Introduction
This letter report is to serve as the Final Sanitary Study for the Development of 11.04 serviceable acres at the southwest corner of Colbern Road and Blackwell Road. The proposed development will provide 42 single family residential units on the subject property. The downstream sanitary sewer system is contained wholly within Woodland Shores where sewerage is collected by a pump station and conveyed via a forcemain further downstream. The proposed development will connect directly to City Manhole 26-274, which connects to an 8 inch sanitary main. Design flows for the proposed development along with the existing development area will be calculated per Section 6500 of the City of Lee's Summit Design and Construction Manual.

Background
The following Figures from the Wastewater Master Plan were utilized to identify any known issues within the area.

Figure 7-3 High Inflow Areas in Existing System Plan
Figure 8-1 2015 Condition of Conveyance/Collection System Bottlenecks
Figure 8-2 2015 Condition Recommended Improvements

Figure 7-3 does not identify the subject watershed as having I&I issues. Figure 8-1 does identify sections of both the north and east interceptors just upstream of the pump station as having potential future capacity issues based upon capacity analysis methodology proposed in the Wastewater Master Plan and subsequently adopted by the City. Figure 8-2 recommended new sections of gravity interceptor where it was anticipated through age and growth that the system may begin experiencing capacity issues. The current system has not had any issues to date regarding conveyance to the pump station. Pump station data provided by the City was reviewed during this study, see attached. No capacity issues were evident with the pump station based upon pump start and cycle times.

Ultimate Buildout
The sanitary sewer analysis was terminated at the Woodland Shores pump station wetwell labeled 62-002PS, see Sanitary Sewer Map attached for both the existing sanitary sewer system layout along with proposed development location and tie-in point. There are 86.28 +/- acres tributary to wetwell 62-002PS, see Sanitary Sewer Area Exhibit attached form CES. The serviceable area outlined by CES appears to be reasonable and has been utilized for this analysis. The proposed development will utilize the north branch of the sewer system to convey flow. All tributary area has been accounted for to wetwell 62-002PS as stipulated by the City's design criteria. The proposed development consists of 11.04 acres of tributary area. The proposed development may be served by the existing downstream sewer system with little to no surcharging as outlined in the attached sanitary sewer analysis.

Conclusions
The sanitary sewer analysis shows there is excess capacity in the system both pre and post development of the Woodland Oaks single-family housing project. The analysis anticipates minimal surcharging in the system at ultimate buildout flows. The surcharging would be minimal with no sewerage overflowing and leaving the system. No improvements are necessary due to the development of this site. The existing system will continue to convey sanitary sewage without problem.

Matthew J Schlicht, PE 2006019708

SANITARY SEWER MAP

SCALE: 1" = 150'

0 75' 150' 300'

North

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
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Missouri
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Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

Part of the Southeast $\frac{1}{4}$
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

Existing Sanitary Sewer Map

Preliminary Development Plans for:
Lots 1 thru 42
WOODLAND OAKS
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER 2006019708
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

City Comments 3-24-20

City Comments 3-31-20

C.300

Woodland Oaks Sanitary Sewer Capacity Analysis: City of Lee's Summit Criteria at Ultimate Buildout

D.S. Str.	U.S. Str.	U.S. Str. Area	Branch Area	Cum. Area	PBF	PI	Peak Inflow	Tc	Rainfall Intensity	Tc less	Tc more	iph less	iph more	K	Peak Flow	Cum. Peak Flow	FL IN	FL OUT	Length	Slope	Dia	n	Capacity	Segment Condition	HGL	Rim El.	Surcharge Depth	U.S. Str.
26-273	26-274	1.78	11.04	12.82	0.029	0.010	0.468	21.468	6.078	15	30	6.91	4.98	0.006	0.507	0.507	941.15	945	236.58	0.0163	0.67	0.014	1.836	GRAVITY	945.67	956.92	0.00	26-274
26-271	26-273	2.19	5.2	7.39	0.017	0.006	0.263	22.621	5.929	15	30	6.91	4.98	0.006	0.286	0.793	939.63	940.95	218.3	0.0060	0.67	0.014	1.119	GRAVITY	941.62	952.87	0.00	26-273
26-270	26-271	1.61	1.34	2.95	0.007	0.002	0.109	20.931	6.147	15	30	6.91	4.98	0.006	0.118	0.910	937.97	939.13	192.27	0.0060	0.67	0.014	1.118	GRAVITY	939.80	956.52	0.00	26-271
26-269	26-270	0.01		0.01	0.000	0.000	0.001	5.805	9.098	5	10	9.32	7.94	0.006	0.001	0.911	936.76	937.7	157.4	0.0060	0.67	0.014	1.112	GRAVITY	938.37	944.26	0.00	26-270
26-268	26-269	0.84		0.84	0.002	0.001	0.033	17.761	6.555	15	30	6.91	4.98	0.006	0.036	0.947	935.33	936.26	154.98	0.0060	0.67	0.014	1.115	GRAVITY	936.93	953.2	0.00	26-269
26-267	26-268	0.97		0.97	0.002	0.001	0.038	18.418	6.470	15	30	6.91	4.98	0.006	0.041	0.987	930.6	934.83	210.85	0.0201	0.67	0.014	2.039	GRAVITY	935.50	950.1	0.00	26-268
26-266	26-267	1.34		1.34	0.003	0.001	0.050	19.983	6.269	15	30	6.91	4.98	0.006	0.055	1.042	929.4	930.4	167.63	0.0060	0.67	0.014	1.112	GRAVITY	931.07	942.61	0.00	26-267
26-265	26-266	0.01		0.01	0.000	0.000	0.001	5.805	9.098	5	10	9.32	7.94	0.006	0.001	1.042	928.26	929.2	156.8	0.0060	0.67	0.014	1.114	GRAVITY	929.87	937.07	0.00	26-266
26-264	26-265	1.82		1.82	0.004	0.001	0.066	21.588	6.062	15	30	6.91	4.98	0.006	0.072	1.114	926.7	928.06	225.48	0.0060	0.67	0.014	1.118	GRAVITY	928.73	943.5	0.00	26-265
26-262	26-264	1.7		1.7	0.004	0.001	0.062	21.220	6.110	15	30	6.91	4.98	0.006	0.068	1.182	922.08	924.86	147.9	0.0188	0.67	0.014	1.973	GRAVITY	925.53	935.4	0.00	26-264
26-261	26-262	1.43	0.81	2.24	0.005	0.002	0.084	20.314	6.226	15	30	6.91	4.98	0.006	0.091	1.272	919.94	921.08	284.53	0.0040	0.67	0.014	0.911	SURCHARGE	922.70	929.81	0.95	26-262
26-260	26-261	1.25		1.25	0.003	0.001	0.047	19.635	6.314	15	30	6.91	4.98	0.006	0.051	1.323	919.03	919.74	177.8	0.0040	0.67	0.014	0.909	SURCHARGE	920.85	930.3	0.44	26-261
26-259	26-260	1.75		1.75	0.004	0.001	0.064	21.376	6.090	15	30	6.91	4.98	0.006	0.069	1.393	918.08	918.53	109.7	0.0041	0.67	0.014	0.922	SURCHARGE	919.57	936.74	0.37	26-260
26-258	26-259	0.01		0.01	0.000	0.000	0.001	5.805	9.098	5	10	9.32	7.94	0.006	0.001	1.393	917.48	917.58	25.56	0.0039	0.67	0.014	0.900	SURCHARGE	918.84	922.57	0.59	26-259
26-253	26-258	0.01		0.01	0.000	0.000	0.001	5.805	9.098	5	10	9.32	7.94	0.006	0.001	1.394	916.92	917.28	89.24	0.0040	0.67	0.014	0.914	SURCHARGE	918.68	921.75	0.73	26-258
26-238	26-253	0.37		0.37	0.001	0.000	0.016	14.441	7.025	10	15	7.94	6.91	0.006	0.017	1.411	916.17	916.42	64.2	0.0039	0.67	0.014	0.898	SURCHARGE	918.10	925.37	1.01	26-253
26-237	26-238	1.77	12.19	13.96	0.032	0.011	0.509	21.437	6.082	15	30	6.91	4.98	0.006	0.552	1.963	915.06	915.82	153.59	0.0049	0.83	0.014	1.793	SURCHARGE	917.85	923.27	1.20	26-238
26-236	26-237	0.01		0.01	0.000	0.000	0.001	5.805	9.098	5	10	9.32	7.94	0.006	0.001	1.964	914.4	914.76	84.68	0.0043	0.83	0.014	1.662	SURCHARGE	916.62	924.26	1.03	26-237
26-235	26-236	1.17		1.17	0.003	0.001	0.045	19.310	6.355	15	30	6.91	4.98	0.006	0.048	2.012	914	914.25	82.11	0.0030	0.83	0.014	1.407	SURCHARGE	916.03	936.02	0.95	26-236
26-234	26-235	0.01		0.01	0.000	0.000	0.001	5.805	9.098	5	10	9.32	7.94	0.006	0.001	2.012	913.27	913.8	134.43	0.0039	0.83	0.014	1.601	SURCHARGE	915.63	932.6	1.00	26-235
26-233	26-234	1.62		1.62	0.004	0.001	0.060	20.963	6.143	15	30	6.91	4.98	0.006	0.065	2.077	912.42	912.87	82.84	0.0054	0.83	0.014	1.879	SURCHARGE	914.77	924.09	1.07	26-234
26-232	26-233	1.77		1.77	0.004	0.001	0.065	21.437	6.082	15	30	6.91	4.98	0.006	0.070	2.147	911.71	911.91	52.9	0.0038	0.83	0.014	1.568	SURCHARGE	914.04	927.24	1.30	26-233
26-192	26-232	0.01	3.36	3.37	0.008	0.003	0.184	5.805	9.098	5	10	9.32	7.94	0.006	0.194	2.341	910.8	911.35	75.95	0.0072	0.83	0.014	2.170	SURCHARGE	913.71	920.61	1.53	26-232
26-174	26-192	0.01		0.01	0.000	0.000	0.001	5.805	9.098	5	10	9.32	7.94	0.006	0.001	2.342	910.39	910.72	138.65	0.0024	0.67	0.014	0.702	SURCHARGE	912.66	920.5	1.27	26-192
26-173	26-174	1.31	1.51	2.82	0.006	0.002	0.106	19.869	6.284	15	30	6.91	4.98	0.006	0.115	2.457	909.88	910.29	164.5	0.0025	0.67	0.014	0.719	SURCHARGE	912.12	933.94	1.16	26-174
26-170	26-173	0.9		0.9	0.002	0.001	0.035	18.073	6.515	15	30	6.91	4.98	0.006	0.038	2.495	907.29	908.78	273.56	0.0054	0.67	0.014	1.062	SURCHARGE	911.46	924.38	2.01	26-173
26-169	26-170	2.17	1.64	3.81	0.009	0.003	0.136	22.568	5.936	15	30	6.91	4.98	0.006	0.147	2.642	906.27	907.09	151.9	0.0054	0.67	0.014	1.057	SURCHARGE	909.04	923.04	1.28	26-170
26-168	26-169	0.96		0.96	0.002	0.001	0.037	18.370	6.476	15	30	6.91	4.98	0.006	0.040	2.682	905.37	906.12	129.15	0.0058	0.67	0.014	1.097	SURCHARGE	907.71	923.32	0.92	26-169
26-167	26-168	0.72		0.72	0.002	0.001	0.029	17.083	6.642	15	30	6.91	4.98	0.006	0.031	2.713	904.12	905.17	71.13	0.0148	0.67	0.014	1.749	SURCHARGE	906.49	921.47	0.65	26-168
26-166	26-167	0.01	19.65	19.66	0.045	0.015	1.073	5.805	9.098	5	10	9.32	7.94	0.006	1.134	3.847	903	903.96	14.7	0.0653	0.67	0.014	3.678	SURCHARGE	905.23	916.68	0.60	26-167
26-002PS	26-166	0.01		0.01	0.000	0.000	0.001	5.805	9.098	5	10	9.32	7.94	0.006	0.001	3.848	902	902.9	7.37	0.1221	0.67	0.014	5.029	GRAVITY	903.57	916.07	0.00	26-166

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2001001857
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PE - 834 LS - 136
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Prepared For:
Carl Huff
656 SE BAYBERRY LN #101
LEES SUMMIT MO 64063

REV. NO.	DATE	BY
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Horizontal Scale 1" = 50'
Vertical Scale N/A
Date: 2-27-18
Designed: KNB

Exhibit A
Sanitary Sewer Area

Woodland Oaks

Lee Bodenheimer, MO LS 2114
Lee Bodenheimer, MO PE 018496
Lee Bodenheimer, KS LS 638
Lee Bodenheimer, KS PE 8731

Filtered Event Summary Report

Printed: 7/17/2019 7:43 AM

Filter Conditions: Point=s28dist01; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

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Filtered Event Summary Report

Printed: 7/17/2019 7:43 AM

Filter Conditions: Point=s28dist01; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

Time	Table	Point	RTU	Message
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06/03/2019 18:24:45	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 18:22:09	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/03/2019 16:58:23	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 16:55:01	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/03/2019 14:47:28	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 14:44:50	status	s28dist01	Woodland	Value = RUNNING (normal state)

Filtered Event Summary Report

Printed: 7/17/2019 7:43 AM

Filter Conditions: Point=s28dist01; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

Time	Table	Point	RTU	Message
06/03/2019 12:51:00	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 12:48:26	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/03/2019 10:51:54	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 10:49:50	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/03/2019 09:13:08	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 09:10:53	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/03/2019 07:49:04	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 07:46:47	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/03/2019 06:06:05	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 06:03:47	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/03/2019 00:51:30	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/03/2019 00:49:01	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 22:24:27	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 22:21:05	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 20:59:57	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 20:57:44	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 19:39:43	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 19:36:49	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 18:12:31	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 18:10:09	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 16:38:03	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 16:35:16	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 14:44:19	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 14:41:30	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 13:01:47	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 12:59:48	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 11:10:05	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 11:07:34	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 09:48:31	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 09:46:14	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 08:42:26	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 08:38:35	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 06:50:44	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 06:48:45	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/02/2019 00:25:32	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/02/2019 00:23:42	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 22:26:54	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 22:22:35	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 20:48:30	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 20:45:55	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 18:45:48	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 18:43:35	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 17:09:57	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 17:07:18	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 15:32:03	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 15:29:45	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 13:49:42	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 13:47:24	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 12:23:58	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 12:21:23	status	s28dist01	Woodland	Value = RUNNING (normal state)

Filtered Event Summary Report

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Filter Conditions: Point=s28dist01; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

Time	Table	Point	RTU	Message
06/01/2019 10:54:07	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 10:51:08	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 09:30:19	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 09:27:04	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 08:14:25	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 08:12:38	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 05:08:03	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 05:05:48	status	s28dist01	Woodland	Value = RUNNING (normal state)
06/01/2019 00:06:55	status	s28dist01	Woodland	Value = STOPPED (normal state)
06/01/2019 00:04:59	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 22:15:08	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 22:12:43	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 20:31:34	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 20:27:34	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 18:46:53	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 18:44:35	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 17:00:30	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 16:58:09	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 14:58:01	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 14:54:31	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 12:46:01	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 12:43:49	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 10:29:50	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 10:27:34	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 08:48:05	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 08:45:29	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 07:19:37	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 07:17:16	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/31/2019 00:14:39	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/31/2019 00:13:51	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 22:22:05	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 22:18:50	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 21:05:35	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 21:02:31	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 19:22:38	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 19:19:04	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 17:29:24	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 17:25:46	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 15:04:24	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 15:02:44	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 08:28:58	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 08:26:09	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 07:21:51	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 07:19:40	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 05:56:52	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 05:54:32	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/30/2019 00:32:23	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/30/2019 00:30:05	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/29/2019 22:28:27	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 22:26:02	status	s28dist01	Woodland	Value = RUNNING (normal state)

Filtered Event Summary Report

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Filter Conditions: Point=s28dist01; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

Time	Table	Point	RTU	Message
05/29/2019 21:14:40	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 21:11:50	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/29/2019 19:52:57	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 19:51:36	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/29/2019 18:36:38	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 18:34:23	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/29/2019 16:39:49	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 16:37:33	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/29/2019 14:02:00	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 13:58:25	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/29/2019 11:40:35	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 11:38:47	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/29/2019 07:19:23	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 07:16:01	status	s28dist01	Woodland	Value = RUNNING (normal state)
05/29/2019 05:29:55	status	s28dist01	Woodland	Value = STOPPED (normal state)
05/29/2019 05:26:54	status	s28dist01	Woodland	Value = RUNNING (normal state)

Filtered Event Summary Report

Printed: 7/17/2019 7:50 AM

Filter Conditions: Point=s28dist02; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

Time	Table	Point	RTU	Message
06/07/2019 22:18:22	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 22:16:13	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 20:25:47	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 20:23:00	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 18:19:54	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 18:17:03	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 16:42:41	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 16:39:30	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 14:33:32	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 14:31:53	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 12:27:04	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 12:24:39	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 10:35:41	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 10:32:16	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 08:51:35	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 08:49:49	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 07:26:04	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 07:24:41	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/07/2019 04:49:32	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/07/2019 04:47:01	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 23:55:45	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 23:53:32	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 22:14:36	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 22:12:08	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 20:32:36	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 20:30:49	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 18:48:24	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 18:46:53	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 17:04:54	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 17:02:03	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 14:29:58	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 14:27:50	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 12:36:03	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 12:33:38	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 10:47:38	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 10:45:29	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 09:02:00	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 08:58:47	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 07:36:26	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 07:33:54	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 05:21:36	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 05:19:19	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/06/2019 00:26:21	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/06/2019 00:23:53	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 22:19:27	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 22:16:36	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 20:53:57	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 20:51:16	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 19:24:31	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 19:21:38	status	s28dist02	Woodland	Value = RUNNING (normal state)

Filtered Event Summary Report

Printed: 7/17/2019 7:50 AM

Filter Conditions: Point=s28dist02; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

Time	Table	Point	RTU	Message
06/05/2019 17:47:46	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 17:46:17	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 16:06:23	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 16:03:56	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 13:53:36	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 13:51:06	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 11:39:13	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 11:36:23	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 09:53:56	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 09:50:31	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 08:13:16	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 08:10:51	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 06:53:27	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 06:51:02	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/05/2019 02:23:49	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/05/2019 02:20:09	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 22:51:56	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 22:49:06	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 21:36:45	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 21:34:23	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 19:59:49	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 19:58:20	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 18:16:49	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 18:14:35	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 16:33:12	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 16:30:05	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 14:28:23	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 14:25:23	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 12:15:17	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 12:11:03	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 10:16:09	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 10:13:21	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 08:29:14	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 08:26:52	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 07:03:38	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 07:00:53	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/04/2019 03:45:27	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/04/2019 03:42:54	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 23:24:11	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 23:22:15	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 22:04:09	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 22:01:25	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 20:51:37	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 20:47:51	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 19:11:39	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 19:08:32	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 17:44:04	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 17:42:19	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 15:53:28	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 15:49:50	status	s28dist02	Woodland	Value = RUNNING (normal state)

Filtered Event Summary Report

Printed: 7/17/2019 7:50 AM

Filter Conditions: Point=s28dist02; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

Time	Table	Point	RTU	Message
06/03/2019 13:49:51	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 13:45:55	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 11:50:53	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 11:47:36	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 10:00:48	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 09:57:44	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 08:25:29	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 08:21:41	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 07:09:28	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 07:06:29	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/03/2019 04:01:56	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/03/2019 03:59:15	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 23:15:48	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 23:12:25	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 21:37:41	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 21:34:31	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 20:21:40	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 20:17:55	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 18:58:46	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 18:54:39	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 17:23:48	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 17:19:31	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 15:40:01	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 15:36:36	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 13:53:04	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 13:50:48	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 12:02:23	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 11:59:00	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 10:29:51	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 10:27:01	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 09:13:29	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 09:11:08	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 07:58:52	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 07:55:56	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/02/2019 03:13:17	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/02/2019 03:11:35	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 23:16:11	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 23:13:03	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 21:36:07	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 21:33:54	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 19:49:20	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 19:48:27	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 17:52:05	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 17:48:54	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 16:23:15	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 16:19:56	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 14:38:46	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 14:37:04	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 13:03:56	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 13:01:47	status	s28dist02	Woodland	Value = RUNNING (normal state)

Filtered Event Summary Report

Printed: 7/17/2019 7:50 AM

Filter Conditions: Point=s28dist02; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

Time	Table	Point	RTU	Message
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06/01/2019 11:35:54	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 10:14:25	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 10:11:01	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 08:49:25	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 08:46:33	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 07:24:21	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 07:22:48	status	s28dist02	Woodland	Value = RUNNING (normal state)
06/01/2019 02:08:14	status	s28dist02	Woodland	Value = STOPPED (normal state)
06/01/2019 02:06:04	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/31/2019 23:05:30	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 23:03:15	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/31/2019 21:27:19	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 21:23:51	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/31/2019 19:34:30	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 19:32:28	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/31/2019 17:57:17	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 17:54:48	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/31/2019 16:03:07	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 16:00:03	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/31/2019 13:51:50	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 13:48:38	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/31/2019 11:40:46	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 11:37:31	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/31/2019 09:32:50	status	s28dist02	Woodland	Value = STOPPED (normal state)
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05/31/2019 08:01:22	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 07:58:24	status	s28dist02	Woodland	Value = RUNNING (normal state)
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05/31/2019 03:21:18	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/31/2019 03:18:21	status	s28dist02	Woodland	Value = RUNNING (normal state)
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05/30/2019 20:15:43	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/30/2019 18:16:51	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/30/2019 18:14:30	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/30/2019 16:16:08	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/30/2019 16:13:53	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/30/2019 13:41:47	status	s28dist02	Woodland	Value = STOPPED (normal state)
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05/30/2019 09:15:23	status	s28dist02	Woodland	Value = STOPPED (normal state)
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Filtered Event Summary Report

Printed: 7/17/2019 7:50 AM

Filter Conditions: Point=s28dist02; Start Time=may 29 2019 00:00:00; End Time=Jun 08 2019 00:00:00;

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05/29/2019 23:08:50	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 21:56:23	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 21:54:01	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 20:37:49	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 20:35:28	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 19:24:55	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 19:21:42	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 17:35:51	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 17:32:05	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 15:28:42	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 15:24:53	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 12:53:41	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 12:49:59	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 10:33:20	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 10:30:00	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 07:51:44	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 07:49:01	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 06:42:10	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 06:39:16	status	s28dist02	Woodland	Value = RUNNING (normal state)
05/29/2019 02:32:45	status	s28dist02	Woodland	Value = STOPPED (normal state)
05/29/2019 02:29:38	status	s28dist02	Woodland	Value = RUNNING (normal state)

1161 SE Hamblen Road
Lee's Summit, MO 64081
Tel#: 816-525-3320
800-366-7867
Fax#: 816-525-5881

Submittal Data For:

ITT Flygt submersible pump package to include:

Qty 2, ITT Flygt CP3201-457 submersible non-clog pump of standard construction with a 47 HP, 3 phase, 60 Hz, 460 Volt motor with standard 40' power and sensor cord. The pump is to be equipped with FLS seal leak detection sensor and motor thermal sensors for motor protection.
Qty 2, 6" x 6" cast iron discharge elbow
Qty 2, 304 stainless steel upper guiderail bracket
Qty 2, 304 stainless steel intermediate guiderail bracket
Qty 2, 304 stainless steel, 3" guiderail pipe
Qty 2, Stainless steel chain slings and ITT Flygt "Grip Eye" pump lifting attachment
Qty 2, Stainless steel cord grips, KELLEMS
Qty 2, Flygt "MiniCAS" pump monitoring relay for mounting in control panel
Standard 5 year prorated warranty

Warranty

1

ITT FLYGT 5 YEAR (10,000 HOUR) PUMP WARRANTY
MUNICIPAL: PERMANENT INSTALLATIONS

For the period defined below. ITT FLYGT offers a Commercial Warranty to the original End Purchaser against defects in workmanship and material covering Parts and Labor on its pumps when used in permanent installations, in compliance with the requirements of the ITT FLYGT Catalog and Technical Manual specifications, for use in Sewage Collection Systems or for intermittent (40% duty cycle or less) pumping of Raw Sewage, Municipal Wastewater, Potable or Raw Water, Storm Water or similar, abrasive free non-corrosive liquids ("Qualified Liquids").

ITT FLYGT Pumps used with Qualified Liquids in Sewage Lift Stations are Warranted for 5 years. ITT FLYGT pumps used for Sewage Treatment Processing or for more continuous (41% duty cycle or more) pumping of Qualified Liquids are Warranted for 10,000 hours of operation. Warranty begins on the date of shipment from ITT FLYGT. ITT FLYGT will pay the following share of the cost of replacement parts and labor provided the Pump, with Cable attached, is returned prepaid to an Authorized ITT FLYGT Service Facility for repairs. Cutting Plates and Impellers for FP Pumps are not included in this warranty.

	TIME AFTER SHIPMENT		
Months:	0-18	19-39	40-60
Hours:	0-3000	3000-6500	6500-10,000
Warranty:	100%	50%	25%

Unless otherwise specified by ITT FLYGT Corporate Headquarters, time after shipment shall be determined from shipping date, to date of receipt of defective product (or Warranty Claim) by ITT FLYGT or any of ITT FLYGT's Authorized Service Facilities.

Start-up report and electrical System Schematics (including Bills of Material) will be required to support any Warranty Claims. This Warranty shall not apply to any Product or Part of Product which has been subjected to misuse, accident, negligence, used in a manner contrary to ITT FLYGT's printed instructions or damaged due to a defective power supply, improper electrical protection or faulty installation or repair. The 5 year (or 10,000 hour) Warranty applies to the following Accessories if originally purchased with the pumps: Discharge Connection, Access Cover, HDL Valve, Guide Bar Bracket(s) and Pump Power Cable(s).

IMPORTANT: For warranty purposes, Monitoring devices supplied with specific pumps for protection must be connected and utilized. Failure to do so will invalidate the warranty.

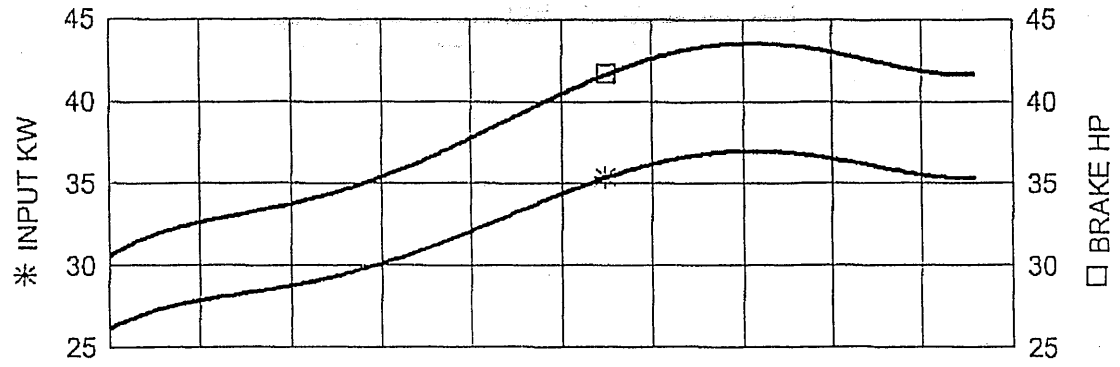
ITT FLYGT's sole obligation under this Warranty shall be to Repair, Replace or Grant a Credit Reimbursement at its discretion, through its Warranty Processing Procedures for defective products when returned prepaid to ITT FLYGT and upon ITT FLYGT's exclusive examination found to be defective. Products repaired or replaced under this warranty will be returned freight prepaid.

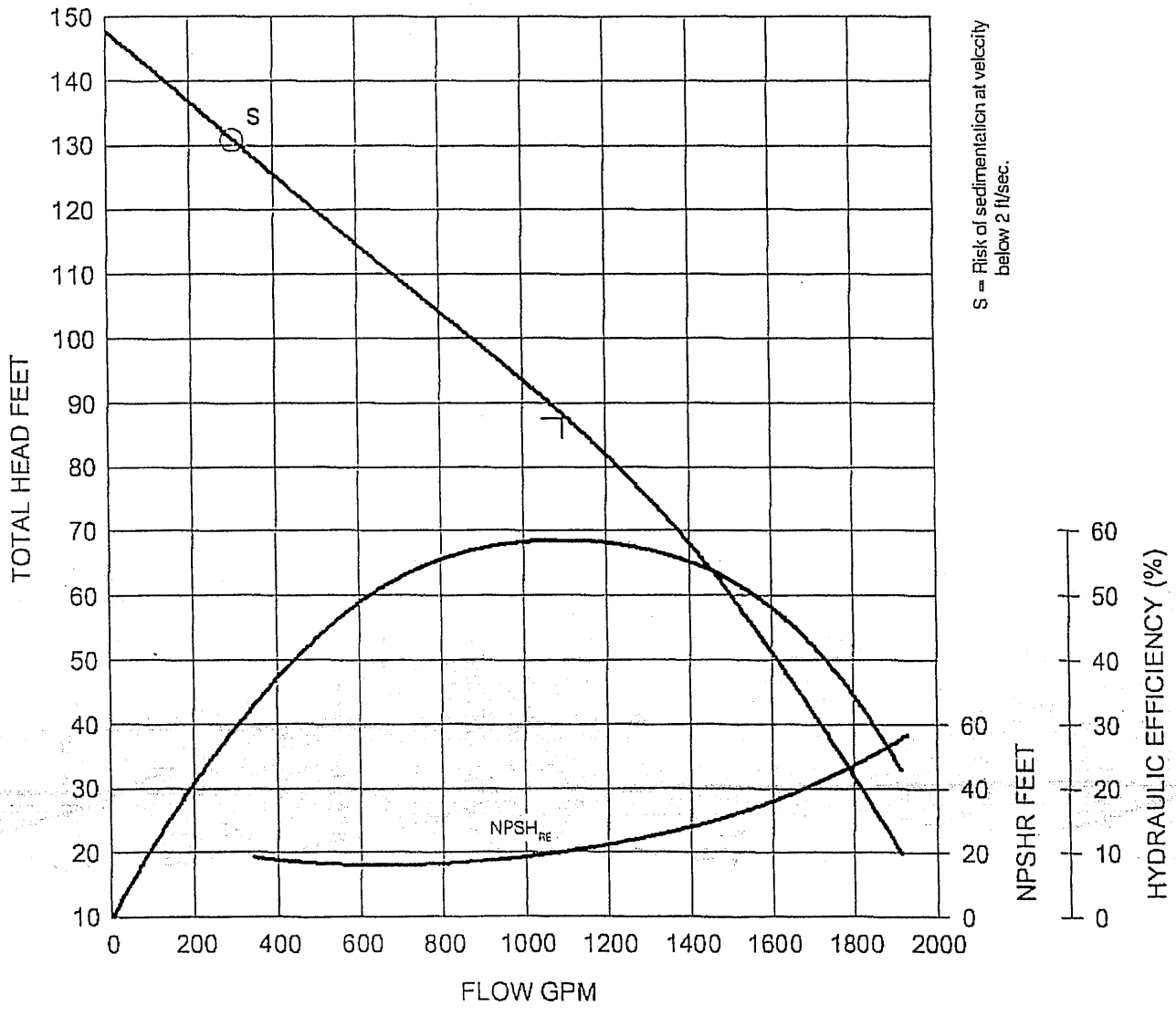
ITT FLYGT neither assumes, nor authorizes any person or company to assume for it, any other obligation in connection with the sale of its equipment. Any enlargement or modification of this Warranty by a Representative, or other Selling Agent shall become his exclusive responsibility.

ITT Flygt will not be held responsible for travel expenses, rented equipment, outside contractor's fees, unauthorized repair shop expenses, or for pumps purchased or used without ITT Flygt supplied cable or controls unless suitable for the purpose and equal to ITT Flygt cables or controls. The warranties made herein by ITT Flygt are in lieu of any and all other warranties, expressed or implied and the implied warranties of merchantability and fitness for a particular purpose are hereby expressly disclaimed. ITT Flygt assumes no liability for loss of use or for any direct, indirect or consequential damages of any kind in respect to the use or operation of ITT Flygt products, or any equipment or accessories in connection therewith.

THE ITT FLYGT CORPORATION
FUS 4-2001

CONFIG.		C-3201 457 Impeller	SECTION	PAGE
CP/CT/CZ/CS			3	7
PHASE	VANES		SUPERSEDES	ISSUED
3	1		6/94	2/96





PAGE	SECTION
2	3
ISSUED	SUPERSEDES
6/96	6/94

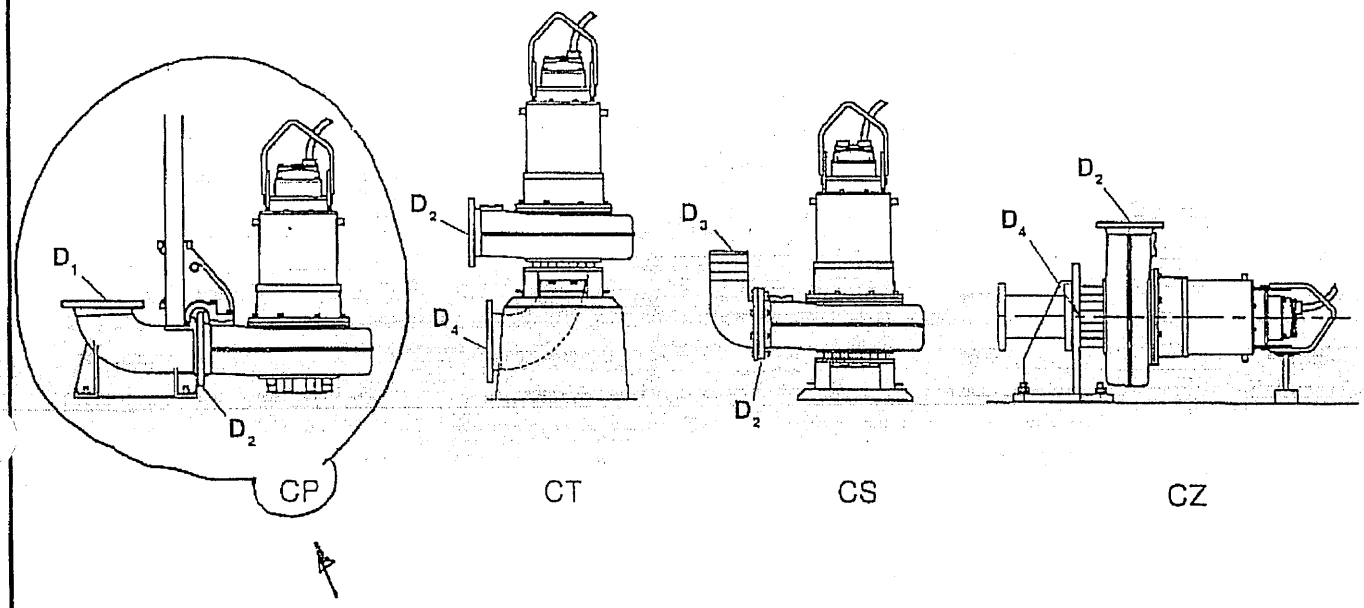
C-3201
Impeller/Motor/Nominal Sizes

PUMP MODEL	IMPELLER CODE	HP RATING			VAC	RPM	D1	D2	D3	D4
		CP	CT CZ	CS						
3201 3Ø	452 HT	47	47	47	200 230/460 575	1755	6" or 8"	6"	6"	*6" 8"
	454 HT	30	30	30						
	457 HT 458 HT	47	47	47						
	636 MT 637 MT 638 MT	35	35	35		1170	8" or 10"	8"	8"	*8" 10"
	**635 MT 639 MT	40	40	40		1165				
	821 LT 822 LT 823 LT 824 LT 825 LT	30	30	30		860	12" or 14"	12"	10"	*12" 16"

* for CZ configuration

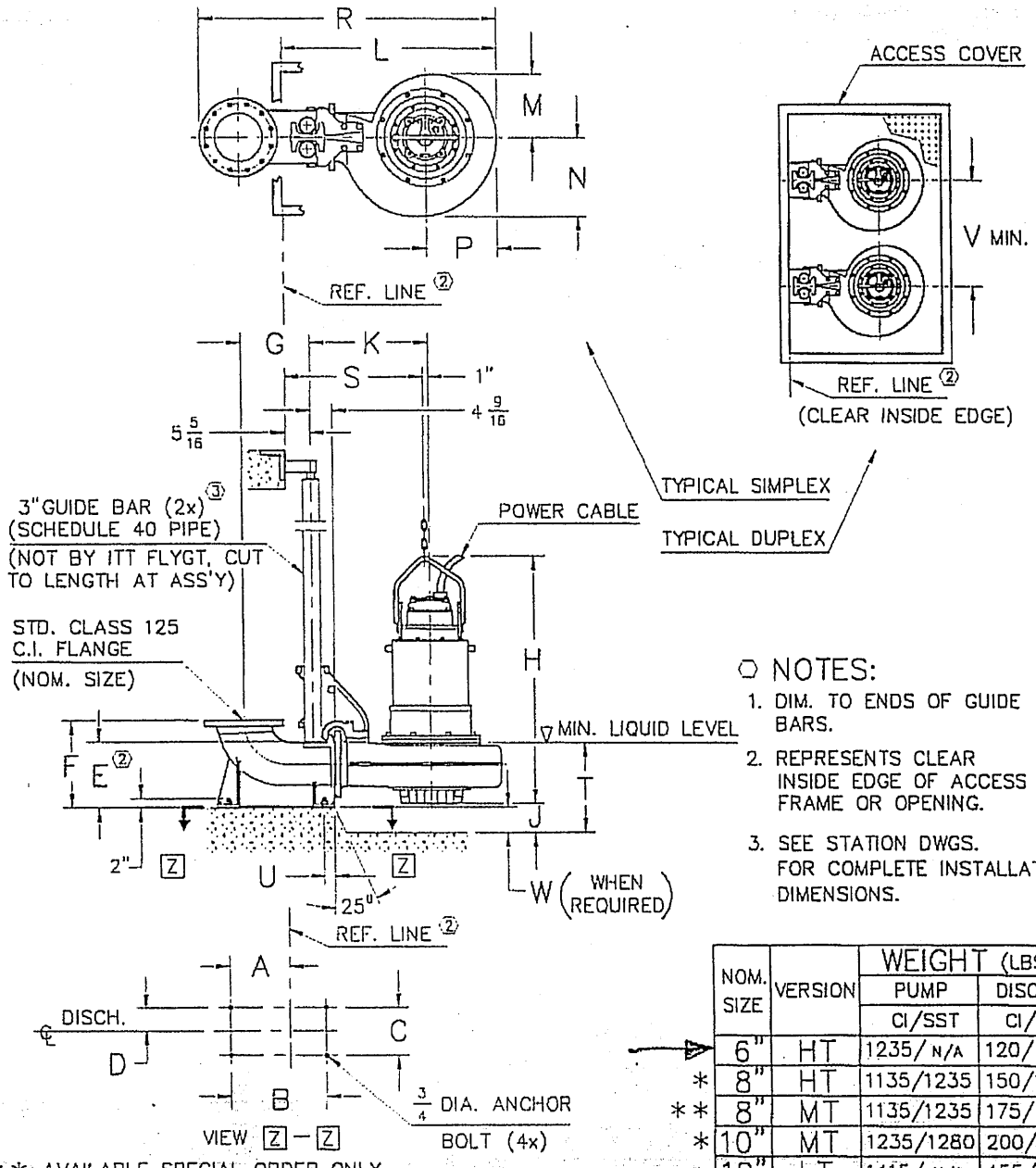
		HP	---	HS						
3201 3Ø	462 HT	47	–	47	200 230/460 575	1755	6" or 8"	6"	6"	–

LT= High Volume MT= Standard HT= High Head
** Consult Flygt Engineering if performance above 40 HP is required



CP-3201

Section 4		OUTLINE DIMENSIONS	Issued: 3/96	Supersedes: 6/94



NOTES:

1. DIM. TO ENDS OF GUIDE BARS.
2. REPRESENTS CLEAR INSIDE EDGE OF ACCESS FRAME OR OPENING.
3. SEE STATION DWGS. FOR COMPLETE INSTALLATION DIMENSIONS.

	NOM. SIZE	VERSION	WEIGHT (LBS) PUMP CI/SST	DISCH CI/SST
	6"	HT	1235/ N/A	120/ N/A
*	8"	HT	1135/1235	150/160
**	8"	MT	1135/1235	175/ N/A
*	10"	MT	1235/1280	200/225
	12"	LT	1415/ N/A	455/ N/A
	14"	LT	1415/ N/A	465/ N/A

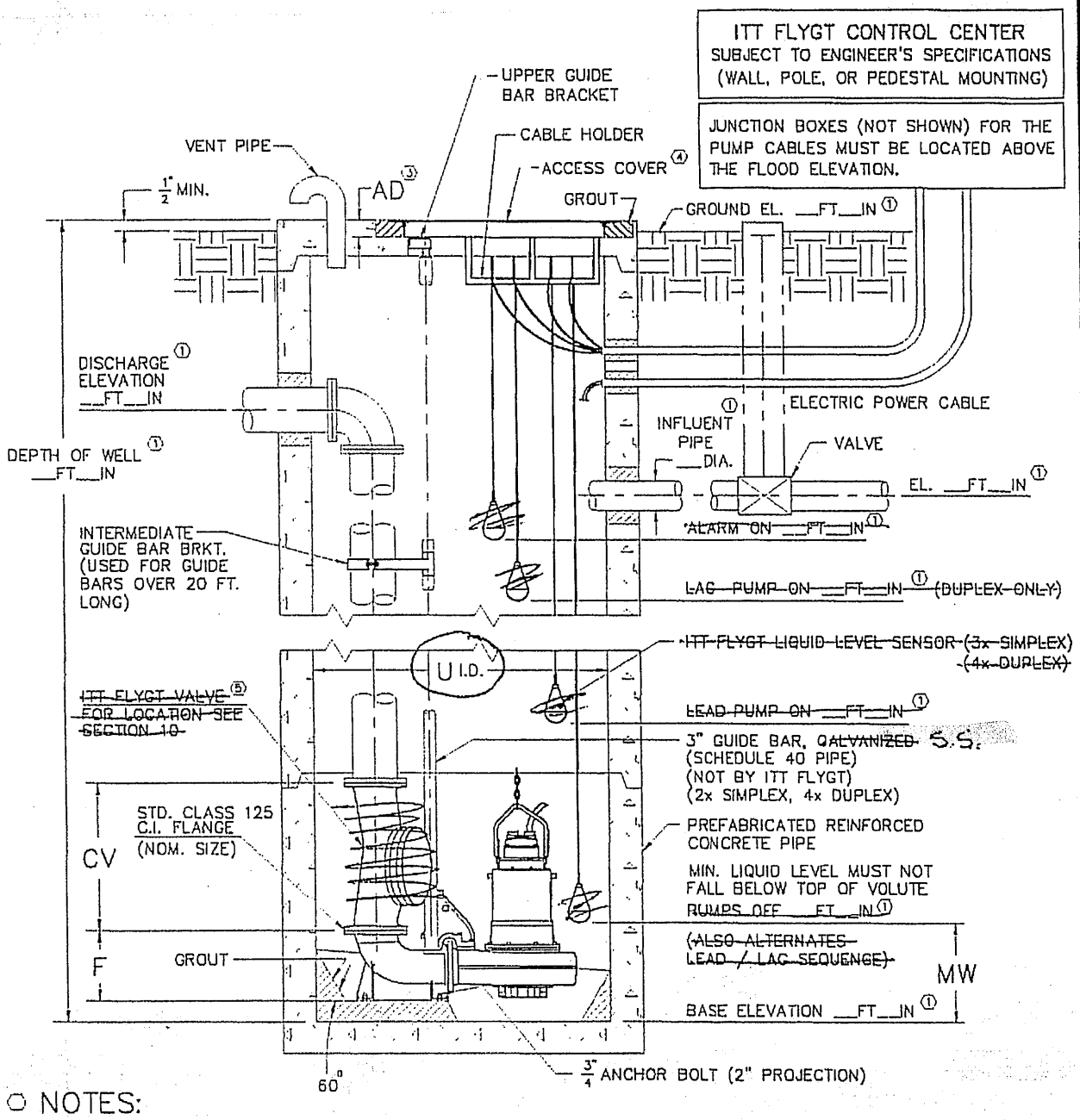
** AVAILABLE SPECIAL ORDER ONLY
* ALSO AVAILABLE IN STAINLESS STEEL
ALL DIMENSIONS IN INCHES

DIMENSIONAL CHART

	NOM. SIZE	VERSION	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W
	6"	HT	2 3/8	11	9 1/2	4 3/4	13	17 3/4	11	50	5 3/4	22 1/2	38	10 1/2	11	10 1/2	49 1/2	26 3/4	18	2 1/4	38	2
*	8"	HT	3 1/2	11	9 1/2	4 3/4	13 3/4	17 3/4	12 1/4	50	6 1/2	22 1/2	38	10 1/2	11	10 1/2	51 1/2	26 3/4	19	2 1/4	38	2
**	8"	MT	3 1/2	11	9 1/2	4 3/4	14 3/4	17 3/4	12 1/2	50 1/2	6 1/4	24 1/4	44 1/4	13	16 1/4	14 1/2	57 3/4	29	19	2 1/4	39	4
*	10"	MT	12 1/4	19 3/4	9 1/2	4 3/4	13 1/2	17 3/4	14 1/4	50 3/4	6	24 1/2	44	12 3/4	16 1/4	14 3/4	61	28 3/4	19	2 1/4	39	5
	12"	LT	7 5/8	19 3/4	19 3/4	9 7/8	26 1/2	31 1/2	17	53 1/2	10 1/4	27 1/2	48 1/4	12 1/2	18 1/2	15 1/2	69 1/2	31 3/4	26	3	39	N/A
	14"	LT	7 5/8	19 3/4	19 3/4	9 7/8	26 1/2	33 1/2	18	53 1/2	10 1/4	27 1/2	48 1/4	12 1/2	18 1/2	15 1/2	71 1/2	31 3/4	26	3	39	N/A

CP-3201

Section 5		Lift Station Dimensions	Issued: 4/96	Supersedes: 6/94



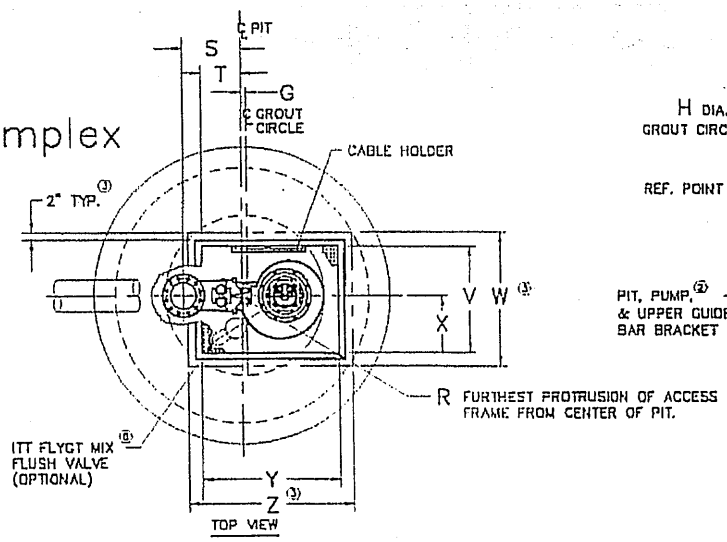
NOTES:

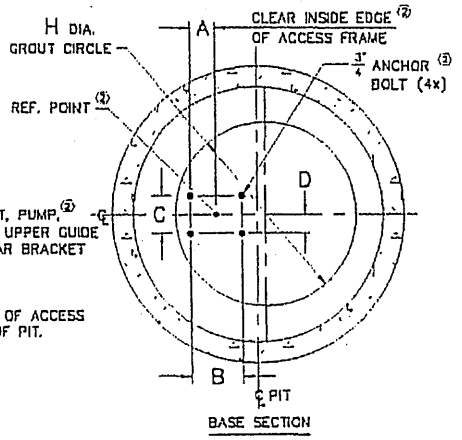
1. INDICATES INFORMATION TO BE DETERMINED BY OTHERS.
2. LOCATE ANCHOR BOLTS USING CLEAR INSIDE EDGE OF ACCESS FRAME AND CENTER LINE OF PUMP AS REF. POINT. BOLT LOCATIONS MUST BE HELD TO MAINTAIN EXACT POSITION OF PUMP RELATIVE TO ACCESS FRAME.
3. GROUT OPENING FOR ACCESS FRAME.
4. ~~COVER SHOWN IS FOR STANDARD DUTY ANGLE FRAME. FOR ADDITIONAL DIMENSIONS ON STANDARD DUTY TROUGH FRAME, HEAVY DUTY ANGLE FRAME AND HEAVY DUTY TROUGH FRAME, CONSULT ITT FLYGT CORP. ENGINEERING DEPT.~~
5. CONFIGURATION AND DIMS. SHOWN ARE SUGGESTED REQUIREMENTS ONLY. ALL DETAILS, INCLUDING SIZING OF PIT, TYPE, LOCATION AND ARRANGEMENT OF VALVES AND PIPING, ETC. ARE TO BE SPECIFIED BY THE CONSULTING ENGINEER AND ARE SUBJECT TO HIS APPROVAL.
6. ~~FOR INFORMATION SEE SECTION 10.~~

CP-3201

Section 5		Lift Station Dimensions	Issued: 4/96	Supersedes: 6/94

Simplex



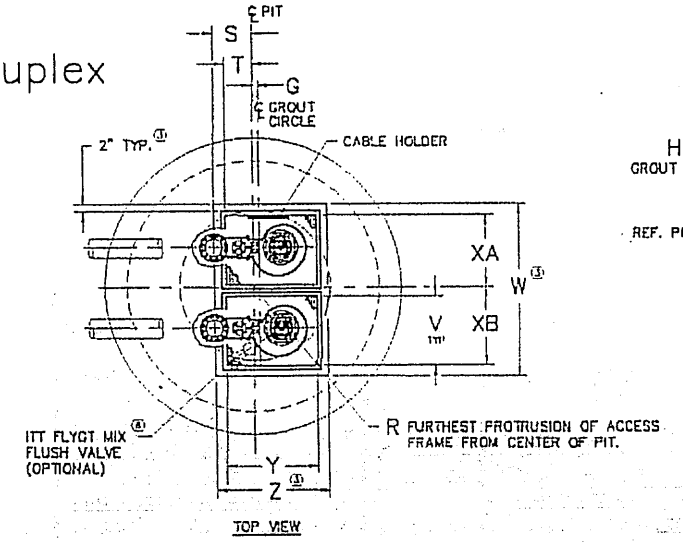


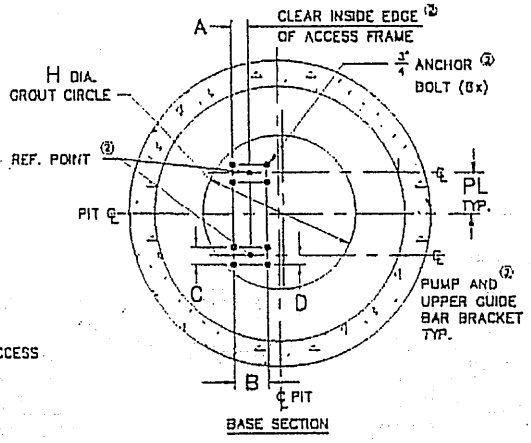
ALL DIMENSIONS IN INCHES * ALSO AVAILABLE IN STAINLESS STEEL ** AVAILABLE SPECIAL ORDER ONLY

DIMENSIONAL CHART

	NOM. SIZE	VERSION	STATION A	B	C	D	F	G	H	R	S	T	U	CV	MW	COVER SIZE	V	W	X	Y	Z	AD
	6"	HT	2⅛	11	9½	4½	17½	3	45	40	19	13½	72	14	18	FAPS-34 x 49	30	40	13	48	59	3
*	8"	HT	3½	11	9½	4½	17½	1	50	40	20	13½	72	19½	19	FAPS-34 x 49	30	40	13	48	59	3
**	8"	MT	3½	11	9½	4½	17½	1	60	46	20	13½	96	19½	19	FAPS-40 x 49	36	50	20	48	59	3
*	10"	MT	12½	19¾	9½	4¾	17¾	1	62	46	22¼	13½	96	39⅜	19	FAPS-40 x 49	36	50	20	48	59	3
	12"	LT	7⅝	19¾	20¾	9⅞	31½	4	65	55	24	12½	96	47¼	26	FAPS-53 x 55	48	63	27	54	65	3
	14"	LT	7⅝	19¾	20¾	9⅞	33½	4½	65	53	25	12½	96	55⅛	26	FAPS-53 x 55	48	63	27	54	65	3

Duplex





ALL DIMENSIONS IN INCHES * ALSO AVAILABLE IN STAINLESS STEEL ** AVAILABLE SPECIAL ORDER ONLY

DIMENSIONAL CHART

	NOM. SIZE	VERSION	STATION A	B	C	D	F	G	H	R	S	T	U	CV	MW	PL	COVER SIZE	V	W	XA	XB	Y	Z	AD
	6"	HT	2⅛	11	9½	4½	17½	1	68	54	20	14½	96	14	18	19	FAPS-34 x 49 (2x)	30	74	36	34	48	59	3
*	8"	HT	3½	11	9½	4½	17½	2	70	54	20	13½	96	19½	19	19	FAPS-34 x 49 (2x)	30	74	36	34	48	59	3
**	8"	MT	3½	11	9½	4½	17½	1	86	59	21½	14½	120	19½	19	23½	FAPS-40 x 49 (2x)	36	87	43	40	48	59	3
*	10"	MT	12½	19¾	9½	4¾	17¾	1	92	59	23½	14½	120	39⅜	19	23½	FAPS-40 x 49 (2x)	36	87	43	40	48	59	3
	12"	LT	7⅝	19¾	20¾	9⅞	31½	1	104	75	23½	12	144	47¼	26	29½	FAPS-53 x 55 (2x)	48	110	50	57	54	65	3
	14"	LT	7⅝	19¾	20¾	9⅞	33½	1	104	74	26¾	14	144	55⅛	26	29½	FAPS-53 x 55 (2x)	48	110	50	57	54	65	3

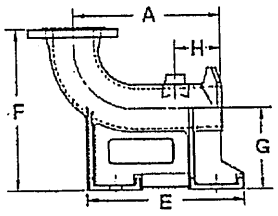
Standard CP/NP Discharge Connections (Cast Iron)

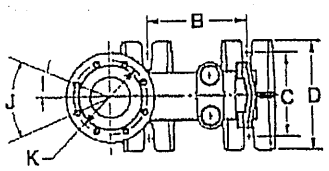
Dimensions

All dimensions (Inches)

Pump Model	Part Number	Disch. Inlet	Disch. Outlet	A	B	C	D	E	F	G	H	I	J	K
2" - 3045, 3057, 3067	486 55 01	2"	2"-11 1/2 NPT	3 13/16	4	4 1/2	5 1/2	7 1/4	6 3/4	3 15/16	7/8	—	—	—
3" - 3057	555 48 01	2"	3-8 NPT	6 3/4	5 1/2	4 1/8	5 1/2	10 3/4	6 3/4	3 15/16	7/8	—	—	—
2 1/2" - 3067	493 17 06	2 1/2"	2 1/2"	11 5/8	7 7/8	6 1/2	7 7/8	11 7/16	9 7/8	6 1/2	4 9/16	45°	90° x 4	5 5/8
3" - 3067	555 48 01	2"	3-8 NPT	6 11/16	5 1/2	4 1/4	5 1/2	10 3/4	6 3/4	3 13/16	7/8	—	—	—
3" - 3075, 3080, 3085, 3085/82	444 68 05	3"	3"	14	9 7/8	8	10 5/8	15 3/8	15 3/4	7 7/8	4 9/16	45°	90° x 4	6
4" - 3080, 3085, 3085/82, 3102, 3127, 3140, 3152, 3153, 3170	540 13 05	4"	4"	14 3/8	9 7/8	8	10 5/8	15 3/8	15 3/4	7 7/8	4 9/16	22.5°	45° x 8	7 1/2
6" - 3102, 3127, 3140, 3152, 3153, 3170, 3201.	444 70 06	5 1/2"	6"	15 9/16	11	10	12 3/16	15 3/8	17 3/4	9 7/8	4 9/16	22.5°	45° x 8	9 1/2
6" - R3231	388 25 06	6"	6"	20 11/16	19 3/4	15 3/4	19 3/4	23 5/8	15 3/4	7 7/8	6 7/8	22.5°	45° x 8	9 7/16
8" - 3102, 3127, 3152, 3170, 3201, 3300.	444 71 06	6"	8"	16 3/4	11	10	12 3/16	15	17 3/4	10 1/8	4 9/16	22.5°	45° x 8	11 3/4
8" - 3201,(*3140, *3153,*3300).	374 76 06	6"	8"	16 3/4	11	9 1/2	12 3/16	15 3/8	17 3/4	10 1/4	4 9/16	22.5°	45° x 8	11 3/4
8" - 3231	388 24 06	8"	8"	21 5/8	19 3/4	15 3/4	19 3/4	23 5/8	17 3/4	8 7/8	6 7/8	22.5°	45° x 8	11 3/4
10" - 3140, 3201.	444 73 05	8"	10"	18 3/4	19 3/4	10	12 3/16	24	17 3/4	8 7/8	4 9/16	15°	30° x 12	14 1/4
10" - 3152, 3170.	481 76 05	10"	10"	18 3/4	19 3/4	10	12 3/16	24	17 3/4	8 7/8	4 9/16	15°	30° x 12	14 1/4
12" - 3152, 3170, 3300.	481 75 05	10"	12"	21 3/4	19 3/4	19 3/4	24 7/16	25 5/8	31 1/2	19 11/16	4 9/16	15°	30° x 12	17
12" - 3201	481 77 05	12"	12"	21 5/8	19 3/4	19 3/4	24 7/16	25 9/16	31 1/2	19 11/16	4 9/16	15°	30° x 12	17
12" - 3306, 3312.	373 92 05	12"	12"	24 5/8	25 5/8	23 3/4	27 9/16	29 1/2	23 3/4	10 13/16	6 7/8	15°	30° x 12	17
14" - 3201, 3300.	320 15 05	12"	14"	22 5/8	19 3/4	19 3/4	24 7/16	25 5/8	33 1/2	19 11/16	4 9/16	15°	30° x 12	18 3/4
14" - 3306, 3312	442 16 05	12"	14"	25 5/8	25 5/8	23 3/4	27 9/16	29 1/2	23 3/4	11 13/16	6 7/8	15°	30° x 12	18 3/4
14" - 3351	557 00 05	14"	14"	27 9/16	31 1/2	27 3/4	31 1/2	35 7/16	23 3/4	11 13/16	8 7/8	15°	30° x 12	18 3/4
14" - 3356	388 27 05	14"	14"	25 5/8	25 5/8	23 3/4	27 9/16	29 1/2	23 3/4	11 13/16	6 7/8	15°	30° x 12	18 3/4
16" - 3400	581 98 05	16"	16"	29 9/16	31 1/2	31 1/2	35 7/16	31 1/2	29	13 3/4	8 13/16	11.25°	22.5° x 16	21 1/4
20" - 3501, 3531.	387 90 05	20"	20"	30 5/8	31 1/2	27 3/4	31 1/2	35 1/2	33	15 3/8	8 7/8	9°	18° x 20	25
24" - 3602	388 65 05	24"	24"	33	35 1/2	31 1/2	35 7/16	39 3/8	37 1/2	17 3/4	8 7/8	9°	18° x 20	29 1/2
32" - 3800	586 03 05	32"	32"	40 1/4	26 5/8	47 1/4	51 1/4	57 1/4	47 1/2	21 3/4	9 3/4	6.43°	12.86° x 28	38 1/2

*Special Order





Note:
The discharge connection shown here is typical in appearence for most pumps.

C-3201
Electrical Data

Motor Data

RATED OUTPUT POWER HP	(kW)	Ø	VOLTS NOM.	FULL LOAD AMPS	LOCKED ROTOR AMPS	LOCKED ROTOR KVA	LOCKED ROTOR CODE LETTER KVA/HP	RATED INPUT POWER kW	POLES/RPM
30	(22)	3	200 230 460 575	84 72 36 29	535 466 233 186	185	G	26	4/1755
30	(22)	3	200 230 460 575	94 82 41 33	396 344 172 137	137	E	26	8/860
35	(26)	3	200 230 460 575	108 94 47 38	724 630 315 252	251	J	30	6/1170
40	(30)	3	200 230 460 575	117 102 51 41	724 630 315 252	251	G	35	6/1165
→ 47	(35)	3	200 230 460 575	133 116 58 46	930 810 405 325	323	H	40	4/1760

PUMP MOTOR HP	EFFICIENCY			POWER FACTOR		
	100% LOAD	75% LOAD	50% LOAD	100% LOAD	75% LOAD	50% LOAD
30 (4-pole)	86.5	86.5	85.5	0.90	0.88	0.81
30 (8 pole)	86.0	86.5	85.5	0.79	0.74	0.63
35	86.5	86.0	83.5	0.81	0.75	0.64
40	86.5	86.5	84.5	0.85	0.80	0.70
→ 47	87.5	87.5	85.5	0.87	0.84	0.76

Cable Data

HP	VOLTS	MAX. LENGTH FT.	CABLE SIZE/ NOMINAL DIA.	CONDUCTORS (IN ONE CABLE)	PART NUMBER
30 (4 pole)	**200 **230 460 575	165 220 450 700	6/3-2-1-GC 31.0 (1.22")	(3) 6AWG (PWR) (2) 10AWG (CTRL) (1) 8AWG (GND) (1) 10AWG (GC)	00094 21 09
30 (8 pole)	**200 **230 460 575	170 230 450 700			
35 & 40	**200 **230 460 575	125 170 330 520			
→ 47	**200 **230 460 575	105 140 280 450			

** Requires 2 cables

C-3201
Performance Specifications

REQUIREMENTS

Furnish and install 2 submersible non-clog wastewater pump(s). Each pump shall be equipped with a 47 HP, submersible electric motor connected for operation on 460 volts, 3 phase, 60 hertz, 4 wire service, with 40 feet of submersible cable (SUBCAB) suitable for submersible pump applications. The power cable shall be sized according to N.E.C. and ICEA standards and also meet with P-MSHA Approval. For 230 volt service, two power cables shall be used to share the load and thus keep power cables to a manageable size. The pump shall be supplied with a mating cast iron 6 inch discharge connection and be capable of delivering _____ GPM at _____ TDH. An additional point on the same curve shall be _____GPM at _____feet total head. Shut off head shall be ___feet (minimum). Each pump shall be fitted with 30 feet of SS lifting chain or stainless steel cable. The working load of the lifting system shall be 50% greater than the pump unit weight.

40

PUMP DESIGN

The pump(s) shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. There shall be no need for personnel to enter the wet-well. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. **Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable.** No portion of the pump shall bear directly on the sump floor.

PUMP CONSTRUCTION

Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be AISI type 304 stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.

Sealing design shall incorporate **metal-to-metal contact** between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or Viton rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.

Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

COOLING SYSTEM

Each unit shall be provided with an adequately designed cooling system. The water jacket shall encircle the stator housing; thus, providing heat dissipation for the motor regardless of the type of installation. Impeller back vanes shall provide the necessary circulation of the cooling liquid through the water jacket. The cooling media channels and ports shall be non-clogging by virtue of their dimensions. Provisions for external cooling and seal flushing shall also be provided. The cooling system shall provide for continuous pump operation in liquid temperature of up to **104 DEGREES F.** Restrictions below this temperature are not acceptable.

CABLE ENTRY SEAL

The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of a single cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the body containing a strain relief function, separate from the function of sealing the cable. The assembly shall provide ease of changing the cable when necessary using the same entry seal. **The cable entry junction chamber and motor shall be separated by terminal board, which shall isolate the interior from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered acceptable.**

MOTOR

The pump motor shall be induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber, NEMA B type. The stator windings and stator leads shall be insulated with moisture resistant Class F insulation rated for 155°C (311°F). The stator shall be dipped and baked three times in Class F varnish and shall be heat-shrink fitted into the stator housing. The use of bolts, pins or other fastening devices requiring penetration of the stator housing is not acceptable. The motor shall be designed for continuous duty handling pumped media of 40°C (104°F) and capable of up to 15 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches set to open at 125°C (260°F) shall be embedded in the stator lead coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The junction chamber containing the terminal board, shall be hermetically

sealed from the motor by an elastomer O-ring seal. Connection between the cable conductors and stator leads shall be made with threaded compression type binding posts permanently affixed to a terminal board. Wire nuts or crimping type connection devices are not acceptable. The motor and pump shall be designed and assembled by the same manufacturer.

The combined service factor (combined effect of voltage, frequency and specific gravity) shall be a minimum of 1.15. The motor shall have a voltage tolerance of plus or minus 10%. The motor shall be designed for operation up to 40°C (104°F) ambient and with a temperature rise not to exceed 80°C. A performance chart shall be provided upon request showing curves for torque, current, power factor, input/output kW and efficiency. This chart shall also include data on starting current and torque.

The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be oil resistant chloroprene rubber. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet.

The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out.

BEARINGS

The pump shaft shall rotate on two bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single roller bearing. The lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces. **Single row lower bearings are not acceptable.**

MECHANICAL SEAL

Each pump shall be provided with a tandem mechanical shaft seal system consisting of two totally independent seal assemblies. The seals shall operate in an lubricant reservoir that hydrodynamically lubricates the lapped seal faces at a constant rate. The lower, primary seal unit, located between the pump and the lubricant chamber, shall contain one stationary and one positively driven rotating **tungsten-carbide** ring. The upper, secondary seal unit, located between the lubricant chamber and the motor housing, shall contain one stationary **tungsten-carbide** seal ring and one positively driven rotating **tungsten-carbide** seal ring. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment nor **depend on direction of rotation for sealing.** For special applications, other seal face materials shall be available.

The following seal types shall not be considered acceptable nor equal to the dual independent seal specified: shaft seals without positively driven rotating members, or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces. Cartridge type systems will not be acceptable. No system requiring a pressure differential to offset pressure and to effect sealing shall be used.

Each pump shall be provided with an lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and to provide lubricant expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. **The motor shall be able to operate dry without damage while pumping under load.**

Seal lubricant shall be FDA Approved, nontoxic.

PUMP SHAFT

Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The pump shaft shall be of carbon steel C-1035 and shall be completely isolated from the pumped liquid.

IMPELLER

The impeller(s) shall be of gray cast iron, Class 35B, dynamically balanced, double shrouded non-clogging design having a long throughlet without acute turns. The impeller(s) shall be capable of handling solids, fibrous materials, heavy sludge and other matter found in wastewater. Whenever possible, a full vaned, not vortex, impeller shall be used for maximum hydraulic efficiency; thus, reducing operating costs. Mass moment of inertia calculations shall be provided by the pump manufacturer upon request. Impeller(s) shall be keyed to the shaft, retained with an Allen head bolt and shall be capable of passing a minimum 3 inch diameter solid. All impellers shall be coated with an acrylic dispersion zinc phosphate primer.

WEAR RINGS

A wear ring system shall be used to provide efficient sealing between the volute and suction inlet of the impeller. Each pump shall be equipped with a brass, or nitrile rubber coated steel ring insert that is drive fitted to the volute inlet. This pump shall also have a stainless steel impeller wear ring heat-shrink fitted onto the suction inlet of the impeller.

VOLUTE
Pump volute(s) shall be single-piece grey cast iron, Class 35B, non-concentric design with smooth passages large enough to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified.

PROTECTION
All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. At 125°C (260°F) the thermal switches shall open, stop the motor and activate an alarm.

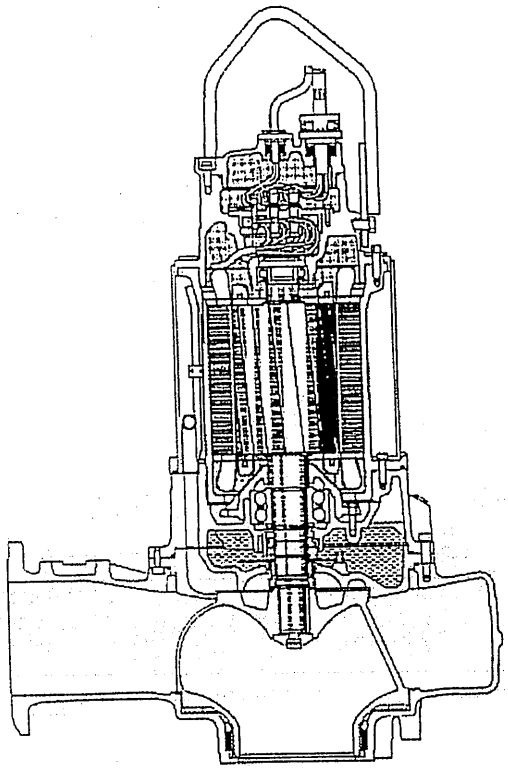
A leakage sensor shall be available as an option to detect water in the stator chamber. The Float Leakage Sensor (FLS) is a small float switch used to detect the presence of water in the stator chamber. When activated, the FLS will stop the motor and send an alarm both local and/or remote. **USE OF VOLTAGE SENSITIVE SOLID STATE SENSORS AND TRIP TEMPERATURE ABOVE 125°C (260°F) SHALL NOT BE ALLOWED.**

The thermal switches and FLS shall be connected to a Mini CAS (Control and Status) monitoring unit. The Mini CAS shall be designed to be mounted in any control panel.

MODIFICATIONS

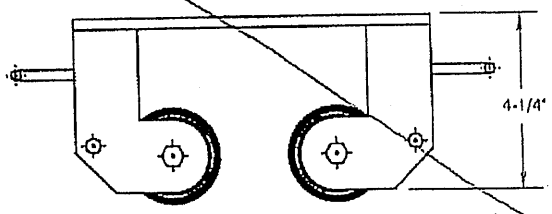
~~1. Explosion-proof Pumps (X).~~
~~2. Warm Liquid Applications (WL).~~
~~3. Dry Pit Installations (CT).~~
~~4. Stainless Steel Pumps (SS).~~
~~5. Aluminum Bronze Pumps (B).~~

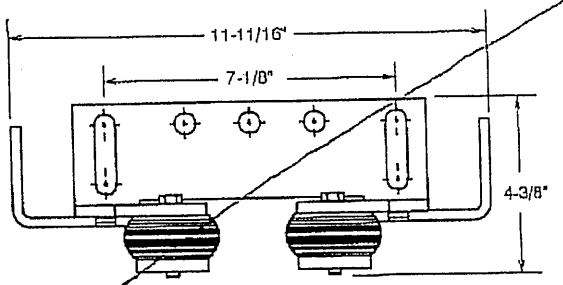
Refer to the General Guide Specifications for additional information.



Upper Guide Bar Brackets

UPPER GUIDE BAR BRACKET
613 68 00 - Galvanized Steel
613 68 04 - 316 Stainless Steel



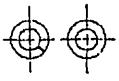


Note: use with 2" nominal guide bars

MOUNTING HARDWARE
(stainless steel)

3/8"-16 LATERAL NUT
14-46 37 05

HEX. HEAD BOLT (2),
3/8"-16 x 7/8"
14-46 20 25

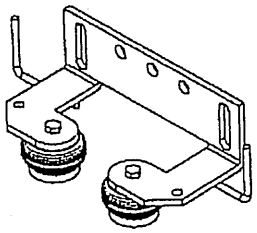


3/8" PLAIN WASHER
(2)
14-46 50 07

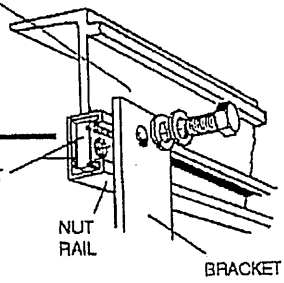
3/8" LOCK
WASHER (2)
14-46 50 67

Standard for the following pumps:

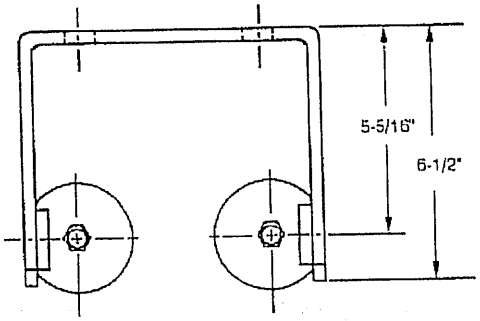
DP-3067
CP-3075
DP-3080
BP/CP/DP/FP-3085
CP/FP/NP-3102
CP-3126
CP/FP/NP-3127
CP/NP-3140
CP/FP/NP-3152
NP-3153

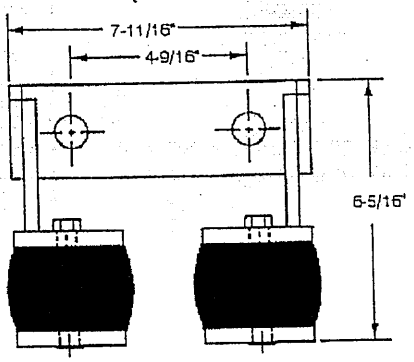


OPTIONAL:
NUT RAIL FEATURE



UPPER GUIDE BAR BRACKET
14-58 93 17 - Galvanized Steel
14-58 93 18 - 316 Stainless Steel





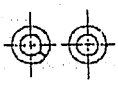
Note: use with 3" nominal guide bars

MOUNTING HARDWARE
(stainless steel)

5/8"-11 LATERAL NUT
14-46 37 06

HEX. HEAD
BOLT (2),
5/8"-11 x 1-1/4"
14-46 20 13

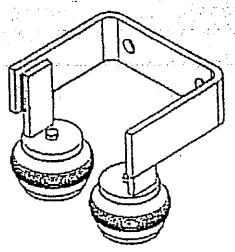
5/8" LOCK
WASHER (2)
14-46 50 70



5/8" PLAIN
WASHER (2)
14-46 50 30

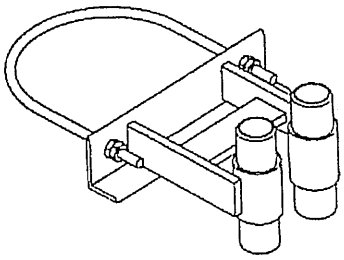
Standard for the following pumps:

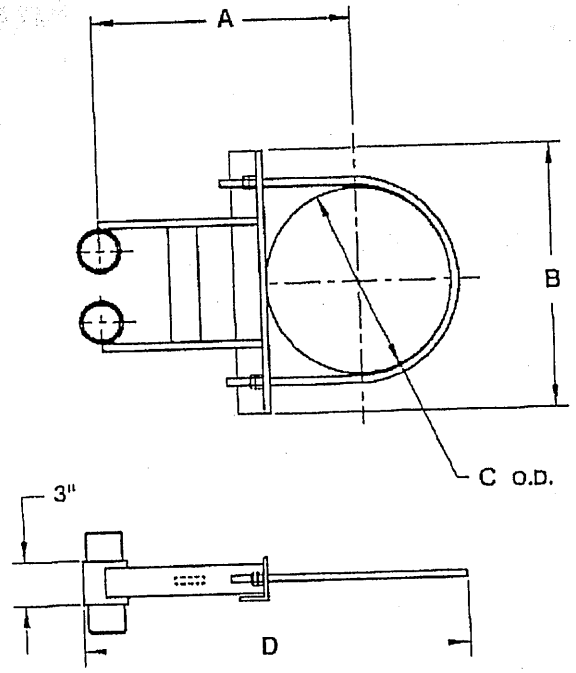
CP/NP-3170	CP-3356
CP/HP/NP-3201	CP-3400
CP/RP-3231	CP-3501
CP/NP/RP-3300	CP-3531
CP-3306	CP-3602
CP-3312	CP-3800
CP-3351	



Intermediate Guide Bar Brackets

(for cast iron or ductile iron pipe)





All dimensions (inches)

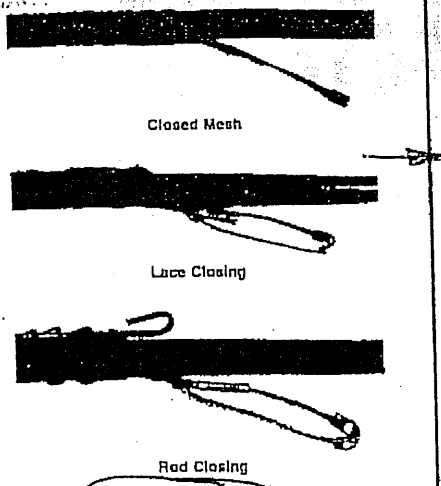
Intermediate Guide Bar Bracket	Part Number	A	B	C	D
4" DP-3080, C/D/FP-3085, CP/FP/NP-3102, CP-3127, 3140	14-58 44 44	9-7/8	9	4-7/8	13-3/8
6" CP/NP-3102, CP/FP/NP-3127, CP/NP-3140, CP/FP/NP-3152, NP-3153.	14-58 44 45	11	9-1/2	7	16-1/8
CP/NP-3170, 3201	14-58 44 52	13-13/16	9-1/2	7	19-1/2
8" CP/NP-3127, 3152	14-58 44 46	12-3/16	12-1/2	9-1/8	18-7/8
CP/NP-3170, 3201, 3300	14-58 44 53	12-1/8	12-1/2	9-1/8	18-15/16
CP-3231	14-58 44 54	14-13/16	12-1/2	9-1/8	21-5/8
10" CP/NP-3140, 3152	14-58 44 47	14-1/8	15-1/2	11-1/8	21-3/8
CP/NP-3170, 3201	14-58 44 55	14-1/8	15-1/2	11-1/8	21-15/16
12" CP/NP-3170, 3201, 3300	14-58 44 48	17-1/8	18	13-1/4	26-3/8
CP-3306, 3312	14-58 44 56	17-3/4	18	13-1/4	26-7/8
14" CP/NP-3300	14-58 44 49	18-1/8	20	15-3/8	26-1/2
CP-3306, 3312, 3356	14-58 44 57	18-3/4	20	15-3/8	27-3/8
16" CP-3400	14-58 44 50	20-3/4	20	17-1/2	31-15/16
20" CP-3501, 3531	14-58 44 51	21-5/8	26	21-5/8	35
24" CP-3602	14-58 44 58	24-1/4	30	25-7/8	39-5/8
32" CP-3800**					

** Contact Flygt Engineering

Material: U-Bolt and Nuts are 304 Stainless Steel, all other materials A-36 Structural Steel.

Support Grips

KELLEMS®
Support Grips



Offset eye. Stainless steel grips available. Never use grip to approximate breaking strength.

Close Mesh. For permanent support when cable end is available to be installed though grip.

Split Mesh. For permanent support when cable end not available.

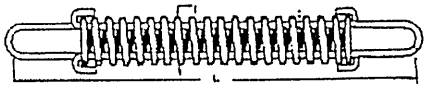
Closed Mesh

No.	Cable Dia. In.	Break. Strgth. Lbs.	Eye In.	Mesh In.	Price
022-01-037	.50-.62	500	4	10	$13.29/EA
022-01-038	.63-.74	750	4	10	14.72/EA
022-01-039	.75-.99	950	4	13	15.29/EA
022-01-041	1.00-1.24	1500	5	14	17.36/EA
022-01-010	1.25-1.49	1610	10	15	22.79/EA
022-01-042	1.25-1.49	1500	5	15	19.22/EA
022-01-043	1.50-1.74	1500	5	17	23.22/EA
022-01-044	1.75-1.99	2000	6	19	28.29/EA
022-01-045	2.00-2.49	3100	6	21	33.80/EA
022-01-046	2.50-2.99	3100	6	23	47.43/EA
022-01-047	3.00-3.49	3800	6	25	60.93/EA
022-01-048	3.50-3.99	3800	9	27	83.30/EA

Split Mesh

No.	Cable Dia. In.	Break. Strgth. Lbs.	Eye In.	Mesh In.	Price
Lace Closing					
022-02-037	.50-.62	500	4	10	$19.92/EA
022-02-038	.63-.74	750	4	10	25.26/EA
022-02-039	.75-.99	950	4	13	22.58/EA
022-02-041	1.00-1.24	1500	5	14	22.79/EA
022-02-042	1.25-1.49	1500	5	15	24.86/EA
022-02-043	1.50-1.74	1500	5	17	$ 25.86/EA
022-02-044	1.75-1.99	2000	6	19	35.08/EA
022-02-045	2.00-2.49	3100	6	21	40.94/EA
022-02-046	2.50-2.99	3100	6	23	58.43/EA
022-02-047	3.00-3.49	3800	9	25	78.02/EA
022-02-048	3.50-3.99	3800	9	27	108.20/EA
Rod Closing					
022-03-037	.50-.62	500	4	7	18.72/EA
022-03-038	.63-.74	750	4	9	20.08/EA
022-03-039	.75-.99	950	4	10	21.65/EA
022-03-041	1.00-1.24	1500	5	12	22.40/EA
022-03-042	1.25-1.49	1500	5	14	24.58/EA
022-03-043	1.50-1.74	1500	5	15	26.44/EA
022-03-044	1.75-1.99	2000	6	16	32.72/EA
022-03-045	2.00-2.49	3100	6	19	32.65/EA
022-03-046	2.50-2.99	3100	6	20	53.34/EA
022-03-047	3.00-3.49	4300	9	21	79.85/EA
022-03-048	3.50-3.99	4300	9	24	103.10/EA

KELLEMS®
Bus Drop Safety Spring



No.	Max. Deflection	Break. Strgth. Lbs.	Dim., In. L	Dim., In. D	Price
203-02-001	2⅛" - 40 lbs.	500	8¼	¾	$5.50/EA

KELLEMS®
Bus Drop Grips
Wide Range

With patented mesh. Made of galvanized steel strand. Aluminum shoulders and swaged aluminum eye. UL Listed 899D standard type, single eye.

Bus Drop Grips

No.	Desc.	Cable Range Dia. In.	Eye Lgth. In.	Mesh Lgth. In.*	Design Str. Lbs.	Price
073-04-1276†	BD-022	.24-.32	3	3½	350	$ 6.65/EA
073-04-1277	BD-030	.32-.43	4	4	450	7.50/EA
073-04-1278	BD-041	.43-.56	6	4¾	550	8.65/EA
073-04-1279	BD-053	.56-.73	7	6	1000	9.79/EA
073-04-1280	BD-070	.73-.85	7	6¾	1400	11.86/EA
073-04-1281	BD-082	.85-1.00	8	8	1400	12.15/EA
073-04-1282	BD-096	.100-1.125	9	9½	1500	12.74/EA

*At nominal diameter. †UL not applicable.

KELLEMS®
Support Grips
Conduit Riser

Available in closed mesh and split mesh with face or rod closures. Tin coated bronze strand. Grip permanently fastened to support ring, allowing one piece unit which will allow air ventilation within the conduit. Ring supported grip is used for supporting electrical cable inside standard rigid conduit. The rings will fit schedule 40, standard rigid conduit. For permanent support when cable end is available to be installed through the grip.

No.	Break Strgth. Lbs.	Lgth. In.	Price
Model R075 Cable Size .75"-.99"			
022-11-010	920	11	$46.80/EA
Model R100 Cable Size 1.00"-1.24"			
022-11-009	1610	12	45.90/EA
Model R125 Cable Size 1.25"-1.49"			
022-11-013	1610	12	43.18/EA
022-11-017	1510	12	50.90/EA
Model R175 Cable Size 1.75"-1.99"			
022-11-025	1990	15	60.51/EA

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ITT Flygt Grip-Eye System

The normal method of lowering and raising a CP pump in and out of a lift station is by use of a chain or cable attached to the pump. The length of the chain or cable is dependent on the depth of the station. The average length would probably be between 18 to 20 ft. and in certain cases may be much longer. In many cases, depending on the lifting device (usually a hoist), the operator may have to take a second or third bite on the pump chain in order to lift the pump clear of the station.

An added accessory to the ITT Flygt line is the pattented ITT Flygt Grip-Eye System which consists of 33 ft. of nylon line, a short length of high tensile strength galvanized chain and a forged "Grip-Eye" of wrought alloy steel.

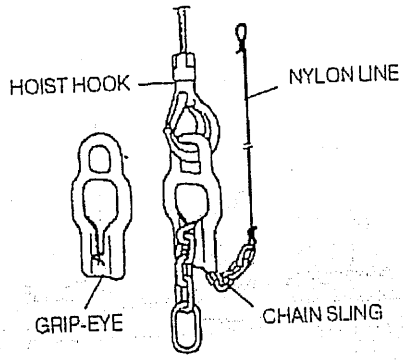
The operation of this positive recovery system is as follows:

1. Connect the small eye of the grip-eye to the end of the hoist cable.
2. Slip the end of the nylon line through the large eye of the grip-eye. The nylon line simply acts as a guide for the grip-eye on its way down to the short length of the pump lifting chain.
3. While keeping the nylon line (guide line) taut, proceed to lower the grip-eye until it is well positioned over the pump lifting chain.
4. Release the tension on the nylon guide line. The lifting chain will now take a position to become engaged in the grip-eye.
5. Gradually take up tension on the hoist cable and the grip-eye will make a positive grip on the pump lifting chain. Continue hoisting until the pump is clear of the station.

Caution: The Grip-Eyes may only be used with the corresponding special ITT Flygt Chain Sling Units.

Grip-Eyes are not warrantied if other chains are used.

Refer to the following pages for pump models and correct assembly.



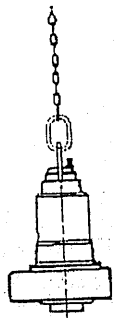


FIG. 1

(Standard) The end ring of the Chain Sling is slipped over the pump lifting handle.

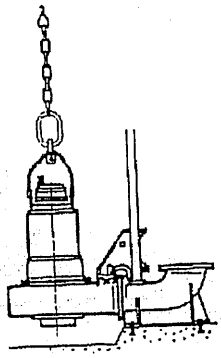


FIG. 2

(Customer to supply extra shackle) A shackle can be used in conjunction with the standard ring should customer choose not to remove and replace pump handle.

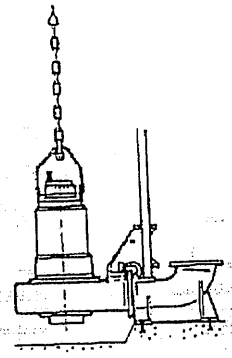


FIG. 3

(Standard) This type comes with a shackle as part of the Chain Sling for connecting to pump lifting handle.

ITT Flygt Grip-Eye System

Fig. 1

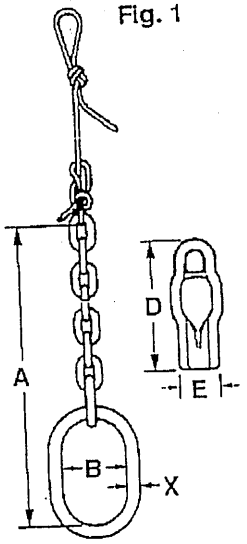


Fig. 2

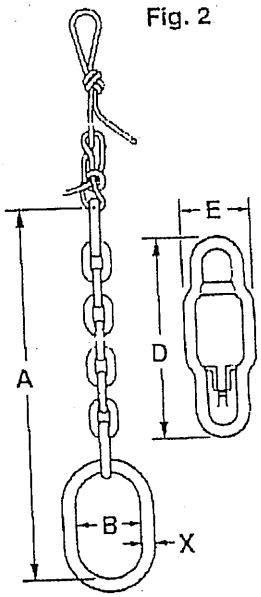


Fig. 3

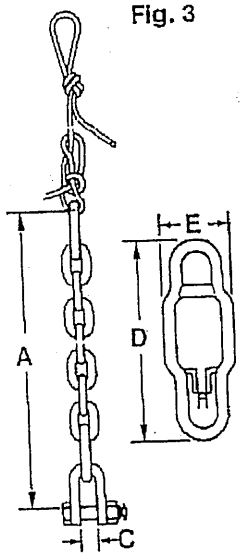
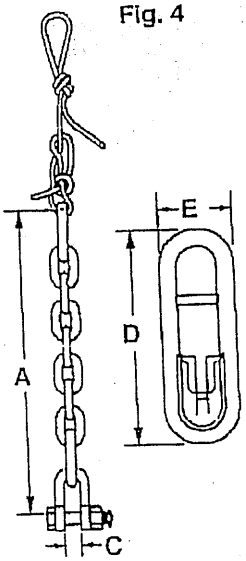


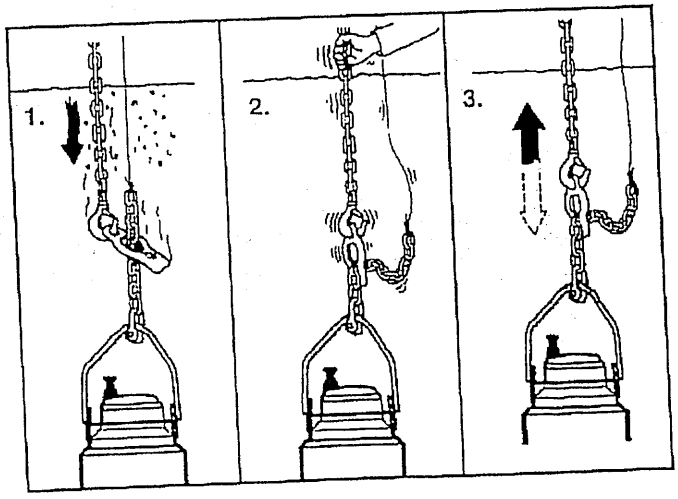
Fig. 4



All dimensions are in inches

Item	Fig. 1		Fig. 2	Fig. 3	Fig. 4
Chain Sling Ass'y	442 18 00	*442 18 06	*442 18 05	442 18 02	442 18 03
Grip-Eye	620 09 00	620 09 00	620 09 01	620 09 01	602 09 02
A	13-1/2	11-1/4	24-13/16	25	35
B	2-3/8	2-3/4	2-3/16	--	--
C	--	--	--	1-7/16	1-7/8
D	7-7/8	7-7/8	7-7/8	13-3/4	22-1/8
E	2-3/8	2-3/8	4-3/4	4-3/4	6-3/8
X	1/2	5/8	7/8	--	--

* Stainless Steel



ITT Flygt Grip-Eye System

ITT Flygt Grip-Eye System Specification

Submersible pump shall be furnished with a pump lifting-chain positive-recovery system consisting of the following components:

1. Minimum of 10 meters (33 ft.) of nylon line, of diameter matching weight of lifting chain required, connected to a short length (approximately ten links long) of high tensile strength proof-tested chain of required capacity, connected to the lifting eye or lifting bail of the submersible pump.

2. A forged "grip-eye" of wrought alloy steel, provided separately to connect to the end of the lifting cable or chain of the pump lifting device.

The operation of the pump lifting-chain positive-recovery system shall be as follows:

1. Connect small eye of "grip-eye" to end of chain or cable of external mechanical of lifting device.

2. Slip top end of nylon line through large eye of "grip-eye".

3. Lower "grip-eye" to top of pump while maintaining a taut nylon line, making sure short length of chain fastened to pump is also taut.

4. Release tension on nylon line when "grip-eye" has reached pump top. Make certain upper end of nylon line has been secured.

5. Take up tension on cable or chain of lifting device, "grip-eye" will engage links of short chain and lift pump.

Device shall be the same as the "ITT Flygt-Lift" manufactured by ITT Flygt Corporation, Norwalk, Connecticut or approved equal.

Black Box Specification - ITT Flygt Grip-Eye System

Furnish with each submersible pump one complete ITT Flygt-Lift system or approved equal. The system shall consist of 10 meters (33 ft.) nylon line, short length of high tensile strength proof-tested chain and forged steel Grip-Eye for use with mechanical lifting device (furnished by others). System shall be appropriately sized for weight of pump to be lifted.

ITT Flygt Monitoring Devices
MiniCAS

Description:

The MiniCAS modules are relays especially designed by ITT Flygt to simultaneously supervise pump motor thermal switches and ITT Flygt pump leakage detectors FLS (Stator housing) and/or CLS (Water-in-oil) installed in each small to medium Flygt pump (Models 3085 through 3300) or mixer (Series 4600).

The MiniCAS is using only two wires for two or more sensors connected in series and actually includes two current sensitive mini-relays. The principle of operation is: a 12 VDC voltage is sent to the pump sensors and the current through the input circuit is fed through the current mini-relays. One mini-relay is an overcurrent relay, the other is an undercurrent relay.

- If a normally closed thermal switch, installed into the stator winding, opens due to overheating, or one of the connecting leads is broken, the undercurrent relay will de-energize, changing its contacts status. The MiniCAS will shut down the pump.

- If the leakage sensor (FLS or CLS) is activated, the current through the sensor will increase and the overcurrent relay will be energized, changing the status of its contacts . The MiniCAS will send a "Leakage" signal or shut down the pump, depending on the MiniCAS external connections.

ITT Flygt offers MiniCAS relays in two interchangeable variants:

- MiniCAS II with external manual reset after an overtemperature tripping.

- MiniCAS II/FUS with a "Manual/Auto Reset" selector switch, which allows the pump to restart in "Auto Reset" position after the stator cools down and the thermal switches re-close. (See Technical Data next page)

MiniCAS II - Technical Data:

Operation Principle:	Current sensing
Environment:	0-50°C (32-123°F) max 90% RH
Supply Voltage:	20-30 VAC 50-60 Hz
Relay Contact Rating:	8 Amps @ 250 VAC
Voltage to Sensor:	12 VDC ±5%
Values of Operation:	3 mA<I<22 mA = OK conditions. I<3 mA = High temp. (or broken wire). I>22 mA = Leakage (or short circuit). (I = DC current measured by the MiniCAS II).
LED Indicators:	Yellow LED: for Supply Voltage presence indication. Red LED: for Overtemperature indication. Red LED: for Leakage indication.
Reset:	Manual - for Overtemperature by interrupting power supply or pushing external push-button (NO), connected between terminals 6 and 2 (not supplied with the unit). Automatic - for Leakage
Physical Size:	Width: 33mm (1.33") Height: 79mm (3.11") Depth: 75mm (2.95")
Part Number:	83 58 57 (MiniCAS II) 14-40 70 97 (Socket) - optional

MiniCAS II/FUS - Technical Data:

Operation Principle:	Current sensing
Environment:	0-50°C (32-123°F), max 90% RH
Supply Voltage:	24 VAC 50-60 Hz ±15%
Relay Contact Rating:	16 Amps @ 277 VAC
Voltage to Sensor:	12 VDC ±10%
Values of Operation:	7.0 mA<I<30 mA = OK conditions. I<7.0 mA = High temp. (or interrupt). I>30.0 mA = Leakage (or short circuit). (I = current measured by the MiniCAS II/FUS).

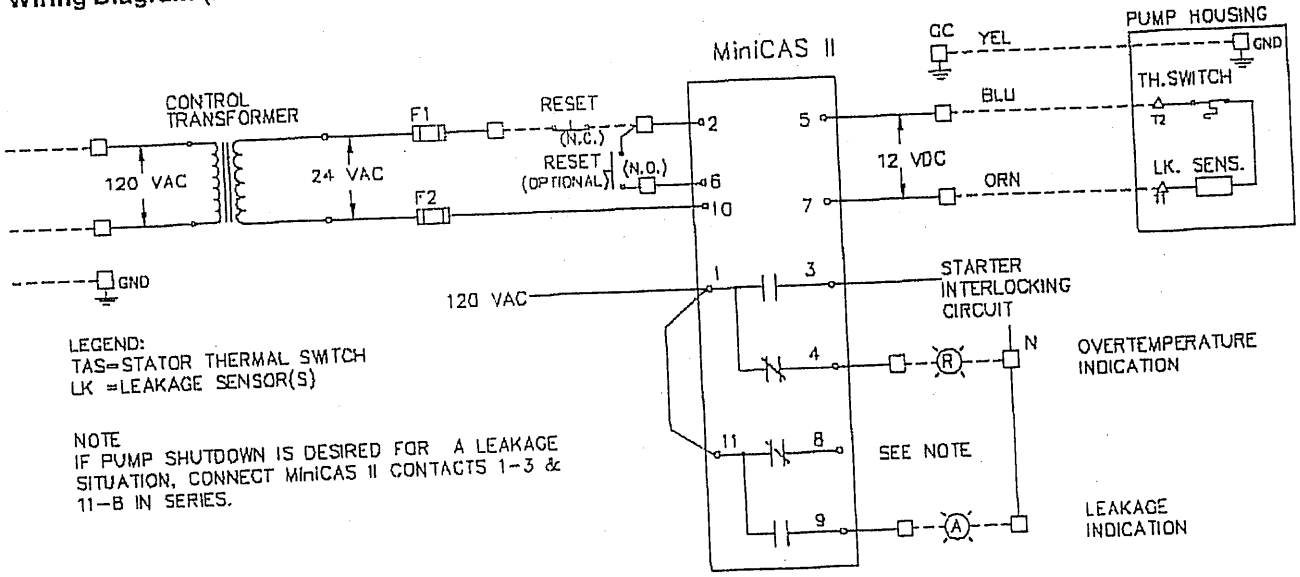
Leakage

Contact:	Form "C" 16 A @ 277 VAC (N.C. contact for interlocking)
Reset:	Automatic (N.O. contact for alarm)
LED Indicators:	Red LED On = Leakage indicated Red LED Off = No leakage indicated

Temperature

Contact:	Form "C" 16 A @ 277 VAC (N.C. contact for interlocking, N.O. contact for alarm)
Reset:	Manual - by interrupting the supply for 1 sec. or by setting the toggle switch in the "Manual" mode. Automatic - by setting the toggle switch in the "Auto Reset" mode.
LED Indicators:	Green LED On = Supply Voltage is 'On' **and** no Over-temperature present. Green LED Off = Overtemperature is present **or** no Supply Voltage indicated.
Physical Size:	Width: 1.75" Height: 2.36" Depth: 3.575"
Part Number:	14-40 71 13 (MiniCAS II/FUS) 14-40 70 97 (Socket, 11-pin) - optional
Approvals:	UL - File E132545

Wiring Diagram (MiniCAS II and MiniCAS II/FUS)



Mode of Operation

In normal conditions, when the MiniCAS II is powered, the yellow LED is 'ON' and the relay contact status is as follows:

- Overtemperature relay contacts: 1-3 closed, 1-4 open;
- Leakage relay contacts: 11-8 closed, 11-9 open.

If an overtemperature condition occurs, the unit will turn the pump off and lock it out.
Relay contact status:

- Overtemperature relay contacts: 1-3 open, 1-4 closed;
- Leakage relay contacts: 11-8 closed, 11-9 open.

The power to the pump can be restored after the stator temperature has decreased to a point of safe operation and the thermal switches are closed. The MiniCAS II has to be manually reset. The MiniCAS II/FUS can be reset either manually or automatically.

Note:
When selecting the "Automatic Reset" mode, (MiniCAS II/FUS) the control panel should include a latching type circuit for overtemperature alarm display. This circuit will retain the information that an overtemperature situation has occurred and the operator should check the possible cause for motor overtemperature.

If a leakage is detected, after a 5 sec. delay an alarm will be activated or the pump will be shut down. Relay contact status:

- Overtemperature relay contacts: 1-3 closed, 1-4 open;
- Leakage relay contacts: 11-8 open, 11-9 closed.

Once the leakage condition is removed, power is restored to the pump automatically.