For SE51AU, SE52AU, SE51HTAU & SE52HTAU)
59	1	2-88-1		Screw,	(For SE51AU, SE52AU, SE51HTAU & SE52HTAU)
60	A/R	-----		Loctite 609	
61	1	082852		Inlet Strainer, Stainless	(Optional)
62	3	028913		Hex Hd. Screw, Stainless	(Optional), 3/8-16 x .875" Lg., Stainless
63	1	105147		Wire Assembly	All AU Series
64	2	030337		Socket Head Cap Screw	Double seal Only, 1/4-20 x 2.00" Lg., Stainless
65	1	625-02117	♦✦	Sleeve, Fiberglass	

TABLE 2 - POWER & SENSOR CORD SETS

CABLE LENGTH	ITEM #16 120 VOLT 1 PHASE STD. Temp	ITEM #16 120 VOLT 1 PHASE High Temp	ITEM #16 240 VOLT 1 PHASE 0.5HP STD & HT	ITEM #16 240 VOLT 1 PHASE 0.75 & 1HP STD & HT	ITEM #16 3 PHASE	ITEM #55 (OPTIONAL) STD. Temp Piggy-Back Float Switch "A" Series	ITEM #55 (OPTIONAL) High Temp. Piggy-Back Float Switch "A" Series	ITEM #56 (OPTIONAL) Temperature 3 Phase	ITEM #56 (OPTIONAL) Moisture and Temperature Sensor 3 Phase or Moisture Sensor Only
8 FT	103756A	110416A	----	103741A	103742A	---	---	103741A	103740A
15 FT	103756	110416	110949	103741	103742	101758	090269	103741	103740
20 FT	103756XA	110416XA	110949XA	103741XA	103742XA	101758XA	090269XA	103741XA	103740XA
30 FT (Std)	103756XC	110416XC	110949XC	103741XC	103742XC	101758XC	090269XC	103741XC	103740XC
50 FT	103756XF	110416XF	110949XF	103741XF	103742XF	101758XF	090269XF	103741XF	103740XF
75 FT	103756XJ	110416XJ	110949XJ	103741XJ	103742XJ		090269XJ	103741XJ	103740XJ
100 FT	103756XL	110416XL	110949XL	103741XL	103742XL		090269XL	103741XL	103740XL

IMPORTANT!
WARRANTY REGISTRATION

Your product is covered by the enclosed Warranty.
Complete the Warranty Registration Form and return to
Crane Pumps & Systems, Inc. Warranty Service Group

If you have a claim under the provision of the warranty, contact your local Crane Pumps & Systems, Inc. Distributor.

RETURNED GOODS

RETURN OF MERCHANDISE REQUIRES A "RETURNED GOODS AUTHORIZATION". CONTACT YOUR LOCAL CRANE PUMPS & SYSTEMS, INC. DISTRIBUTOR.

Products Returned Must Be Cleaned, Sanitized, Or Decontaminated As Necessary Prior To Shipment, To Insure That Employees Will Not Be Exposed To Health Hazards In Handling Said Material. All Applicable Laws And Regulations Shall Apply.

BARNES®

Limited Warranty

We warrant to our immediate customer and to the ultimate consumer that products of our manufacture will be free of defects in material and workmanship under normal use and service for the following time periods, when installed and maintained in accordance with our instructions.

Pump Products: One (1) year from date of installation or (24) twenty-four months from date of shipment, whichever occurs first. Cleaning Products: Twelve (12) months from date of installation or eighteen (18) months from date of shipment, whichever occurs first. As used herein, "the ultimate consumer" is defined as the purchaser who first uses the product after its initial installation or, in the case of product designed for non permanent installation, the first owner who used the product. It is the purchaser's or any sub-vendee's obligation to make known to the ultimate consumer the terms and conditions of this warranty. This warranty gives you specific legal rights, and there may also be other rights which vary from state to state. In the event the product is covered by the Federal Consumer Product Warranties Law (1) the duration of any implied warranties associated with the product by virtue of said law is limited to the same duration as stated herein, (2) this warranty is a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against us, until the ultimate consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURE OR AUTHORIZED REPAIR STATION, SUCH PRODUCTS AND/OR PARTS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE.** Unless expressly stated otherwise, guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on a product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing if a conflict arises between the results of field testing conducted by or for user, and laboratory tests corrected for field performance, the latter shall control. Components or accessories supplied by us but manufactured by others are warranted only to the extent of and by the terms and conditions of the original manufacturer's warranty. **RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDATIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PERFORMANCE AND NO SUCH WARRANTY IS GIVEN.**

This warranty shall not apply when damage is caused by (a) improper installation, (b) improper voltage (c) lightning (d) sand or other abrasive material (e) scale or corrosion build-up due to excessive chemical content. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts. Neither will we accept charges incurred by others without our prior written approval. This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and\or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the application and use of the product. **UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND\OR WORKMANSHIP AND\OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.

CRANE

PUMPS & SYSTEMS

A Crane Co Company

420 Third Street
Piqua, Ohio 45356
Phone: (937) 778-8947
Fax. (937) 773-7157
www.cranepumps.com

83 West Drive, Bramton
Ontario, Canada L6T 2J6
Phone: (905) 457-6223
Fax: (905) 457-2650

Notes

Pump #1 1.5 HP 240 V 1 Phase
RPM 3450 FLA 13.5
model # 2 SEV1522 D.S Ra
Part # 1079147P Serial # 608
impeller Dia 3.50 max Temp 40C Class B

Pump #2 1.5 HP 240 V 1 Phase
RPM 3450 FLA 13.5
model # 2 SEV1522D.S
Part # 107 S1H 1P Serial # 608
impellin 3.50 max temp 40°C insulation Class B

START-UP REPORT
FOR SUBMERSIBLE PUMPS

This form is designed to provide assurance that customer service and a quality product are the number one priority with Crane Pumps & Systems, Inc (CP&S). Please fill out the following questions as completely and accurate as possible. When complete, mail this form to:

In U.S.A Send To:
Crane Pumps & Systems, Inc
Attn: Warranty Service Group
420 Third Street
Piqua, Ohio 45356

In Canada Send To:
Crane Pumps & Systems, Inc.
Attn: Service Manager
83 West Drive, Brampton
Ontario, Canada L6T 2J6

REPORTS THAT ARE NOT RETURNED CAN DELAY OR VOID WARRANTY.

Pump Owner's Name. _____
Address: _____
Location of Installation _____
Person in Charge _____ Phone _____
Purchased From (Crane Pumps & Systems Representative/Distributor _____

Pump Model _____ Serial No. _____
Part Number _____
Voltage _____ Phase _____ Hertz _____ Horespower _____
Rotation: Direction of impeller rotation (Use C/W for clockwise, CC/W for counter-clockwise) _____
Method used to check rotation (viewed from bottom) _____
Does impeller turn freely by hand: Yes _____ No _____

Condition of equipment Good _____ Fair _____ Poor _____
Condition of cable jacket Good _____ Fair _____ Poor _____
Resistance of cable jacket Good _____ Fair _____ Poor _____
Resistance of cable and pump motor (measured at pump control)
Red-Black _____ Ohms, Red-White _____ Ohms, White-Black _____ Ohms
Resistance of Ground Circuit between Control Panel and outside of pump _____ Ohms
MEG Ohms check of insulation:
Red to Ground _____ White to Ground _____ Black to Ground _____

Condition of equipment at Start-Up: Dry _____ Wet _____ Muddy _____
Was Equipment Stored? _____ Length of Storage _____
Describe station layout _____

Liquid being pumped _____
Debris in bottom of station? _____
Was debris removed in your presence? _____
Are guide rails exactly vertical? _____
Is BAF stationary installed level? _____

Liquid level controls: Model _____
Are level controls installed away from turbulence? _____
Operation Check:
Tip lowest float (Stop Float), All pumps should remain off.
Tip second float (and Stop Float), one pump comes On.
Tip third float (and Stop Float), both pumps on (alarm on simplex).
Tip fourth float (and Stop Float), high level alarm on (omit on simplex).

If not CP&S level controls, describe type of controls _____
Does liquid level ever drop below volute top? _____

CP&S control panel part no. and brand _____
Number of pumps operated by control panel _____
NOTE: At no time should holes be made in top of control panel, unless proper sealing devices are utilized.
Control panel manufactured by others _____
Company name _____
Model number _____
Short circuit protection _____ Type _____
Number and size of short circuit device(s) _____ Amp rating _____
Overload type _____ Size _____ Amp rating _____
Do protection devices comply with pump and motor Amp rating? _____
Are all connections tight? _____
Is the interior of the panel dry? _____

ELECTRICAL READINGS:

Single Phase:
Voltage supply at panel line connection, Pump Off, L1, L2 _____
Voltage supply at panel line connection, Pump On, L1, L2 _____
Amperage: Load connection, Pump On L1 _____ L2 _____

Three Phase:
Voltage supply at panel line connection, Pump Off, L1 - L2 _____ L2 - L3 _____ L3 - L1 _____
Voltage supply at panel line connection, Pump On, L1 - L2 _____ L2 - L3 _____ L3 - L1 _____
Amperage: Load connection, Pump On L1 _____ L2 _____ L3 _____

FINAL CHECK:
Is pump seated on discharge properly? _____ Check for leaks? _____
Does check valve(s) operate properly? _____
Flow, Does station appear to operate at proper rate? _____ Pump down time _____
Noise level: High _____ Medium _____ Low _____
Comments: _____
_____

Equipment difficulties during start-up: _____
_____
_____

MANUALS:
Has operator received pump instructions and parts manual? _____
Has operator received electrical control panel diagram? _____
Has operator been briefed on Warranty? _____
Address of local CP&S Representative/Distributor: _____
I have received the above information (Name of Operator) _____
Name of Company _____
_____ Date: _____
I Certify this report to be accurate (Name of Start-Up person) _____
Employed By: _____ Date: _____

Date and time of Start-Up _____
Present at Start-Up
( ) Engineer: _____ ( ) Operator: _____

( ) Contactor: _____ ( ) Other: _____

To be filled out by factory:
Start-Up form checked by: _____ Date warranty registration mailed: _____

IMPORTANT!
WARRANTY REGISTRATION

Your product is covered by the enclosed Warranty.
Complete the Warranty Registration Form and return to
Crane Pumps & Systems, Inc. Warranty Service Group

If you have a claim under the provision of the warranty, contact your local
Crane Pumps & Systems, Inc. Distributor.

FOLD HERE AND TAPE, DO NOT STAPLE

IMPORTANT!

WARRANTY REGISTRATION

CUSTOMER'S NAME _____ **DATE INSTALLED** _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

PHONE # _____ **FAX #** _____

DEALER'S NAME _____

CITY _____ **STATE** _____ **ZIP** _____

MODEL NO. _____ **SERIAL NO.** _____

PART NO. _____ **BRAND** _____

FOLD HERE AND TAPE, DO NOT STAPLE

PLACE
STAMP
HERE

CRANE PUMPS & SYSTEMS, INC.
WARRANTY SERVICE GROUP
420 THIRD STREET
PIQUA, OHIO
45356 - U.S.A.

VMP Pavilion

General Guidelines for Pavilion Seasonal Shutdown and Start-up

Coordinate this shutdown of the Concession Building

SHUTDOWN

- Open sanitary tank access hatch and hose down interior with water from the grey water system
- Run sanitary pump down to low level after the tank is clear of solids and pump shuts down
- Shut off power to the domestic hot water tank and open drain
- Shut off city water (providing concession building is also being closed)
- Shut off grey water (rainwater) booster pumps
- Close valves (2) at catch basins
- Shut off rainwater recirculating pump
- Drain down rainwater tanks
- Use compressed air to completely drain down city water and grey water systems to below the basement ceiling
- Remove UV element and dispose – check replacement unit is on site for next season
- Remove flush valve and faucet batteries and store in basement for start-up next season
- Clean debris baskets in catch basins
- Add plumber's anti-freeze to all traps
- Shut off sanitary pumps after concession building has been drained
- Record final city and rainwater meter readings after verifying that the Concession building has been shut down
- Forward water meter readings to the NCC Property Department
- Check the following have power and are operational:
- Sump pumps (2)
- Electric unit heater – set thermostat at +5°C
- Dehumidifier
- Exhaust fan - fan used only in summer or while personnel working in basement. Set thermostat at 20°C
- Before leaving the building, shut off the exhaust fan.
- Remove soap at all soap dispensers at sinks

START UP

- Turn on exhaust fan while performing the building start up
- Close all drain valves
- Install new UV element – keep spare element on site
- Open city water shut off valve
- Check for leaks
- Reinstall flush valve and faucet batteries and check for correct function – replace batteries if required
- Pull out catch basin debris baskets, clean if necessary and replace
- Open catch basin valves
- Open faucets to expel air and allow water systems to fill
- Check for water leaks
- Check sanitary pumps are operational – add water to tank to start pump
- Check rainwater booster pumps are operational by adding water to tanks
- Verify the city water solenoid valve opens when the rainwater tank levels drop to low level
- Turn on rainwater recirculation pump
- Switch power on to domestic hot water tank after tank has filled
- Check vortex filter is operational and not leaking at bell gasket - spare gasket to be kept on site
- Replace urinal sealing liquid if necessary
- Check all flush valves function correctly
- Add water to floor drains
- Verify UV unit is working and bypass valve closed
- Check exhaust fan set at 22°C
- Ensure the motion sensors are operational by entering each room, checking that the lights turn on and the green LED indicating light is activated – if the lights fail to activate, troubleshoot using the motion sensor directions in the O & M manual
- Clean all floors and clean and wax terrazzo floors
- Clean all mirrors, glass at walls and glass skylights
- Add soap dispenser manufacturers recommended soap to all soap dispensers at sinks

Location:	**Ottawa, Canada**
S&L S/N:	**19-01614-H, 19-01615-H, 80-02991-H**
Project:	**Vincent Massey PS**
Equipment:	**4B2 Pumps, Interconnecting Piping and Control Panel and Accessories**
Purchaser:	S&R Mechanical
Engineer:	Genivar
Manufacturer:	***Smith & Loveless, Inc.***
S&L Parts Phone:	**(800) 922-9048**
S&L Service Phone:	**(913) 888-5201**
Representative:	Aqua Technical Sales, Inc.
Rep Phone Number:	(905) 628-3807

SERIAL NUMBER: **19-01614-H, 19-01615-H, 80-02991-H**

LOCATION: **OTTAWA, CANADA**

ENGINEERING ORDER

S&L PUMP OUTLINE DRAWING - SECTION 2

	DRAWING NUMBER
4B2 Pumps	61C7
Shaft Seal Assembly (B Shaft)	61D2

S&L PUMP ASSEMBLY DRAWINGS - SECTION 3

	DRAWING NUMBER
4B2, 4B2A & 4B2Y Pumps	61D1

SPECIAL INFORMATION - SECTION 4 – S/N 80-02991-H

Plan & Elevation Drawing	B80-2991-1
Add-A-Phase Drawing	4L801A
Wiring Diagram	B80-2991-30

SECTION 1

Sewage Pump Order

Date EO Prepared: 02/09/10
Job Serial Number: 19-01614-00-H

Location: Ottawa, CANADA	**Engineer:** Genivar
Purchaser: S&R Mechanical	**Project:** Vincent Massey PS
Prepared By: Martin Paredes	**Job SN:** 19-01614-00-H **Config. Number:**
Rep Firm: Aqua Technical Sales, Inc. (ATSI)	**Companions:** 19-01615/80-02991

Electrical Service Data: 3 Phase | 60 Cycle | 575 Volts

PUMP DATA		MOTOR DATA	
Design Characteristics (GPM@TDH)	75 @ 40	Motor Horsepower	5
Pump Model	4B2	Motor RPM	1200
Impeller Diameter	9 3/8	Electrical Data	3/60/575
Rotation	CW	Conduit Box Location	A
Mechanical Seal Size	1 7/8	Motor Serial Number Code	
Suction Elbow Size	4" x 4"		
Suction Elbow Type	S&L		
Pump Discharge Location	2		
Pump Serial Number			

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

Item No.	Item Description
1.	Provide pump stand, and under pump stand provide a 4" tall maintenance stand, with (4) holes for 1/2" anchors (anchors by others)

O&M Manuals

Preliminary:	0	Marketing /Comm:	1	Start-Up:	1
With Equipment:	1	Rep:	1	Customer:	5
				TOTAL:	9

Sewage Pump Order

Date EO Prepared: 02/09/10
Job Serial Number: 19-01615-00-H

Location: Ottawa, CANADA	**Engineer:** Genivar
Purchaser: S&R	**Project:** Vincent Massey PS
Prepared By: Martin Paredes	**Job SN:** 19-01615-00-H **Config. Number:**
Rep Firm: Aqua Technical Sales, Inc. (ATSI)	**Companions:** 19-01614/80-02991

Electrical Service Data: 3 Phase 60 Cycle 575 Volts

PUMP DATA		MOTOR DATA	
Design Characteristics (GPM@TDH)	75 @ 40	Motor Horsepower	5
Pump Model	4B2	Motor RPM	1200
Impeller Diameter	9 3/8	Electrical Data	3/60/575
Rotation	ccw	Conduit Box Location	A
Mechanical Seal Size	1 7/8	Motor Serial Number Code	
Suction Elbow Size	4" x 4"		
Suction Elbow Type	S&L		
Pump Discharge Location	2		
Pump Serial Number			

SPECIAL MODIFICATIONS - ADDITIONS - AUXILIARY EQUIPMENT

Item No.	Item Description
1.	Provide pump stand, and under pump stand provide a 4" tall maintenance stand, with (4) holes for 1/2" anchors (anchors by others)

O&M Manuals

Preliminary:	0	Marketing /Comm:	1	Start-Up:	1
With Equipment:	1	Rep:	0	Customer:	0
				TOTAL:	3

SMITH & LOVELESS, INC.
ENGINEERING ORDER

LOCATION: Ottawa, Ontario, CN
PROJECT: Vincent Massey Park Washroom Building Rehabilitation
PURCHASER: S & R Mechanical
ENGINEER: Genivar
EO PREPARED BY: Martin Paredes

S&L SERIAL NO.: 80-02991-H
COMPANION: 19-01614-H and 19-01615-H

CONFIG. NO.: 39644.3
REP FIRM: Aqua Technical Sales
DATE PREPARED: 2/10/10

Provide the interconnecting piping, and control panel and accessories for the two pumps under 19-01614-H and 19-01615-H

Site has only 1-phase, 575 V power. S&L to ship loose one Add-A-Phase and one 2 kVa transformer (to be wall mounted, at site, by others)

Provide (4) float switches – Pumps off, pump 1 on, pump 2 on, High Level Alarm

Discharge piping to terminate on a 4" x 4" x 6" connection; 6" riser to be by others.
Interconnecting piping between the two pumps to include a 4" discharge gate valve

Control panel to be NEMA 1, stamped/labeled cUL. Provide a fluorescent light on top of the panel. Panel to allow wall-mounting, by others. Cables, conduit to/from panel(s) and S&L equipment, not by S&L.
Panel to have the following features:
-Main circuit breaker
-Single phase failure alarm
-12 V common alarm light and charger
-(2) Running time meters
-(2) Running lights
-(2) GFI receptacles

Provide fused disconnects (one per pump)

SALES ENGINEERING		MAINTENANCE MANUAL QTY.		COMPANION JOB SERIAL NO.
PREPARED BY	DATE	Preliminary Copies	0	
		M.C. Copy	1	
		Start-Up Copy	1	
		Equipment Copy	1	19-01614-H and 19-01615-H
		Rep Copy	0	
		Customer	0	
M. Paredes	6/14/10	Total O&M's	3	

INTERNATIONAL WARRANTY CERTIFICATE

SMITH & LOVELESS, INC.®, Lenexa, Kansas, manufacturer of the wastewater treatment/transfer equipment, shall warrant for eighteen (18) months from date of shipment or one (1) year from date of start-up, whichever occurs first, that the structure and all equipment will be free from defects in materials and workmanship.

Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility by the manufacturer are not provided. The manufacturer shall be solely responsible for the warranty of the equipment and all components.

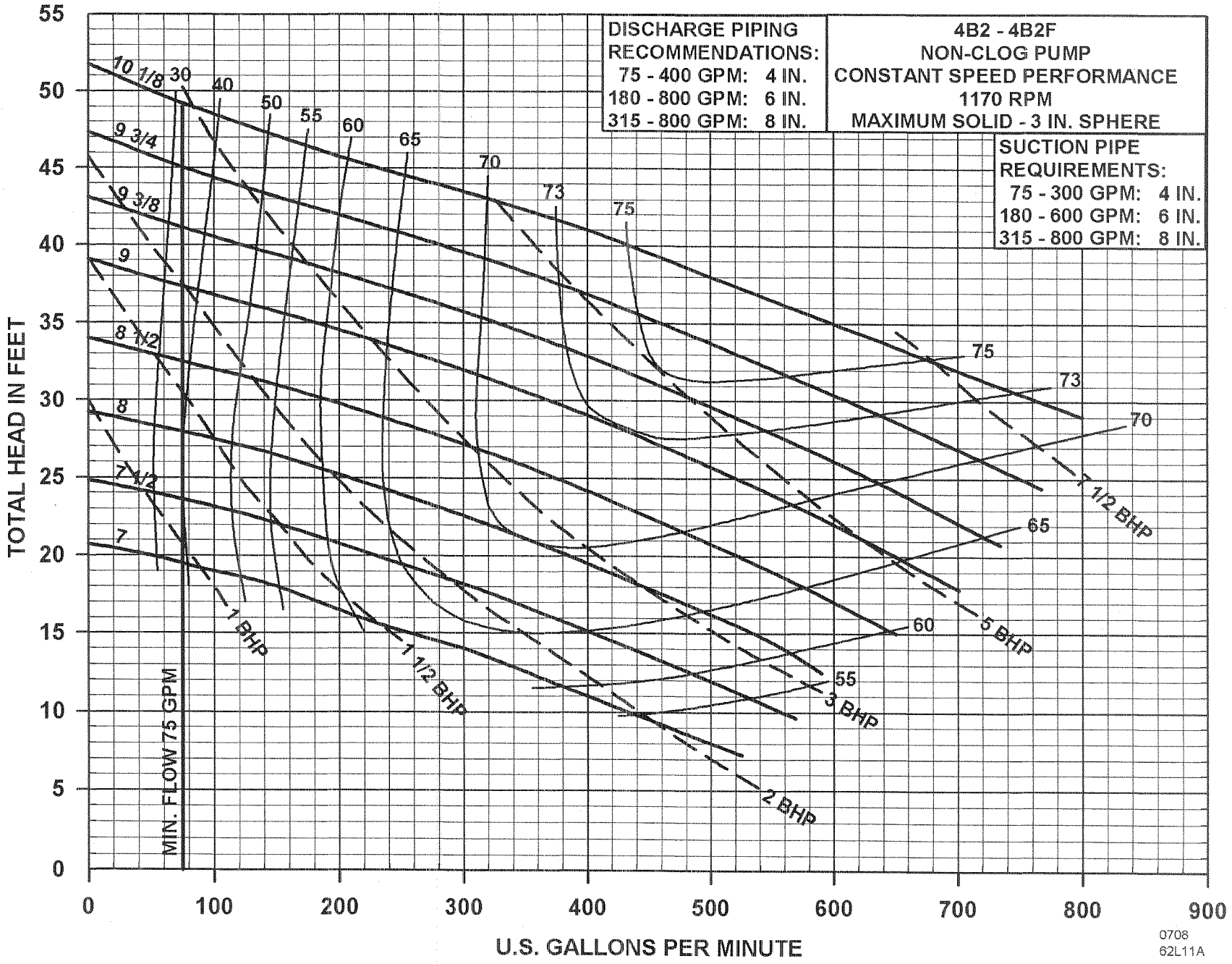
During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions and if the equipment has been protected prior to start-up and has been installed, operated and maintained all in accordance with the written instructions provided by SMITH & LOVELESS, SMITH & LOVELESS will repair or replace the defective part F.O.B. Lenexa, Kansas. Owner to furnish SMITH & LOVELESS, INC. a "no charge" Purchase Order to facilitate import/export requirements. Owner to pay all applicable import duties. Defective parts must be returned by the owner to SMITH & LOVELESS, if so requested. The cost of labor and any other expenses resulting from replacement of defective parts and from installation of parts furnished under this warranty shall be borne by the purchaser.

The replacement of those items normally consumed in service, such as seals, drive belts, light bulbs, filters, oil, grease, etc., shall be considered as part of the purchaser's routine maintenance and upkeep, and such parts are not eligible for repair or exchange free of charge under this warranty.

SMITH & LOVELESS makes no other warranty expressed or implied and SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY AS TO THE MERCHANTABILITY OF THE EQUIPMENT OR AS TO ITS FITNESS FOR ANY PARTICULAR PURPOSE. SMITH & LOVELESS is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defects in design, material, workmanship, or delays in delivery, replacements or repairs.

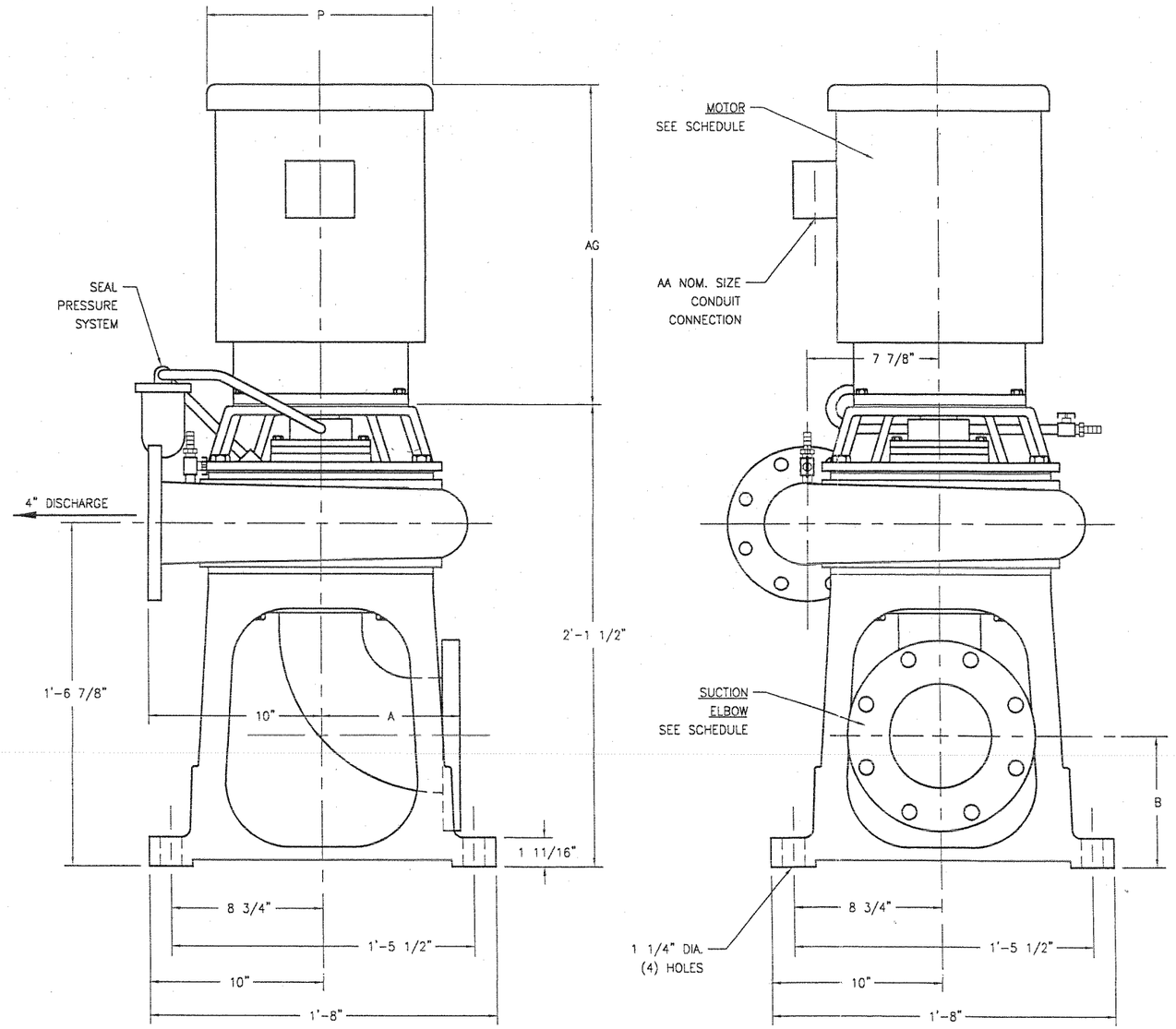
S&L®

Smith & Loveless, Inc.


DISCHARGE PIPING RECOMMENDATIONS:
75 - 400 GPM: 4 IN.
180 - 800 GPM: 6 IN.
315 - 800 GPM: 8 IN.
4B2 - 4B2F
NON-CLOG PUMP
CONSTANT SPEED PERFORMANCE
1170 RPM
MAXIMUM SOLID - 3 IN. SPHERE
SUCTION PIPE REQUIREMENTS:
75 - 300 GPM: 4 IN.
180 - 600 GPM: 6 IN.
315 - 800 GPM: 8 IN.
TOTAL HEAD IN FEET
U.S. GALLONS PER MINUTE
MIN. FLOW 75 GPM
10 1/8
9 3/4
9 3/8
9
8 1/2
8
7 1/2
7
1 BHP
1 1/2 BHP
2 BHP
3 BHP
5 BHP
7 1/2 BHP
30
40
50
55
60
65
70
73
75
0708
62L11A

SECTION 2

WASTEWATER PUMP
MODELS 4B2–4B2A–4B2Y–4C2–4C2A–4C2Y



MOTOR SCHEDULE						
PUMP MODEL	HORSE POWER			MOTOR DIMS.		
	1800 R.P.M.	1200 R.P.M.	900 R.P.M.	AG (MAX.)	P (MAX.)	AA
4B2, 4B2A & 4B2Y	---	2	1 1/2	18"	12 1/2"	3/4"
	5	3	2	18"	12 1/2"	3/4"
	7 1/2	5	3	18"	12 1/2"	3/4"
	10	7 1/2	5	23"	16"	1"
	15	---	---	23"	16"	1"
4C2, 4C2A & 4C2Y	20	---	---	25"	16"	1 1/4"
	25	---	---	27"	16"	1 1/4"

ELBOW SCHEDULE			
S&L PART NO.	ELBOW SIZE	DIM. A	DIM. B
28A92	4" X 4" (S&L)	11 1/2"	6 7/8"
2L7A	4" X 4" (STD.)	6 1/2"	8 3/8"
28C114	4" X 6" (S&L)	9 1/2"	6 7/8"

NOTES:

1. FLANGES ARE FACED AND DRILLED A.S.A. CLASS 125.
2.

61C7/A

LET	ECN NO	DATE	BY APPV'D
A	N2001-24	5/2001	JMK
			RGD

ORIGINAL ISSUE N92-99

SHEET 1 OF 1

DRAWN BY: R.DIEHM	DATE: 2/3/1993	ALLOWABLE TOLERANCES
CHECKED BY: MDH	DATE: 3/1993	FRACTIONS –
APPROVED BY: SBM	DATE: 9/1993	DECIMALS –
SCALE: NTS	CODE: 9	ANGLES –

FOR

OUTLINE DIMENSIONS
4B2–4B2A–4B2Y–4C2–4C2A–4C2Y
PUMPS

SIZE | U/M EA | WT.

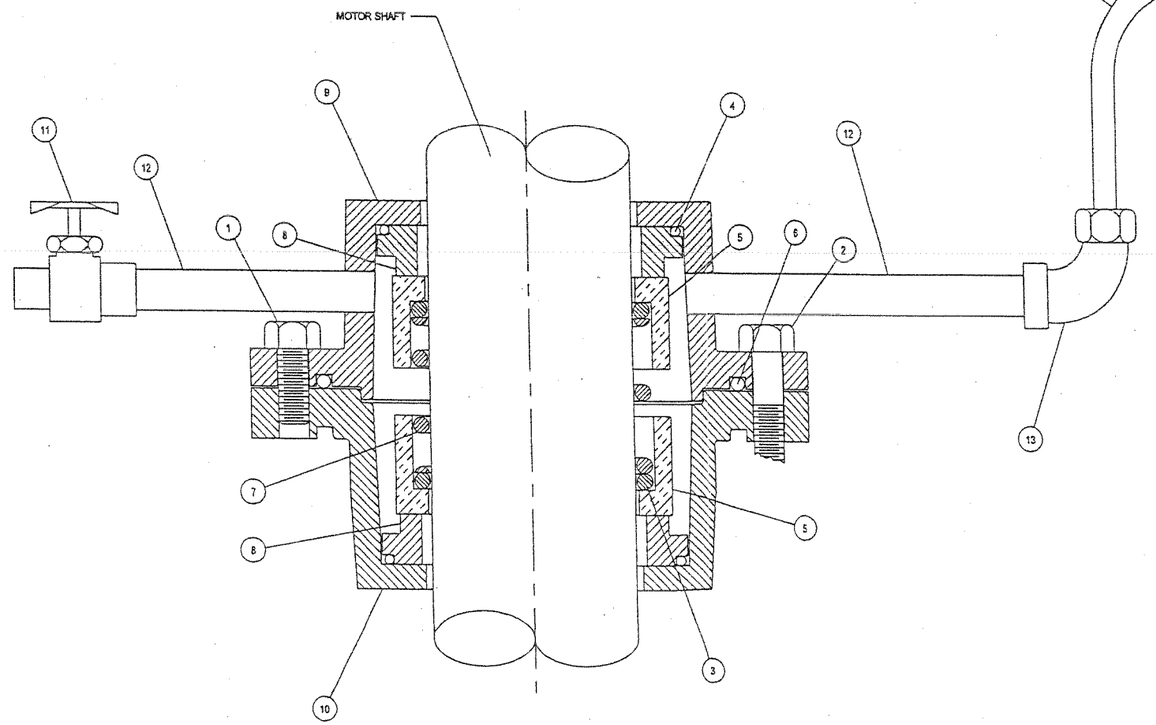
FILE NAME \SALES\61C7A | PLOT SCALE 1=5.333

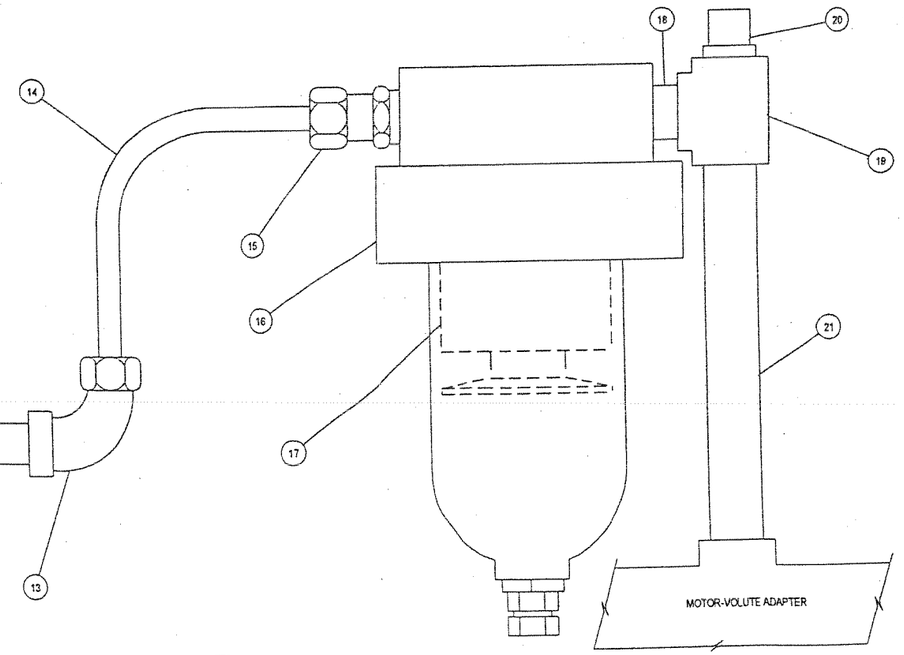
SERIAL NO | DWG NO 61C7 | REV A

Smith & Loveless, Inc.

BILL OF MATERIAL

Item	Qty	UM	Part Number	Raw Matl	Description	Size	Wt Ea
1	3	EA	6L59BB		CAPSCREW, S.S.	5/16-18 X 3/4" LG.	
2	3	EA	6L59BD		CAPSCREW, S.S.	5/16-18 X 1 1/4" LG.	
* 3	2	EA	60A39		O-RING, ROTATING		
* 4	2	EA	60A38		QUAD RING, STATIONARY		
* 5	2	EA	60A32		WEAR RING, ROTATING		
6	1	EA	60A110		QUAD GASKET		
* 7	1	EA	60A30		SPRING		
* 8	2	EA	60A36		WEAR RING, STATIONARY		
9	1	EA	60C92		SEAL HOUSING, UPPER		
10	1	EA	60C93		SEAL HOUSING, LOWER		
11	1	EA	1L56A		SHUT-OFF COCK	1/8"	
12	2	EA	1L33AC		NIPPLE	1/8" X 7" LG.	
13	1	EA	1L67D		CONNECTOR, 90° TUBE	1/8" NPT X 1/4" T	
14	1	EA	1L120C		TUBE, COPPER	1/4" OD X 14" LG.	
15	1	EA	1L53B		TUBE, CONNECTOR	1/4" NPT X 1/4" T	
16	1	EA	1L485		FILTER ASSY	40 MICRON	
17	1	EA	1L485A		REPLACEABLE FILTER ELEMENT	40 MICRON	
18	1	EA	1L31B		NIPPLE, CLOSE	1/4"	
19	1	EA	1L36B		TEE	1/4"	
20	1	EA	1L233B		PLUG	1/4"	
21	1	EA	1L33BA		NIPPLE	1/4" X 6" LG.	





NOTES:

1. COPYRIGHT (C) 1958, 1996 SMITH & LOVELESS INC.

2. * INDICATES PARTS SUPPLIED IN A SPARE SEAL ASSEMBLY.

REDRAWN PER REV. T

61D2/T

				DRAWN BY: R. DIEHM	DATE: 9/1/96	ALLOWABLE TOLERANCES	FOR	
				CHECKED BY: AB	DATE: 9/6/96	FRACTIONS -	STANDARD SEAL ASSEMBLY "B" SHAFT	
				APPROVED BY: SBM	DATE: 9/20/96	DECIMALS -		
T	N96-74	9/1/96	R E D		SCALE: NTS	CODE: 9	ANGLES -	SIZE	U/M EA	WT.
LET	ECN NO	DATE	A B	BY APPV'D				FILE NAME \SALES\61D2T	PLOT SCALE 1=1.000
ORIGINAL ISSUE	8-14-58				© Smith & Loveless, Inc. 1958, 1996			SERIAL NO	DWG NO 61D2	REV T

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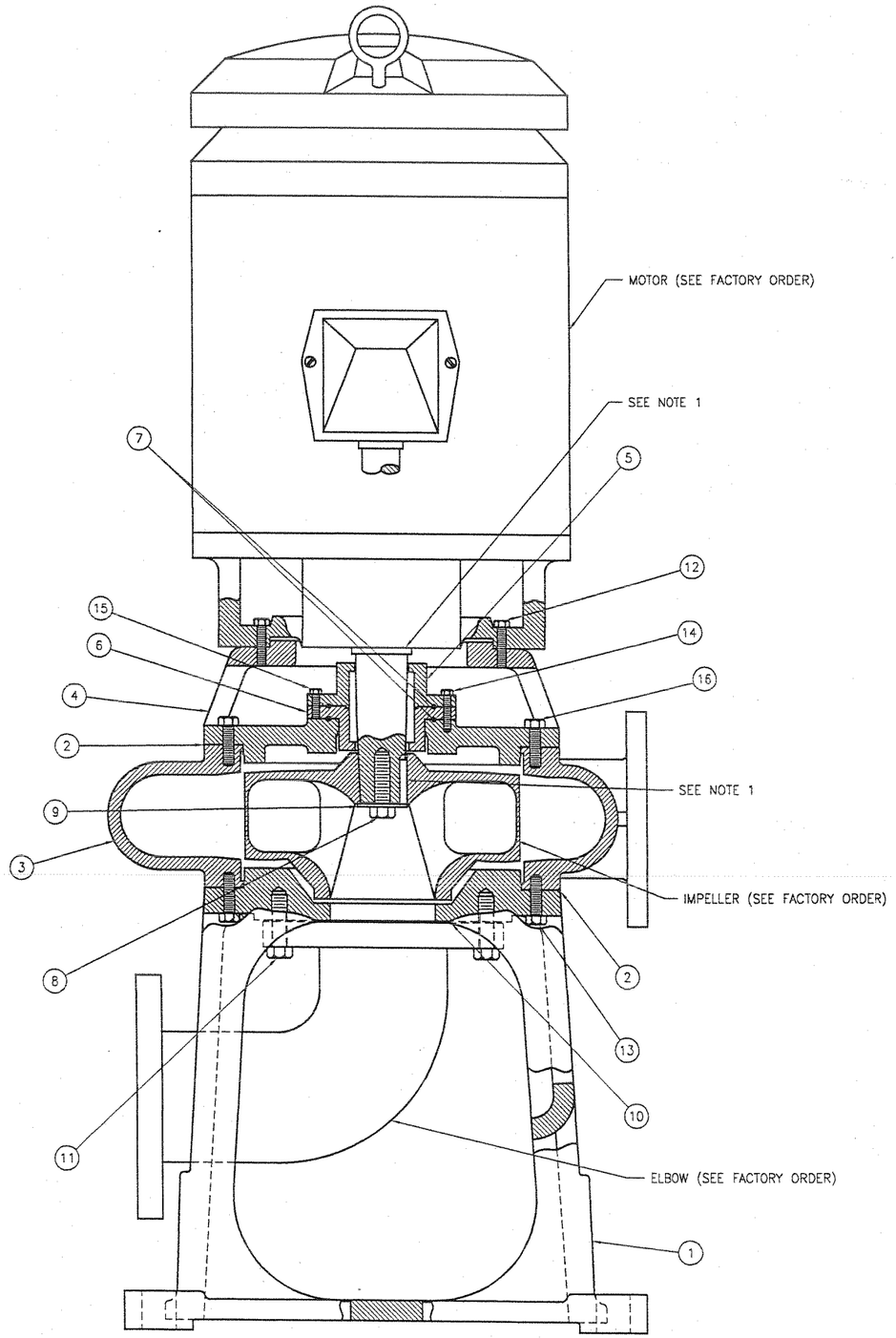
S&L Smith & Loveless, Inc.

SHEET 1 OF 1

SECTION 3



BILL OF MATERIAL

Item	Qty	UM	Part Number	Raw Matl	Description	Size	Wt Ea
1	1	EA	60D5		STAND, PUMP		
2	2	EA	60A26		GASKET, VOLUTE		
3	1	EA	60D7		VOLUTE, PUMP		
4	1	EA	60C8		ADAPTER, MOTOR		
5	1	EA	60C92		SEAL HOUSING UPPER B SFT		
6	1	EA	60C93		SEAL HSG LOWER B		
7	2	EA	60A110		QUAD RING		
8	1	EA	60A12		BOLT, IMPELLER		
9	1	EA	60A20		WASHER, IMPELLER		
10	1	EA	11L1A		GASKET, FLG	4"	
11	8	EA	6L20HF		CAP SCREW, GALV.	5/8-11 X 1 3/4"	
12	4	EA	6L20DC		CAP SCREW, GALV.	3/8-16 X 1"	
13	8	EA	6L20FG		CAP SCREW, GALV.	1/2-13 X 2"	
14	3	EA	6L59BE		CAP SCREW, 304 SST	5/16-18 X 1 1/2"	
15	3	EA	6L59BB		CAP SCREW, 304 SST	5/16-18 X 3/4"	
16	8	EA	6L20FD		CAP SCREW. GALV	1/2-13 X 1 1/4"	

NOTES:

1. NEOPRENE SLINGER RING & STAINLESS STEEL IMPELLER KEY INCLUDED WITH MOTOR.
2. SEAL ASSEMBLY-SEE FACTORY ORDER FOR PROPER MECHANICAL SEAL.
3.

REDRAWN PER REVISION L

61D1/L

LET	ECN NO	DATE	BY APPV'D
L	N2005-50	10/2005	RGD JK
ORIGINAL ISSUE			

DRAWN BY: C.R. WELTY — DATE: 5/23/58
CHECKED BY: C. WAAGE — DATE: 5/1958
APPROVED BY: --- — DATE: ---
SCALE: NTS — CODE:

ALLOWABLE TOLERANCES
FRACTIONS --
DECIMALS --
ANGLES --

FOR

PUMP ASSEMBLY
4B2/4B2A/4B2Y PUMPS

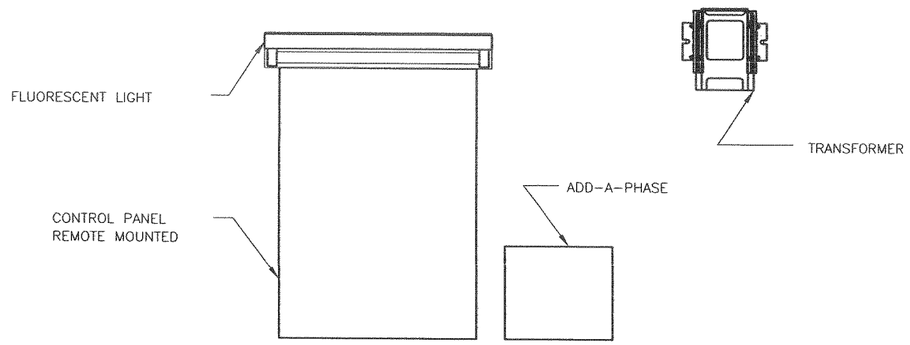
SIZE | U/M EA | WT.
FILE NAME \SUB\61D1L | PLOT SCALE 1=3.5
SERIAL NO | DWG NO 61D1 | REV L

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

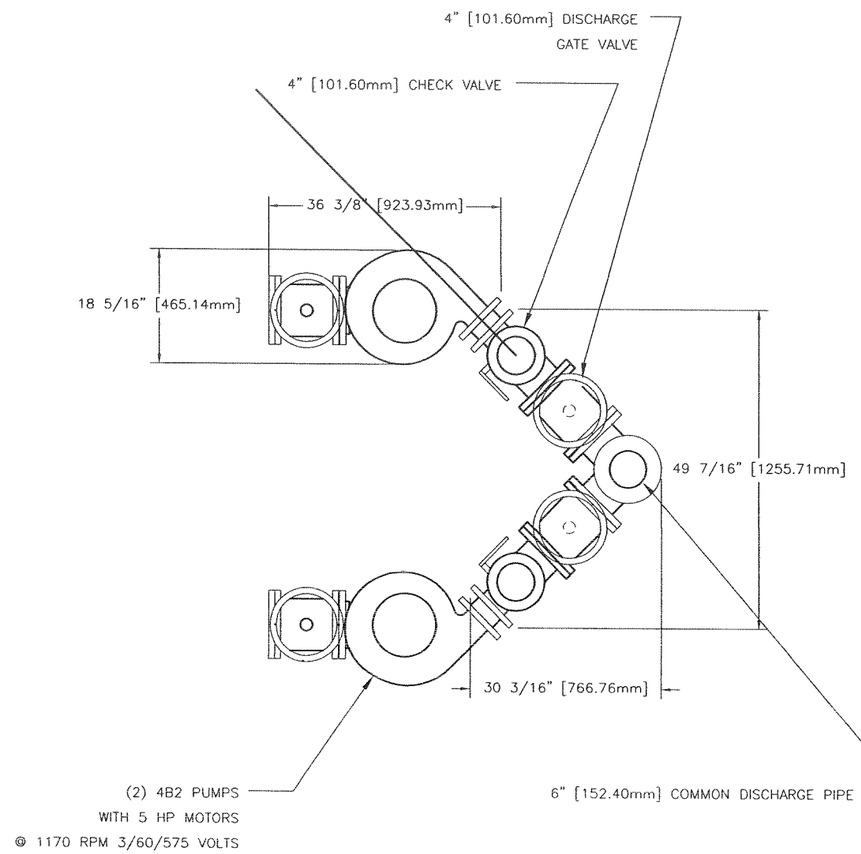
Smith & Loveless, Inc.

SHEET 1 OF 1

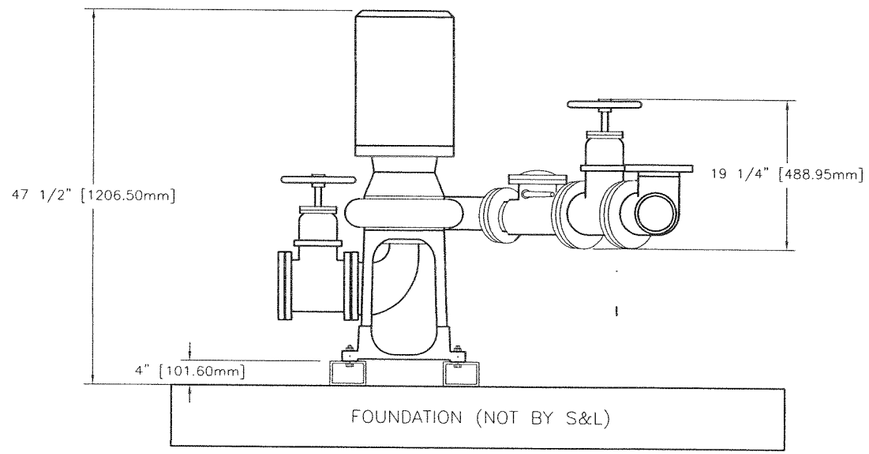
SECTION 4



SHIP LOOSE



STATION PLAN



NOTES:

1. SEE ENGINEER'S PLANS AND SPECIFICATIONS FOR DETAILS OF WET WELL, CONCRETE FOUNDATION, GROUT UNDER STATION, AND ELECTRICAL SERVICE.

2.

28D986\D

SHEET 1 OF 1

LET	ECN NO	DATE	BY APPV'D
ORIGINAL ISSUE			

DRAWN BY: CMB DATE: 2/18/2010
CHECKED BY: BFO DATE: 2/10
APPROVED BY: FHA DATE: 2/10
SCALE: NTS CODE:
ALLOWABLE TOLERANCES
FRACTIONS –
DECIMALS –
ANGLES –

FOR OTTAWA, ONTARIO, CANADA

7'-0" [2133.60mm] DIA. DUPLEX PUMPING STATION

SIZE | U/M EA | WT.
FILE NAME 802991X1 | PLOT SCALE 1=16
SERIAL NO 80-2991 | DWG NO B80-2991-1 | REV

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

Smith & Loveless, Inc.

4L801A

ADD-A-PHASE® POWER CONVERTER

TYPE	TYPICAL APPLICATIONS (SINGLE MOTOR ONLY)
S	PUMP, COMPRESSOR, FAN, BLOWER
SAC	AIR CONDITIONING, REFRIGERATION COMPRESSOR
SUB	SUBMERSIBLE WATER PUMPS
HE-AA	HYDRAULIC PASSENGER ELEVATORS
AA-HE	HYDRAULIC COMPACTORS, BALERS
HD	SIREN, VALVE ACTUATOR

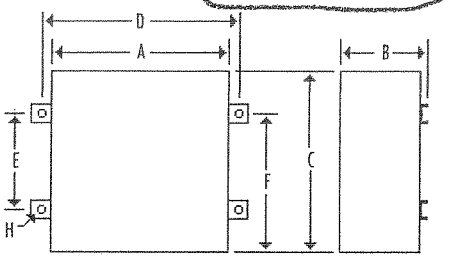
1Ø FULL LOAD AMP RATING

HP	INPUT VOLTAGE 240V	INPUT VOLTAGE 480V	STARTING CURRENT
1	5	3	
1.5	7	4	
2	9	6	
3	13	7	APPROXIMATELY
5	20	10	300% OF
7.5	30	15	FULL LOAD
10	40	20	RUNNING
15	60	30	AMPS
20	80	40	
25	95	48	
30	115	58	
40	150	75	
50	185	93	
60	220	110	
75	280	140	

FOR TYPE SAC & SUB, USE THE NEXT LARGER HP RATING

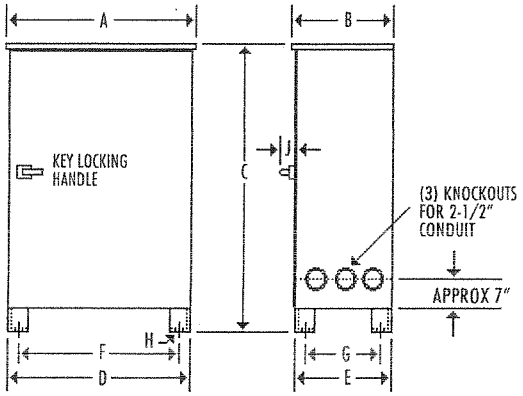
OTHER MODELS AVAILABLE. CONTACT RONK FOR MORE INFORMATION

DIMENSIONS OF NEMA 3R ENCLOSURES



ENCLOSURE	A	B	C	D	E	F	H
603	17	11	16-1/8	18	10	13	1/2
107	22-1/4	12-7/8	18-5/8	26	11-1/2	15	9/16
115	25-1/2	14	21-1/4	29	14	17-1/2	9/16
130	28-3/4	16-1/2	26-3/4	32-1/4	17-5/8	22-1/8	9/16

PADMOUNT



ENCLOSURE	A	B	C	D	E	F	G	H	J
150	32	22-7/8	40-7/8	30	21	27-1/2	18-1/2	1/2	3-1/4
175	38	28-7/8	40-7/8	36	27	33-1/2	24-1/2	1/2	3-1/4

ENCLOSURE SIZE & APPROXIMATE SHIPPING WEIGHTS (LBS)

ENCLOSURE	HP	2S	2SAC 2SUB	2HE-AA 2AA-HE	2HD	3S	3SAC 3SUB	3HE-AA 3AA-HE	3HD	4S	4SAC 4SUB	4HE-AA 4AA-HE	4HD
603	1	52	60		55	68	73		78	56	60		61
	1.5	60	63		85	73	81		98	60	63		85
	2	63	74		95	81	121		111	63	115		95
	3	74	140		112	121	160		158	115	142		110
107	5	140	165		145	160	190		180	142	165		145
	7.5	165	205		178	190	240		205	165	205		175
115	10	205	242	225	210	240	285	269	250	205	245	210	215
	15	242	310	275	280	285	380	319	315	245	320	250	285
130	20	310	350	328	320	380	400	373	390	320	360	330	330
	25	350	390	368	360	400	450	410	410	360	420	370	370
	30	390	555	400	497	450	635	545	550	420	574	425	525
150	40	555	626	565	565	635	720	640	645	574	660	585	590
	50	626	680			720	867			660	755		
175	60	680	700			867	975			755	892		
	75	700				975				892	1,115		
	100									1,115	1,125		
	125									1,125			

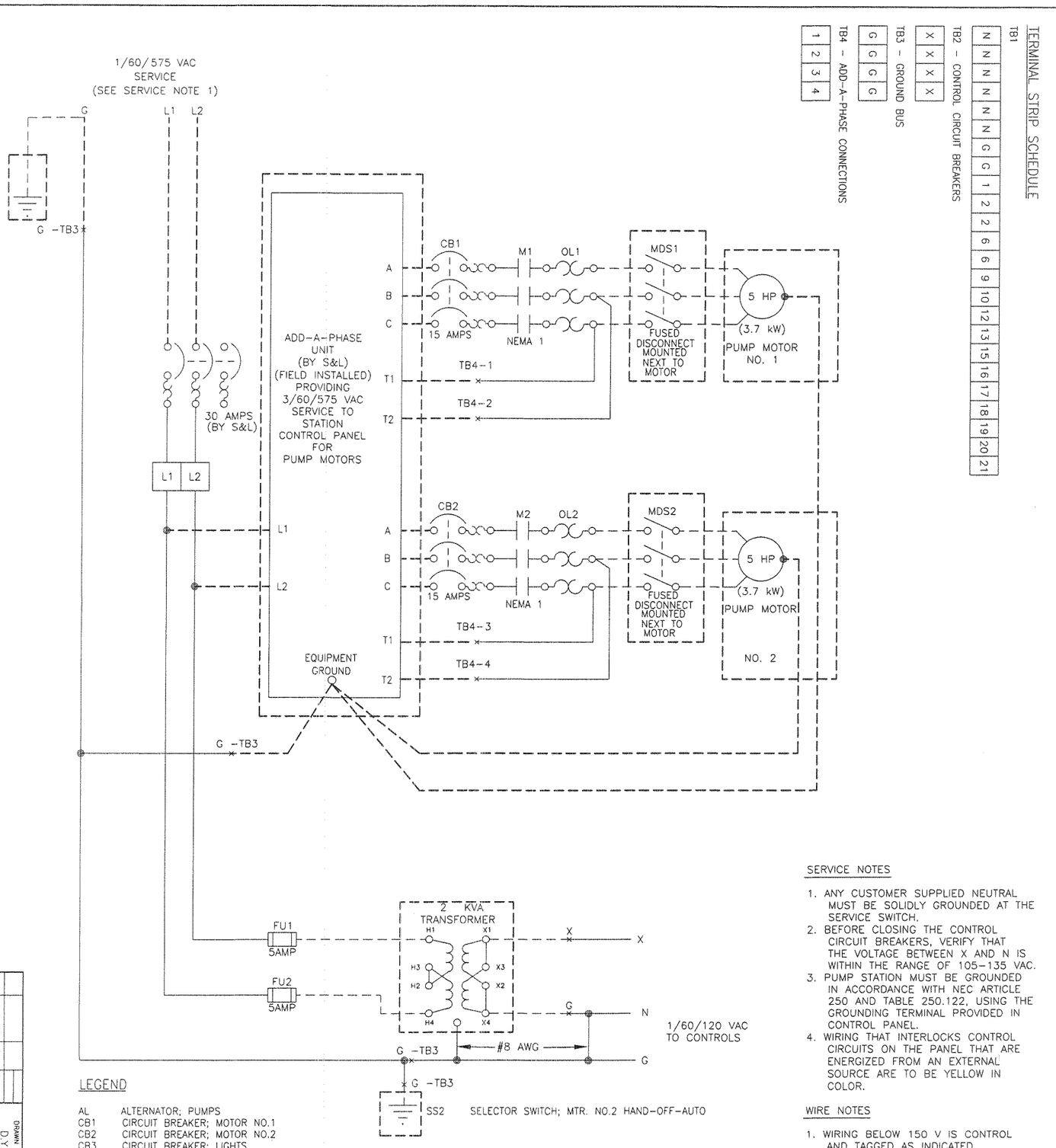
Close

Sales Information: 1-800-221-7665

RONK ELECTRICAL INDUSTRIES, INC.

Service & Support: 1-217-563-8333

106 E. State Street • Nokomis, Illinois 62075 www.ronkelectrical.com Phone: 217-563-8333 • Fax: 217-563-8336



LEGEND

AL ALTERNATOR; PUMPS
CB1 CIRCUIT BREAKER; MOTOR NO.1
CB2 CIRCUIT BREAKER; MOTOR NO.2
CB3 CIRCUIT BREAKER; LIGHTS
CB4 CIRCUIT BREAKER; BLOWER & DEHUMIDIFIER
CB5 CIRCUIT BREAKER; SUMP PUMP
CB6 CIRCUIT BREAKER; AIR COMPRESS. & CONTROL
CBM MAIN CIRCUIT BREAKER
FL FLUORESCENT LIGHT
FS/HL FLOAT SWITCH; HIGH LEVEL PUMP ON
FS/HWA FLOAT SWITCH; HIGH WATER ALARM
FS/LL FLOAT SWITCH; LOW LEVEL PUMP ON
FS/OFF FLOAT SWITCH; PUMPS OFF
FU1 FUSE; TRANSFORMER
FU2 FUSE; TRANSFORMER
GFI1 GROUND FAULT INTERRUPT
GFI2 GROUND FAULT INTERRUPT
IL1 INDICATING LIGHT; NO.1 PUMP RUNNING
IL2 INDICATING LIGHT; NO.2 PUMP RUNNING
M1 MOTOR STARTER NO.1
M2 MOTOR STARTER NO.2
MDS1 MOTOR DISCONNECT; MOTOR 1
MDS2 MOTOR DISCONNECT; MOTOR 2
MS1 MANUAL SWITCH; LIGHT
MS3 MANUAL SWITCH; PUMP ALTERNATOR
OL1 OVERLOAD RELAY; NO.1 MOTOR STARTER
OL2 OVERLOAD RELAY; NO.2 MOTOR STARTER
PFR RELAY; CONTROL POWER FAILURE
R RED
RT1 RUNNING TIME METER; PUMP NO.1
RT2 RUNNING TIME METER; PUMP NO.2
SS1 SELECTOR SWITCH; MTR. NO.1 HAND-OFF-AUTO
SS2 SELECTOR SWITCH; MTR. NO.2 HAND-OFF-AUTO

SERVICE NOTES

1. ANY CUSTOMER SUPPLIED NEUTRAL MUST BE SOLIDLY GROUNDED AT THE SERVICE SWITCH.
2. BEFORE CLOSING THE CONTROL CIRCUIT BREAKERS, VERIFY THAT THE VOLTAGE BETWEEN X AND N IS WITHIN THE RANGE OF 105-135 VAC.
3. PUMP STATION MUST BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250 AND TABLE 250.122, USING THE GROUNDING TERMINAL PROVIDED IN CONTROL PANEL.
4. WIRING THAT INTERLOCKS CONTROL CIRCUITS ON THE PANEL THAT ARE ENERGIZED FROM AN EXTERNAL SOURCE ARE TO BE YELLOW IN COLOR.

WIRE NOTES

1. WIRING BELOW 150 V IS CONTROL AND TAGGED AS INDICATED.
2. WIRING ABOVE 150 V IS POWER AND NOT TAGGED.
3. NEUTRAL (N) IS WHITE OR BARE COPPER.
4. GROUND (G) IS GREEN.
5. DASHED ITEMS SIGNIFY FIELD CONNECTIONS OR EQUIPMENT NOT BY S&L.
6. LAST WIRE NUMBER USED: 21
7. WIRE NUMBER(S) NOT USED: 4

7 — DEVICE TERMINAL CONNECTION

7 — TERMINAL BLOCK CONNECTION (DENOTES CONDUCTOR ENTERING OR LEAVING ENCLOSURE.)

SHEET 1 OF 2

LET	ECN NO.	DATE	BY/APP'D
ORIGINAL ISSUE			
A	ENG.	2/22/10	D.Y. / M.S.
B	PROC	4/21/10	D.Y. / M.S.
C	ENG.	6/4/10	D.Y. / M.S.

DRAWN BY:	D.Y.
CHECKED BY:	M.S.
APPROVED BY:	F.H.A.
DATE:	10/11/10
DATE:	2/19/10
DATE:	2/19/10
SCALE:	NTS
CODE	
ALLOWABLE TOLERANCES	
FRACTIONS	-
DECIMALS	-
ANGLES	-

FOR OTTAWA, ONTARIO CANADA

DUPLEX PUMP STATION NEMA 1 SCHEMATIC WIRING DIAGRAM 30 FLA=15.7 SCCR=5KAIC

SERIAL NO. 80-2991
SIZE
FILE NAME 802991
DWG NO. B80-2991-30 REV C
Q/M EA
WT.
PLOT SCALE 1=1

Smith & Loveless, Inc.

SHEET 2 OF 2

LET	ECN NO	DATE	BY APPV'D
C	ENG.	6/4/10	D.Y. MS
B	PROC	4/21/10	D.Y. MS
A	ENG.	2/22/10	D.Y. MS
ORIGINAL ISSUE			

DRAWN BY: D.Y.	DATE: 02/11/10	ALLOWABLE TOLERANCES
CHECKED BY: MS	DATE: 2/19/10	FRACTIONS –
APPROVED BY: FHA	DATE: 2/19/10	DECIMALS –
SCALE: NTS	CODE:	ANGLES –

FOR OTTAWA, ONTATIO CANADA

DUPLEX PUMP STATION NEMA 1 SCHEMATIC WIRING DIAGRAM 3Ø FLA=15.7 SCCR=5KAIC

SIZE		U/M EA	WT.
FILE NAME 802991			PLOT SCALE 1=1
SERIAL NO 80-2991		DWG NO B80-2991-30	REV C

Smith & Loveless, Inc.

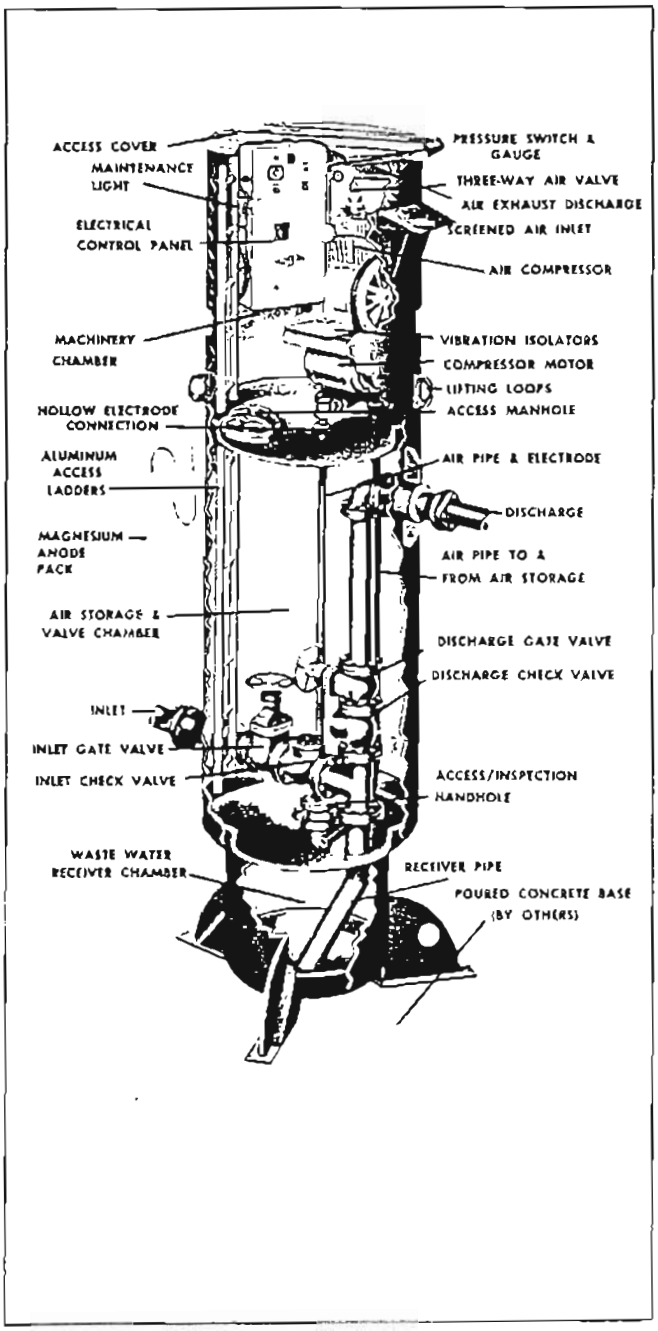
APPENDIX A

mon-o-ject®

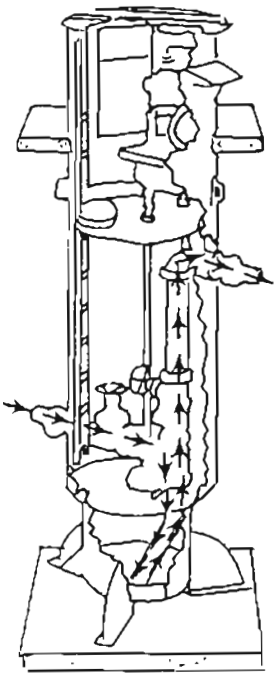
The Industry Standard of Economy Reliability

- Recommended in capacities up to 100 GPM
- Fast, economical installation
- Simple design for low maintenance
- Proven reliability

The Smith & Loveless "Mon-O-Ject" has become the standard of the industry—due to its simple, economical installation and operation. The "Mon-O-Ject" is available with capacities up to 100 GPM to meet the requirements of your application. Duplex "Mon-O-Jects" have dual compressors for extra dependability. The "Mon-O-Ject" has proven to be the choice when the job calls for a pneumatic ejector with simple, dependable operation.



How it Works...



The Smith & Loveless "Mon-O-Ject" pneumatic ejector is divided into three chambers: The top compartment, accessible from ground level, houses the control panel and compressor; the middle chamber houses the valves, manifold and serves as an air-storage tank; and the lower section is the influent waste reciver.

The waste flows through the inlet gate valve, the inlet check valve into the receiver compartment. Air displaced by the influent is vented through a hollow electrode air pipe, through a three-way air valve and air vent to the outside. When the waste receiver is filled, an electrical circuit is completed from the electrode, through the liquid, to the ground at the receiver wall. This energizes a DC relay which activates the three-way air valve, cutting off the vent connection and connecting the receiver to the high-pressure air stored in the middle section of the station. This high-pressure air passes through the three-way valve and electrode air pipe and into the receiver, forcing the waste up through the discharge check valve and gate valve and into the force main. A timer, energized by the DC relay, keeps the three-way air valve activated for a predetermined length of time while the waste is ejected from the receiver. When this time cycle is completed, the three-way valve is returned to its original position, cutting off the high-pressure air and reconnecting the receiver to the vent line. The station is then ready to repeat the cycle.

MAINTENANCE TROUBLE SHOOTING

Should the "Mon-O-Ject" lift station fail to operate properly for the reasons given, check the following chart before attempting repairs or adjustments.

CHATTERING ELECTRODE RELAY

Possible Causes	Remedies
A defective rectifier in the electrode circuit.	Replace rectifier.

LIQUID LEVEL IN WET WELL VARIES WITH EACH EJECTION

This is usually caused by a broken influent line or settling which forms an air lock in the line.	Consult your contractor and the Smith & Loveless representative in your area.

MOTORS AND COMPRESSORS WILL NOT RUN

Power failure	Call local power company.
Blown fuses - usually due to a short circuit.	Locate and correct cause of trouble. Replace fuses.
Circuit breaker or overload relay tripped, usually caused by:	
Low line voltage or single phasing of motor.	Check line voltage to motor.
High operating pressure.	Adjust presssure switches.
Compressor or motor bearing failure.	Remove V-belts and operate motor.
Pressure switches not making contact due to improper adjustment. Mercury tube slipped in holder in pressure switch.	Re-glue mercury tube and readjust switch.
Loose electrical connections.	Locate and tighten.

MOTORS & COMPRESSORS RUNNING BUT NOT BUILDING UP AIR PRESSURE

Possible Causes	Remedies
Three-way valve has foreign material between valve and valve seat.	Remove valve cap and remove material.
Air leaks	Check manhole cover. Check all air piping. Check electrode assembly.
Unloader on compressor not operating.	Change oil and clean unloader.
Foreign material holding inlet check valve flapper open.	Remove check valve cover and remove obstruction.

SUFFICIENT AIR PRESSURE BUT UNIT FAILS TO EJECT

Three-way valve out of order.	Remove valve and clean thoroughly. Clean all parts.
Three-way valve coil burned out.	Replace coil.
Loose connections on wires or terminals in electrode circuit.	Check and tighten.
Burned coil in electrode relay.	Replace relay.
Burned contacts in electrode relay.	Replace relay.
Control circuit breaker tripped--usually due to short circuit or grounded wire.	Locate and repair.
Influent and discharge piping obstructed with foreign material.	Remove check valve covers and any material lodged in valves; or, by manual operation, raise air pressure 10-15 PSI above normal setting to blow obstruction from line.
Influent piping may be broken, not permitting flow of sewage into receiver.	Replace broken pipe.
Electrode(s) may have become coated with foreign material causing the tip to be insulated.	Remove and clean electrode(s).
Air strainer plugged up.	Clean screening element.

UNIT OPERATING BUT "NO-FAIL" LIGHT INDICATES GROUNDED CONDITION

Possible Causes	Remedies
Electrode(s) have become grounded due to foreign material or breakage of the vinyl jacket covering the electrode.	Clean electrode(s).

Smith & Loveless Engineering Data S&L

• Main Plant: Lenexa, Kansas 66215

"MON-O-JECT" FACTORY-BUILT SEWAGE LIFT STATION OPERATION & MAINTENANCE INSTRUCTIONS

EVERY DAY - Visit the station. Raise the cover and:

1. Check oil level in compressor by inspecting dip stick or sight glass.
2. Check air pressure. Gauge should read between high and low settings with the compressor not running.
3. Check the "No-Fail" light. The light should operate continuously; therefore, if the light is out, the bulb has burned out and should be replaced. If this light is bright while the unit is not ejecting, the electrode is grounded and is operating on the "No-Fail" timer. Clean the electrode according to the instructions on page 3 of the Operation & Maintenance Instructions.
4. If the ejector does not operate automatically while you are checking the station, turn the electrode switch to the "Test" position to initiate the ejection cycle. If it completes the cycle and the compressor shuts off automatically after restoring the used air, the ejector is operating normally.
5. Test the "No-Fail" system by holding the electrode switch in the "Test" position. At the end of the ejection cycle and while still holding the electrode switch in the "Test" position (this simulates a grounded electrode), the solenoid valve will de-energize, allowing the receiver to fill. After the timer interval allowed for the fill cycle, the unit will again eject.
6. Open the safety relief valve and permit it to reset.
7. Check heater in cold weather.
8. Remove any dirt or debris in the compressor chamber.
9. Close and lock the cover.

EVERY WEEK

1. Clean compressor chamber thoroughly. Dust control cabinet, motor, compressor, etc. Wash off mud or grease.

EVERY THREE MONTHS

1. Change compressor oil by draining and refilling crankcase. Use correct weight and quality oil, according to the Air Compressor Bulletin attached. On compressors having an oil pump, check oil pressure after filling to be sure the oil pump is primed.
2. Check V-belts for wear.

EVERY SIX MONTHS

1. Remove electrodes and thoroughly clean exposed tip with sand paper or comparable abrasive. (This may be required more frequently in some areas, depending upon local water conditions.) The S&L Electrode Cleaner will clean the electrode without entering the air storage chamber or removing the electrode.
2. Check lubrication of the motors. See "Motor Maintenance" page for detailed instructions.

ENTERING THE CENTER CHAMBER

There is no need to enter the center chamber unless you have evidence of malfunctioning such as clogging of piping or check valve leakage, which cannot be relieved by external means. The station is shipped with the gate valves in the "Open" position. The valves have "O" rings instead of packing on the stem, hence they should remain tight indefinitely, especially since they are not being opened and closed. If there should be any leakage, it will be of air through the valve bonnet into the sewage, not sewage into the air chamber. Any condensation is removed automatically on each discharge cycle, as the draw-off pipe terminates with an open-end, flexible hose lying on the floor.

If you must enter the center chamber, proceed as follows:

1. Turn the compressor switch to "Off" position.
2. Open the manual air blow-off valve which releases the stored air and wait for pressure to drop to atmospheric pressure.
3. Tie a rope to the handle of the manhole cover so that the cover does not drop into the center chamber when the yokes are removed.
4. Remove the yokes and open the manhole cover.
5. Lift out the cover by the rope so it will not be in the way.
6. If required, the air-storage chamber can be vented while the operator works inside. Just follow these instructions:

FOR DUPLEX "MON-O-JECTS"

a) Turn both compressor switches to "Off."

b) Turn electrode switch to "Off."

c) Close valve in the line from #2 compressor to air storage.

d) Turn compressor #1 to "Hand" to provide ventilating air.

The "Mon-O-Ject" will not eject while the center chamber is being vented according to the above instructions.

EASY ELECTRODE CLEANING AND REMOVAL

Before doing any work on the electrode, turn the switch to the "Off" position.

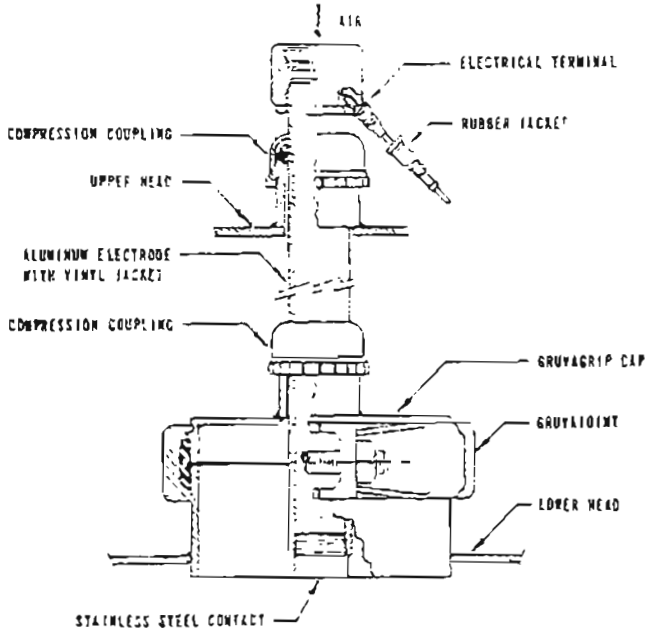
The Smith & Loveless Electrode Cleaner permits cleaning the electrode without removing it. Remove the plug from the tee at the top of the electrode and insert the S&L Electrode Cleaner in the electrode. The stainless steel tip is the only portion requiring cleaning. Its position can easily be felt as the brush is pushed down the electrode. After cleaning, replace the plug and check for leaks by operating the unit.

If you do not have an S&L Electrode Cleaner, it is necessary to enter the center air storage chamber to clean the electrode. Do this as described in these instructions.

To clean the electrode, loosen the two bolts on the Gruvajoint and the cap of the compression coupling. (See drawing next page.) Take care not to damage the vinyl jacket. If the jacket is broken when the compression coupling cap is removed, repair with insulating varnish before replacing.

Slide the Gruvagrip cap up the electrode pipe two or three feet and tighten the top of the compression coupling to hold up the Gruvagrip cap. Remove any foreign matter that has collected on the electrode tip by pushing the electrode pipe to the side of the Gruvagrip nipple and reaching down inside the nipple. Reinstall the Gruvagrip cap and compression coupling with care.

After the unit is again ready for automatic operation, check for air leaks from the storage chamber by turning the electrode switches to the "Off" position and observing the pressure gauge for any appreciable pressure drop.



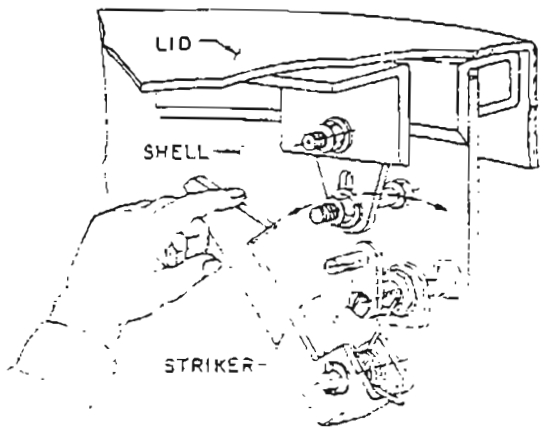
To remove the electrode, remove the flexible air hose and the electrical terminal from the electrode pipe. Do not loosen the PVC tee. Loosen the compression coupling caps in the upper and air storage chambers and pull the electrode pipe out of the sewage receiver. When replacing the electrode pipe, the paint line on the pipe can be used as a guide to obtain the proper depth of the electrode in the sewage receiver.

INLET AND DISCHARGE PIPES

The inlet and discharge pipes that project through the station shell are grouted with a special type of grout mixture which contains metal particles. This grout mixture has a tendency to expand upon contact with moisture. Should there be a slight leakage through the grout around the pipes when the station is first installed, it will take up and seal after a few days of operation.

ENTRANCE LOCK

You cannot be locked inside the station. The lock may be easily opened from inside the station by rotating the lock striker counterclockwise.



EMERGENCY CONNECTIONS FOR PORTABLE COMPRESSOR

During a prolonged power outage, the sewage receiver can be ejected by connecting an engine-driven compressor to the vent outlet. The air control valve is automatically in the correct position when the power is off. Where a compressor is available for the purpose, we recommend that half of a quick coupling be attached to the vent opening on the outside of the station. The other half of the coupling should be attached to an air hose on the compressor outlet. The hose should be disconnected after blowing out the pot as sewage cannot flow into the pot unless the vent is open.

PORTABLE LIGHT

In each "Mon-O-Ject" lift station, a portable light is furnished as standard equipment. The light is plugged into the side of the control panel which furnishes 115 volt, 60 cycle service. The cord is of sufficient length to permit the light to extend into the air storage chamber. This cord is equipped with a

magnet so that the light may be positioned and held in the most convenient location for any service work.

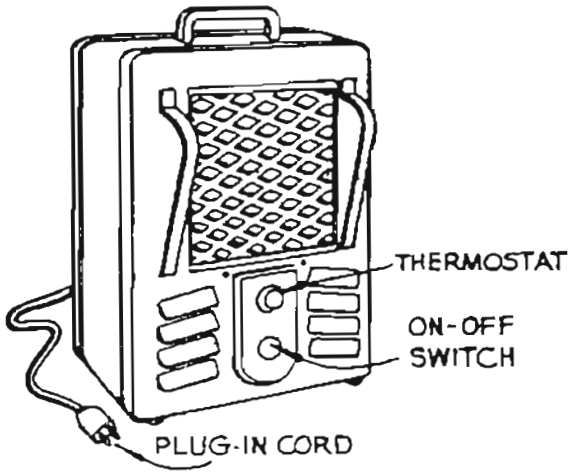
VENTILATOR

In a "Mon-O-Ject" lift station whose motor and compressor size is 9LN-10 or larger, a ventilating fan is furnished to exhaust the heat created by the compressors and motors. The ventilator is mounted in the station lid and operates off of 115 volt, 60 cycle service, controlled by a "Hand-Off-Auto" switch mounted on the side of the control panel.

During the winter months in areas where extreme cold weather is experienced, the ventilator should be turned off.

SPACE HEATERS

In each "Mon-O-Ject" lift station that is subject to severe temperatures, a unit heater is installed to prevent freezing in the upper chamber. This heater is designed only to prevent freezing of the controls and should be set at approximately 40° F.



MAINTENANCE TROUBLE SHOOTING

Should the "Mon-O-Ject" lift station fail to operate properly for the reasons given, check the following chart before attempting repairs or adjustments.

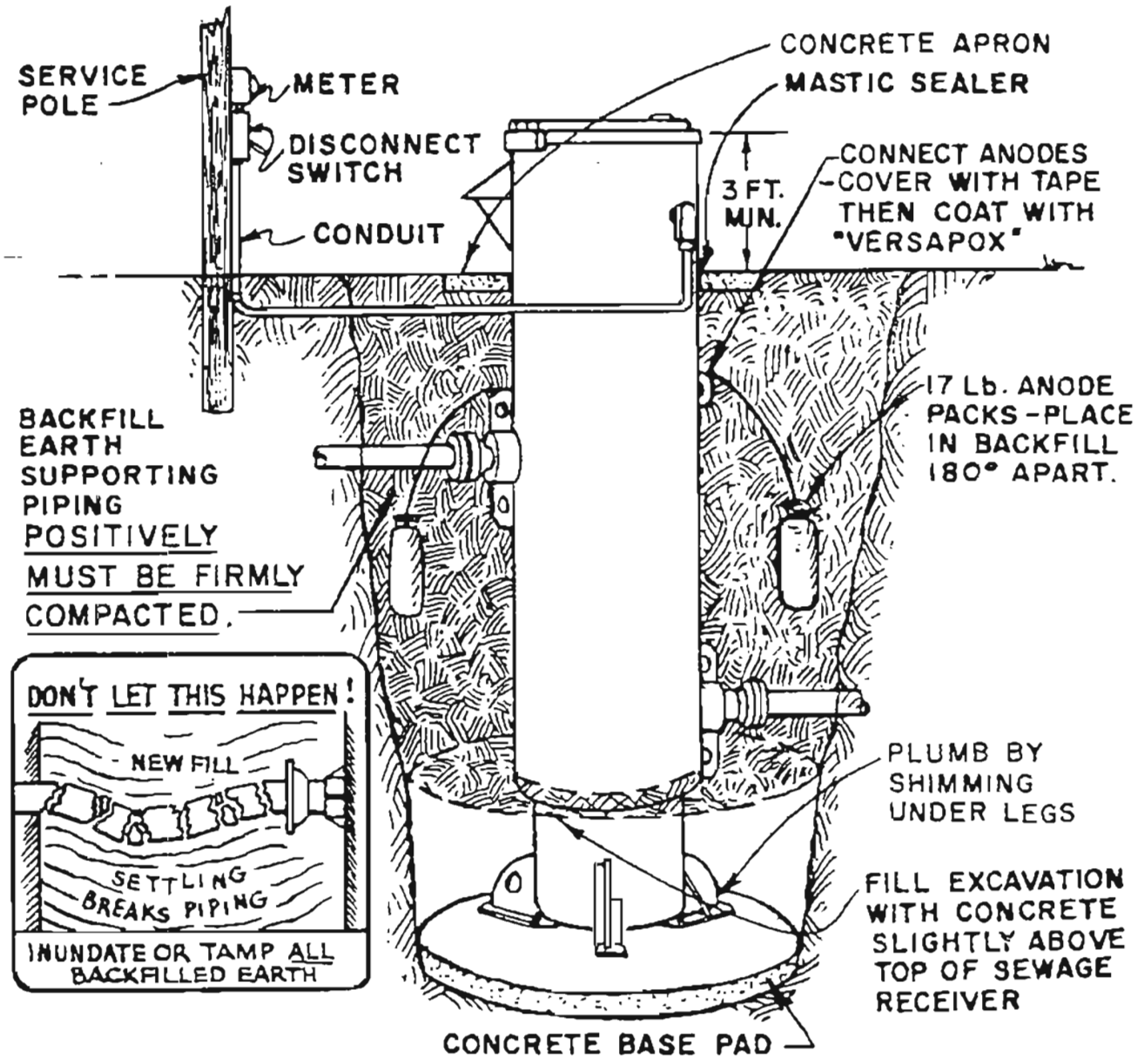
Problems	Possible Causes	Remedies
Liquid level in wet well varies with each ejection:	This is usually caused by a broken influent line or settling which forms an air lock in the line.	Consult your contractor and the Smith & Loveless representative in your area.
Motors and compressors will not run:	Power failure	Call local power company.
	Blown fuses - usually due to a short circuit.	Locate and correct cause of trouble. Replace fuses.
	Circuit breaker or overload relay tripped, usually caused by:	
	Low line voltage or single phasing of motor.	Check line voltage to motor.
	High operating pressure.	Adjust pressure switches.
	Compressor or motor bearing failure.	Remove V-belts and operate motor:
	Pressure switches not making contact due to improper adjustment. Mercury tube slipped in holder in pressure switch.	Re-glue mercury tube and readjust switch.
	Loose electrical connections.	Locate and tighten.
Motors and compressors running but not building up air pressure:	Three-way valve has foreign material between valve and valve seat.	Remove valve cap and remove material.
	Air leaks	Check manhole cover. Check all air piping. Check electrode assembly.
	Unloader on compressor not operating.	Change oil and clean unloader.
	Foreign material holding inlet check valve flapper open.	Remove check valve cover and remove obstruction.
	Safety rupture disc has ruptured indicating overpressure of system.	Replace safety rupture disc. Check system - especially relief valves - for proper operation prior to start-up.
Sufficient air pressure but unit fails to eject:	Three-way valve out of order.	Remove valve and clean thoroughly. Clean all parts.
	Three-way valve coil burned out.	Replace coil.
	Loose connections on wires or terminals in electrode circuit.	Check and tighten.
	Burned coil in timing relay.	Replace relay.
	Burned contacts in timing relay.	Replace relay.
	Control circuit breaker tripped - usually due to short circuit or grounded wire.	Locate and repair
	Influent and discharge piping obstructed with foreign material.	Remove check valve covers and any material lodged in valves; or, by manual operation, raise air pressure 10-15 PSI above normal setting to blow obstruction from line.
	Influent piping may be broken, not permitting flow of sewage into receiver.	Replace broken pipe.
	Electrode(s) may have become coated with foreign material causing the tip to be insulated.	Remove and clean electrode(s).
	Air strainer plugged up.	Clean screening element.
Unit operating but "No-Fail" light indicates grounded condition:	Electrode(s) have become grounded due to foreign material or breakage of the vinyl jacket covering the electrode.	Clean electrode(s).

Smith & Loveless Engineering Data
A Division of Ecodyne Corporation • Main Plant: Lenexa, Kansas 66215

"MON-O-JECT" FACTORY-BUILT SEWAGE LIFT STATION INSTALLATION INSTRUCTIONS

Your Smith & Loveless lift station is a complete factory-built unit, including all equipment ready to operate. It has been thoroughly tested at the factory by actual operation on our test floor. Every item of mechanical and electrical equipment has been operated and found free of defects.

INSTALLATION DIAGRAM



Smith & Loveless Engineering Data S&D
A Division of Ecodyne Corporation • Main Plant: Lenexa, Kansas 66215

"MON-O-JECT" FACTORY-BUILT SEWAGE LIFT STATION INSTRUCTIONS FOR INITIAL OPERATION

OIL

Fill each compressor with oil in accordance with the accompanying compressor bulletin. A red warning tag is attached to each compressor containing this same information in abbreviated form.

V-BELTS

Remove the motor bracing and motor compressor tie-downs, check V-belts and motor for alignment, adjusting if necessary. The weight of the motor provides the correct belt tension automatically when motors are 10 HP or smaller. With 15 and 20 HP motors, the belt tension should be adjusted by means of the threaded rod between the motor mount and the compressor base. Compressors are furnished with the correct number of belt grooves in the flywheel for the maximum horsepower motor which can be used with the compressor. The number of belts furnished in this station may be less than the number of flywheel grooves since it is determined by installed motor horsepower and speed.

GATE VALVES

The station is shipped from the factory with the gate valves open, so it is not necessary to enter the center chamber to open these valves.

ELECTRICAL CHECK

1. Place the compressor "Hand-Off-Auto" switches in the "Off" position.

2. Turn all circuit breakers to the "On" position.

3. If the station is equipped with a heater, check the heater by turning on the heater switch and advancing the thermostat control. After checking, reset the thermostat to 40° F.

4. Turn the alternator disconnect switch to the "On" position.

5. Check compressor rotation by momentarily turning the compressor switches, one at a time, to the "Hand" position. The correct rotation is indicated by the arrow on the flywheel. Three-phase motors can be reversed, if necessary, by interchanging any two of the leads to the motor.

6. If the motor does not run, push the "Reset" button of the starter and repeat procedure under 5. If motors still fail to run, check power supply for both power and control circuits.

7. Turn selector switch to the "Automatic" position and build up air pressure in the air-storage section. The pressure at which the compressor should start and stop will be found in the Engineering Order in the Maintenance Manual. Check compressor operation against these values. If adjustment is required, refer to paragraph on Adjustment of Pressure Switches. Open the safety relief valve manually and permit it to reset. It is set for the correct maximum pressure at the factory.

8. Turn the electrode switch to the "On" position. If the sewage receiver has filled with water or sewage to a level high enough to contact the electrode, the three-way valve will be energized and will shift immediately. A normal ejection cycle will result.

   If the receiver has not filled so that contact is made with the electrode, the ejection cycle may be tested by turning the electrode switch to the "Test" position. This grounds the relay circuit just as though the sewage was in contact with the electrode, and the three-way valve should shift. Release this switch; it is constructed to provide spring-return from the "Test" position to the "On" position. A normal cycle should result; that is, the timer will run through its cycle, the three-way valve will be de-energized and return to the vent position, and the timer will reset.

OPERATING CHECK

If sufficient sewage is flowing into the system, the station should cycle regularly and automatically. If sufficient flow is not available, run water from a fire hydrant into a nearby upstream manhole to simulate normal flow.

ADJUSTMENT OF PRESSURE SWITCHES

The cut-in and cut-out pressures for setting pressure switches will be found in the Engineering Order in the station Maintenance Manual. Two pressure switches are provided. The upper (main) pressure switch should be set to the higher pressure specified on the Engineering Order.

Check cut-in and cut-out operation against specified pressures. If readjustment is required, proceed as follows:

1. Reset the cut-out (high) pressure of the main pressure switch by turning the large adjusting screw on the top of the switch clockwise to raise the cut-out pressure or counterclockwise to lower it.

2. Reset the cut-in (low) pressure of the main pressure switch by turning the small adjusting screw on the top of the switch clockwise to lower the cut-in pressure or counterclockwise to raise it. The setting on the scale marked "Diff." should equal the difference between the cut-out and cut-in pressures.

3. A second pressure switch is mounted below the main

switch. It should be adjusted according to the procedure above and set to the lower cut-out and cut-in pressures listed in the Engineering Order.

CHECK THE EJECTION CYCLE

The ejection cycle is set at the factory during test under design conditions. Since actual conditions may vary slightly from design conditions, the cycle should be rechecked for most efficient operation.

Check the flow in the first manhole downstream from the station during ejection cycle. (Use a fire hose to produce design flow if necessary.) If no air is being blown into the manhole at the end of the cycle, increase the setting of the Smith & Loveless "No-Fail" timer (by turning the top knob clockwise) two seconds to permit a longer ejection cycle. If this does not cause air to be blown into the manhole, continue increasing the timer setting by two seconds until air is blown.

When the setting is reached which blows air into the manhole, decrease the timer setting by one second. Check for air in the manhole and decrease another second if necessary.

If air is being blown into the downstream manhole when checked according to Paragraph 2, decrease the "No-Fail" timer setting one second at a time until no air is observed.

Stations which are designed for a flow of 100 gallons per minute or less have a 100-gallon sewage receiver. To operate the station most efficiently, the entire contents of the sewage receiver should be ejected during each ejection cycle.

The following table gives the approximate time interval of the ejection cycle.

GPM	"No-Fail" Timer Setting Ejection Time Interval (In Seconds)
30	100
50	60
75	40
100	30
150	30
200	30

The above settings may vary slightly according to the actual total dynamic head.

ADJUSTMENT OF THE "NO-FAIL" CYCLE

With the Smith & Loveless "No-Fail" Electrode System, if the electrode should become grounded, the time interval for the sewage receiver to refill is controlled by the timer. This fill cycle is set at the factory during test; however, since actual conditions may vary slightly from design conditions, the cycle should be re-checked and set for the actual flow conditions. (This check should be made at a time when peak flows occur.)

To check the timing interval of the timing relay, hold the Electrode Switch in the "Test" position. Time the interval between the completion of the "No-Fail" timer cycle and when it resets.

Set the time interval of the fill cycle in accordance with the following table by adjusting the lower knob. Turning the knob of the timer to the right increases the time interval.

FILL TIME INTERVAL

GPM	SECONDS
30	100
50	60
75	40
100	30
150	30
200	30

OPERATION OF THE S&L "NO-FAIL" ELECTRODE SYSTEM

The system is composed of a current-sensitive dual timer which is adjustable for both "on" and "off" times. The components were selected to provide the utmost dependability and are connected in a fashion which truly provides an electrode system which, with proper maintenance, cannot fail to operate even though shorted or grounded.

A "Mon-O-Ject" with the Smith & Loveless "No-Fail" Electrode System normally operates in the following manner. When sewage fills the receiver up to the level of the electrode tip, an electrical circuit is completed from the tip through the sewage to the receiver wall which is at electrical ground potential. The timer is energized by completing this circuit. This timer operates a three-way air valve and immediately starts timing. The timer will keep the three-way valve energized for a predetermined period of time to permit the sewage to be ejected from the receiver. When the time cycle is completed, the three-way valve is de-energized and sewage can again flow into the receiver.

There are two basic types of failure that can occur with any electrical system. First, the electrode tip may become coated with grease, mineral deposits and other foreign materials which act as an insulator and prevent the electrode from making an electrical circuit with the sewage. Since grease and other minerals are always present in sewage, all electrodes gradually become coated with these materials and eventually become insulated. For this reason, it is imperative that the electrode be cleaned periodically according to the maintenance instructions.

Secondly, failure can occur when an electrode becomes grounded. Grounding can occur for a number of reasons and normal maintenance cannot prevent this type of failure. It happens suddenly and in a completely unpredictable manner.

The Smith & Loveless "No-Fail" Electrode System will permit continuing operation of the ejector under shorted electrode condition.

Under normal operation, when the timer completes its cycle, it de-energizes the three-way air valve and timer clutch, permitting the receiver to refill with sewage. Without the Smith & Loveless "No-Fail" System, a grounded electrode will keep the DC relay energized even though the level has dropped. At the end of the timed ejection period, the timer would de-energize the solenoid valve for a fraction of a second but would then start another ejection cycle even though there was no liquid in the receiver. There would be no time for sewage to flow into the receiver.

With the Smith & Loveless "No-Fail" System, ejection will continue for the normal period even though the electrode is shorted or grounded. The solenoid valve will be de-energized, terminating the ejection. At the same time, an off-time cycle with normally closed contacts is initiated. After this relay has "timed out", having allowed the receiver to fill, the momentary opening of the relay contacts resets the "No-Fail" timer which allows the ejection cycle to repeat.

As described above, when the electrode is grounded, the unit will operate continuously through the ejection and fill periods on a time cycle, whether the receiver is partially or completely filled. During periods of low flows in the sewage system, this will cause greater air consumption and therefore slightly higher power consumption. For this reason, it is important that during the daily visit to the station, the operator check for a grounded electrode by observing the "No-Fail" indicator light on the electrical panel. This light should operate continuously. If the light is out, the bulb should be replaced.

In normal operation, the indicator light should be dim; however, it may blink at the start of each ejection cycle. If this light stays bright after the ejection cycle, the electrode is grounded and should be cleaned at the earliest opportunity.

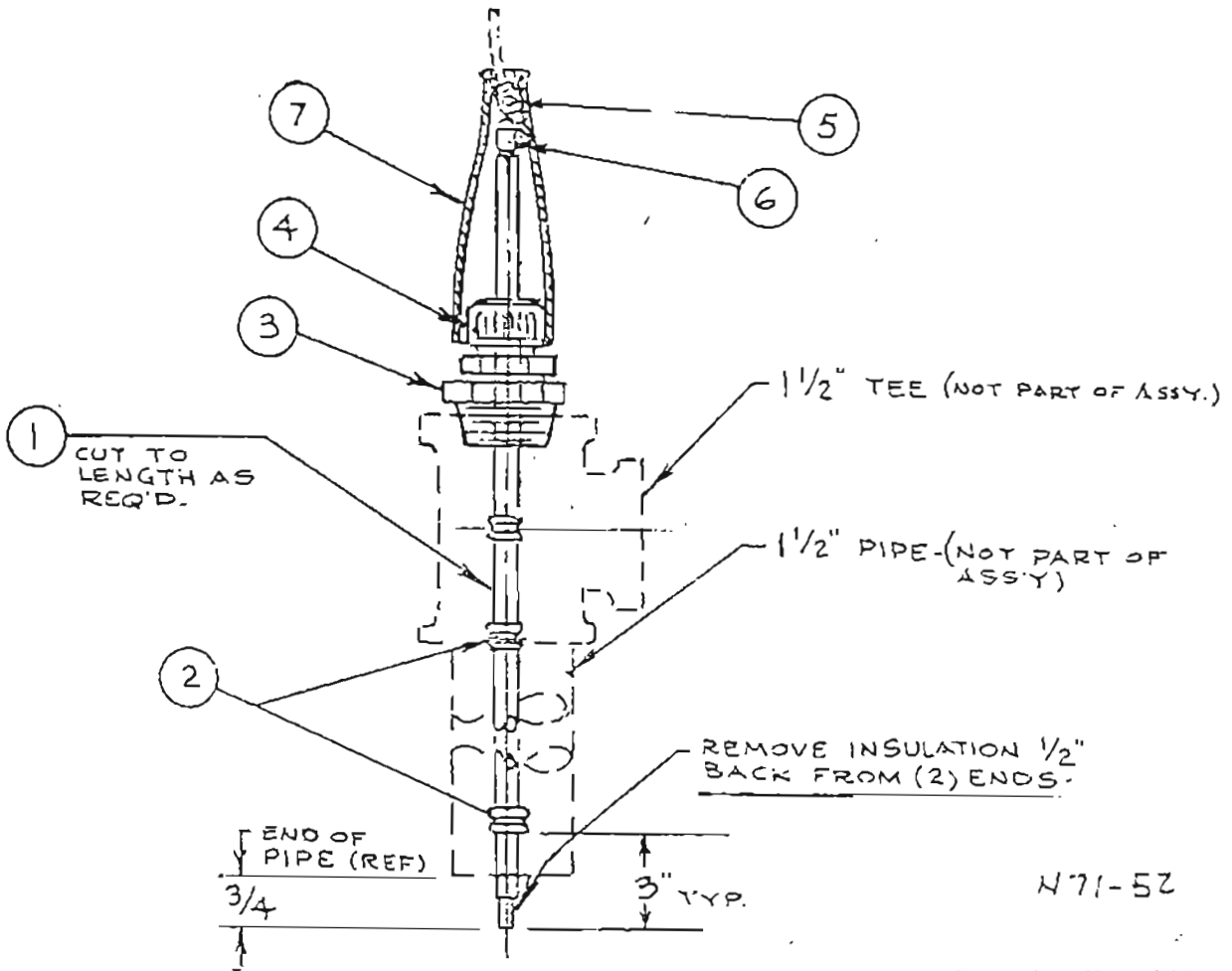
Frequently, the operation of the ejector will blow the grounding material off the electrode. When the grounding material is removed, the electrode system automatically returns to normal operation.

If the light remains dim after the receiver is filled and the unit fails to eject, it is probable that either the electrode is covered with an insulating deposit or that a component failure has occured in the circuit.

ELECTRIC HEATER

If electric heater is provided, it will be shipped in a carton to prevent damage in transit. It should be attached to the bottom of the control enclosure by three bolts through the heater handle. Holes are provided in control enclosure for this purpose.

	ITEM	S&L NO.	QTY.	DESCRIPTION.
	1	94A41	1	1/4" INSULATED ROD - S.S. 303
(A)	2	5L81E	5	RUBBER GROMMET.
	3	1L25P	1	PIPE BUSHING (1½" x ½")
	4	5L57B	1	STRAIN RELIEF BUSHING
(A)	5	5L52D	1	TERMINAL LUG
(A)	6	5L1A	1	GROUND LUG
(2)	7	5L68B	1	INSULATOR (RUBBER)(RED)



DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.
ALLOWABLE TOLERANCES
FRACTIONS ± 1/16 DECIMALS .xx ANGLES 1°

LETTER	ECN. NO.	DATE	BY APPV'D.
B	N81-23	3/82	CLV LGL.
A	N76-30	9-76	DE LMM

DRAWN BY: Hasloam DATE 5-19-
CHECKED BY: E.T. DATE
APPROVED BY: DATE
SCALE NONE

Smith & Loveless INC.
9th & Old Santa Fe Trail
Lenexa, Kansas 66215

FOR

RIGID ELECTRODE-FIELD INSTALLATION & REPLACEMENT PARTS

SERIAL NO.
DRWG. NO. 94A21 REV. B

SMITH & LOVELESS ENGINEERING STANDARDS & SPECIFICATIONS

STD. NO. 1L385A

TITLE

VALVE - 3 WAY, SOLENOID ACTIVATED NORMALLY CLOSED

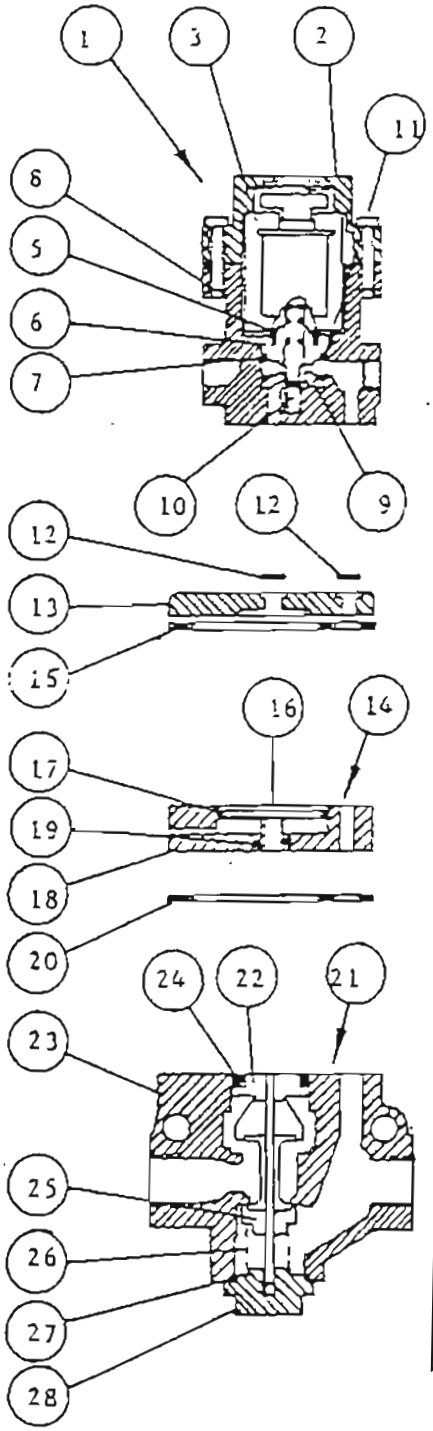
SHEET ___ OF ___

REVISED

SUPERSEDES

APP'D BY

COMPILED BY Bill Nutt



Spare Parts List 1L385A

ITEM		S&L #	Qty.	Description
1	WS17C79	1L385-1	1	Pilot&Solenoid Assy (includes Items 2-11)
2	------	1L385-2	1	Cover Assy
3	183B04 411B04	1L385-3	1	Solenoid
5 +	See -6	1L385-5	1	Cushion
6 +	946K87	1L385-6	1	Insert Assy (Incl #5, =10, =11)
X 7 +	568-019 4000-70	1L385-7	1	"O" Ring
	------	------	1	Body (Not Sold Separately)
X 9 +	206J15	1L385-9	1	"O" Ring
10 +	See -6	1L385-10	1	Spring
11 +	See -6	1L385-11	1	Retaining Ring
X* (12) +	106J15	1L385-12	2	"O" Ring
13	222B25	1L385-13	1	Adapter
14	168A86	1L385-14	1	"PS" Assy (includes Items 16-20)
X 15	199A11	1L385-15	1	GASKET
16	127A99	1L385-16	1	Piston w/"O" Ring
X* 17	568-131- 4000-70	1L385-17	1	"O" Ring
	------	------	1	"PS" Adapter (Not Sold Sep)
X* 19	202J15	1L385-19	1	"O" Ring
X* (20)	200A11	1L385-20	1	Gasket
21	932B81	1L385-21	1	Valve Body Assy (includes Items 22-28)
(22)	399B99	1L385-22	1	Piston & Rod Assy (Incl #24)
	------	------	1	Body (Not Sold Separately)
X* (24)	305A32	1L385-24	1	Seal
(25)	656K77	1L385-25	1	Poppet
(26)	202A13	1L385-26	1	Spring
X (27)	568-028 4000-70	1L385-27	1	"O" Ring
(28)	191B85	1L385-28	1	End Plug Assy

REPAIR KITS:

~~946K87~~ Gaskets & O-Rings (items marked "X") these are sold individually

1L385A-3 ← 511K87 Seal & Gasket Kit (items marked with "*")

1L385A-1 ← 496K87 Valve Body Service Kit (items marked with "O")

1L385A-4 ← 946K87 Pilot Service Kit (items marked with "+")

Annexe B