

ACUMEN TECHNOLOGIES, INC.

51445 Celeste Drive • Shelby Township, MI 48315
(586) 566-8600 • Fax (586) 566-4062

Welcome to Precision Lubrication
by ACUMEN

Conveyors/Chain, Assembly Systems, Drilling Systems, Spindles



Visit us on the web at:
www.acumen-tech.com

All of the employees here at Acumen Technologies, Inc. work together as a team and as individuals to provide the highest level of customer service and the most advanced products we can offer. Attitude is an important factor in this equation. When attitude is right, great things will happen !

Company Profile

Acumen Technologies, Inc. was established in November, 1997. We began as a group dedicated to the manufacture of high quality, precision fluid delivery systems. Our employees have extensive experience in this discipline and are driven to be the finest supplier of these systems in the world.

Acumen Technologies, Inc. has a distributor network where strategically located, technically trained personnel are available to provide field support for the products we offer.

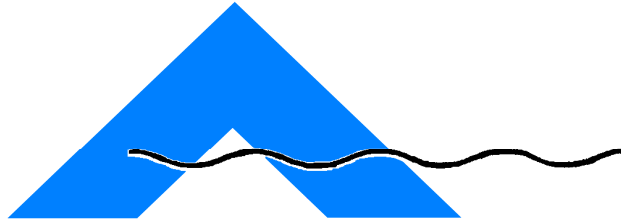
There exists countless applications in these industries where Acumen Technologies, Inc. either has, or is developing, solutions to manufacturing problems. Acumen's product offering solves fluid delivery and lubrication problems in such areas as:

- Mechanical and motion control devices - air motors, power tools, actuators
- Conveyors / Chain
- Assembly Systems

It is our mandate to deliver the proper amount of fluid, where it is required, when it is required, every time it is required. It is imperative that the products we offer satisfy current industry needs, and that we remain focused on the identification of opportunities for the future. Engineered solutions to process and manufacturing problems, in the arena of fluid delivery, is our foundation.

Manufacturing Facility

Our plant is located in Shelby Township, Michigan, approximately twenty-five miles northeast of Detroit. Here we produce fluid delivery systems satisfying the requirements of numerous markets including Automotive, Textile, Product Assembly, Food Processing, Primary Metals, Plastics, Power Generationand more.



ACUMEN TECHNOLOGIES, INC. SERIES 2000 CHAIN LUBRICATION SYSTEM

ACUMEN TECHNOLOGIES' State-of-the-art SERIES 2000 Chain Lubrication System dispenses lubricant to chains in a continuous pinpoint flow. This allows lubrication of the chain in any application without overspray or oil contamination of your product or environment. No mist or atomized fluid exists inside the nozzle. Our nozzle uses **Thin Film Technology** to deliver consistent oil to the tip.

FEATURES

- External Oil Reservoir provides visual fluid level indication
- NEMA12 electrical housing
- Expandable housing will handle any nozzle quantity required to reach all lube points with a single system
- Powder Coat Baked Paint Finish
- Multiple Regulators Available to Balance Tubing Run Distances
- Easily Serviced, External High Capacity Filter
- Low Oil - Low Air Pressure Switches Standard
- Capable of spraying different chains, both continuous and pulse spray with a single system



DRAMATICALLY REDUCE OIL CONSUMPTION

Delivers oil in a pinpoint spray in volumes as little as .005ml per minute to as much as 4.8ml per minute. Accurate delivery of small quantities of fluid eliminates the problem of product contamination.

ADVANTAGES

- **Extended Chain Life:** Proper delivery of lubricant to the sliding and rolling elements of the chain provides extended life of the chain pins, links, sliding wear surfaces, and bearings.
- **Power Savings:** Proper lubrication of the chain sliding surfaces and rolling wheel components reduces friction. This reduction in friction will result in a power savings by a decrease in amperage draw of the drive motor.
- **Consistent Delivery:** No puddling of oil on the chain or product as with conventional drip or brush lubricators.
- **Reduced oil consumption:** By applying the lubricant in small controlled quantities, where it's needed, when it's needed, oil reductions of 50% to 90% are achieved over conventional chain lubrication systems.
- **Precise Volume Control:** Positive displacement pump with adjustable or nonadjustable metering pin injects precise amount of lubricant to the nozzle.
- **Accurate Delivery:** Strategically positioned nozzles (no bent tubes) direct lubricant to the wear points with no overspray.

Specifications

Electrical:

NEMA 12/13 Enclosure
110/120 VAC 50/60 Hz
24 VDC

Pneumatic:

Inlet: 3/8 NPT to be supplied with 3/8" pipe or 1/2" steel tubing
Pressure: 60PSIG min / 120PSIG max
Filter: High Capacity 5 Micron

Oil Reservoir:

2000ml Standard with Central Fill Adapter
1,5,10,30 Gallon Available
Optional sizes up to 30 Gallons
Low Reservoir Level Float Switch
Max switching power 70VA
Switch contact: SPST NO
Voltage: 120 VAC or 24 VDC

Fluids Delivered:

Oil and similar fluids 70 SSU - 2000 SSU

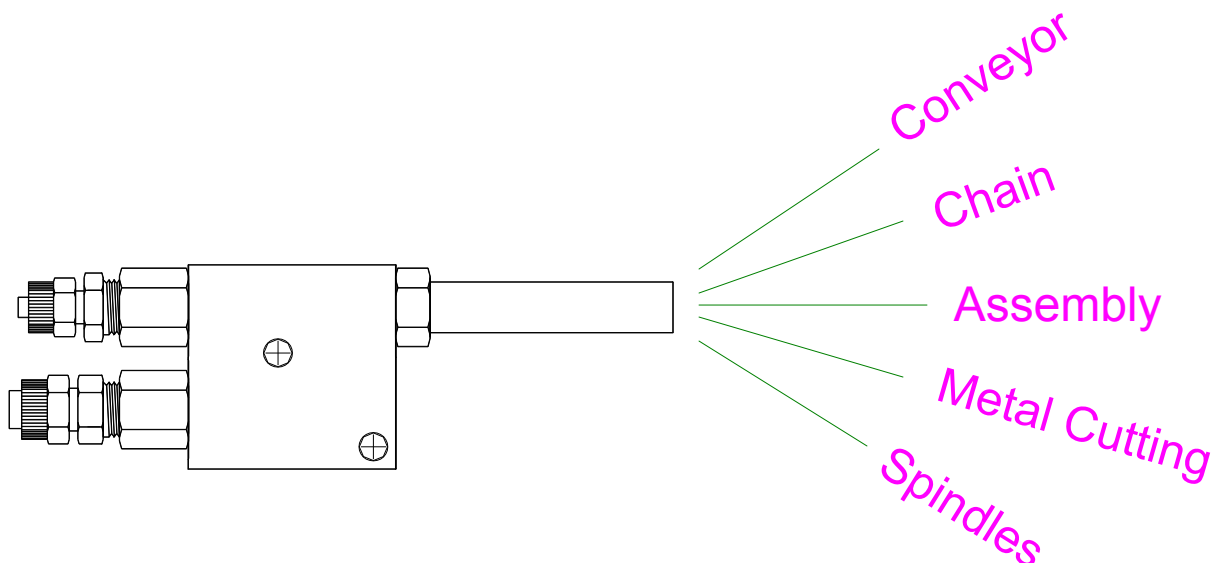
Nozzles:

Acumen nozzles are available for a wide variety of spray patterns:

Pin Point
360 degree
Cone Spray
Flat Spray
Special Application Nozzles

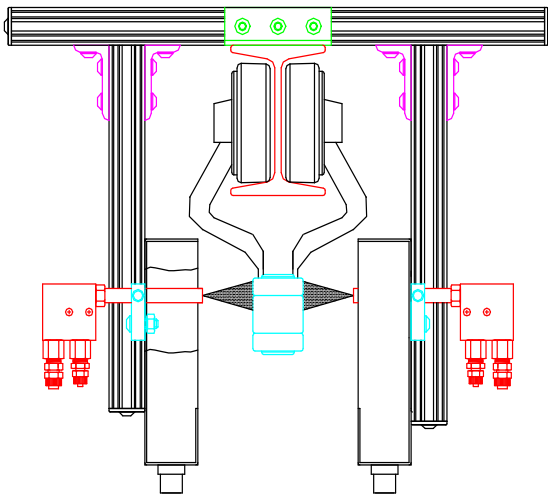
Injector Pump Displacements:

0.015ml (1/2 Drop)
0.030ml (1 drop)
0.060ml (2 Drop)



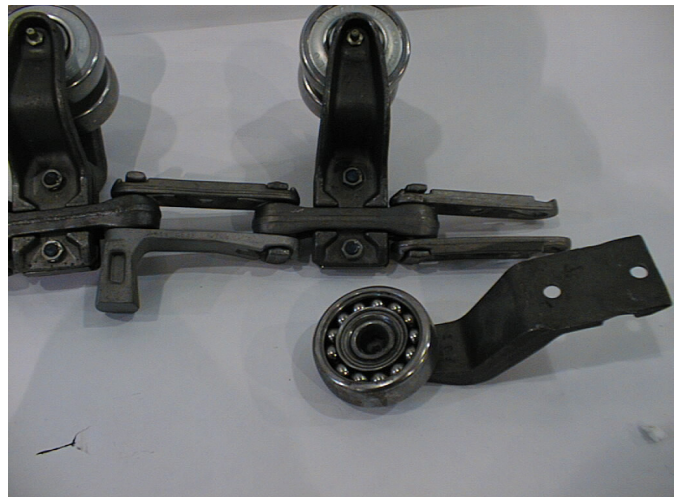
Power & Free Conveyor

Rivetless Chain is very common in conveyor applications. Trolley wheels are attached and traveling on various size I-Beam moving products through the plant. Typically, the product being manufactured, or transferred, is suspended below the conveyor chain.



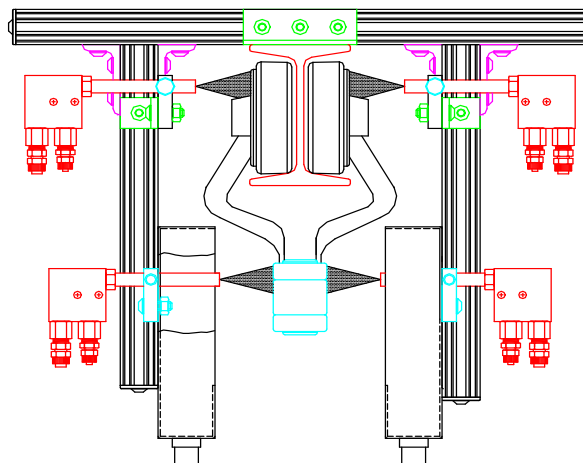
Acumen's **thin film delivery** systems can dispense as little as .015 ml of oil in a consistent pattern over a period of several minutes forcing lubricant into the pins of this type of chain as they pass. We have a wide range of fluid delivery capability exceeding .060 ml per second. Hitting the target, which requires the lubrication, is obviously very important. For this reason, we make all of our nozzle brackets multi-axis for maximum adjustability.

Properly lubricating the conveyor chain with a thin film of oil will: increase chain life; reduce unscheduled downtime; reduce power consumption; reduce the amount of oil purchased; and clean up your plant. But the chain is not the only component of this conveying system that requires lubrication. The trolley wheels are also a critical component that, if left to run dry, will cause numerous problems.

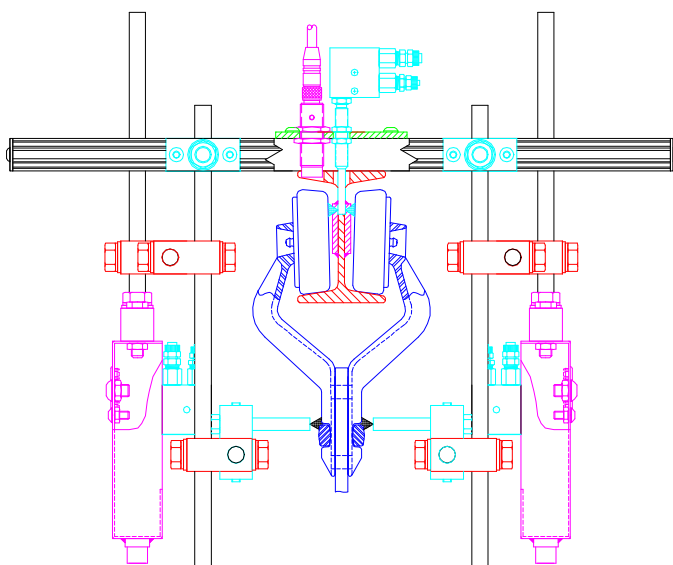


Power & Free Conveyor

Trolley wheels are available in a number of configurations. Most trolley wheels are 3, 4, & 6" for this type of chain. Some are sealed and grease packed while many contain ball bearings which are exposed. The open wheel trolley can be either internal or external in relation to the I-Beam. In other words, external bearings will be visible when looking at the wheels traveling on the I-Beam. Internal are not visible and appear to be a sealed trolley at first glance.



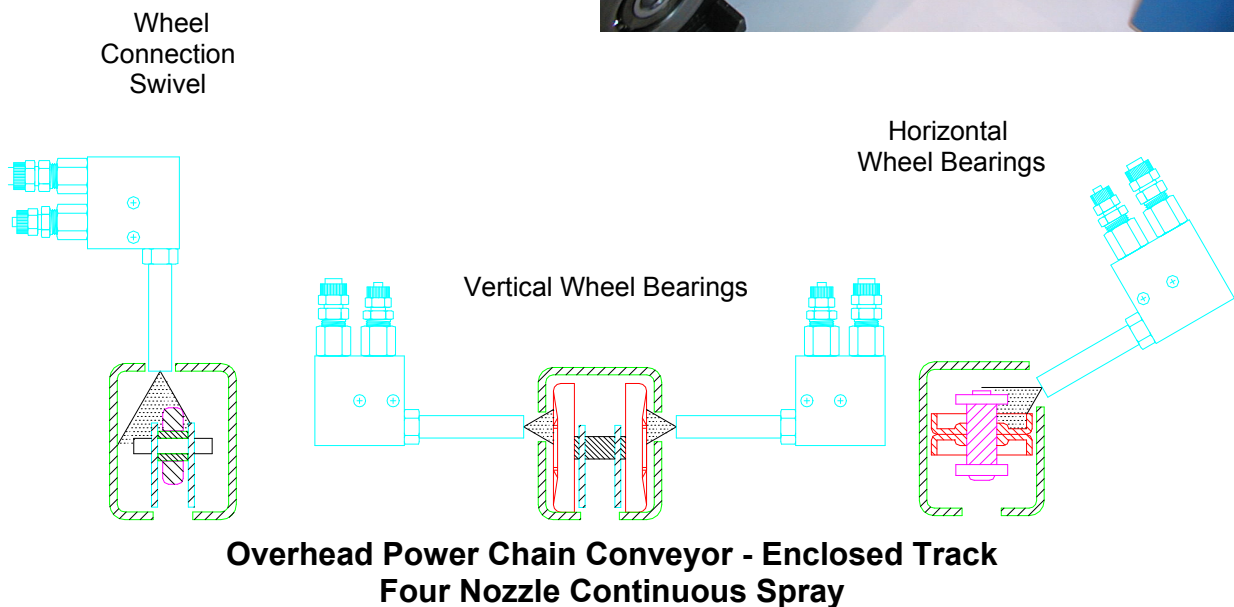
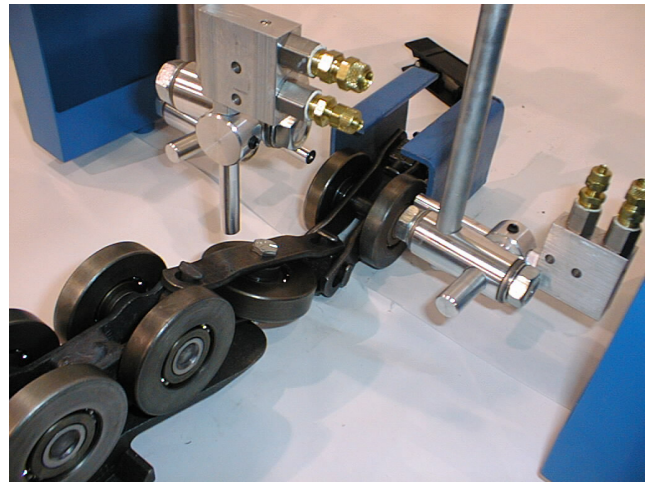
Acumen lubricates open wheel trolleys (internal & external) by sensing their presence with a proximity switch and pulsing the lubricant onto the ball bearings. Wheel rotation distributes oil to the inner and outer race.



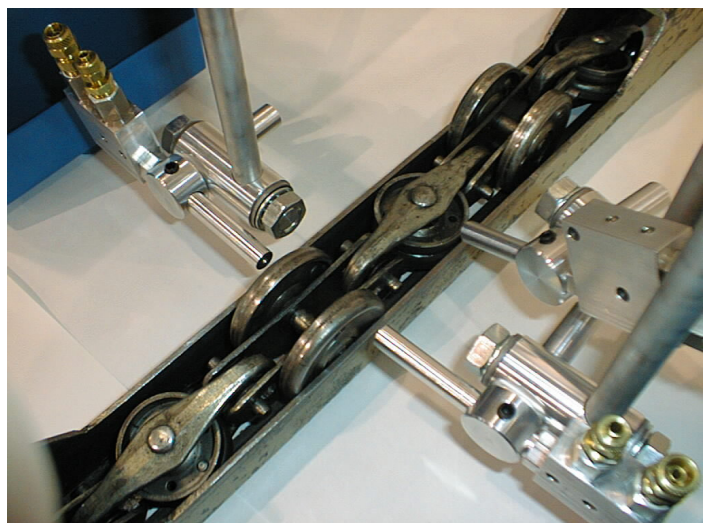
When using an internally open bearing trolley, the I-Beam needs to be modified with a slot to accept the nozzle tip. Acumen's special nozzle tip dispenses lubricant in a thin film out two sides of the tip to lubricate the trolley pair as it passes. In addition, we supply two guide plates to properly center the trolley pair on the I-Beam to ensure the oil hits the target and to prevent the trolley from damaging the nozzle tip.

Enclosed Rail

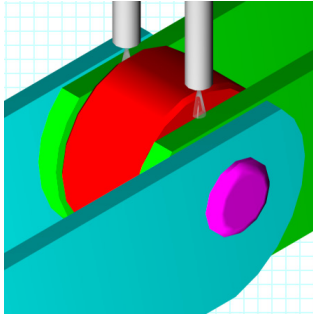
Acumen's lubrication systems for enclosed rail ensure that a thin film of lubrication is consistently delivered to the sliding and rolling surfaces. Multiple nozzles are usually required for this style of conveyor chain.



The positioning of the nozzles is critical and simplified by our multi-axis brackets. Cutting away a small portion of the track gives us the window required to hit the targets at any angle required.

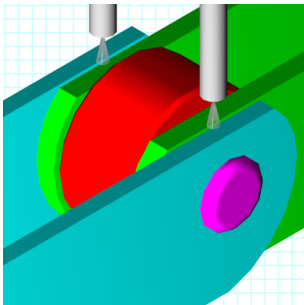
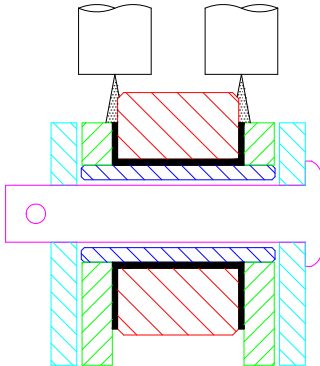


Roller Chain

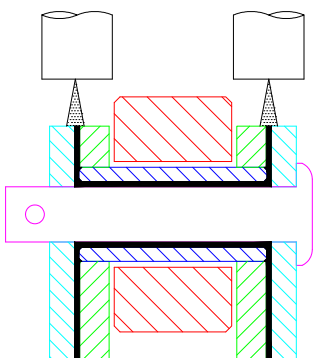


Roller chains are manufactured in many sizes and materials for numerous applications. It is essential that the pins, bushings, and any other sliding surface or rolling element be properly lubricated. The illustrations to the right show how an Acumen system dispenses a thin film of oil to lubricate the bushing and roller, since the roller is load bearing in this example.

Conventional lubrication systems cannot hit the target as accurately and our use of low pressure air helps force a small amount of lubricant to where it needs to be. At the same time, our nozzles provide a cleaning function of debris that may have collected on the chain.



Providing lubricant to the pins of roller chain is also very important in increasing chain life, reducing unscheduled downtime & chain stretch, and reducing power consumption. Depending on the roller width, and chain position (horizontal, horizontal on side, or vertical), multiple nozzles may be required to place the oil, “boundary agent”, where it needs to be.

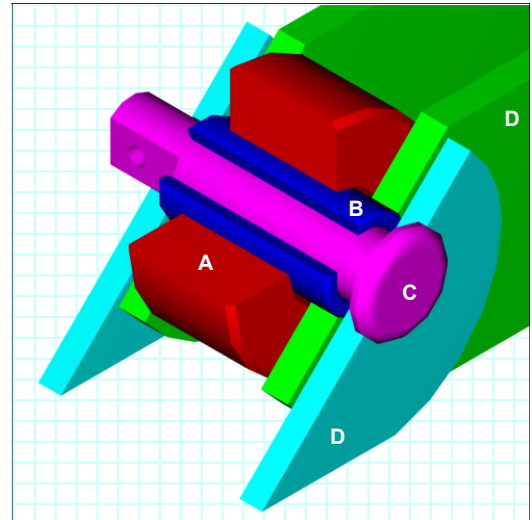


Some typical applications are:

- **Flat top conveyors**
- **Drag conveyors**
- **Elevators**
- **Transfers**
- **Drive chains**

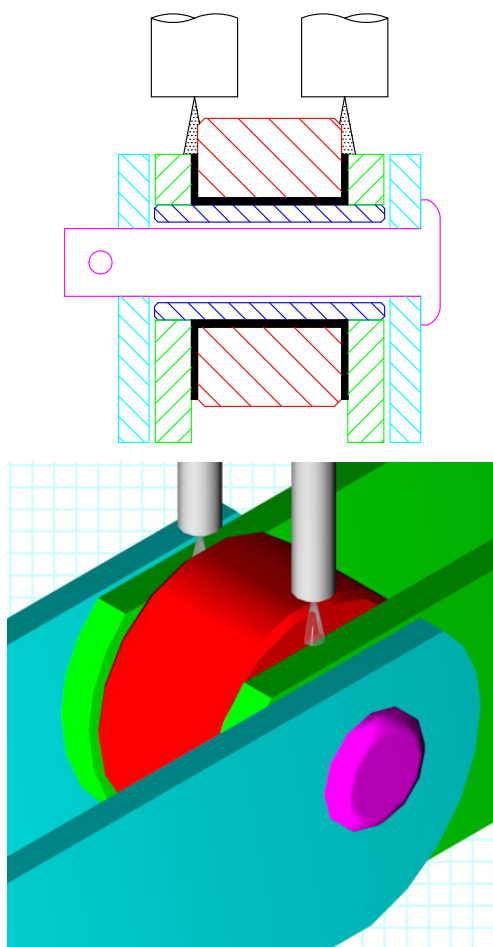
Proper Chain Lubrication

To extend chain life - Excessive pin and roller bushing wear must be eliminated by providing boundary lubrication between the rolling and or sliding elements of the chain. To accomplish this, a continuous thin film of lubricant must be supplied to proper points on the chain. The Acumen system uses air/oil, thin film technology to deliver the lubricant in small continuous quantities to the chain. The lubricant is delivered to the exact point on the chain necessary for it to migrate between the pin and bushing and between the roller and bushing. As the chain link travels through its cycle and returns to the nozzle, it is replenished with fresh lubricant. The air helps force lubricant further into the critical wear points and provides a cleaning effect by removing contaminants from the chain. This re-lubrication cycle varies depending on the chain length, speed and temperature. By applying the lubricant in small controlled quantities, where it's needed, when it's needed, substantial oil reduction can be achieved over conventional chain systems.

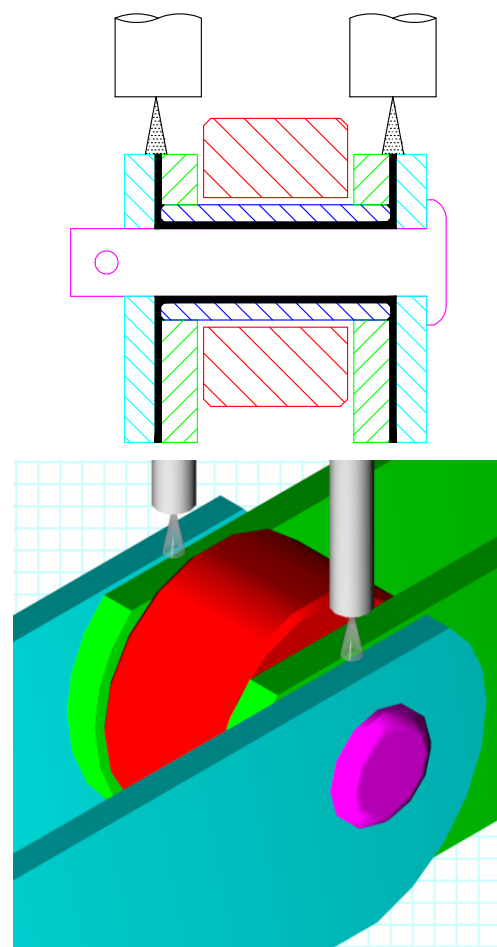


Typical Chain Components

- A – Roller
- B – Bushing
- C – Pin
- D – Link Plates

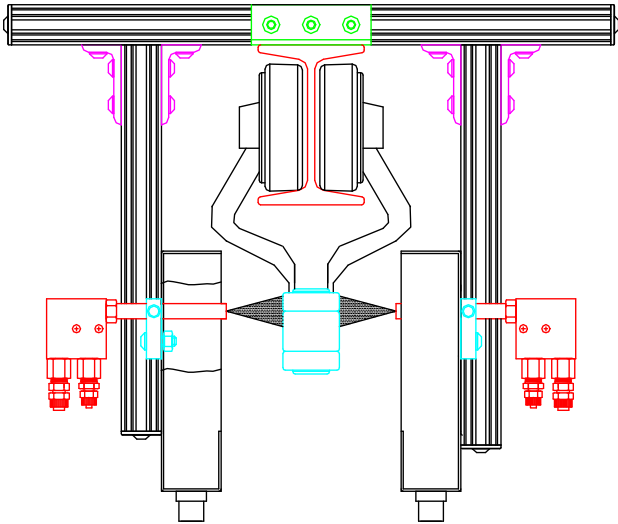


Lubrication of Roller & Bushing

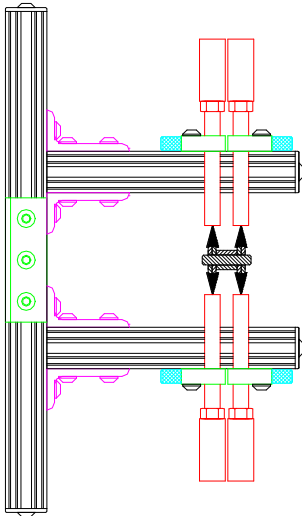


Lubrication of Pin

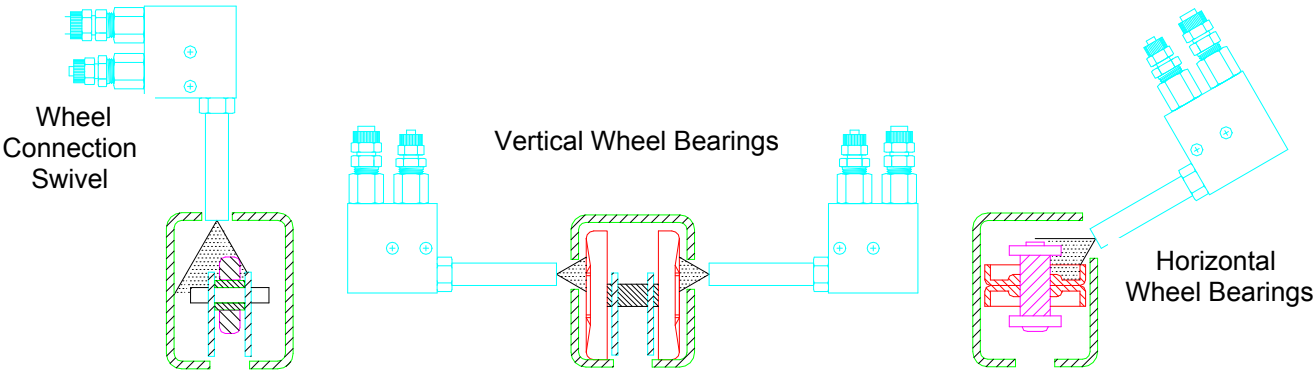
Typical Nozzle Locations



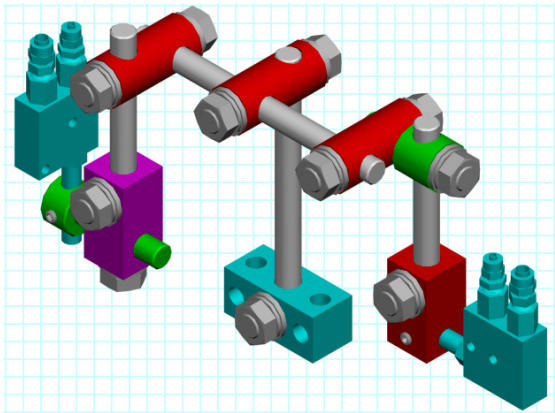
Two Nozzle - Continuous



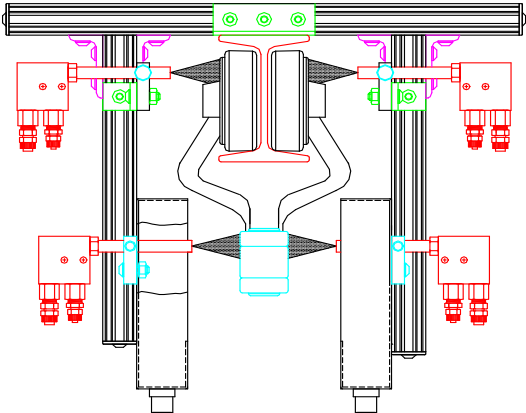
Can Deco
Four Nozzle Continuous



Overhead Power Chain Conveyor - Enclosed Track
Four Nozzle Continuous Spray

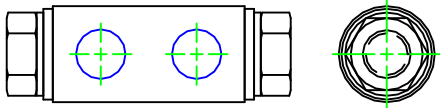


Modular Aluminum
Bracket System

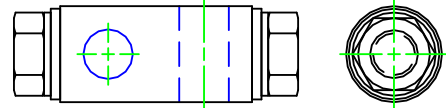


Four Nozzle - Two Continuous / Two
Intermittant Spray

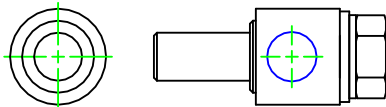
Modular Aluminum Bracket System



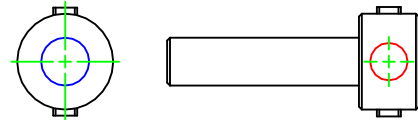
(1) Parallel Block Sleeve Assembly
500 001167 00



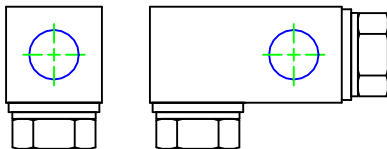
(2) Cross Block Sleeve Assembly
500 001166 00



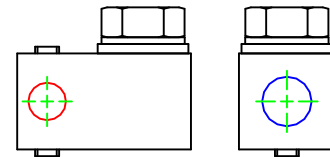
(3) Rod Swivel Block Assembly
500 001169 00



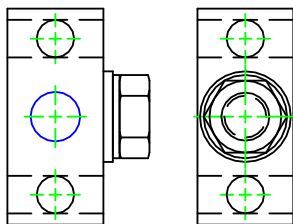
(4) Nozzle Swivel Block Assembly
500 001165 00



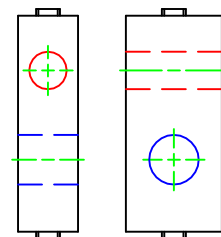
(5) End Block Assembly
500 001168 00



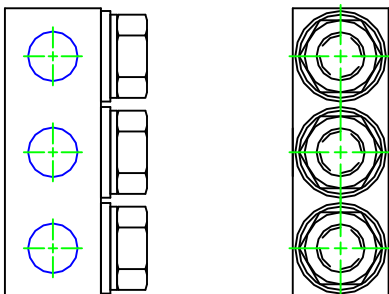
(6) Nozzle End Block Assembly
500 001164 00



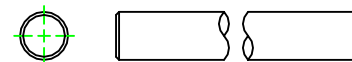
(7) Mounting Block Assembly
500 001170 00



(8) Nozzle Holder Block Assembly
500 001163 00



(9) Three Rod Block Assembly
500 001199 00



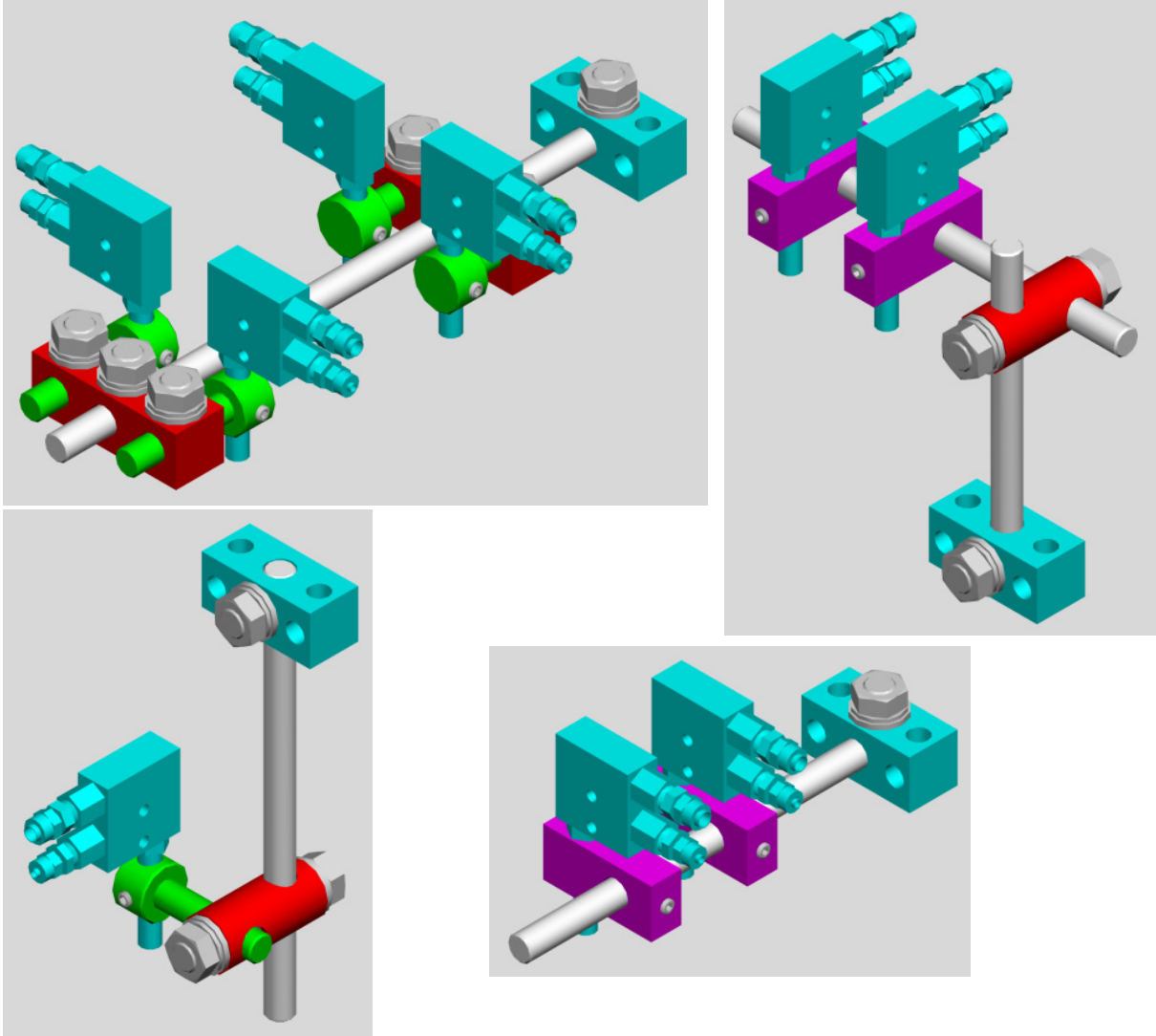
(10) 1/2" Diameter Mounting Rod
100 001664 00

Drawings are 1/2 Scale

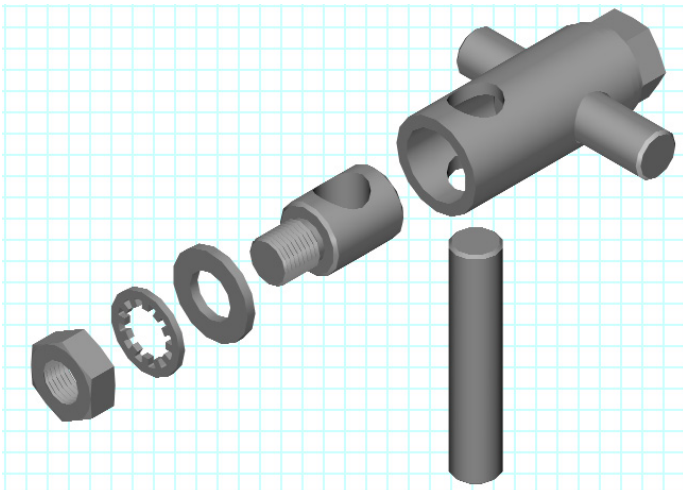
Red holes are for mounting nozzles

Blue holes are for mounting rod or other assemblies

Modular Aluminum Bracket System



Fixture Assembly Examples

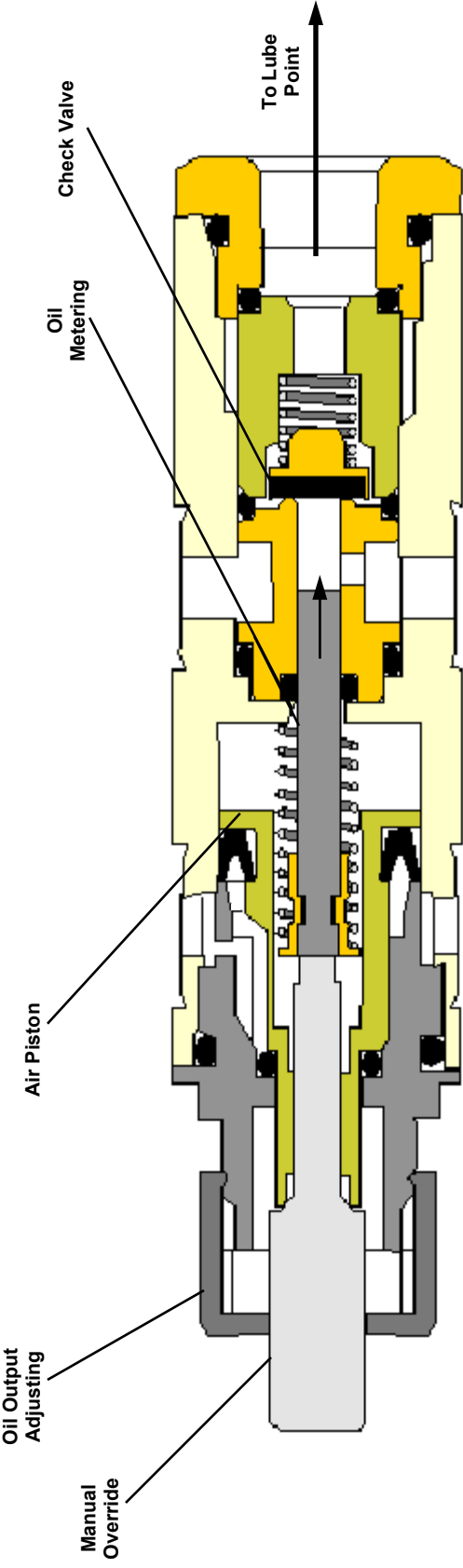


Ordering:

Order each assembly with the 500 series part number.
Order the aluminum rod with the 100 series part number and specify length in inches.
Assemblies are shipped with all the necessary fasteners.

Assembly:

To fasten assemblies together insert part or rod into the insert fitting and tighten with a 3/4" wrench.
Set screws that hold the nozzles in place require an 1/8" Allen wrench.



Air Side

Minimum pressure 60 PSIG
with output oil pressure
ratio of 11:1

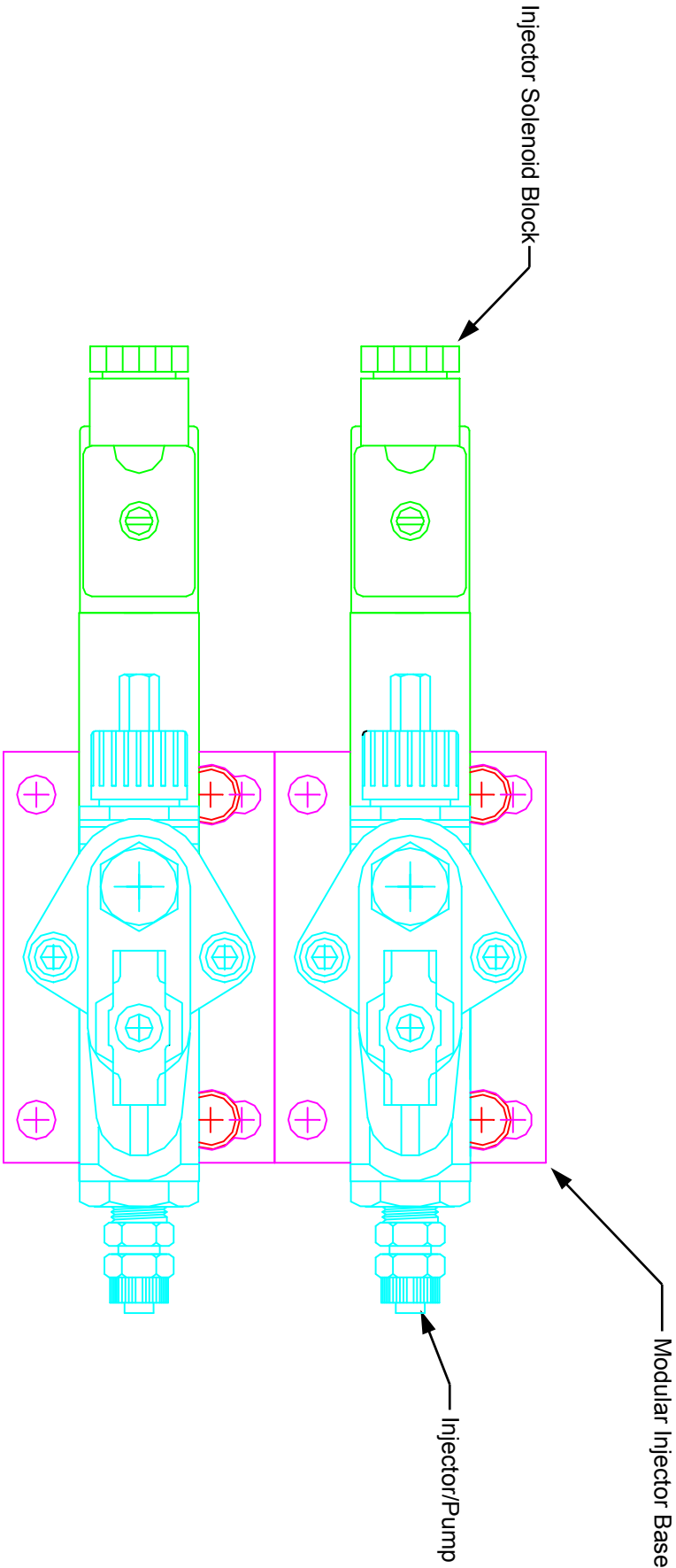
Oil or Liquid Side

Fed by a gravity reservoir
or pressurized supply
at 30 PSIG or less

Injector / Pump
0.015ml 1/2 Drop
0.030ml 1 Drop
0.060ml 2 Drop



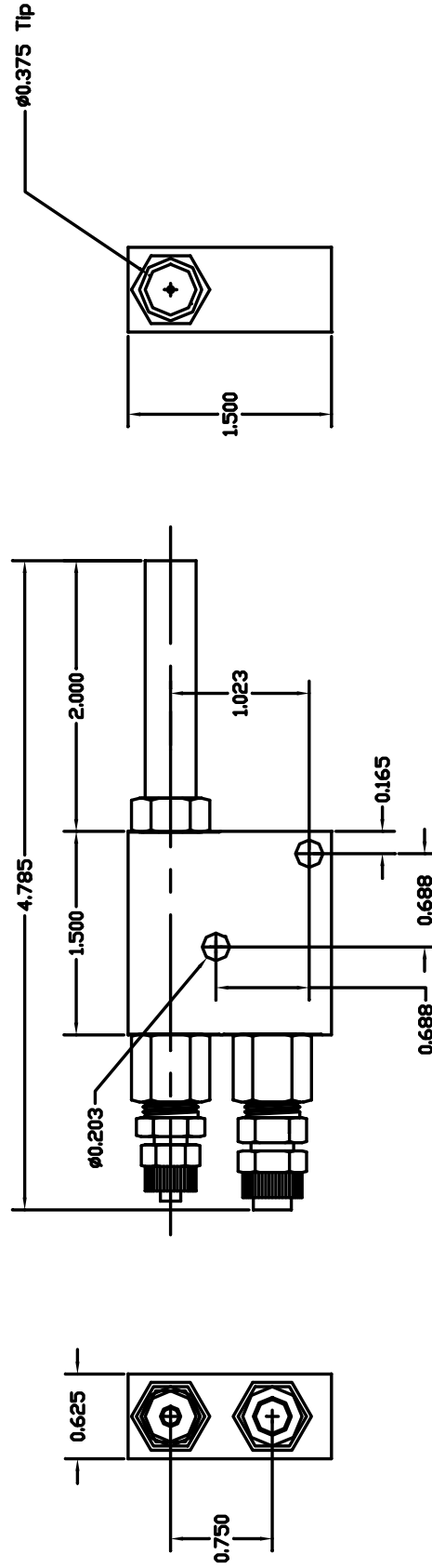
Technical Information



Injector Manifold Base



Technical Information



Nozzle Assembly 1 1/2" Body 2"

Pin Point Tip

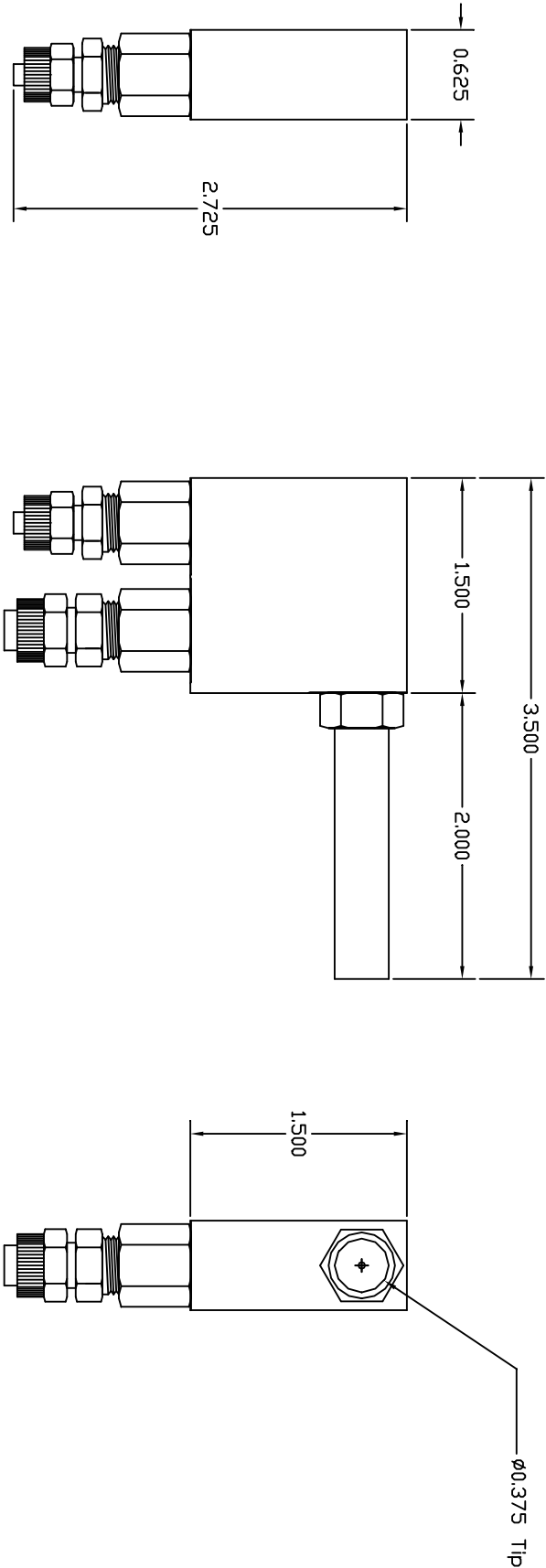
Part Number 500 000544 00



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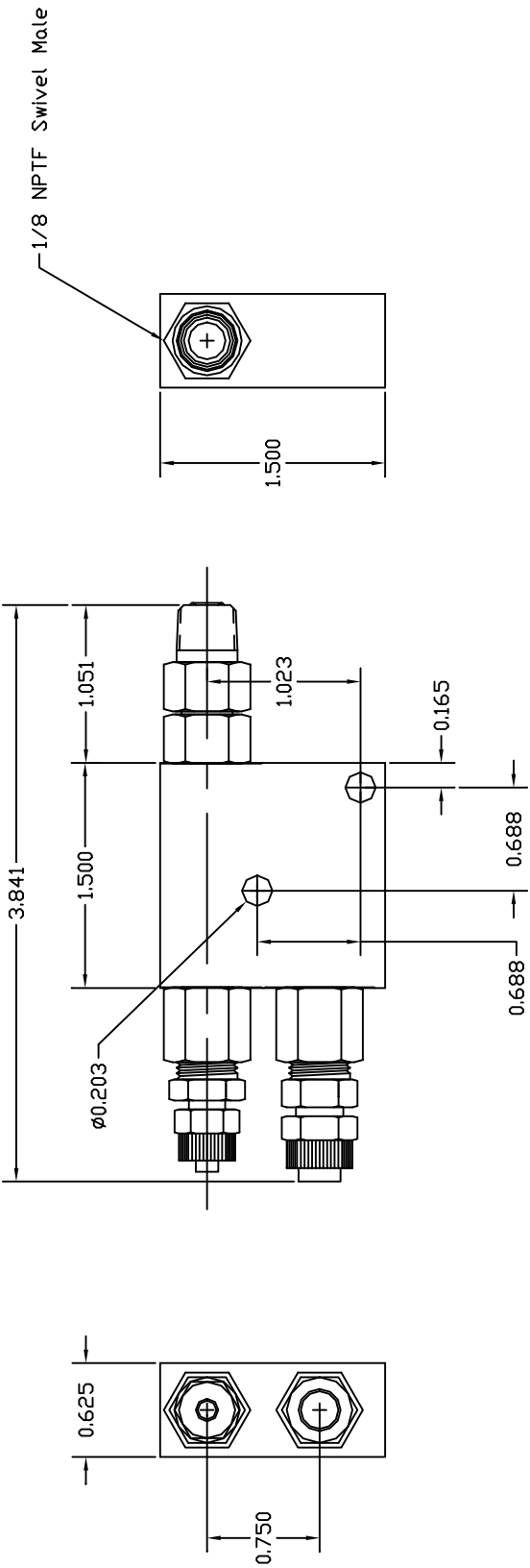
Technical Information



Nozzle Assembly 1 1/2" Body
90 Degree 2" Pin Point Tip
Part Number 500 000702 00



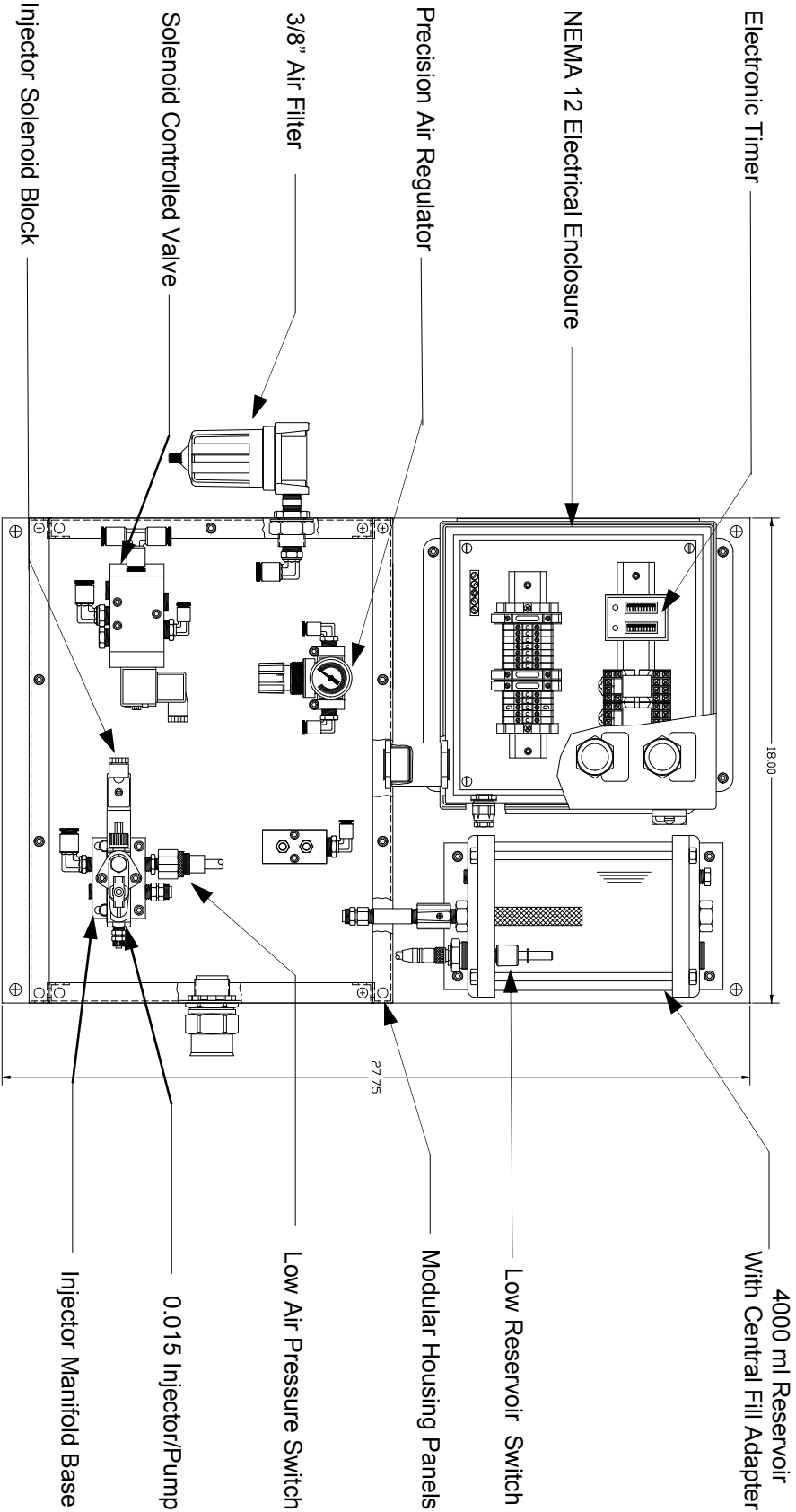
Technical Information



Nozzle Assembly 1 1/2" Body
1/8" NPTF Tip
Part Number 500 000302 00



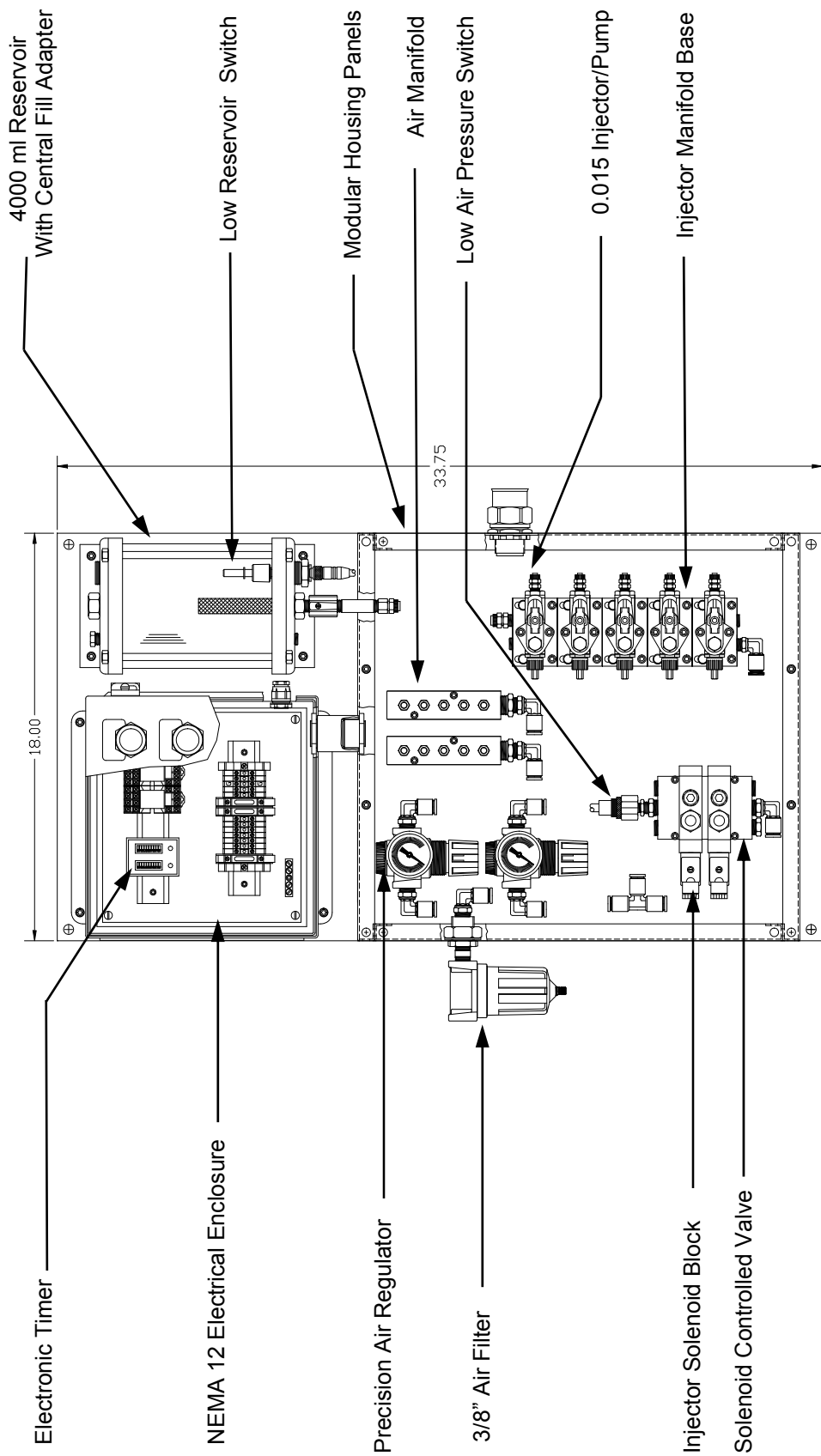
Technical Information



Typical Chain System Layout



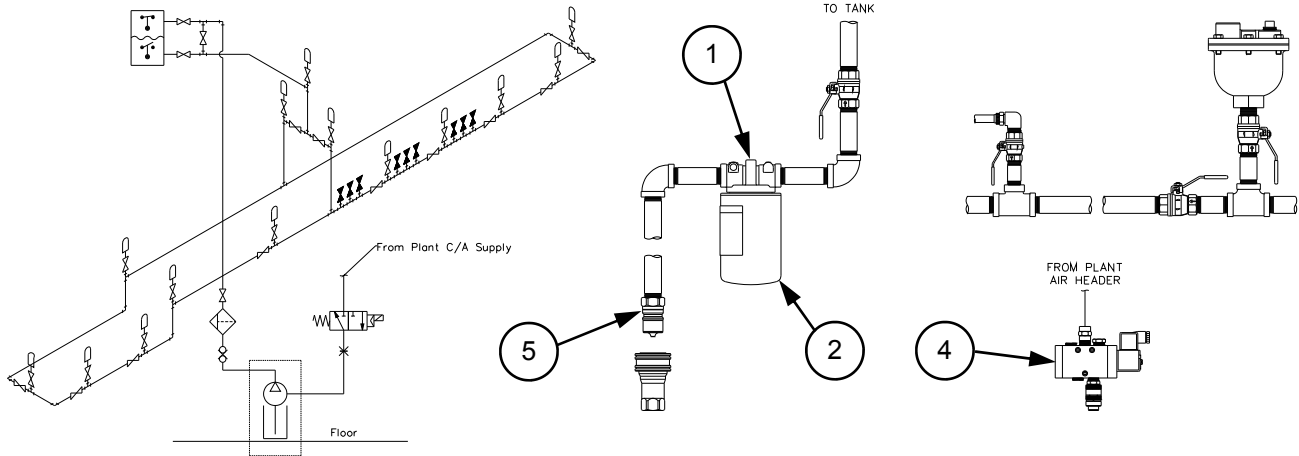
Technical Information



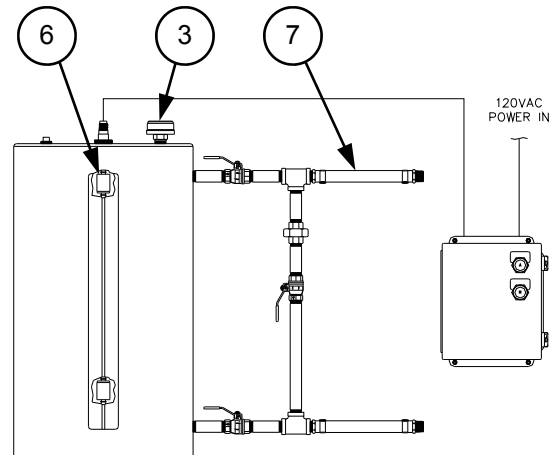
Typical Chain System Extended Housing 40 Nozzles



OIL DELIVERY SYSTEMS

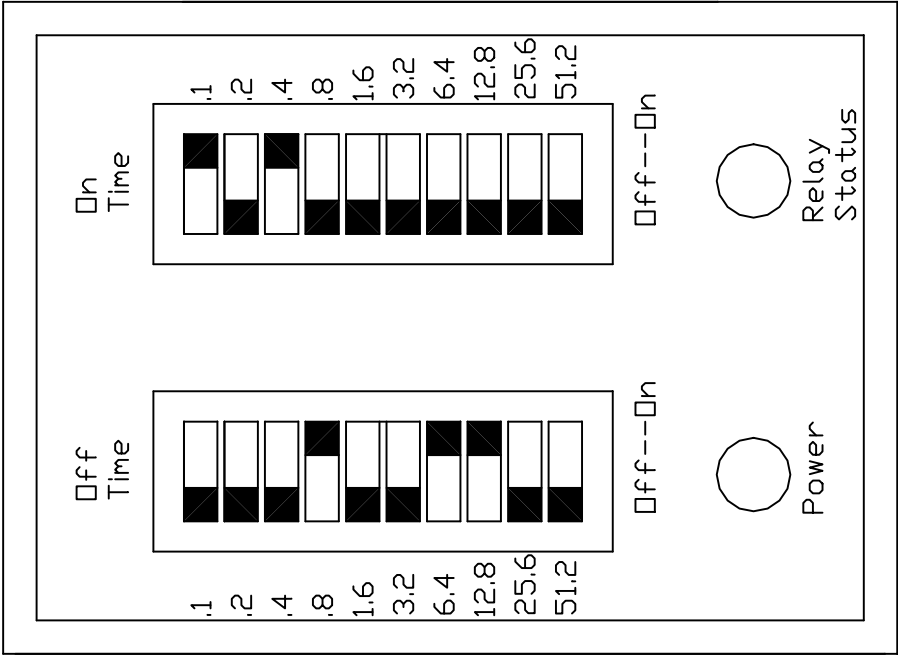


Det.	DESCRIPTION	Number	System Features
	30 Gallon Reservoir with Standard Controls	ODS-C-S	Higher Volume Polyethylene Reservoir
	30 Gallon Reservoir with Auto Pump-Up Controls	ODS-C-P	<ul style="list-style-type: none"> Reduction in Cost of Fill Holds a Full 25 Gallon Drum of Oil
	30 Gallon Polyethylene Reservoir Only	ODS-T-X	Electronic Controls
	Electronic Control Package Only	ODS-E-S	<ul style="list-style-type: none"> Visual and / or Electronic Indication
	Electronic Control Package with Pump Up Controls	ODS-E-P	<ul style="list-style-type: none"> Available w/ Automatic Fill Controls
	Drum Pump Only	ODS-PUMP	Gravity System
	Air Hose to Pump	10705-68-P5-MO4R	<ul style="list-style-type: none"> Simplicity by Design Maintenance Free
	Oil Hose from Pump	10707-128-M12R-DHS12	System Capability - 1000 Lineal Feet Pipe
	Portable Oil Fill Cart	AC-OFC97	<ul style="list-style-type: none"> Design by ACUMEN
	Oil Header Vent	ODS-VENT	
	Poly Tubing, 3/8 OD Tube	ODS-222-6	
	Porous Bronze Filter Assembly - 3/8 Tube	AC-584-18	
	Central Fill Line Quick Disconnect Plug	AC-HN2	
	Central Fill Line Quick Disconnect Socket	AC-HK2	
	Capillary Tube Pliers	CTP97	
①	Complete Oil Filter Assembly	ODS-1-X	
②	Replacement Filter Element	ODS-2-X	
③	Replacement Breather For Reservoir	ODS-3-X	
④	Replacement Air Solenoid Valve	ODS-4-X	
⑤	Replacement Disconnect For Oil Fill	ODS-5-X	
⑥	Replacement HI-LO Switch Assembly	ODS-6-X	
⑦	Replacement Isolator Hose	ODS-7-X	



**Your total system can be designed by Acumen Technologies, Inc. at no charge.
Contact your technically trained, local Authorized Distributor for details.**

Example is set at
20 Seconds
Adjustable Up To
102.3 Seconds Max.



Must be set at
.5 Seconds

Optional Timing Range
1 Second to 1023 Seconds
In 1 Second Increments

Electronic Injector Volume Control Timer





ACUMEN TECHNOLOGIES, INC.

Fluid Delivery Rate Chart For 0.015 ml Injector

0.015 ml = 1/2 Drop 0.060 ml = 2 Drops 1 Gallon = 126,167 Drops
0.030 ml = 1 Drop 1 Gallon = 3785 ml

Timer Setting	Fluid Delivery Rate In ml						
Seconds	Per Min	Per Hour	Per 8 Hour	Per 24 Hour	Per Week	Per Month	Per Year
1	0.600	36.000	288.000	864.000	6,048.00	25,920.00	311,040.00
2	0.360	21.600	172.800	518.400	3,628.80	15,552.00	186,624.00
3	0.257	15.429	123.429	370.286	2,592.00	11,108.57	133,302.86
4	0.200	12.000	96.000	288.000	2,016.00	8,640.00	103,680.00
5	0.164	9.818	78.545	235.636	1,649.45	7,069.09	84,829.09
6	0.138	8.308	66.462	199.385	1,395.69	5,981.54	71,778.46
7	0.120	7.200	57.600	172.800	1,209.60	5,184.00	62,208.00
8	0.106	6.353	50.824	152.471	1,067.29	4,574.12	54,889.41
9	0.095	5.684	45.474	136.421	954.95	4,092.63	49,111.58
10	0.086	5.143	41.143	123.429	864.00	3,702.86	44,434.29
11	0.078	4.696	37.565	112.696	788.87	3,380.87	40,570.43
12	0.072	4.320	34.560	103.680	725.76	3,110.40	37,324.80
13	0.067	4.000	32.000	96.000	672.00	2,880.00	34,560.00
14	0.062	3.724	29.793	89.379	625.66	2,681.38	32,176.55
15	0.058	3.484	27.871	83.613	585.29	2,508.39	30,100.65
16	0.055	3.273	26.182	78.545	549.82	2,356.36	28,276.36
17	0.051	3.086	24.686	74.057	518.40	2,221.71	26,660.57
18	0.049	2.919	23.351	70.054	490.38	2,101.62	25,219.46
19	0.046	2.769	22.154	66.462	465.23	1,993.85	23,926.15
20	0.044	2.634	21.073	63.220	442.54	1,896.59	22,759.02
21	0.042	2.512	20.093	60.279	421.95	1,808.37	21,700.47
22	0.040	2.400	19.200	57.600	403.20	1,728.00	20,736.00
23	0.038	2.298	18.383	55.149	386.04	1,654.47	19,853.62
24	0.037	2.204	17.633	52.898	370.29	1,586.94	19,043.27
25	0.035	2.118	16.941	50.824	355.76	1,524.71	18,296.47
26	0.034	2.038	16.302	48.906	342.34	1,467.17	17,606.04
27	0.033	1.964	15.709	47.127	329.89	1,413.82	16,965.82
28	0.032	1.895	15.158	45.474	318.32	1,364.21	16,370.53
29	0.031	1.831	14.644	43.932	307.53	1,317.97	15,815.59
30	0.030	1.770	14.164	42.492	297.44	1,274.75	15,297.05
31	0.029	1.714	13.714	41.143	288.00	1,234.29	14,811.43
32	0.028	1.662	13.292	39.877	279.14	1,196.31	14,355.69
33	0.027	1.612	12.896	38.687	270.81	1,160.60	13,927.16
34	0.026	1.565	12.522	37.565	262.96	1,126.96	13,523.48
35	0.025	1.521	12.169	36.507	255.55	1,095.21	13,142.54
36	0.025	1.479	11.836	35.507	248.55	1,065.21	12,782.47
37	0.024	1.440	11.520	34.560	241.92	1,036.80	12,441.60
38	0.023	1.403	11.221	33.662	235.64	1,009.87	12,118.44
39	0.023	1.367	10.937	32.810	229.67	984.30	11,811.65
40	0.022	1.333	10.667	32.000	224.00	960.00	11,520.00
41	0.022	1.301	10.410	31.229	218.60	936.87	11,242.41
42	0.021	1.271	10.165	30.494	213.46	914.82	10,977.88
43	0.021	1.241	9.931	29.793	208.55	893.79	10,725.52
44	0.020	1.213	9.708	29.124	203.87	873.71	10,484.49
45	0.020	1.187	9.495	28.484	199.38	854.51	10,254.07



ACUMEN TECHNOLOGIES, INC.

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0.015 ml = 1/2 Drop 0.060 ml = 2 Drops 1 Gallon = 126,167 Drops
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Timer Setting	Fluid Delivery Rate In ml						
Seconds	Per Min	Per Hour	Per 8 Hour	Per 24 Hour	Per Week	Per Month	Per Year
46	0.019	1.161	9.290	27.871	195.10	836.13	10,033.55
47	0.019	1.137	9.095	27.284	190.99	818.53	9,822.32
48	0.019	1.113	8.907	26.722	187.05	801.65	9,619.79
49	0.018	1.091	8.727	26.182	183.27	785.45	9,425.45
50	0.018	1.069	8.554	25.663	179.64	769.90	9,238.81
51	0.017	1.049	8.388	25.165	176.16	754.95	9,059.42
52	0.017	1.029	8.229	24.686	172.80	740.57	8,886.86
53	0.017	1.009	8.075	24.224	169.57	726.73	8,720.75
54	0.017	0.991	7.927	23.780	166.46	713.39	8,560.73
55	0.016	0.973	7.784	23.351	163.46	700.54	8,406.49
56	0.016	0.956	7.646	22.938	160.57	688.14	8,257.70
57	0.016	0.939	7.513	22.539	157.77	676.17	8,114.09
58	0.015	0.923	7.385	22.154	155.08	664.62	7,975.38
59	0.015	0.908	7.261	21.782	152.47	653.45	7,841.34
60	0.015	0.893	7.140	21.421	149.95	642.64	7,711.74
61	0.015	0.878	7.024	21.073	147.51	632.20	7,586.34
62	0.014	0.864	6.912	20.736	145.15	622.08	7,464.96
63	0.014	0.850	6.803	20.409	142.87	612.28	7,347.40
64	0.014	0.837	6.698	20.093	140.65	602.79	7,233.49
65	0.014	0.824	6.595	19.786	138.50	593.59	7,123.05
66	0.014	0.812	6.496	19.489	136.42	584.66	7,015.94
67	0.013	0.800	6.400	19.200	134.40	576.00	6,912.00
68	0.013	0.788	6.307	18.920	132.44	567.59	6,811.09
69	0.013	0.777	6.216	18.647	130.53	559.42	6,713.09
70	0.013	0.766	6.128	18.383	128.68	551.49	6,617.87
71	0.013	0.755	6.042	18.126	126.88	543.78	6,525.31
72	0.012	0.745	5.959	17.876	125.13	536.28	6,435.31
73	0.012	0.735	5.878	17.633	123.43	528.98	6,347.76
74	0.012	0.725	5.799	17.396	121.77	521.88	6,262.55
75	0.012	0.715	5.722	17.166	120.16	514.97	6,179.60
76	0.012	0.706	5.647	16.941	118.59	508.24	6,098.82
77	0.012	0.697	5.574	16.723	117.06	501.68	6,020.13
78	0.011	0.688	5.503	16.510	115.57	495.29	5,943.44
79	0.011	0.679	5.434	16.302	114.11	489.06	5,868.68
80	0.011	0.671	5.366	16.099	112.70	482.98	5,795.78
81	0.011	0.663	5.301	15.902	111.31	477.06	5,724.66
82	0.011	0.655	5.236	15.709	109.96	471.27	5,655.27
83	0.011	0.647	5.174	15.521	108.65	465.63	5,587.54
84	0.011	0.639	5.112	15.337	107.36	460.12	5,521.42
85	0.011	0.632	5.053	15.158	106.11	454.74	5,456.84
86	0.010	0.624	4.994	14.983	104.88	449.48	5,393.76
87	0.010	0.617	4.937	14.811	103.68	444.34	5,332.11
88	0.010	0.610	4.881	14.644	102.51	439.32	5,271.86
89	0.010	0.603	4.827	14.480	101.36	434.41	5,212.96
90	0.010	0.597	4.773	14.320	100.24	429.61	5,155.36



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Timer Setting	Fluid Delivery Rate In ml						
Seconds	Per Min	Per Hour	Per 8 Hour	Per 24 Hour	Per Week	Per Month	Per Year
91	0.010	0.590	4.721	14.164	99.15	424.92	5,099.02
92	0.010	0.584	4.670	14.011	98.08	420.32	5,043.89
93	0.010	0.578	4.620	13.861	97.03	415.83	4,989.95
94	0.010	0.571	4.571	13.714	96.00	411.43	4,937.14
95	0.009	0.565	4.524	13.571	94.99	407.12	4,885.45
96	0.009	0.560	4.477	13.430	94.01	402.90	4,834.82
97	0.009	0.554	4.431	13.292	93.05	398.77	4,785.23
98	0.009	0.548	4.386	13.157	92.10	394.72	4,736.65
99	0.009	0.543	4.342	13.025	91.18	390.75	4,689.05
100	0.009	0.537	4.299	12.896	90.27	386.87	4,642.39
101	0.009	0.532	4.256	12.768	89.38	383.05	4,596.65
102	0.009	0.527	4.215	12.644	88.51	379.32	4,551.80
103	0.009	0.522	4.174	12.522	87.65	375.65	4,507.83
104	0.009	0.517	4.134	12.402	86.81	372.06	4,464.69
105	0.009	0.512	4.095	12.284	85.99	368.53	4,422.37
106	0.008	0.507	4.056	12.169	85.18	365.07	4,380.85
107	0.008	0.502	4.019	12.056	84.39	361.67	4,340.09
108	0.008	0.498	3.982	11.945	83.61	358.34	4,300.09
109	0.008	0.493	3.945	11.836	82.85	355.07	4,260.82
110	0.008	0.489	3.910	11.729	82.10	351.86	4,222.26
111	0.008	0.484	3.874	11.623	81.36	348.70	4,184.39
112	0.008	0.480	3.840	11.520	80.64	345.60	4,147.20
113	0.008	0.476	3.806	11.419	79.93	342.56	4,110.66
114	0.008	0.472	3.773	11.319	79.23	339.56	4,074.76
115	0.008	0.468	3.740	11.221	78.55	336.62	4,039.48
116	0.008	0.464	3.708	11.124	77.87	333.73	4,004.81
117	0.008	0.460	3.677	11.030	77.21	330.89	3,970.72
118	0.008	0.456	3.646	10.937	76.56	328.10	3,937.22
119	0.008	0.452	3.615	10.845	75.92	325.36	3,904.27
120	0.007	0.448	3.585	10.755	75.29	322.66	3,871.87
121	0.007	0.444	3.556	10.667	74.67	320.00	3,840.00
122	0.007	0.441	3.527	10.580	74.06	317.39	3,808.65
123	0.007	0.437	3.498	10.494	73.46	314.82	3,777.81
124	0.007	0.434	3.470	10.410	72.87	312.29	3,747.47
125	0.007	0.430	3.442	10.327	72.29	309.80	3,717.61
126	0.007	0.427	3.415	10.245	71.72	307.35	3,688.22
127	0.007	0.424	3.388	10.165	71.15	304.94	3,659.29
128	0.007	0.420	3.362	10.086	70.60	302.57	3,630.82
129	0.007	0.417	3.336	10.008	70.05	300.23	3,602.78
130	0.007	0.414	3.310	9.931	69.52	297.93	3,575.17
131	0.007	0.411	3.285	9.856	68.99	295.67	3,547.98
132	0.007	0.408	3.260	9.781	68.47	293.43	3,521.21
133	0.007	0.404	3.236	9.708	67.96	291.24	3,494.83
134	0.007	0.401	3.212	9.636	67.45	289.07	3,468.85
135	0.007	0.399	3.188	9.565	66.95	286.94	3,443.25



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Timer Setting	Fluid Delivery Rate In ml						
Seconds	Per Min	Per Hour	Per 8 Hour	Per 24 Hour	Per Week	Per Month	Per Year
136	0.007	0.396	3.165	9.495	66.46	284.84	3,418.02
137	0.007	0.393	3.142	9.425	65.98	282.76	3,393.16
138	0.006	0.390	3.119	9.357	65.50	280.72	3,368.66
139	0.006	0.387	3.097	9.290	65.03	278.71	3,344.52
140	0.006	0.384	3.075	9.224	64.57	276.73	3,320.71
141	0.006	0.382	3.053	9.159	64.11	274.77	3,297.24
142	0.006	0.379	3.032	9.095	63.66	272.84	3,274.11
143	0.006	0.376	3.010	9.031	63.22	270.94	3,251.29
144	0.006	0.374	2.990	8.969	62.78	269.07	3,228.79
145	0.006	0.371	2.969	8.907	62.35	267.22	3,206.60
146	0.006	0.369	2.949	8.846	61.92	265.39	3,184.71
147	0.006	0.366	2.929	8.786	61.51	263.59	3,163.12
148	0.006	0.364	2.909	8.727	61.09	261.82	3,141.82
149	0.006	0.361	2.890	8.669	60.68	260.07	3,120.80
150	0.006	0.359	2.870	8.611	60.28	258.34	3,100.07
151	0.006	0.356	2.851	8.554	59.88	256.63	3,079.60
152	0.006	0.354	2.833	8.498	59.49	254.95	3,059.41
153	0.006	0.352	2.814	8.443	59.10	253.29	3,039.48
154	0.006	0.350	2.796	8.388	58.72	251.65	3,019.81
155	0.006	0.347	2.778	8.334	58.34	250.03	3,000.39
156	0.006	0.345	2.760	8.281	57.97	248.43	2,981.21
157	0.006	0.343	2.743	8.229	57.60	246.86	2,962.29
158	0.006	0.341	2.726	8.177	57.24	245.30	2,943.60
159	0.006	0.339	2.708	8.125	56.88	243.76	2,925.14
160	0.006	0.336	2.692	8.075	56.52	242.24	2,906.92
161	0.006	0.334	2.675	8.025	56.17	240.74	2,888.92
162	0.006	0.332	2.658	7.975	55.83	239.26	2,871.14
163	0.006	0.330	2.642	7.927	55.49	237.80	2,853.58
164	0.005	0.328	2.626	7.878	55.15	236.35	2,836.23
165	0.005	0.326	2.610	7.831	54.82	234.92	2,819.09
166	0.005	0.324	2.595	7.784	54.49	233.51	2,802.16
167	0.005	0.322	2.579	7.737	54.16	232.12	2,785.43
168	0.005	0.320	2.564	7.691	53.84	230.74	2,768.90
169	0.005	0.319	2.549	7.646	53.52	229.38	2,752.57
170	0.005	0.317	2.534	7.601	53.21	228.04	2,736.42
171	0.005	0.315	2.519	7.557	52.90	226.71	2,720.47
172	0.005	0.313	2.504	7.513	52.59	225.39	2,704.70
173	0.005	0.311	2.490	7.470	52.29	224.09	2,689.11
174	0.005	0.309	2.476	7.427	51.99	222.81	2,673.70
175	0.005	0.308	2.462	7.385	51.69	221.54	2,658.46
176	0.005	0.306	2.448	7.343	51.40	220.28	2,643.40
177	0.005	0.304	2.434	7.301	51.11	219.04	2,628.51
178	0.005	0.303	2.420	7.261	50.82	217.82	2,613.78
179	0.005	0.301	2.407	7.220	50.54	216.60	2,599.22
180	0.005	0.299	2.393	7.180	50.26	215.40	2,584.82



ACUMEN TECHNOLOGIES, INC.

51445 Celeste Drive • Shelby Township, MI 48315
(586) 566-8600 • Fax (586) 566-4062

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If it appears within one year of the date of purchase that the equipment has not met the warranties above and the Purchaser notifies Acumen promptly, Acumen will correct any defect, at its option, either by repairing any defective part or at Acumen's sole option by making available at Acumen's plant a repaired or replacement part.

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* It is extremely important that our products be used in the proper environment. ABS, Polycarbonate, Nylon, Acetyl and other plastics are especially vulnerable to attack by certain chemicals and their fumes including compressor oils, cleaners, solvents, etc. Please consult with your chemical supplier to determine whether their products are injurious to the parts used in our products.

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Specify whether you require the freight to be **COLLECT** or **PREPAY** and **ADD**.

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