



CWM CHEMICAL SERVICES, LLC

1550 Balmer Road
Model City, NY 14107
(716) 286-1550
(716) 286-0211 Fax

October 4, 2012

Mr. Dennis Weiss, PE
New York State Department of
Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

Re: RMU-1 Primary Leachate Collection Pipe Supplemental Pumping Design and Operation

Dear Mr. Weiss:

Attached please find a letter report prepared by EnSol, Inc., for RMU-1 Primary Leachate Collection Pipe Supplemental Pumping System (the Pump System) Design and Operation as requested by the New York State Department of Environmental Conservation (NYSDEC) in a letter to CWM dated August 31, 2012.

Please call Mr. Jonathan Rizzo at (716) 286-0354 or myself at (716) 286-0246 if you have any questions or comments.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,
CWM CHEMICAL SERVICES, LLC

A handwritten signature in cursive script, reading 'Jill A. Banaszak'.

Jill A. Banaszak
Technical Manager
Model City Facility

JPR/JAB/jpr
Attachment

October 4, 2012

Mr. Dennis Weiss

NYSDEC

Re: RMU-1 Primary Leachate Collection Pipe Pump System Design

Page - 2 -

cc: J. Strickland - NYSDEC/Region 9
B. Rostami - NYSDEC/Region 9
J. Sacco - NYSDEC/Region 9
M. Cruden - NYSDEC/Albany, NY
T. Killen - NYSDEC/Albany, NY
M. Mortefolio - NYSDEC/Albany, NY
On-site Monitors- NYSDEC/Model City, NY
P. Flax - USEPA/Region II
J. Devald - NCHD/Lockport, NY
M. Mahar - CWM/Model City, NY
J. Rizzo - CWM/Model City, NY
L. Sullivan - CWM/Model City, NY
S. Rydzyk - CWM/Model City, NY
B. Shiah - EnSol/Niagara Falls, NY
EMD Subject File
Q & A

Transmitted Via Electronic Mail

October 4, 2012

Mr. Stephen Rydzyk
Engineer
CWM Chemical Services, LLC
1550 Balmer Road, P.O. Box 200
Model City, New York 14107

Re: RMU-1 Landfill Primary Leachate Collection Pipe
Supplemental Pumping Design and Operation
Model City, New York Facility

Dear Mr. Rydzyk:

EnSol, Inc. (EnSol) has prepared this letter to present the design and operational details of the proposed RMU-1 Primary Leachate Collection Pipe Supplemental Pumping System (the Pump System) at the CWM Chemical Services, LLC (CWM) Model City, NY Facility (the Site), as requested by the New York State Department of Environmental Conservation (NYSDEC) in a letter dated August 31, 2012 to CWM.

The primary leachate collection pipes were originally designed to collect leachate from the primary leachate collection component of the RMU-1 baseliner system and convey the leachate to the primary sump, where the leachate would exfiltrate through the PVC pipe perforations into the primary sump and ultimately be removed by the leachate pumps located within the primary riser pipes. During pipe flushing operations, as required by Module VI, Condition E.3.e of CWM's Part 373 Permit, CWM discovered the pipe perforations in the PVC pipes located in RMU-1 Cells 7/8, 9/10, 11/13, and 12/14 had apparently become clogged in the sump areas, causing leachate to accumulate within the pipes. In a letter to the NYSDEC dated August 7, 2012, CWM recommended installation of submersible pumps within the PVC riser pipe to remove the accumulated leachate.

The design goal of the Pump System presented herein is to provide a means for automated removal of leachate trapped within the PVC pipes, and provide a method to monitor the quantity of leachate removed from each of the affected cells, thus providing additional data to analyze the current operational performance of the PVC pipes.

PUMP SYSTEM DESIGN BASIS AND OPERATIONS DESCRIPTION

This section provides a brief description of the design of the Pump System and its intended operation.

Photos of the existing primary sump pump discharge piping within each of the respective riser vaults are included in Attachment 1.

Design drawings for the proposed Pump System are included as Attachment 2. These drawings include:

- Sheet 1. Existing Conditions and Project Location Plan
- Sheet 2. Piping and Mechanical Details
- Sheet 3. Schematic Wiring Diagram

A Pump Operation and Controls Description is included in Attachment 3 which provides a description of the Pump System logic controls and electrical operations. This summary is intended to supplement the description of the mechanical operations of the Pump System described herein.

In order to pump accumulated leachate from the pipes, a stainless steel submersible well pump will be attached to a custom fabricated stainless steel pump cart, similar to those used in the primary and secondary sumps of RMU-1. The proposed pump (Dayton Pump Model 1LZT3) is a one horsepower, 230V, single phase pump with a 1-inch discharge. A capacitance level switch will be installed onto the cart to control the pumping system as described in the Pump Operation and Controls Description. The cart with pump and level switch will be lowered into the PVC pipe from within the riser vault, via the solid-wall PVC Pipe extension, which initiates within the riser vault and proceeds down the landfill sideslope and lies along the floor of the four RMU-1 Cells. A 1-inch diameter flex hose will run from the pump discharge up the PVC pipe cleanout to the riser vault. A saddle tap will be utilized for the connection of the new Pump System discharge hose to the existing 3-inch diameter HDPE primary sump discharge piping within the riser vault, as shown on Sheet 2 of the design drawings. Additional control valves and ancillary equipment utilized to connect the 1-inch discharge flexhose to the existing 3-inch HDPE primary sump discharge piping within the riser vault will include a stainless steel ball valve for system isolation during routine maintenance, a stainless steel check valve to prevent backflow during RMU-1 primary sump pump operation, and stainless steel cam lock quick-connect coupling to connect the flexhose to the hard piping. Manufacturer's cut sheets and product information for the proposed Pump System equipment are included in Attachment 4.

Based on the physical dimensions and configuration of the pump/cart, and the geometry of the PVC pipe, the Pump System will be capable of pumping the leachate in the pipe down to a level of approximately 9-inches above the invert of the pipe at the PVC Pipe Cleanout-to-Collection elbow located on the floor of the RMU-1 cells. The Table below summarizes the approximate elevations of each of the four respective pump systems:

Cell ID	PLC Pipe Invert Elevation at Riser Vault	PLC Pipe Invert Elevation at Low Point/Sideslope Elbow	Minimum Achievable Leachate Drawdown Elevation
Cell 7/8 ⁽¹⁾	331.32	312.11	312.86
Cell 9/10 ⁽¹⁾	331.44	313.60	314.35
Cell 11/13 ⁽²⁾	333.20	310.56	311.31
Cell 12/14 ⁽²⁾	331.00	310.76	311.51

Notes:

1. Invert elevation approximated from as-built top of pipe record survey data.
2. Where as-built data was not readily available, invert elevations approximated from permit design elevations.

The pumps in each of the respective cells are anticipated to operate at the same approximate flow rate of 24-gallons per minute (GPM), based on the pump system curve provided by the pump manufacturer, at a maximum system operation point of 23-feet of head pressure. The actual flow rate of each Pump System will be verified in the field via a field demonstration. This demonstration will include running the pump while discharging into a 55-gallon drum (or similar vessel of known volume), simultaneously monitoring the time it takes to fill the drum in order to determine each Pump System's true pumping rate.

During operations, pumping volumes will be calculated by CWM personnel based on the run-time totalizer values multiplied by the pump rate determined during the field demonstration. Run time data will be recorded on a weekly basis and records will be maintained by CWM on-site for NYSDEC review, until such a time that system abandonment is mutually agreed upon.

Each of the proposed Pump Systems will be interlocked with the existing PLC controls of RMU-1 to ensure shut down of the proposed Pump Systems will occur in the event the RMU-1 Lift Station tank high level alarm or manhole/vault leak detection sensor alarm occurs. A detailed description of how the proposed Pump Systems will be interlocked to the RMU-1 PLC is included in the Pump Operation and Controls Description included in Attachment 3.

EnSol appreciates the opportunity to provide CWM with continued engineering services. Should you have any questions, please feel free to contact either myself or Keith Pellerin at (716) 285-3920.

Sincerely,

ENSOL, INC.



Brian D. Shiah, PE
President

Attachments

cc: Mr. Jonathan Rizzo - CWM Chemical Services, LLC.
Mr. Keith Pellerin - Ensol Inc.

RMU-1 LANDFILL PRIMARY LEACHATE COLLECTION PIPE SUPPLEMENTAL PUMPING DESIGN AND OPERATION CERTIFICATION

**CWM Chemical Services, LLC
Model City, New York Facility**

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Brian D. Shiah, P.E.
ENSOL, INC.

Date 10-4-12

Attachment 1

EnSol, Inc. *Environmental Solutions*

professional engineering – business consulting

Photos



8" Primary Leachate
Collection Pipe Riser

Photo #1: Cell 7/8 Riser Vault



8" Primary Leachate
Collection Pipe Riser

Photo #2: Cell 9/10 Riser Vault

EnSol, Inc. Environmental Solutions 661 Main St., Niagara Falls, NY 14301 Ph: 716-285-3920 Fax: 716-285-3928	PRIMARY CLEANOUT PUMPING DESIGN		PROJECT PHOTOGRAPHS	
	CWM CHEMICAL SERVICES, LLC 1550 BALMER ROAD Model City, New York			1
Prepared By: TAS Date Taken: 9/27/12 Filename: project photos	RESPONSE LETTER		Page No.	PN: 12-7021 October 2012



8" Primary Leachate Collection Pipe Riser

Photo #3: Cell 11/13 Riser Vault



8" Primary Leachate Collection Pipe Riser

Photo #4: Cell 12/14 Riser Vault

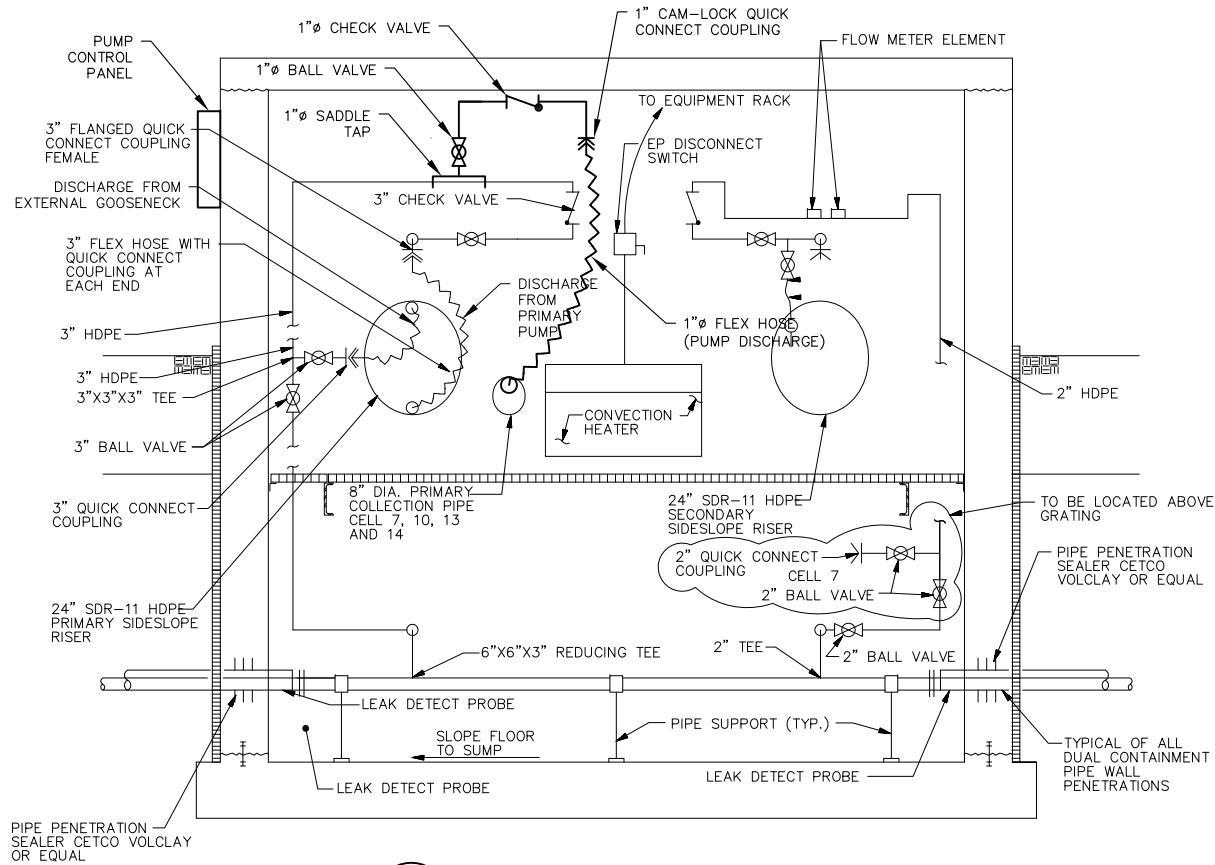
EnSol, Inc. Environmental Solutions 661 Main St., Niagara Falls, NY 14301 Ph: 716-285-3920 Fax: 716-285-3928	PRIMARY CLEANOUT PUMPING DESIGN		PROJECT PHOTOGRAPHS	
	CWM CHEMICAL SERVICES, LLC 1550 BALMER ROAD Model City, New York			2
Prepared By: TAS Date Taken: 9/27/12 Filename: project photos	RESPONSE LETTER			Page No. PN: 12-7021 October 2012

Attachment 2

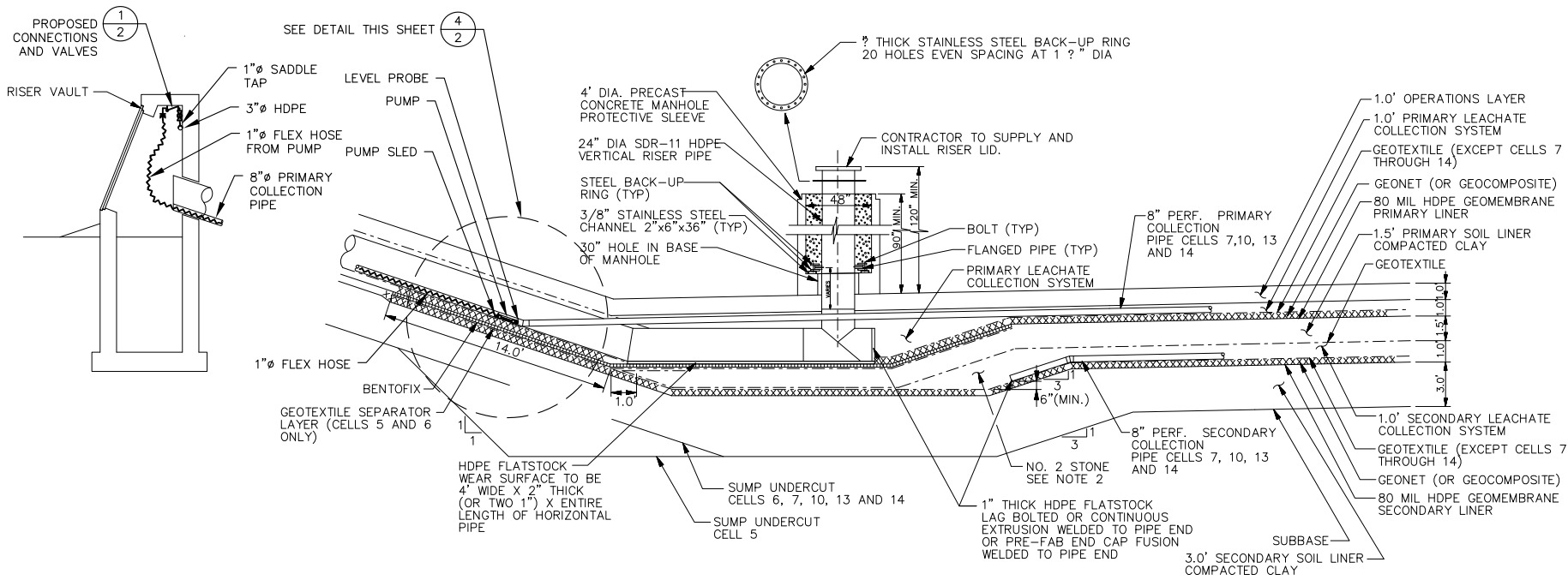
EnSol, Inc. *Environmental Solutions*

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Design Drawings

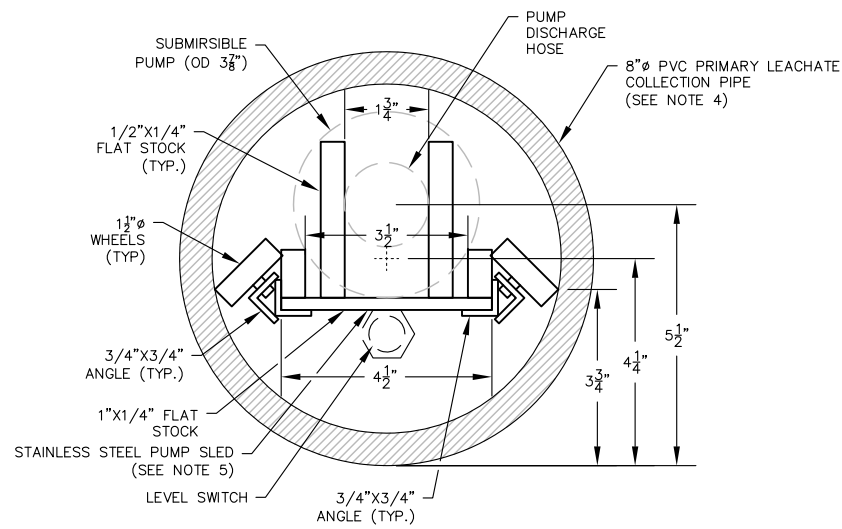


1
2
RISER VAULT PIPE SCHEMATICS
NTS

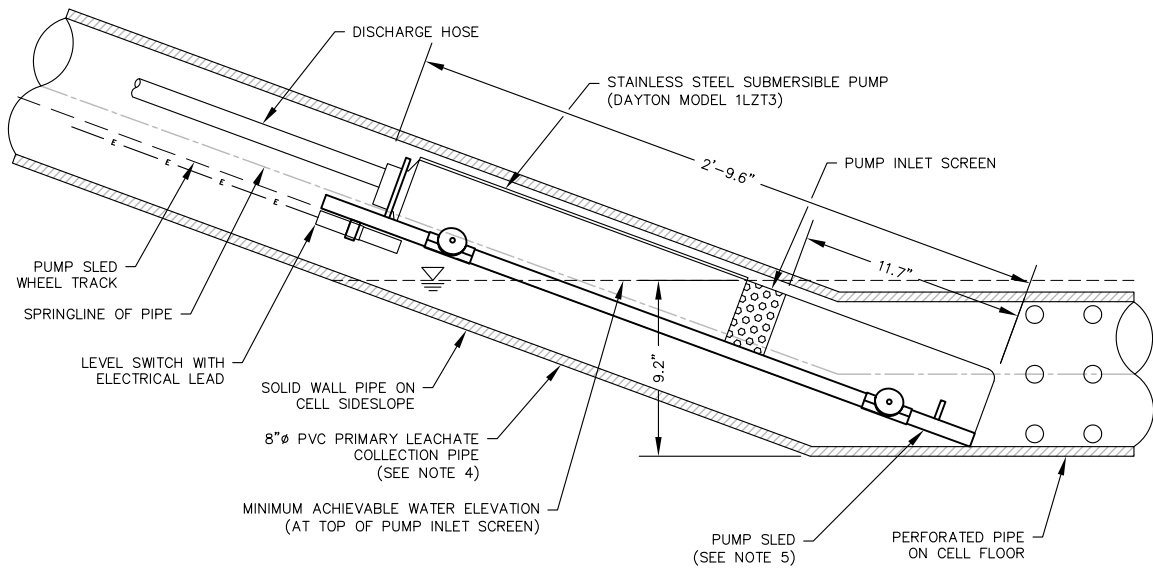


2
2
PRIMARY LEACHATE COLLECTION SUMP
NTS

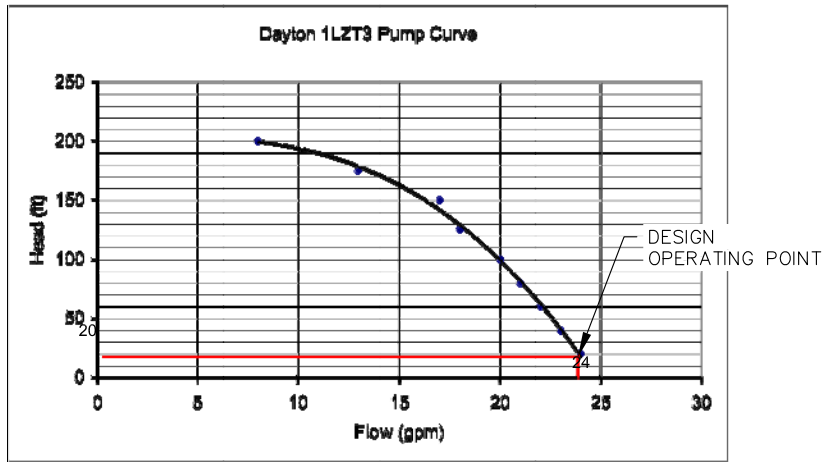
- NOTES:
- ALL FITTINGS AND APPURTENANCES TO BE STAINLESS STEEL.
 - FLEX HOSE TO BE 1" GOODYEAR PLYCORD EXTREMEFLEX (OR EQUAL).
 - ACTUAL LOCATION OF SADDLE TAP MAY VARY PER FIELD CONDITIONS
 - PRIMARY LEACHATE COLLECTION PIPE SIZE BASED ON 8" SDR13.5 HDPE (ID=7.271) AS EXISTS IN CELL 7/8 SIDERISER VAULT AND REPRESENTS CONSERVATIVE DESIGN FOR 8" SCH-80 PVC (ID=7.625).
 - PUMP SLED TO BE CONSTRUCTED OF STAINLESS STEEL



3
2
PUMP SLED PROFILE
NTS



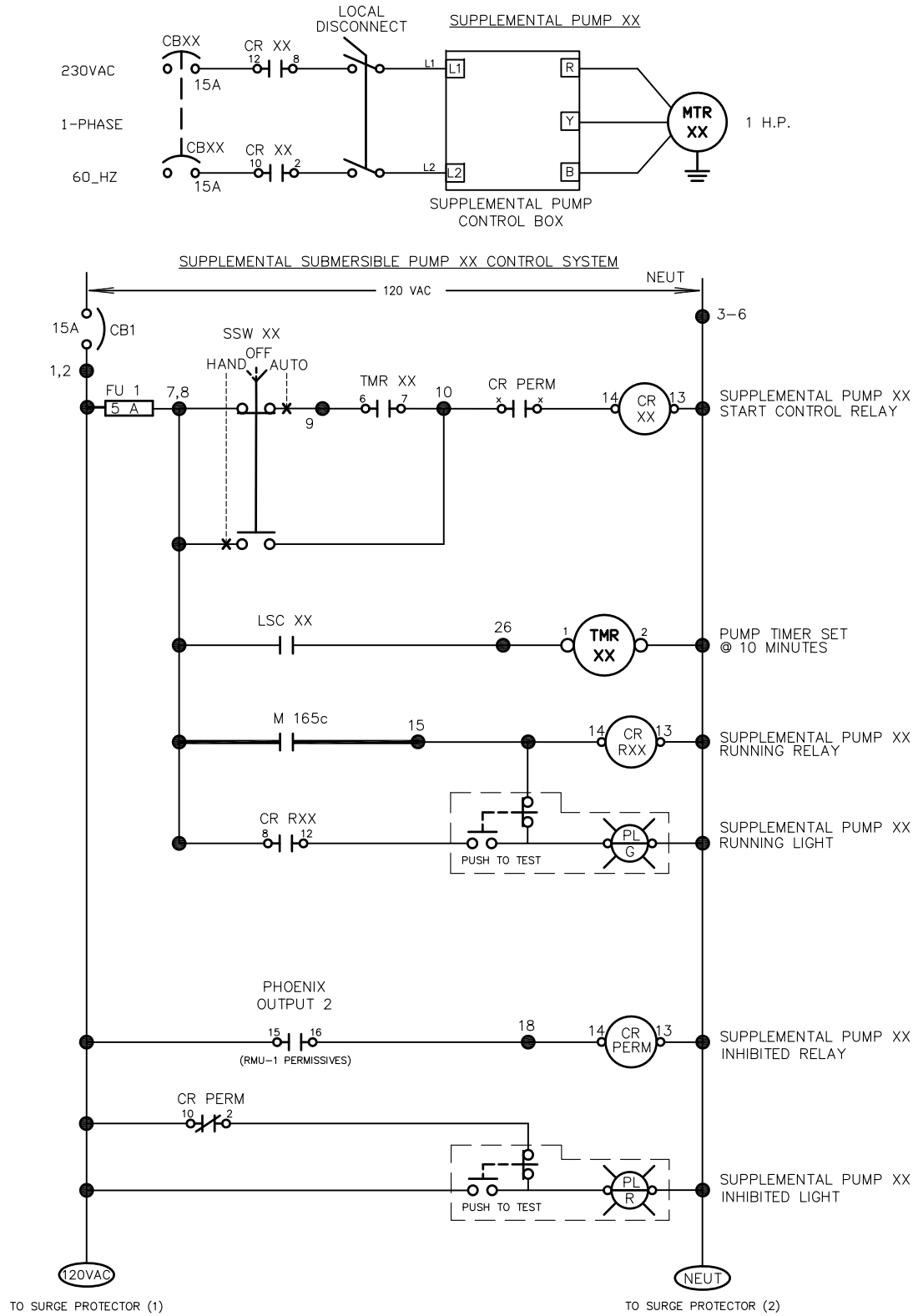
4
2
PUMP SLED DETAIL
NTS



5
2
PUMP CURVE AND OPERATION POINT
NTS

	REVISION	BY	DATE	<div><div>EnSol, Inc.</div><div>Environmental Solutions</div><div>661 MAIN STREET NIAGARA FALLS, NY 14301 PHONE (716) 285-3920 FAX (716) 285-3928</div></div>	PROJECT NO: 12-7021			TITLE: PIPING AND MECHANICAL DETAILS AT RISER VAULTS					SHEET 2
					SCALE: AS NOTED								
					DWG: 12-7021-D02-DETAILS.dwg			PROJECT: RMU-1 PRIMARY LEACAhte PIPE SUPPLEMENTAL PUMPING DESIGN					
					DES. BY: KFP / TAS	DRW. BY: KFP / TAS	CHK. BY: BDS	PREPARED FOR: CWM CHEMICAL SERVICES, LLC					
					DATE: OCTOBER 2012			TOWN OF PORTER		COUNTY OF NIAGARA		STATE OF NEW YORK	
IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 140 SECTION 7209, FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER ANY ITEM IN ANY WAY.					BRIAN D. SHIAH, P.E. NYSPE LICENSE NO. 079072								

W:\AAAP\J\CWM\12-7021 RMU-1 Primary Pipe Supplemental Pumping Design (Task 17) \Acad\12-7021-D03-PPSPD Wiring.dwg, 10/2/2012 3:30:08 PM, kpellertn



SUPPLEMENTAL PUMP MATERIAL LIST

ITEM	QTY.	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	HOUR TIME METER, LCD DISPLAY, TIME RANGE 0-99,999 HOURS, 120VAC OPERATION.	ENM	GRAINGER ITEM # 2PAT2
1	1	MULTI-RANGE REPEAT CYCLE TIMER, FLIP-FLOP OPERATION OF A DPDT LOAD RELAY, TIME RANGE FROM 1 SEC. TO 10 HRS., 120VAC OPERATION, RESET ON POWER FAILURE. PROVIDE BRACKET AND HARDWARE FOR SURFACE MOUNTING.	ATC	342B-200F10P
2	1	ULTRASONIC LEVEL SWITCH, SUBMERSIBLE, 24vdc SUPPLY POWER, (1)SPST RELAY CONTACT, 60VA RATED, 120' 4-CONDUCTOR CABLE WITH #22 AWG WIRE, 3/4" NPT PROCESS CONN'S.	FLOWLINE SWITCH-TEK	LU10-140-120 GRAINGER ITEM # 12U432
3	1	SELECTOR SWITCH 800H SERIES, 3-POS. MAINT'D., 1-N.O. AND 1-N.C. CONTACT BLOCKS, RATED FOR OUTDOOR SERVICE, WITH STANDARD SELECTOR KNOB LEGEND PLATE MARKED "HAND - OFF - AUTO".	ALLEN BRADLEY	
4	1	ENCLOSURE (NEMA 3R RATED), 304 SS, SURFACE MOUNTED, CONTINUOUS HINGE, S.S. SCREW CLAMPS, 16"H X 16"W X 8"D, WITH SUBPLATE.	HOFFMAN (or equivalent)	A1616CHNFSS A16P16 (SUBPLATE)
5	3	RELAY, 120VAC, 4-FORM C CONTACTS, 5 AMP RATING, INTERNAL PILOT LAMP.	ALLEN BRADLEY	700-HC24A1-4
6	3	RELAY SOCKET, SCREW TERMINALS	ALLEN BRADLEY	700-HN128
7	2	PILOT LIGHT, 120VAC, (1) LENS RED, (1) LENS GREEN WITH PUSH TO TEST BUTTON	ALLEN BRADLEY	XXX

NOTE: THESE PARTS PROVIDED BY C.W.M.

NOTES:

1) HEAVY LINES REPRESENT FIELD WIRES FROM ANOTHER PANEL.

REVISION

BY

DATE

EnSol, Inc.
Environmental Solutions

661 MAIN STREET
NIAGARA FALLS, NY 14301
PHONE (716) 285-3920 FAX (716) 285-3928

BRIAN D. SHIAH, P.E.
NYSPE LICENSE NO. 079072

PROJECT NO: 12-7021

SCALE: N.T.S.

DWG: 12-7021-D03-PPSPD Wiring.dwg

DES. BY: MJM

DRW. BY: MJM

CHK. BY: BDS

DATE: OCTOBER 2012

TITLE:

SCHEMATIC WIRING DIAGRAM

PROJECT: RMU-1 PRIMARY LEACHATE PIPE SUPPLEMENTAL PUMPING DESIGN

PREPARED FOR: CWM CHEMICAL SERVICES, LLC.

TOWN OF PORTER

COUNTY OF NIAGARA

STATE OF NEW YORK

SHEET

3

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 145 SECTION 7208, FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY.

Attachment 3

EnSol, Inc. *Environmental Solutions*

professional engineering - business consulting

Pump System Operation & Controls Description

CWM Chemical Services, LLC.
Model City Facility
RMU-1 Landfill Primary Leachate Collection Pipe
Supplemental Pumping Design and Operation
Pump Operation & Controls Description

Supplemental Pump(s)

The Supplemental Pumps to be added are 1hp submersible pumps located within the primary collection pipes of RMU-1 landfill cells #7/8, 9/10, 11/13, and 12/14. The purpose of these dedicated pumps will be to remove leachate that is apparently trapped in these pipes due to clogged pipe perforations in the sump area which were originally designed to allow leachate within these pipes to exfiltrate into the sump where it could be removed by the leachate pumps in the sideslope risers. These supplemental pumps have a pumping rate of approximately 24 gpm each. The pumps will be controlled automatically by a liquid level switch and an on-off repeat timer, whereby the on and off times of the timer can each be separately adjusted. As long as the liquid level switch detects liquid, the repeat timer will cycle the pump on and off at preset time intervals. If the liquid goes below the liquid level switch setting, the pump will shut down and the timing sequence will cease until the liquid level rises above the setpoint of the switch, thus resetting the repeat timing sequence to the beginning.

The pumps will be interlocked to automatically shutdown based on various RMU-1 system permissives, such as the high level/hi-hi level alarms at the RMU-1 Lift Station Tank T-160, the RMU-1 Lift Station floor leak detect alarm, a leak detection alarm in any of the southern RMU-1 riser vaults (Cells 2, 4, 6, 9/10, 12/14, 11/13), the northern RMU-1 riser vaults (cells 1,3,5,7/8) or within Manhole #1 located in the northeast corner or #2 located in the southwest corner of RMU-1. If any of these RMU-1 Permissives “alarm”, then the supplemental pumps will all shutdown until the RMU-1 Permissive “alarm” is cleared.

The pump panels will have a Hand/Off/Auto switch adding flexibility to the operation of the pumps. A green light on the panel will indicate when the respective pump is operating. Hand & Auto positions will be tied to the RMU-1 permissives to shut down the pumps and not allow the pumps to run. The hand position will allow the pump to run, even below the liquid level switch setting. On the front of the pump panel, there will be a pump run time meter displaying the accumulated running time of the pump.

Miscellaneous

A control box containing the motor starter contactor, run and start capacitors for these pumps will be located on the exterior wall of their respective cell riser vault on the RMU-1 berm.

Attachment 4

EnSol, Inc. *Environmental Solutions*

professional engineering - business consulting

Product Cut Sheets



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APOLLO Ball Valve, 2 PC, 1 In NPT, SS, 2000 PSI

Plumbing > Valves > Ball Valves

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Two Piece Ball Valve, FNPT Connection, Max. Pressure 2000 psi WOG, Standard Port, Material of Construction Stainless Steel, Seats RPTFE, Stem Material Stainless Steel, Handle Locking Lever, Standards MSS-SP-110

Grainger Item #	1CKT1
Your Price (ea.)	\$97.20
Brand	APOLLO
Mfr. Model #	7610527A
UNSPSC #	40141607
Ship Qty.	1
Sell Qty. (Will-Call)	1
Ship Weight (lbs.)	1.67
Availability	Ready to Ship
Catalog Page No.	4177
Country of Origin (Country of Origin is subject to change.)	USA



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☐ Add Grainger TripleGuard® repair & replacement coverage for \$35.95 each.

When can I get it? Use your ZIP code to estimate availability.

Qty: ZIP code:

Tech Specs	Additional Information	Compliance & Restrictions	MSDS	Required Accessories	Optional Accessories	Alternate Products	Repair Parts
Item		Ball Valve					
Type		Two Piece					
Connection		FNPT					
Max. Pressure		2000 psi WOG					
Max. Steam Pressure		150 psi WSP					
Pipe Size		1"					
Port		Standard					
Material of Construction		316 Stainless Steel					
Seats		RPTFE					
Stem Material		Stainless Steel					
Handle		Locking Lever					
Temp. Range (F)		-50 to 450 Degrees					
Overall Length (in)		6.55					
Standards		MSS-SP-110					

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Product Reviews Disclaimer:

Grainger is neither responsible for, nor does it endorse, the content of any product review or statement posted. Any statements posted constitute the statements of the poster and are not the statements of Grainger. The statements posted by Grainger employees with the Grainger employee badge represent the views of such employees and are not the statements of Grainger. Grainger makes no representations as to the appropriateness, accuracy, completeness, correctness, currentness, suitability, or validity of any product review or statements posted, including those posted by employees with the Grainger employee badge, and is not liable for any losses, injuries or damages which may result from any such product review or statements. Use of any linked web site provided in a product review or post is at the user's own risk.

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Swing Check Valve, 1 In, NPT, 316 SS

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Swing Check Valve, Check, Material of Construction 316 Stainless Steel, Size 1 In., NPT Connection, Length 3-1/2 In., Width (In.) 3.15, Overall Height (In.) 5.39, Top of Handle to Inlet Center (In.) 2.72, Rated For 200 PSI, Cracking Pressure (PSI) 2.85, Max. Temp. (F) 353, Mounting Position Horizontal, Seal PTFE

Grainger Item #	4VMU2
Price (ea.)	\$119.65
Brand	GRAINGER APPROVED VENDOR
Mfr. Model #	4VMU2
UNSPSC #	40141634
Ship Qty.	1
Sell Qty. (Will-Call)	1
Ship Weight (lbs.)	1.55
Availability	Ready to Ship
Catalog Page No.	4221
Country of Origin	China
(Country of Origin is subject to change.)	


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 Qty.

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Specs

 Additional
Information

 Compliance
& Restrictions

MSDS

 Required
Accessories

 Optional
Accessories

 Alternate
Products

 Repair
Parts

Item	Swing Check Valve
Type	Check
Material of Construction	316 Stainless Steel
Size	1"
Connection	NPT
Length	3-1/2"
Width (In.)	3.15
Overall Height (In.)	5.39
Top of Handle to Inlet Center (In.)	2.72
Rated For	200 PSI
Cracking Pressure (PSI)	2.85
Max. Temp. (F)	353
Mounting Position	Horizontal
Seal	PTFE
Package Quantity	1

Customers Also Bought

1 of 5


Quartz Metal Halide, ED37, 400W

Brand: GE LIGHTING

Grainger Item #: 2V058

Price: \$28.30

 Qty

Battery, Button Cell, Size 303/357

Brand: DURACELL

Grainger Item #: 2HYJ2

Price: \$2.73

 Qty

V Belt, 4L, 1/2 X 22 In

Brand: DAYTON

Grainger Item #: 4L220

Price: \$5.09

 Qty

Sealant Tape, 1/2 x 520 In

Brand: ANTI-SEIZE

Grainger Item #: 3AB55

Price: \$1.22

 Qty

Drill/Driver 1/2, 18VDC, 1/2 In, Compact

Brand: DEWALT

Grainger Item #: 2AEU6

Price: \$232.25

 Qty

Customers Also Viewed


Spring Check Valve, 1 In, NPT, SS

Brand: APOLLO

Grainger Item #: 1CKV1

Price: \$172.50

 Qty

Vibrator, Pneumatic

Brand: VIBCO

Grainger Item #: 6L747

Price: \$250.25

 Qty

Fan, Wall, 10 3/8 In

Brand: BROAN

Grainger Item #: 4C702

Price: \$158.00

 Qty

Swing Check Valve, 1-1/2 In, NPT, 316 SS

Brand: APPROVED VENDOR

Grainger Item #: 4VMU4

Price: \$211.75

 Qty

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Coupler, Female, 1 In, 316 SS

[Plumbing > Fittings > Cam and Groove Fittings](#)[Write a Review](#) | [Read all Reviews](#) | [Read all Ask & Answer](#)

Cam And Groove Coupling, Size 1 In, Female Coupler x Female NPT Connection, Max Working Pressure 250 PSI, Material of Construction 316 Stainless Steel

Grainger Item #	3LW99
Price (ea.)	\$82.40
Brand	GRAINGER APPROVED VENDOR
Mfr. Model #	3LW99
UNSPSC #	40141719
Ship Qty.	1
Sell Qty. (Will-Call)	1
Ship Weight (lbs.)	0.7
Availability	Ready to Ship
Catalog Page No.	3893
Country of Origin (Country of Origin is subject to change.)	Taiwan

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SpecsAdditional
InformationCompliance
& Restrictions

MSDS

Required
AccessoriesOptional
AccessoriesAlternate
ProductsRepair
Parts

Item	Coupler
Type	D
Size	1"
Connection	Female Coupler x FNPT
Max. Working Pressure (PSI)	250
Material of Construction	316 Stainless Steel

Optional Accessories

More Accessories



Adapter, Male, 1 In, 316 SS

Brand: GRAINGER APPROVED
VENDOR

Grainger Item #: **3LW93**
Price (ea.): **\$48.95**

Qty [Add to Order](#)

Customers Also Bought					1 of 5
Adapter, Male, 1 In, 316 SS	Standard Battery, Alkaline, AA, PK 24	25x16x1, Pleated Air Filter, MERV 7	Plug, 5-15 NEMA, 15 A	Quick Coupler, 1/4 FNPT, 1/4 Body, Steel	
Brand: APPROVED VENDOR	Brand: DURACELL	Brand: AIR HANDLER	Brand: HUBBELL WIRING DEVICE-	Brand: LEGACY	
Grainger Item #: 3LW93	Grainger Item #: 2HYL8	Grainger Item #: 5W510	Grainger Item #: 4A250	Grainger Item #: 1HUK7	
Price: \$48.95	Price: \$34.95	Price: \$7.55	Price: \$16.56	Price: \$8.64	
Qty <input type="text"/>	Qty <input type="text"/>	Qty <input type="text"/>	Qty <input type="text"/>	Qty <input type="text"/>	

Other Popular Terms for this Product

- [Hose Fittings \(3266\)](#)
- [Stainless Steel Threaded Fittings \(2199\)](#)
- [Hose Couplings \(684\)](#)
- [Pneumatic Couplings \(460\)](#)
- [Cam and Groove Fittings \(221\)](#)
- [Cam and Groove Couplings \(86\)](#)
- [Stainless Steel Cam and Groove Couplings \(12\)](#)

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Enter keyword or part number

Adapter, Male, 1 In, 316 SS

Plumbing > Fittings > Cam and Groove Fittings

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Cam And Groove Coupling, Size 1 In, Male Adapter x FNPT Connection, Max Working Pressure 250 PSI, Material of Construction 316 Stainless Steel

Grainger Item # 3LW93
Price (ea.) \$48.95
Brand GRAINGER APPROVED VENDOR
Mfr. Model # 3LW93
UNSPSC # 40141719
Ship Qty. 1
Sell Qty. (Will-Call) 1
Ship Weight (lbs.) 0.35
Availability **Ready to Ship**
Catalog Page No. 3893
Country of Origin Taiwan
(Country of Origin is subject to change.)



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Qty:

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When can I get it? Use your ZIP code to estimate availability.

Qty: ZIP code:

Optional Accessories

More Accessories



Coupler, Female, 1 In, 316 SS

Brand: GRAINGER APPROVED VENDOR
Grainger Item #: 3LW99
Price (ea.): \$82.40
Qty [Add to Order](#)

Tech Specs | Additional Information | Compliance & Restrictions | MSDS | Required Accessories | Optional Accessories | Alternate Products

Repair Parts

Item Type	Adapter
Size	A
Connection	1"
Max. Working Pressure (PSI)	Male Adapter x FNPT
Material of Construction	250
	316 Stainless Steel

Customers Also Bought 1 of 5

Sports Drink Mix, Fruit Punch	Knit Glove, Poly/Cotton, Men Fits L, PR	Sports Drink Mix, Orange	Angle Broom	Sports Drink Mix, Fierce Grape
Brand: GATORADE	Brand: CONDOR	Brand: GATORADE	Brand: TOUGH GUY	Brand: GATORADE
Grainger Item #: 2AF76	Grainger Item #: 5JK50	Grainger Item #: 3AJ38	Grainger Item #: 1VACS	Grainger Item #: 1KEU7
Price: \$17.44	Price: \$1.25	Price: \$17.44	Price: \$15.51	Price: \$17.44
Qty <input type="text"/>	Qty <input type="text"/>	Qty <input type="text"/>	Qty <input type="text"/>	Qty <input type="text"/>

Other Popular Terms for this Product

- Hose Fittings (3431)
- Stainless Steel Threaded Fittings (2243)
- Hose Adapters (782)
- Cam and Groove Fittings (289)
- Stainless Steel Cam and Groove Adapters (18)

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79 Perry Street
Buffalo, New York 14203
Phone: 1-800-234-3033
www.peerless-inc.com

Fax: 1-716-852-5458

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Quote To:

Steve Rydzyk
 CWM Chemical Services
 1550 Balmer Road
 Po Box 200
 srydzyk@wm.com
 Phone: 1-716-286-0325
 Fax: 1-716-286-0224

Date	Quote
09/07/2012	179916

Quotation

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Reference	Account Manager	F.O.B.	Terms
	Tim Ruth, truth@peerless-inc.com, Direct 1-716-566-3550	Origin, Freight Prepaid & Add	Net 30 Days

Comment:

Line	Item/Rev Description	Qty	Net Each	Ext. Price	Lead Time
1	16PB07608600-1080 Peerless Fabricated Assembly Size: 1 Inch Hose Type: Goodyear Plicord ExtremeFlex Brown End 1: 1 inch SS Locking Camlock C (Goodyear Insta-Lock) End 2: 1 inch SS Camlock E (Goodyear Insta-Lock) Attachment Method: Crimp Length: 90ft OAL (Y/N): Y Options: Test and etch, replace camlock gasket with Viton **Built to Goodyear STAR and NAHAD Standards * Assemblies are Noncancellable and Nonreturnable *Customer RFQ Initiated Details to be added. Use Task / Call Log to note or paste details prior to item entry.	4.00 EA	\$1,621.13	\$6,484.51	5 Weeks
2	64VF07A08A00-1200 Peerless Fabricated Assembly Size: 4 Inch Hose Type: Goodyear Versiflo 150 End 1: 4 Inch Aluminum camlock "E" End 2: 4 Inch Aluminum camlock "E" Attachment Method: Crimp Length: 100 feet OAL (Y/N): N Options: none **Built to Goodyear STAR and NAHAD Standards * Assemblies are Noncancellable and Nonreturnable *	2.00 EA	\$1,359.66	\$2,719.32	5 Weeks

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Lead time is based on availability at time of quote and is subject to change.

Total \$9,203.83



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DAYTON Pump, Deep Well, 3 Wire, 20GPM, 1HP, 230V

Pumps > Well Pumps > Submersible Well Pumps

Write a Review | Read all Reviews | Read all Ask & Answer

Pump, Deep Well Submersible, Number of Wires 3, Control Box Required 1LZX5, 20 GPM, 1 HP, Voltage 230, Amps AC 9.8, 1 Phase, Stages 10, Built-In Check Valve, Pump Material Stainless Steel, Impeller Material Celcon, Discharge Port 1.25 In., Flow Ranges 14 - 24 GPM, Max. Operating Temp. 86 F, Pump-Motor Shell Stainless Steel, Max. Head 221 Ft., Well Capacity High, Recommended Tank 3YA59, 4MY63

Grainger Item #	1LZT3
Your Price (ea.)	\$613.80
Brand	DAYTON
Mfr. Model #	1LZT3
UNSPSC #	40151511
Ship Qty.	1
Sell Qty. (Will-Call)	1
Ship Weight (lbs.)	33.69
Availability	Ready to Ship
Catalog Page No.	3927
Country of Origin (Country of Origin is subject to change.)	Mexico



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☐ Add Grainger TripleGuard® repair & replacement coverage for \$129.00 each.

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Qty: ZIP code: 14107

Tech Specs	Compliance & Restrictions	MSDS	Required Accessories	Optional Accessories	Alternate Products	Repair Parts
Item			Pump			
Type			Deep Well Submersible			
Number of Wires			3			
Control Box Required			1LZX5			
GPM			20			
HP			1			
Voltage			230			
Amps AC			9.8			
Phase			1			
Stages			10			
GPM @ Vertical Depth to Water @ 100 Ft @ 30 PSI			20			
GPM @ Vertical Depth to Water @ 200 Ft @ 30 PSI			18			
GPM @ Vertical Depth to Water @ 20 Ft @ 50 PSI			22			
GPM @ Vertical Depth to Water @ 100 Ft @ 50 PSI			17			
Built-In Check Valve			Yes			
Pump Material			Stainless Steel			
Impeller Material			Celcon			
Discharge Port (In.)			1.25			
Flow Ranges (GPM)			14 - 24			
Max. Operating Temp. (F)			86			
Motor			Franklin(TM)			
Pump Bearings			PEEK			
Pump-Motor Shell			Stainless Steel			
Screen Material			Stainless Steel			
Shaft Material			303 Stainless Steel			
Tank PSI			2030405060			
GPM of Water @ 20 Ft @ 30, 50 PSI			- 22			
GPM of Water @ 40 Ft @ 30, 50 PSI			23 21			
GPM of Water @ 60 Ft @ 30, 50 PSI			22 19			
GPM of Water @ 80 Ft @ 30, 50 PSI			21 18			
GPM of Water @ 100 Ft @ 30, 50 PSI			20 17			
GPM of Water @ 125 Ft @ 30, 50 PSI			18 16			
GPM of Water @ 150 Ft @ 30, 50 PSI			17 -			
GPM of Water @ 175 Ft @ 30, 50 PSI			13 -			
GPM of Water @ 200 Ft @ 30, 50 PSI			8 -			
GPM of Water @ 250 Ft @ 30, 50 PSI			- -			
GPM of Water @ 300 Ft @ 30, 50 PSI			- -			
GPM of Water @ 350 Ft @ 30, 50 PSI			- -			
GPM of Water @ 400 Ft @ 30, 50 PSI			- -			
GPM of Water @ 450 Ft @ 30, 50 PSI			- -			
GPM of Water @ 500 Ft @ 30, 50 PSI			- -			
Max. Head (Ft.)			221			
Well Capacity			High			
Recommended Tank			3YA59, 4MY63			

Required Accessories

More Accessories



Control Box, 1HP, 230V, 1Phase

Brand: FRANKLIN

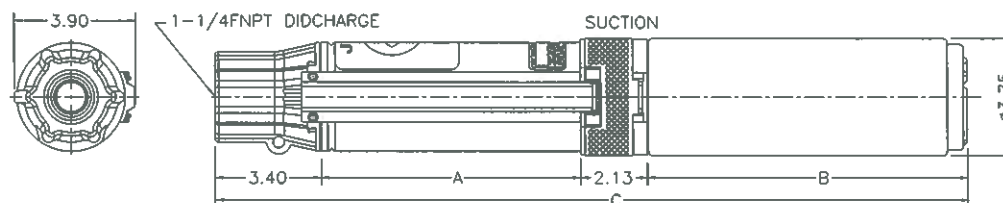
Grainger Item #: 1LZX5

Price (ea.) \$472.00 \$151.36

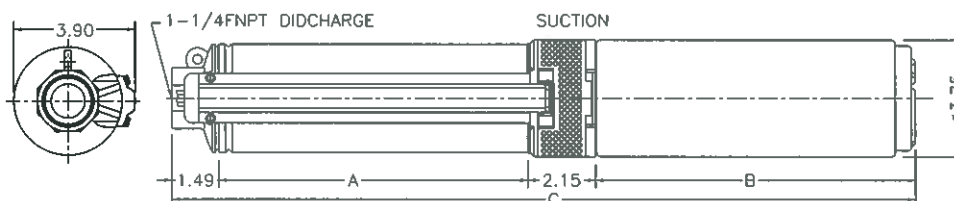
Qty

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Thermoplastic Models:



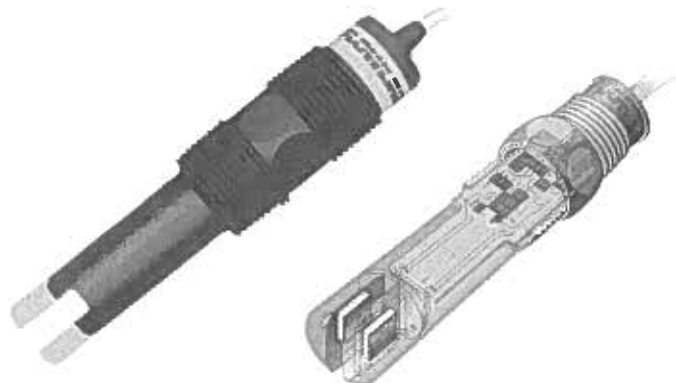
Stainless Steel Models:



Specifications

Series (GPM)	Stock No.	No. of Wires	Control Box Required	HP	Volts @ 60 Hz.	S.F. Amps	Stages	Built-In Check Valve	Pump Material	Impeller Material	Discharge Port (In)	Dimensions			Shipping Weight
												A	B	C	
5	1LZP8	2	N/A	1/2	115	12	13	Yes	Stainless Steel	Noryl	1.25	13.75	9.51	26.90	28
5	1LZP9	2	N/A	1/2	230	6	13	Yes	Stainless Steel	Noryl	1.25	13.75	9.51	26.90	28
5	1LZP7	3	1LZX3	1/2	230	6	13	Yes	Stainless Steel	Noryl	1.25	13.75	9.51	26.90	27
5	1LZR2	2	N/A	3/4	230	8	18	Yes	Stainless Steel	Noryl	1.25	17.71	10.64	31.99	32
5	1LZR1	3	1LZX4	3/4	230	8	18	Yes	Stainless Steel	Noryl	1.25	17.71	10.64	31.99	31
5	1LZT8	2	N/A	1/2	115	12	13	Yes	Thermoplastic	Noryl	1.25	12.03	9.51	27.07	26
5	1LZT9	2	N/A	1/2	230	6	13	Yes	Thermoplastic	Noryl	1.25	12.03	9.51	27.07	26
5	1LZT7	3	1LZX3	1/2	230	6	13	Yes	Thermoplastic	Noryl	1.25	12.03	9.51	27.07	25
5	1LZU2	2	N/A	3/4	230	8	18	Yes	Thermoplastic	Noryl	1.25	16.00	10.64	32.17	31
5	1LZU1	3	1LZX4	3/4	230	8	18	Yes	Thermoplastic	Noryl	1.25	16.00	10.64	32.17	30
7	1LZX7	2	N/A	1/2	230	6	9	Yes	Stainless Steel	Noryl	1.25	11.47	9.51	24.62	28
7	1LZX8	2	N/A	1/2	115	12	9	Yes	Stainless Steel	Noryl	1.25	11.47	9.51	24.62	28
7	1LZX9	3	1LZX3	1/2	230	6	9	Yes	Stainless Steel	Noryl	1.25	11.47	9.51	24.62	27
7	1LZY1	3	1LZX2	1/2	115	12	9	Yes	Stainless Steel	Noryl	1.25	11.47	9.51	24.62	32
7	1LZY2	2	N/A	3/4	230	8	12	Yes	Stainless Steel	Noryl	1.25	14.15	10.64	28.43	32
7	1LZY3	3	1LZX4	3/4	230	8	12	Yes	Stainless Steel	Noryl	1.25	14.15	10.64	28.43	31
10	1LZR4	2	N/A	1/2	115	12	6	Yes	Stainless Steel	Celcon	1.25	8.75	9.51	21.90	27
10	1LZR5	2	N/A	1/2	230	6	6	Yes	Stainless Steel	Celcon	1.25	8.75	9.51	21.90	27
10	1LZR3	3	1LZX3	1/2	230	6	6	Yes	Stainless Steel	Celcon	1.25	8.75	9.51	21.90	26
10	1LZR7	2	N/A	3/4	230	8	8	Yes	Stainless Steel	Celcon	1.25	10.50	10.64	24.78	32
10	1LZR6	3	1LZX4	3/4	230	8	8	Yes	Stainless Steel	Celcon	1.25	10.50	10.64	24.78	31
10	1LZR9	2	N/A	1	230	9.8	11	Yes	Stainless Steel	Celcon	1.25	13.21	11.73	28.58	34
10	1LZR8	3	1LZX5	1	230	9.8	11	Yes	Stainless Steel	Celcon	1.25	13.21	11.73	28.58	35
10	1LZT2	2	N/A	1-1/2	230	13.1	15	Yes	Stainless Steel	Celcon	1.25	16.84	13.60	34.08	47
10	1LZT1	3	1LZX6	1-1/2	230	11.5	15	Yes	Stainless Steel	Celcon	1.25	16.84	13.60	34.08	45
10	1LZU4	2	N/A	1/2	115	12	6	Yes	Thermoplastic	Celcon	1.25	7.06	9.51	22.10	25
10	1LZU5	2	N/A	1/2	230	6	6	Yes	Thermoplastic	Celcon	1.25	7.06	9.51	22.10	25
10	1LZU3	3	1LZX3	1/2	230	6	6	Yes	Thermoplastic	Celcon	1.25	7.06	9.51	22.10	24
10	1LZU7	2	N/A	3/4	230	8	8	Yes	Thermoplastic	Celcon	1.25	8.78	10.64	24.95	25
10	1LZU6	3	1LZX4	3/4	230	8	8	Yes	Thermoplastic	Celcon	1.25	8.78	10.64	24.95	24
10	1LZU9	2	N/A	1	230	9.8	11	Yes	Thermoplastic	Celcon	1.25	11.53	11.73	28.79	31
10	1LZU8	3	1LZX5	1	230	9.8	11	Yes	Thermoplastic	Celcon	1.25	11.53	11.73	28.79	32
10	1LZV2	2	N/A	1-1/2	230	9.8	15	Yes	Thermoplastic	Celcon	1.25	15.15	15.10	35.78	43
10	1LZV1	3	1LZX6	1-1/2	230	11.5	15	Yes	Thermoplastic	Celcon	1.25	15.15	13.60	34.28	42
20	1LZT4	2	N/A	1	230	9.8	10	Yes	Stainless Steel	Noryl	1.25	15.72	11.73	31.09	35
20	1LZT3	3	1LZX5	1	230	9.8	10	Yes	Stainless Steel	Noryl	1.25	18.18	11.73	33.55	34
20	1LZT6	2	N/A	1-1/2	230	13.1	14	Yes	Stainless Steel	Noryl	1.25	20.63	15.10	39.37	46
20	1LZT5	3	1LZX6	1-1/2	230	11.5	14	Yes	Stainless Steel	Noryl	1.25	20.63	13.60	37.87	45
20	1LZV4	2	N/A	1	230	9.8	10	Yes	Thermoplastic	Noryl	1.25	14.00	11.73	31.26	31
20	1LZV3	3	1LZX5	1	230	9.8	10	Yes	Thermoplastic	Noryl	1.25	14.00	11.73	31.26	30
20	1LZV6	2	N/A	1-1/2	230	13.1	14	Yes	Thermoplastic	Noryl	1.25	18.93	15.10	39.56	41
20	1LZV5	3	1LZX6	1-1/2	230	11.5	14	Yes	Thermoplastic	Noryl	1.25	18.93	13.60	38.06	39

Application



CSA approved for hazardous environments, the intrinsically safe ultrasonic point level switch provides reliable liquid level detection of chemical, solvent, hydrocarbon and petroleum based liquids with a 1A relay output. Media examples include fuel, acetone and hydrochloric acid. The submersible polypropylene or PFA liquid level sensor is universally mounted through the tank wall or inside the tank as a high level alarm or low level alarm.



Features

- ✓ CSA approved intrinsically safe for use in hazardous environments
- ✓ Submersible polypropylene or PFA Teflon® sensor and cable for corrosive liquids
- ✓ 60VA relay selectable NO or NC via power supply wiring polarity
- ✓ Compatible with Smart Trak and Switch-Pak installation fittings

Key Benefits

- ✓ Ideal for highly corrosive liquids
- ✓ Able to mount through the side wall or top wall of tank
- ✓ Compatible with Smart Track or Switch-Pak mounting options
- ✓ Use as redundant alarm in classified applications

Compatible Products

Switch-Pro™ Remote Level Controller



LCXX

Application

Available in CSA approved general purpose (LC4X) or isolation (with built-in intrinsic safety barriers for use with associated apparatus, LC9X) classifications, the level controller is offered in three configurations for pump and valve control. The LC40/90 accepts one level sensor input and provides one 10A relay. The LC41 accepts two level sensor inputs and provides one latching 10A relay for automatic fill or empty control. The LC42/92 accepts three level sensor inputs with one latching 10A relay output for automatic fill or empty control, and a second non-latching 10A relay for high level alarm or low level alarm. For field mount installation, add a single or dual indicator NEMA box.

Switch-Pro™ Compact Level Controller



LC1X

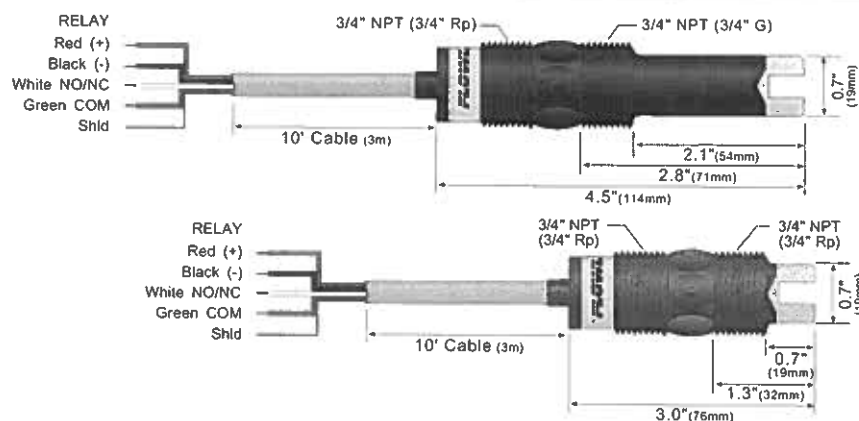
Application

The general purpose level controller is offered in two configurations for pump and valve control. The LC10 accepts one level sensor input and provides one 16A relay for high level control or low level control. The LC11 accepts two level sensor inputs and provides one latching 16A relay for automatic fill or empty control. The optional flash alarm brings attention to level alarm conditions. Package this level controller with our liquid level switch sensors and fittings.

Specifications

Orientation:	Universal
Accuracy:	± 1mm in water
Repeatability:	± 0.5mm in water
Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	GP: 60 VA IS: 32 VDC @ 0.5A
Contact output:	Selectable NO / NC
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	150 psi (10 bar) @ 25° C, derated @ 1.667 psi (0.113 bar) per °C above 25° C
Sensor rating:	-1XX5: NEMA 6 (IP68) -2XX5: NEMA 4X (IP65)
Sensor material:	-1XX5: PP -2XX5: PFA
Cable jack. mat.:	-1XX5: PP -2XX5: PFA
Cable type:	4-conductor, #22 AWG, shielded
Cable length:	10' (3m)
Process mount:	3/4" NPT (3/4" G / Rp)
Mount. gasket:	Viton®
Classification:	Intrinsically safe
Certificate:	CSA, LR 79326
Compliance:	CE
Approvals:	Class I, Groups A, B, C & D; Class II, Groups E, F & G; Class III
Parameters:	Vmax = 32V, Imax = 300 mA, Pmax = 1.3W, Ci = 0 µF, Li = 0 µH

Dimensions



Fittings

For optimum performance, install the level sensor using the below recommended or direct equivalent fittings.

P/N	Description
Switch-Pak Single-Point Switch Fitting	
LM45-7001	2" NPT Plug, 3/4" NPT Adapter & Nipple, PVC
LM45-1001	2" NPT Plug, 3/4" NPT Adapter & Nipple, PP
LM45-5001	2" NPT Plug, 3/4" NPT Adapter & Nipple, PVDF
Smart Trak Multi-Point Switch Fitting	
LM10-1201	2' Track, 2" NPT Plug, 3/4" NPT Nipple, PP
LM10-1401	4' Track, 2" NPT Plug, 3/4" NPT Nipple, PP
LM10-1601	6' Track, 2" NPT Plug, 3/4" NPT Nipple, PP
LM10-1801	8' Track, 2" NPT Plug, 3/4" NPT Nipple, PP
LM10-1001	10' Track, 2" NPT Plug, 3/4" NPT Nipple, PP
LM10-1101	1m Track, 2" NPT Plug, 3/4" NPT Nipple, PP
LM10-1301	2m Track, 2" NPT Plug, 3/4" NPT Nipple, PP
LM10-1701	3m Track, 2" NPT Plug, 3/4" NPT Nipple, PP
Smart Trak Level Switch Car Kit	
LM30-1001	Switch Car Kit, 3/4" NPT, Polypropylene
LM30-1061	Switch Car Kit, 3/4" Rp, Polypropylene
LM52-2890	2" NPT Bulkhead Fitting, PVC

Ordering

Sensor material (1)

- 1 PP
- 2 PFA

Sensor length

- 3 Short
- 4 Long

Process mount (2)

- 0 NPT (US)
- 2 G / Rp (Metric)

LU10- 5

Notes

- To special order a 25' (7.6m) or 50' (15.2 m) level sensor cable, place the cable length at the end of the part number (ie: LU10-1305-25'). For PP, add \$20 for 25' (7.6m) or \$40 for 50' (15.2m) to the price. For PFA, add \$75 for 25' (7.6m) or \$150 for 50' (15.2m) to the price.
- The short Metric level sensor has conical Rp threads on both sides of the wrench flat. The long Metric level sensor has straight G threads on the sensing side and conical Rp threads on the cable side of the wrench flat.



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Preferences

FRANKLIN Control Box, 1HP, 230V, 1Phase

Pumps > Pump Controls > Pump Control Boxes

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Motor and Pump Control Box, Submersible, Motor/Pump 1 HP, 1 Phase, 230 Voltage, 7.1 Amps, Enclosure Type 3R, Height (In.) 8 7/16, Width (In.) 4 13/16, Depth (In.) 2 13/16, Control Box Type CSCR, Mounting Pole/Wall, Accepts Up to #10 AWG Wire

Grainger Item #	1LZX5
Your Price (ea.)	\$151.36
Brand	FRANKLIN
Mfr. Model #	2824085015
UNSPSC #	40151701
Ship Qty.	1
Sell Qty. (Will-Call)	1
Ship Weight (lbs.)	3.55
Availability	Ready to Ship
Catalog Page No.	3927



Country of Origin
(Country of Origin is subject to change.)

Not Available

See [Notes & Restrictions](#) for important safety information.[Enlarge Image](#)Qty:

\$

☐ Add Grainger TripleGuard® repair & replacement coverage for \$35.95 each.

When can I get it? Use your ZIP code to estimate availability.

Qty: ZIP code:

Tech Specs	Compliance & Restrictions	MSDS	Required Accessories	Optional Accessories	Alternate Products	Repair Parts
Item			Motor and Pump Control Box			
Type			Submersible			
Motor/Pump HP			1			
Phase			1			
Voltage			230			
Amps			7.1			
Enclosure Type			3R			
Height (In.)			8-7/16			
Width (In.)			4-13/16			
Depth (In.)			2-13/16			
Control Box Type			CSCR			
Mounting			Pole or Wall			
Accepts			Up to #10 AWG Wire			

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Multi-Range Repeat Cycle Timer

A repeat cycle timer with two separately adjustable MOS digital timing circuits, the 342B is prewired to provide Flip-Flop operation of a DPDT load relay. The 342B also features cycle progress annunciation and multiple range adjustability for each circuit.

LOWER INSTALLATION COSTS: For repeat cycle applications, a single 342B timer does the job of two ordinary timers. Installation cost is cut by more than half; a single panel cutout is required and wiring is simplified since the 342B is prewired to perform flip-flop repeat cycle timing control.

MULTIPLE RANGES REDUCE INVENTORY REQUIREMENTS: The 342B incorporates six switch-selected ranges for each of its two timing circuits. A single 342B thus provides any dial-adjustable timing period between 50 mSEC and 10 hours for each cycle of the flip-flop operation. Thus you need stock only one timer—and only one model of that timer—to satisfy all your needs.

PROGRAMMABLE RELAY OPERATION: The 342B's DPDT relay can be energized either during the first timing cycle (T1) or during the second (T2) simply by moving a push-on connector from one programming pin to another on the circuit board. Thus you can change load operation from one set of contacts to the other (N O to N C) without changing the wiring.

CYCLE PROGRESS INDICATION: The 342B's two pilot lights provide a unique and effective method of cycle progress indication in the minutes and hours timing ranges ... blinking at an ever-increasing rate as the cycle progresses. In the 1 and 10-second ranges, the pilot light is off before timing cycles and steady on during timing.

DESIGNED FOR INDUSTRIAL SERVICE: A number of features and characteristics have been incorporated to ensure a long trouble-free life expectancy, even in difficult industrial environments: transformer-isolation for high noise immunity; reliable relay rated for 100,000,000 mechanical operations; oscillator-based timing circuit for *high accuracy* even with changes in temperature and voltage; and a versatile mounting capability in a compact housing that is dust and impact-resistant.

MODEL NUMBER >>>>>>	342B				P	
Range						
Multi-Range 1 SEC, 10 SEC, 1 MIN, 10 MIN, 1 HR., 10 HRS	200					
Special, (use K in features)	000					
Voltage & Frequency						
24 to 240 VAC and 24 VDC	F					
Special, (use K in features)	K					
Arrangements						
Reset on power failure	10					
Special, (use K in features)	00					
Features						
Basic plug-in timer	P					
Standard Timer	X					
Special	K					

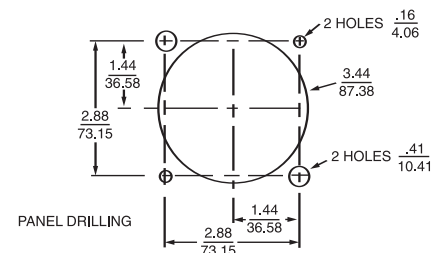
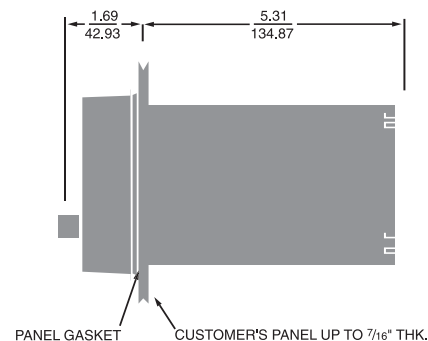
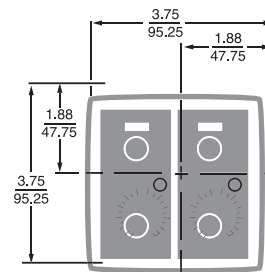
OPERATIONS

The 342B is a repeat-cycle timer that operates continuously through its two timing ranges (T1 and T2), one after the other, transferring the relay contacts as it times out of each range. There is no start circuit and the timer resets on power interruption. The first timing range (T1) begins and the relay is energized when line voltage is applied to the Run terminals of the 342B. The relay is de-energized when T1 times out and it remains de-energized until T2 times out ... at which time the relay is energized and the flip-flop cycle is repeated. The pattern of relay operation can be reversed — de-energized during T1 and energized during T2 — by changing a push-on connector from one pin to another on the circuit board; no wiring change is required.

SPECIFICATIONS

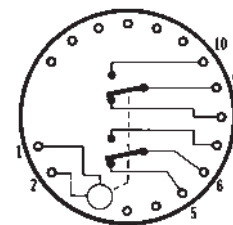
TIMING MODE	Repeat cycle: resets on power interruption. DPDT relay can be energized either during the first timing cycle (T1) or during the second (T2) simply by moving the PCB jumper.	
RANGE	Six independent continuously adjustable switch-selected ranges for each timer:	
	1 SEC	10 MIN
	10 SEC	1 HR
	1 MIN	10 HR
CONTACT RATING	Load Relay Type: DPDT Rated 10 Amps resistive at 30 VDC or 250 VAC (or less); 1/8 HP @ 120 VAC; 1/4 HP @ 240 VAC; 240 VA @ 240 VAC	
	Life	10 million operations with no load 100,000 operations with: 10 Amps at 30 VDC (or less) or 10 Amps at 250 VAC (or less)
	Contact Material	Silver Cadmium Oxide
TEMPERATURE RATING	0° to 140°F (-18°C to 60°C)	
NOISE IMMUNITY	Showering arc per NEMA ICS 2-230, in addition the 342B will withstand a voltage surge of 4500 volts for 50 µSEC without damage.	
MOUNTING STANDARD	Hardware is provided to mount timer from front panel through cutout.	
	Optional: Bracket and hardware for surface mounting. NEMA 12 molded case; DIN size (96mm x 96mm)	
HOUSING	Plug-in design; dust, moisture and impact resistant molded plastic case; DIN size (96mm x 96mm)	
POWER REQUIREMENT	Universal power supply-DC polarity insensitive. Unit will accept power from: 24 to 240 VAC, 50 or 60 Hz, (+10%, -20%) 24 VDC, (+20%, -20%)	
	AC	Inrush - 1.5 Amps Power required: 2 Watts
	DC	Peak Inrush current-1.5 Amps @ 24 VDC Maximum ripple @ 100 Hz - 5% Current required - 50 mA Power required - 1.2 Watts
REPEAT ACCURACY	Any voltage (constant temperature); ±1%* Any voltage (32°F to 140°F); ±3%* Any voltage (0° to 140°F); ±4% *Variation from average actual time.	
MINIMUM SETTING	2% of range, with the exception of 50 mSEC on the 1 second range	
SETTING ACCURACY	± 10% of range	
RESET	a	0 to 20 mSEC power interruption; guaranteed no reset
	b	20 to 65 mSEC; it may reset (40 mSEC typical reset)
	c	Over 65 mSEC guaranteed to reset.
	The TDR will reset properly and not start timing when subjected to an open power switch leakage of 1.5 mA or less. (Prox. switch and Triac drive Applications).	
PILOT LIGHTS	LED cycle progress annunciator for each timer	
WEIGHT	1 lb. (454g)	

DIMENSIONS (INCHES/MILLIMETERS)



WIRING

TERMINAL WIRING



WIRING

