Lyco Manufacturing, Inc.

48” x 96” Single Drum Screen Manual

Operators/Service/Safety

Wayne Farms – Union Springs, AL

Serial Number: SDS -0820-925711

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Introduction

This Operator's/Serve/Safety Manual is provided to furnish you with the information necessary for the safe operation and use of your Lyco Screen.

Although, this machine is designed with safety in mind, possibilities for accidents cannot be completely eliminated until operators understand, and employ safe operating practices, using common sense, and talking all precautions necessary.

History – Lyco Manufacturing

Lyco's experience in the food machinery spans over 50 years. Major product lines include machinery for potato processing, other root crop items, peas, snap beans, corn fruit, miscellaneous vegetables, and meat processing machinery.

The company's motto is "A quality product, on time deliveries, at a profit." It is our goal to provide the best machinery in the world, for whatever it is we make. We do not enter a particular field, unless we can provide remarkably better equipment.

Lyco's plant comprises of 80,000 square feet of manufacturing and office space, located in the south-central Wisconsin. Some of the most advanced computer-controlled manufacturing machines in the world are used in our manufacturing processes.

Lyco test runs every machine they build. Training and start-ups are available for every machine we sell. A full-service program is available for every machine, at modest labor rates. Our replacement parts policy is, "we must ship parts the day an order is received, and no later than 24 hours from receipt of the order, for normal wear parts."

Safety Instructions

Accidents can be prevented with your help.

No accident prevention program can be successful without the whole-hearted cooperation from everyone directly responsible for the operation of the equipment.

Many accident reports from all over the country is convincing evidence that a large number of accidents can be prevented by the operator anticipating the result before the accident is caused and taking the necessary steps to prevent the accident. Accidents can e prevented when the operator accepts the full measure of responsibility when handling any machine.

"The best kind of a safety device is a carful operator". Lyco asks you to be the kind of operator who puts safety first.

Safety Decals

Safety Decals are an important reminder to help insure Operators, Mechanics, and Clean-Up Personnel know and understand the safe operation of this machine(s). If safety decals become unreadable or lost, please contact Lyco Manufacturing at (920) 623-4152 and new decals will be provided free of charge.

The most important action of this machine is to have a safe operating procedure. Please help us ensure no one ever gets hurt operating Lyco Machinery.

Safety Decals

To Avoid Serious Injury

READ these instructions and understand them before installing, operating, or maintaining your Lyco screen.

DO NOT operate this machine unless you have been trained, understand how it works, and can operate it safely.

NEVER start this machine until you are certain all personnel and foreign objects are clear.

ALWAYS turn off and "Lock-Out" electrical power before repairing, adjusting, or cleaning this machine.

Before Performing any work to the unit, turn off disconnect

DO NOT wear loose clothing, ties, or jewelry of any kind which could get caught in moving parts around this machine.

NEVER put your hands, arms, legs, fee, or body into the electrical motor, chain, and sprocket drive area or trunnion area while the machine is in operation.

NEVER put your face, hands, or arms into the drum or cylinder area while the machine is in operation.

NEVER perform maintenance, repair work, or cleaning until you are sure the power is turned off at the main control panel and cannot be turned back on without your knowledge. Use a pad lock or other safe "Lock-Out" device.

ALWAYS keep fingers, hands, and foreign objects out of trunnion mount, and guard areas.

NEVER operate this machine unless ALL protective guards are in place. This includes cylinder cover guards, motor drive guards, and side guards.

ALWAYS keep the area clean and free of obstructions.

ALWAYS wear protective personal equipment in areas that require it.

ALWAYS pay attention to **DANGER**, **CAUTION**, or **WARNING** signs.

ASK YOUR SUPERVISOR if you have not received safety training or do not understand a particular aspect or function of this machine.

PERSONAL SAFETY is **your** responsibility.

READ these instructions and understand them before installing, operating, or maintaining your Lyco screen.

NEVER allow untrained personnel to operate, maintain, repair, or clean this machine. Keep ALL untrained personnel clear of this machine.

ALWAYS train new personnel in the operation of this machine. Repeat instruction frequently.

ALWAYS train new personnel in the safe start-up, shut-off and proper "lock-out" procedures. Retrain frequently.

ALWAYS instruct operators to keep all protective guards in place during operation.

ALWAYS instruct all personnel to keep face, hands, and arms out of the electric motor drive, chain, and sprocket area, and trunnion cylinder area while the machine is in motion.

ALWAYS instruct all personnel to turn off and "lock-out" electrical power before repairing, adjusting, or cleaning this machine.

MAKE SURE all personnel follow these safety instructions. Check frequently for safe operation. Personnel safety is your responsibility as a supervisor.

RECEIVING & INSPECTION

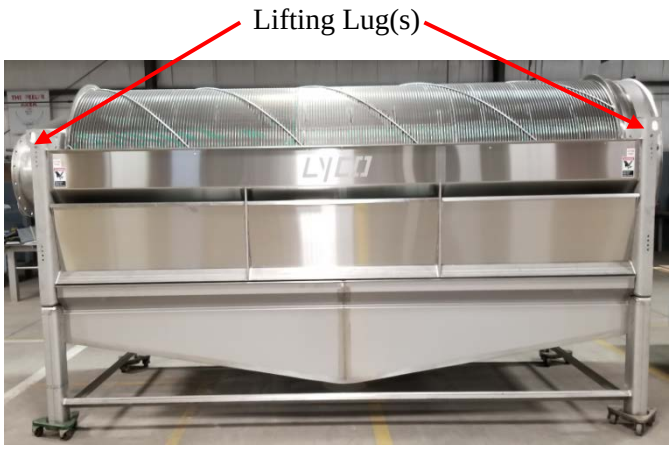
INSPECT your Lyco screen to ensure it has not been damaged in transit. If damage is evident, mark the bill of lading as such and immediately advise the carrier. We advise to take photographs of the damage for insurance claims. If damage is major and makes the machine inoperable, the machine should not be accepted, and the carrier directed to return the machine to Lyco's factory. **You, the customer, must institute the claim against the carrier at this point (after the machine leaves Lyco's factory).**

CHECK every nut and bolt for tightness. Transit over long distances can loosen or remove nuts and bolts. **DO NOT START** this machine until all nuts and bolts have been checked and securely tightened.

INSTALLATION

Lifting Instructions

(4) Lifting lugs have been incorporated into the frame of the screen to be able to lift the screen into its desired location. Straps or chains should be connected to all (4) lugs when lifting the screen.



INSTALLATION CONTINUED

Levelness

VERIFY that the Lyco screen is level for the machine to run efficiently. Make sure the machine is installed on a level surface. Shimming appropriate corners of the machine may be needed.

Electrical

All terminations of any electrical equipment should be made by a licensed and qualified electrician who follows all Federal, State, and Local Codes. This includes the Motor Drive, Mechanical Traveling Spray Motor, and Control Panel. (The Mechanical Traveling Spray, and Control Panel are not purchased on every machine) Motor nameplate data should be referred to for sizing incoming electrical lines and establishing fusing and overload protection

Mechaical Taveling Spray Motor Junction Box

Electrical Motor Junction boxes

Motor Drive Junction Box

CIP Manifolds and Mechanical Traveling Spray Installations

There will generally be piping on the discharge end of the screen for plumbing up any CIP options taken on the screen. There could be from (1 – 4) Stationary Fixed Spray Headers and (1) Mechanical traveling spray. All connections are an NPT-M fitting through the discharge end plate with a pressure gauge. Most size connections are an 1-1/4" threaded connection.

Stationary CIP spray headers are rated up to 150 psi, and the Mechanical Traveling Spray is rated up to 1000 psi. Not all applications will need to use up all the pressure or water to clean the screen. However, it is recommended to size the pressure to handle the peak times throughout the day, so the required cleaning can be accomplished.

Screen Features / Options / Functions

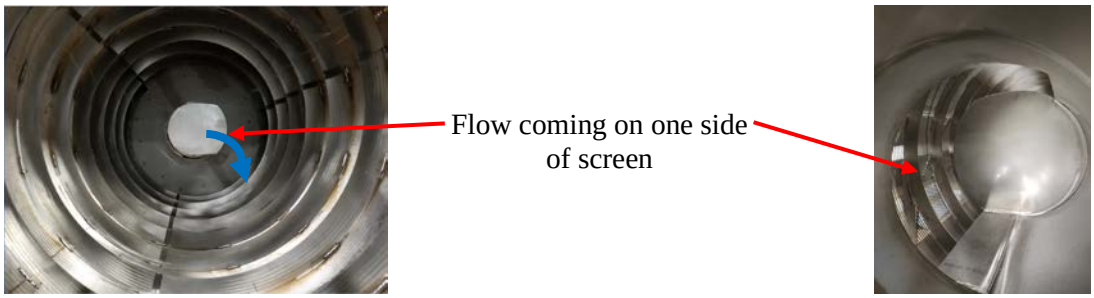
Lyco Manufacturing offers a variety of different options and/or features for the in feeding and discharging of water and product. The features supplied are the features suggested from Lyco from years of experience when dealing with a vast variety of different applications. Every application is different in some way. Changing the designed application for the screen should be consulted with Lyco Manufacturing to ensure the screen will work to its highest efficiency.

Flow Through Design

The flow through design means the influent will be fed in through the sprocket and deposited on the screen surface directly from the flume. There are (3) different designs with the "flow through" flume design. (1) is the one-sided infeed flume, (2) the two-sided infeed flume, and a reverse cone diffuser flume.

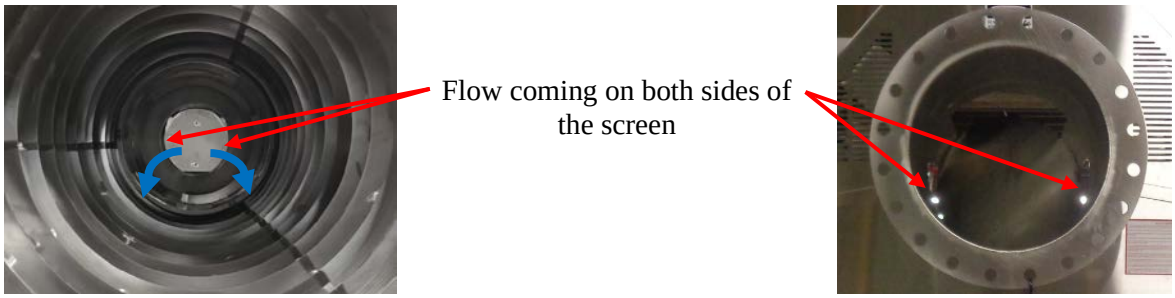
One-Sided Flume

The one-sided infeed flume will direct the flow to one side of the screen. This is the most standard of applications and used when the flow velocity going into the flume is low enough to not cause any splashing or excessive flow velocity going towards the screen.

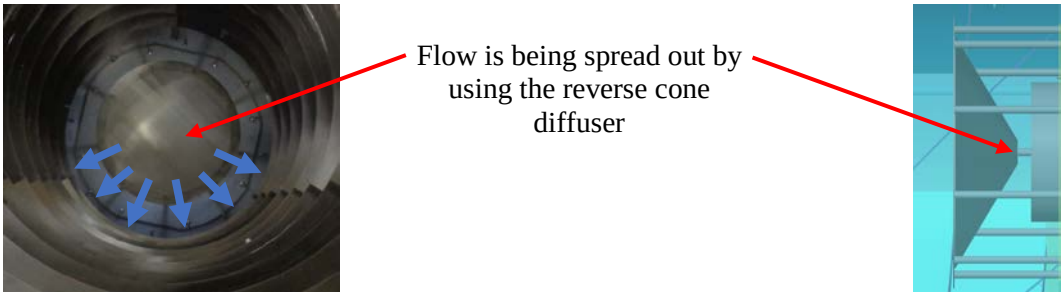


Two-Sided Flume

The two-sided infeed flume directs the flow to both sides of the screen. This flume is necessary when the flow velocity into the screen is close the designed limit of the screen. Flow velocity is coming close to 5 feet per second, and the two-sided flume helps limit the flow of water and product onto one area on the screen.



Reverse Cone Diffuser
The reverse cone diffuser is only applied with the velocity of the flow is pumped at a very high fast. The cone on the inside will evenly disperse the flow rate to hit multiple areas on the screen.



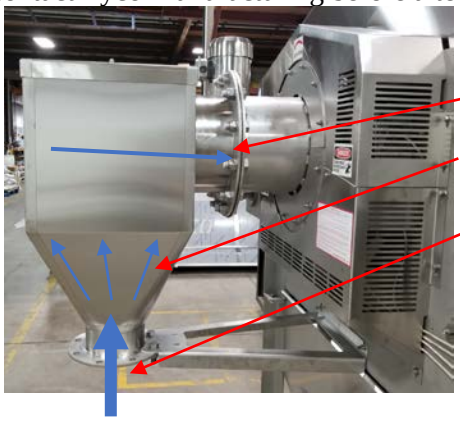
Product Infeeding
Incoming product into the screen must be slower than 5 feet per second. High velocity feed rates may not give the solids enough time to separate. If the flow rate is exceeding the 5 ft/sec, then the water may end up flowing out the end of the screen instead of being strained through the screen.

Providing the proper velocity for incoming water/solids is the responsibility of the user. You may wish to contact the Lyco Engineering department (920)623-4152 for different methods of accomplishing slow entry infeed systems. This could include options such as a deceleration headbox, or deceleration top hat, etc.

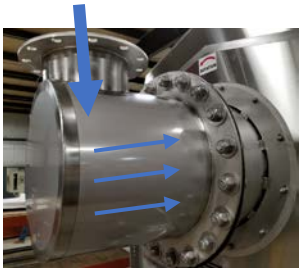
Lyco screens are designed for specific applications and are capable of handling so many gallons per minute of flow. Before changing the application for the screen in which it was specifically built for, please contact your engineering group or Lyco Manufacturing to make sure the screen will be capable of handling the new application.

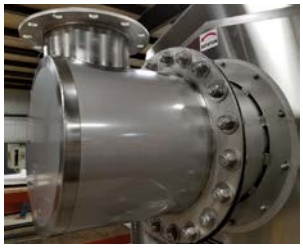
Optional Accessories for Slowing Down Infeed Rate
Lyco Manufacturing has (2) different options for helping slow down the flow rate on the infeed. (1) is a Deceleration Headbox, and (2) a Deceleration Top Hat.

The Deceleration Headbox
The Deceleration Headbox is very effective way to slow down the product flow rate. The headbox is designed to take the flow from the vertical direction and expand the volume of the piping before the flow goes into the screen. These Headboxes are only meant to be piped from the bottom. Changing the direction of how the headbox is positioned may cause the headbox to not function properly. Please contact Lyco Manufacturing before altering the position of the headbox inlet.



The Deceleration Top Hat
The Deceleration Top Hat is another acceptable way to slow down the incoming product. It is not as effective as the headbox, but this accessory can accept product from multiple different angular directions.



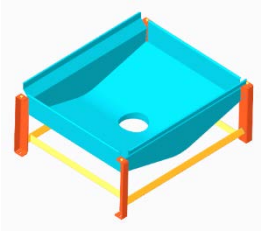


Water / Solids Discharging

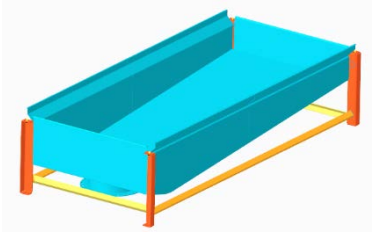
The discharged water from the screen will fall downward into a pit or reservoir. Otherwise, Lyco can provide a discharge tank to collect the screened water. This is very beneficial if the water needs to be pumped to another location for further processing. The standard connection for a tank discharge is a 150# bolt flange. The solids coming out of the discharge end can also be contained in a product discharge chute. This chute prevents any solids from falling out of the desired discharge location. Also, the discharge chute can also come with a cover that will block anything from getting in the end of the screen.

Water Discharge Tanks
The tanks are bolted to the bottom of the screen frame on the four corners of the tank.

Standard locations on the discharge can be accommodated to fit the users need. The standard location options are: Bottom-Center, Left side (facing infeed), Right Side (facing infeed), and the Infeed end. Lyco's largest screen (60"x168") has the discharge location closer to the infeed end of the screen. The discharge of the tank should be close to the infeed end of the screen. Before changing from the intended design, please contact Lyco Manufacturing before changing the discharge location to verify if the tank will work as designed. (2) more common tank discharges are shown below (bottom, center & Infeed end).



Bottom, Center Discharge

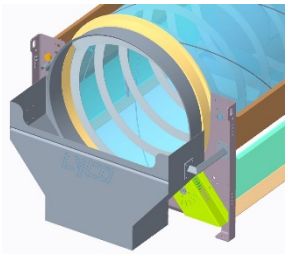


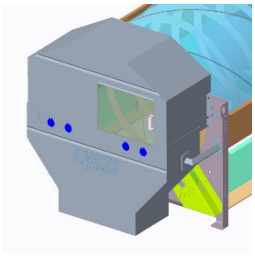
Bottom, Center Near Infeed (60"x168" Screen)

Infeed End 48" Unit

Infeed End 60" Unit

Product Discharge Chutes
Product discharge chutes help collect any solids coming out of the end of the screen. These chutes provide extra satisfaction the solids are falling in the desired location. They also help prevent any personnel from reaching into the end of the screen. The discharge chutes come in (2) parts and are both bolted to the discharge end of the screen frame. The bottom section is the chute funneling the solids into the desired location, and the top section is the cover preventing any external actions getting into the screened area.


Bottom Discharge Chute


Full Discharge Chute Assembly

Screen Features

Wedge Wire Screen
Lyco Manufacturing constructs their screens with a triangular shaped wire or also known as wedge wire. The spacing between the wire is determined by the amount of solids the user wants to remove from the water. Standard spacing in the wedge wire are: 0.020”, 0.030”, 0.040”, 0.060”, 0.080”, 0.100”, and 0.125”. The smaller the spacing, the more solids that are being removed from the water. Although, the smaller spacing does not allow for more flow going into the screen. Every application for screening water is different, and Lyco Manufacturing designs each screen to handle the intended screen use. Before changing the application for the screen, please contact your engineering department or Lyco Manufacturing to determine if the screen will handle the new application.

Double Drum Screens
Double drum screens will have (2) cylinders within the frame. The first cylinder the water and solids will come in contact with is the short inner drum screen. This screen will have the wedge wire spacing larger than the outer drum. The inner drum helps separate the larger solids out of the water quicker and allow the outer drum to start screening the smaller solid particles from the water sooner. This also helps the outer screen to prevent blinding or becoming plugged.


Inner Drum of Double Drum


Inner Drum CIP Spray

Caution
Please keep any foreign objects from entering the screen area that may cause damage to the wedge wire. Any damage will cause the wedge wire to not screen the water/solids properly. The screen’s capacity and efficiency are critically affected by partially plugged or blinded screens.

Cleaning

The wedge wire screens will eventually blind and plug. Every application is different on how fast they will cause the screen to plug. A general rule is vegetable products containing no starch, have little to no tendency to plug. Products containing starch, sugar, cheese, sand, or animal fats have a very great tendency to plug. There are preventative accessories that will help prolong the blinding over of the screen.

Clean-In-Place Systems

Lyco Manufacturing has multiple options for CIP (Clean-In-Place) systems. Water consumptions for each of the options can be found on pages 15-16 of this manual.

1) No CIP System – This system has no CIP option based on the application on the screen. This is a rare case where there is no CIP system, but not unheard of.

2) Outer Fixed Spray Manifolds – These are simple designed manifolds containing Veejet nozzles spraying the outside of the screen. A screen frame can hold from 1 – 4 manifolds spraying the entire drum at once. The end of the manifold has an 1-1/4" NPT-M connection found on the discharge end of the screen.

Piping Connection for Side CIP Spray Manifold (1-1/2" NPT)

Outer Fixed Spray Manifold Nozzles

3) Inner Fixed Spray Manifolds – These are typically used on the Double Drum Screens. These manifolds are bolted to the back side of the infeed flume. They only spray the inside of the inner drum as well. The manifold connection is held by a bracket on the discharge end of the screen.

Inner Fixed Spray Manifold Piping Connection (1-1/2" NPT)

Inner Drum Spraying Inside of Inner Drum (36" and 48" Screen Sizes)

Inner Fixed Spray Manifold Spraying Outside of Inner Drum (60" Screens Only)

Clean-In-Place Systems Continued

4) Mechanical Traveling Spray (Patented) – The mechanical traveling spray is a high-pressured option for CIP that contains 1 or 2 nozzles spraying up to 1000 psi onto the screen. Any screen 120” or more will have 2 nozzles. This nozzle or nozzles are moving up and down the screen by a guided rail, chain, and drive motor. The hook up for the Mechanical Traveling Spray (MTS) is located at the bottom area of the discharge end frame. The connection is a 1/2” NPT-F.

Inlet Piping to Mechanical Traveling Spray (1/2” NPT Connection)

Mechanical Traveling Spray (No Canopy)

1 HP Motor & Gearbox

Mechanical Traveling Spray (w/ Canopy)

Caution

Extreme caution should be used by personnel working around the high-pressure sprays. Lyco asks personnel to wear safety glasses, and not allowing any part of a person’s body to come in contact with the water being sprayed, as it may cause severe damage. Personnel should also be following the PPE of their company as well.

Never allow the motor to receive direct water wash down during clean up. Spraying down the motor or gearbox may cause severe damage that may cause water to leak into the gear drive and causing premature failure.

Danger

If the hose springs a leak from abrasion, or being worn, the high-pressure pump should be immediately shut down and the hose replaced.

Mechanical Traveling Spray Info Continued

Attention
If the Mechanical Traveling Spray is purchased, and Lyco is NOT supplying the controls to the screen. A variable Frequency Drive (VFD) is required to be purchased and used by the customer for the mechanical traveling spray motor. The installation needs to be done by a licensed and qualified electrician who follows all Federal, State, and Local codes. Motor nameplate data should be referred to for sizing incoming electrical lines and establishing fusing an overload protection. The speed of the traveling spray will need to be adjusted throughout the day to prevent the nozzle spraying the same locations on the screen, or else the areas the nozzle does not hit will start to plug and blind over.

Other Variables for CIP Cleaning

Water Temperatures
Ambient or cold-water CIP water works as a cleaning media for a vast majority of applications. A simple example would be most vegetables.

Warm water or steam may be required for more difficult or tough to remove products such as grease, fat, cheese, or starch.

Water Pressures
Low pressure water (30 – 80 psi) will remove simple and easily removable products such as: Vegetables, peas, corn, etc.

Medium pressure water (80 – 300 psi) will be needed for more difficult applications.

High pressure water (800 – 1000 psi) can be required for the most difficult products such as fats, grease, sand, and starch.

When using a high-pressure pump, Lyco recommends purchasing locally because the pumps are generally maintenance intensive, and local service may be required.

Danger
When working with high-pressure sprays, every plant should follow it's PPE standards for working on or around equipment. Extreme care should be taken by personnel. Lyco recommends wearing Safety glasses, ear plugs, long sleeved shirts, and gloves. Routine inspection and maintenance are important to insure all piping, fittings, and hoses are properly maintenance.

Lyco Cannot Guarantee the CIP options will be able to completely clean or remove every application without extra-ordinary chemical or manual cleaning.

Lyco Cannot Guarantee that experimentation won't be necessary for every new installation with regard to the CIP water pressure required, the temperature of the water, or the steam pressure needed.

Lyco Cannot Guarantee that periodic manual cleaning during or at the end of the day won't be require over and above the CIP system capabilities.

If you have any questions or concerns about any of the options/features of your Lyco screen, please contact Lyco Manufacturing at (920)623-4152.

Pressure and Water Usage in CIP Systems

Below are table showing the relative flow rates of the CIP stationary spray headers and mechanical traveling sprays. Please note: the flow rates for a single and double drum screens are different from each other.

To follow the chart. First, find the size screen you are trying to find the flow rate through. Second, find the pressure at which is being supplied to the CIP option.

An example will be for a 60”x84” Single Drum Screen’s Stationary CIP Manifold at 100 psi. This screen will have a flow rate of approximately 67 gallons per minute through a single CIP manifold.

Single Drum Screen CIP Flow Rates

Water Flow Rates on Fixed Spray Manifold CIP Spray Headers for a **Single Drum Screen (SDS)**												
Note: These flow rates are based on having (1) CIP manifold. If additional manifolds have been added in the machine configuration, calculate the additional water flow rates based by multiplying the number of manifolds by the amount of flow rate through one manifold.												
Unit Size	Number of Spray Nozzles	Gallons Per Minute for Different Pressures										
		Pressure (PSI) in Green						Flow Rate (GPM) in Blue				
		5	10	20	30	40	60	80	100	200	300	500
24”x48”	15	11	15	21	26	30	38	42	48	68	83	107
36”x60”	19	13	19	27	32	38	48	53	61	86	105	135
48”x72”	17	12	17	24	29	34	43	48	54	77	94	121
48”x96”	19	13	18	27	32	38	48	53	61	86	105	135
48”x120”	23	16	23	32	39	46	58	64	74	104	127	163
48”x144”	28	20	28	39	48	56	70	78	90	126	154	199
60”x84”	21	15	21	29	36	42	53	59	67	95	116	149
60”x126”	25	18	25	35	43	50	63	70	80	113	138	178
60”x144”	28	20	28	39	48	56	70	78	90	126	154	199
60”x168”	33	23	33	46	56	66	83	92	106	149	182	234
GPM per Nozzle		0.7	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	5.5	7.1

Water Flow Rates on the Mechanical Traveling Spray for a **Single Drum Screen (SDS)**									
Note: The number of nozzles is dependent on the length of the screen.									
Unit Size	Number of Spray Nozzles	Gallons Per Minute for Different Pressures							
		Pressure (PSI) in Green					Flow Rate (GPM) in Blue		
		300	400	500	600	700	800	1000	1500
24”x48”	1	3	3	4	4	4	5	5	6
36”x60”	1	3	3	4	4	4	5	5	6
48”x72”	1	3	3	4	4	4	5	5	6
48”x96”	1	3	3	4	4	4	5	5	6
48”x120”	2	5	6	7	8	8	9	10	12
48”x144”	2	5	6	7	8	8	9	10	12
60”x84”	1	3	3	4	4	4	5	5	6
60”x126”	2	5	6	7	8	8	9	10	12
60”x144”	2	5	6	7	8	8	9	10	12
60”x168”	2	5	6	7	8	8	9	10	12
GPM per Nozzle		2.7	3.2	3.5	3.9	4.2	4.5	5	6.1

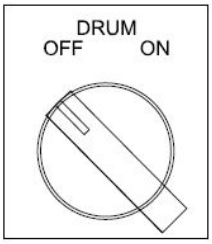
Double Drum CIP Flow Rates

Water Flow Rates on Fixed Spray Manifold CIP Spray Headers for a **Double Drum Screen (DDS)**													
Unit Size	Inner Header Nozzles	Outer Header Nozzles	Total Number of Nozzles	Gallons Per Minute for Different Pressures									
				Pressure (PSI) in Green					Flow Rate (GPM) in Blue				
				5	10	20	30	40	60	80	100	200	300	500
24”x48”	6	15	21	15	21	29	36	42	53	59	68	95	116	149
36”x60”	5	19	24	19	27	38	46	54	68	76	86	122	149	192
48”x72”	16	17	33	25	35	49	60	70	88	98	112	158	193	249
48”x96”	18	19	37	26	37	52	63	74	93	104	118	167	204	263
48”x120”	18	23	41	29	41	57	70	82	103	115	131	185	226	291
48”x144”														
60”x84”	10	21	31	22	31	43	53	62	78	87	99	140	171	220
60”x126”	11	25	36	25	36	50	61	72	90	101	115	162	198	256
60”x144”														
60”x168”	20	33	53	37	53	74	90	106	133	148	170	239	292	376
GPM per Nozzle on Inner Header				0.7	1	1.4	1.7	2.0	2.5	2.8	3.2	4.5	5.5	7.1

Water Flow Rates on the Mechanical Traveling Spray for a **Double Drum Screen (DDS)**								
Note: The number of nozzles is dependent on the length of the screen.								
Unit Size	Number of Spray Nozzles	Gallons Per Minute for Different Pressures						
		Pressure (PSI) in Green				Flow Rate (GPM) in Blue		
		300	400	500	600	700	800	1000	1500
24”x48”	1	6	6	7	8	8	9	10	12
36”x60”	1	6	6	7	8	8	9	10	12
48”x72”	1	6	6	7	8	8	9	10	12
48”x96”	1	6	6	7	8	8	9	10	12
48”x120”	2	8	10	11	12	13	13	15	18
48”x144”	2	8	10	11	12	13	13	15	18
60”x84”	1	6	6	7	8	8	9	10	12
60”x126”	2	8	10	11	12	13	13	15	18
60”x144”	2	8	10	11	12	13	13	15	18
60”x168”	2	8	10	11	12	13	13	15	18
GPM per Nozzle on 1st Nozzle		5.5	6.3	7.1	7.7	8.4	8.9	10.0	12.2
GPM per Nozzle on 2nd Nozzle		2.7	3.2	3.5	3.9	4.2	4.5	5.0	6.1

Controls (If Ordered)

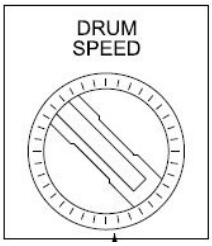
Standard controls do not have a PLC/HMI screen. The controls contain a combination of On/Off switches and variable speed dials depending on the application the dial or switch is controlling. On/Off switches will control turning off and on of the drum motor, mechanical traveling spray, and spray bar. The dials will control the speed of the drum rotating, and the mechanical traveling spray speed of going up and down the screen.



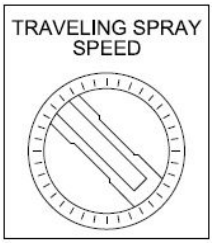
Switch for turning the drum rotation On and Off

Switch for turning the spray bar On and Off. (if solenoid is being controlled on spray bar)

Switch for turning the MTS On and Off

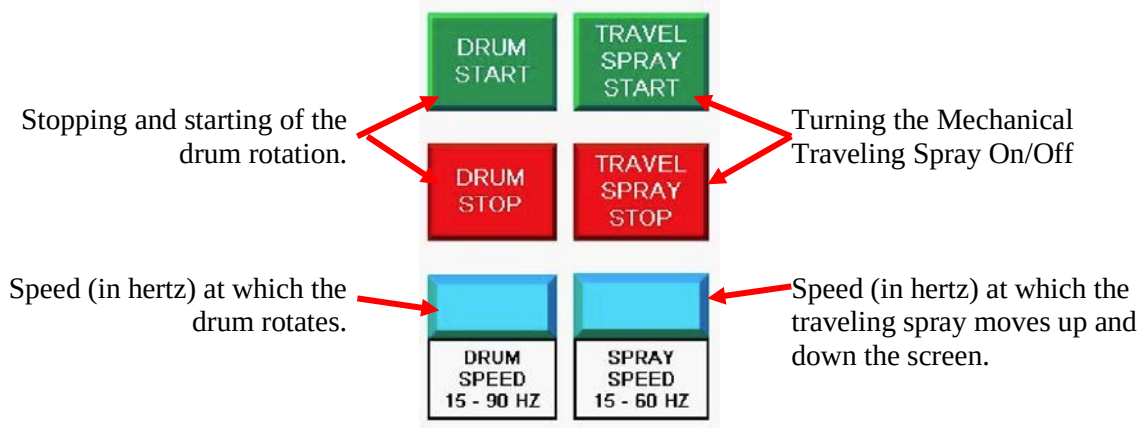


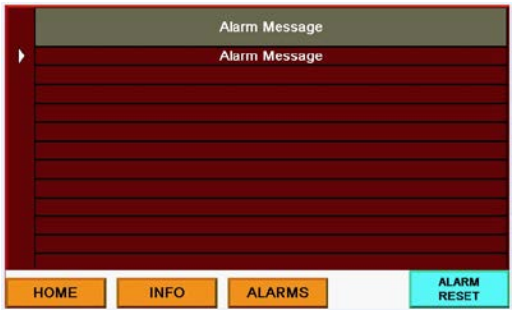
Dial for the speed of the drum rotating



Dial for the speed of the nozzle moving up and down the screen

If a PLC/HMI is purchased, the same controls are moved to a screen. The HMI also comes with an alarm screen.





Maintenance

The biggest concerns when dealing with maintenance for your Lyco screen are the motor(s), gearbox(es), cylinder(s), trunnions, thrust wheels, mechanical traveling spray components, sprockets, and chain(s).

3 Hp Screen Drive Motor & Gearbox

1 Hp Mechanical Traveling Spray Motor & Gearbox

Motors and Gearboxes

Motor manual are provided as part of this manual. Motors, gearboxes, and electrical controls have been carefully selected to meet Lyco's highest standards of quality and performance. Lyco is in direct agreement with the motor manufacturer's operation manual and includes those guidelines as a condition of warranty.

Attention

Motor gearboxes should always be checked to see they are filled with oil before running and lubricated according to the manufacturer's recommendations.

Caution

All motors, regardless of design are susceptible to high-pressure wash down. Direct wash down should be avoided. A vast majority of motor failures involve water damage. Lyco will NOT warranty motor failures resulting from water damage.

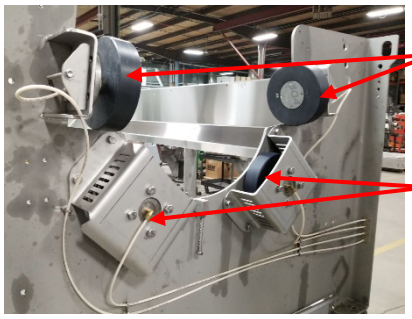
Trunnions and Thrust Wheels

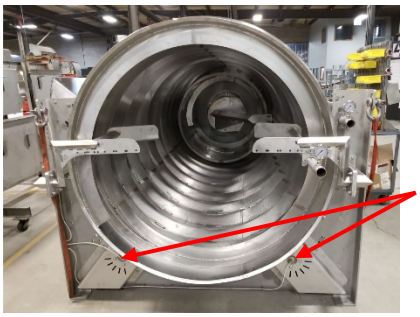
There are (4) trunnions located on a Lyco screen and (1) or (2) thrust wheels (depending on size of screen). (2) trunnions are located at the infeed end plate and (2) are located on the discharge end plate. The thrust wheels are located behind the driven sprocket on the screen.

The trunnions allow the screen to rotate smoothly, and the thrust wheels prevent the screen from moving laterally. If the screen does not rotate smoothly or see excessive lateral movement in the screen. The appropriate trunnion(s) or thrust wheels need to be replaced. The thrust wheels are the same assembly as the trunnion wheels. If one of the trunnions goes out, you can use one of the thrust wheels to replace it. (only interchange the trunnion wheel and thrust wheels on an immediate emergency). The screen will operate correctly with (1) thrust wheel. A new wheel assembly should be immediately ordered for replacement.

Please keep the trunnions and thrust wheels free from debris. Letting debris get into the wheels may cause premature failure.

All trunnions and thrust wheels should be greased daily to help keep wheels performing at their highest efficiency and longer life span. Lyco recommends Jax Haloguard FG-2 grease for the trunnions and thrust wheels. The grease line zerks will be found on the left or right side of each frame end plate (user requested prior to the approval drawings).

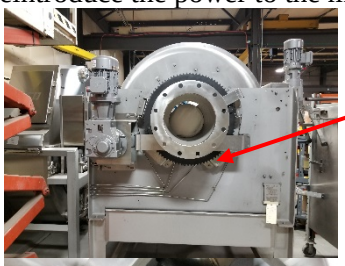




Replacing a Trunnion Wheel (Infeed End)
Follow steps to replace the trunnion wheel on the infeed end of the screen. Pictures are shown below instructions.

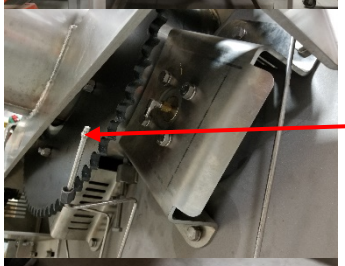
1) Be sure to turn off any power to the screen before performing any maintenance on the screen. Use your company's "Lock-Out Tag-Out" instructions.
2) Remove the chain guard from the infeed end.
   Note: This will use a 9/16" wrench to loosen bolts.
3) Lift the drum off the trunnion wheels using the jack screw located directly under the trunnion running ring.
   Note: This will use a 3/4" wrench to lift up the screen
4) Remove the grease line from the trunnion wheel assembly.
5) Loosen and remove the (4) bolts on the trunnion wheel mounting assembly. Use a 3/4" wrench to remove bolts.
6) Remove the trunnion wheel assembly from the mounting bracket. Use a 3/4" wrench to remove bolts.
7) Take off fitting from grease line from trunnion assembly.
8) Replace trunnion assembly onto the trunnion bracket mount. And put the grease fitting back onto the trunnion assembly.
9) Put the trunnion mounting bracket back onto the infeed end of the frame.
10) Reattach the trunnion wheel grease line to the grease fitting.
11) Loosen the jack screw under the trunnion running ring.
    Note: Make sure the jack screw is no longer touching the running ring.
12) Reattach the chain guard.

13) Be sure to introduce some grease to the trunnion before starting the drum back up.
14) Reintroduce the power to the machine and continue use of your Lyco Screen.



Infeed End Trunnion Replacement

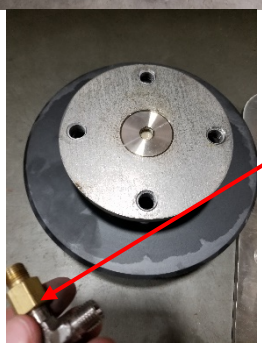
Jack Screw Under Infeed Flume



Grease Line Removed

Trunnion Mounting Bracket & Trunnion Assembly

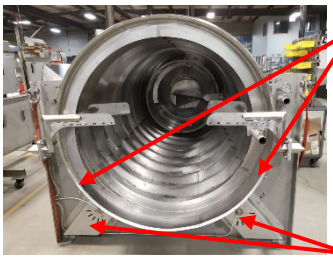
Trunnion Mounting Bracket & Trunnion Assembly



Grease Fitting & Trunnion Assembly

Replacing a Trunnion Wheel (Discharge End)

1) Be sure to turn off any power to the screen before performing any maintenance on the screen. Use your company's "Lock-Out Tag-Out" instructions.
2) Lift the drum off the trunnion wheels using the jack screw located under the discharge end trunnion ring. There are (2) jack screws located right above the trunnion wheel mounts.
   Note: This will use a 3/4" wrench to lift up the screen
3) Remove the grease line on the trunnion wheel.
4) Remove trunnion mounting bracket from discharge end plate. Use a 3/4" wrench to remove bolts.
5) Take off trunnion assembly from trunnion mounting bracket.
6) Remove grease fitting from trunnion assembly.
7) Attach the new trunnion assembly to the trunnion mounting bracket.
8) Reattach the grease fitting to the new trunnion assembly.
9) Bolt the trunnion mounting bracket back on discharge end of the machine.
10) Reattach the trunnion wheel grease line.
11) Loosen the jack screw under the trunnion running ring.
    Note: Make sure the jack screw is no longer touching the running ring.
12) Be sure to introduce some grease to the trunnion before starting the drum back up.
13) Reintroduce the power to the machine and continue use of your Lyco Screen.



Jack Screws on Both Sides

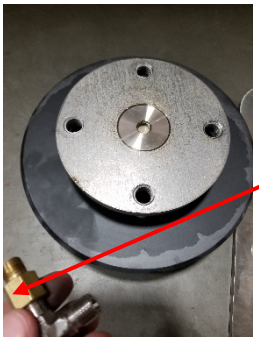
Discharge End Trunnion Wheel Replacement

Jack Screw

Trunnion Bracket Mount

Discharge Trunnion Mounting Bracket

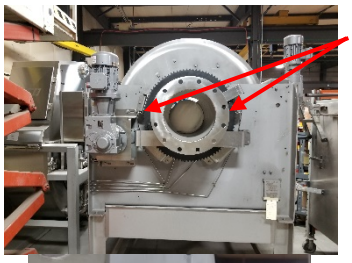
Mounting Bracket with Trunnion Assembly



Grease Fitting & Trunnion Assembly

Adjusting the Thrust Wheel Alignment

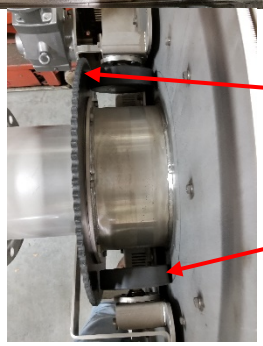
1) Be sure to turn off any power to the screen before performing any maintenance on the screen. Use your company's "Lock-Out Tag-Out" instructions.
2) Remove the upper chain guard on the infeed end of the screen.
   Note: This will use a 9/16" wrench to loosen bolts.
3) Loosen the (4) bolts on the thrust wheel mount.
   Note: This will use a 3/4" wrench to loosen the bolts.
4) Adjust the threaded rod on the thrust wheel so there is a small amount of resistance on the thrust wheel.
   Note: (1) Thrust wheel should be against the sprocket, and (1) should be against the end plate of the screen. This helps keep the screen in place for minimal movement back and forth.
5) Retighten the thrust wheel mounting bolts.
6) Reattach the chain guard screen.
7) Reintroduce the power to the machine and continue use of your Lyco Screen.



Infeed End
Thrust Wheel(s)

Thrust wheel

Thrust Wheel
Adjustment
Bolt



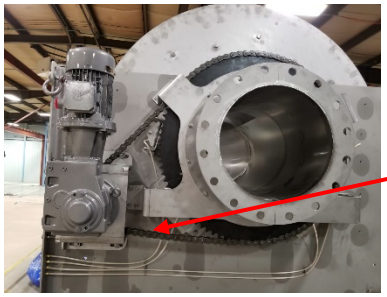
Thrust Wheel
Against
Sprocket

Thrust Wheel
Against
Cylinder

Screen Drive Chain

The screen drive chain is located on the infeed end of the screen. The chain's tension should be checked at least once a week in order to lengthen the life span of the chain. Having a loose chain may cause premature failure within the links and will cause the chain to break. The chain and value guide should be check weekly for excess build-up of foreign material. The chain and value guide should be cleaned off as needed.

Lyco strongly recommends checking all chain tensions 7 – 10 days after startup.



Drive Motor

Drive Chain

Screen Sprockets

Along with checking the chain, you should also verify the sprocket teeth on both the drive motor and the screen driven sprocket. If any teeth appear to be broken / damaged, the sprockets will need to be replaced.

Driven Sprocket

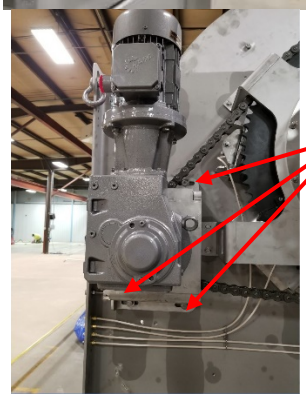
Drive Sprocket

Chain Tensioning on Screen

1) Be sure to turn off any power to the screen before performing any maintenance on the screen. Use your company's "Lock-Out Tag-Out" instructions.
2) Remove the top chain guard on the infeed end of the screen.
   Note: You will need to remove the guard to get at one of the drive motor mount bolts.
3) Loosen the (4) bolts on the drive motor mount.
4) Adjust the threaded rod adjustment(s) to tighten/loosen the chain.
5) Retighten the drive motor mount bolts.
6) Attach the chain guard back on the infeed end.
7) Reintroduce the power to the machine and continue use of your Lyco Screen.

Drive Motor

Chain Guard Removed



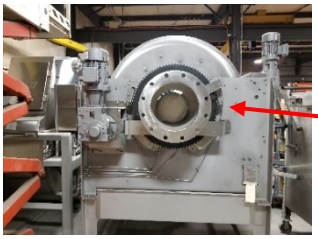
Drive Motor Bracket Mounting Bolts (4) On All Corners of Mount

Chain Adjustment Bolts (2)

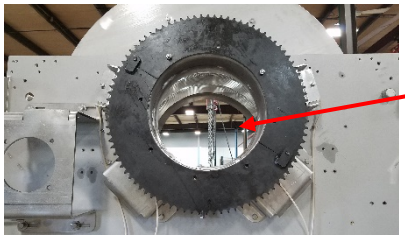
Screen Sprocket Replacement

1) Be sure to turn off any power to the screen before performing any maintenance on the screen. Use your company's "Lock-Out Tag-Out" instructions.
2) Remove the chain guards from the infeed end of the screen.
3) If the driven screen sprocket needs to be replaced. Remove the infeed flume from the screen. There are (8) bolts in total holding the infeed flume in place.
   Note: you can use a 9/16" wrench to remove the bolts.
   Caution: The infeed flume is very heavy and would need assistance from an overhead crane or forklift.
4) Remove the chain by taking off the master link first.
5) Remove bolts holding the split sprocket together.
   Note: the bolt heads are located on the back side of the sprockets, and you will need to use a 5/16" Allen wrench to unbolt.
6) Unbolt the split sprocket from the infeed end.
   Note: you can use a 3/4" wrench to remove bolts.

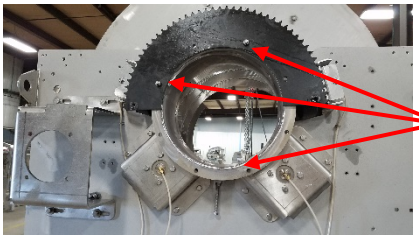
7) Reattach the new sprocket onto the infeed end of the screen.
8) Reattach the split sprockets back together.
9) Assemble the chain back onto the drive and driven sprockets.
   Note: Make sure chain tension is correct for running the screen.
10) Reattach the infeed flume to the screen.
11) Reattach the guards on the infeed end.
12) Reintroduce the power to the machine and continue use of your Lyco Screen.



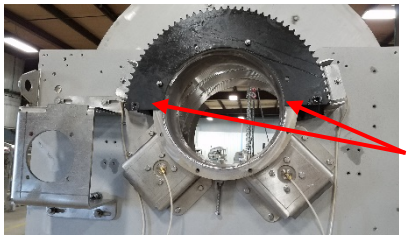
Chain Guard Removed



Infeed Flume Removed



Sprocket Bolted to Infeed



Sprocket Split Connection

Split Sprocket Allen Wrench Connection (Back Side of Sprocket)

Mechanical Traveling Spray
The Mechanical Traveling Spray is found on the side of the machine (most commonly on the right side). This accessory allows pressure up to 1000 psi to clean off any residue on the screen. Most applications for this would be for products most commonly stick or plug up the screen very easily.

Caution
Extreme caution should be used by personnel working around the high-pressure sprays. Lyco asks personnel to wear safety glasses, and not allowing any part of a person's body to come in contact with the water being sprayed, as it may cause severe damage. Personnel should also be following the PPE of their company as well.

Never allow the motor to receive direct water wash down during clean up. Spraying down the motor or gearbox may cause severe damage that may cause water to leak into the gear drive and causing premature failure.

Danger
If the hose springs a leak from abrasion, or being worn, the high-pressure pump should be immediately shut down and the hose replaced.

Attention

If the Mechanical Traveling Spray is purchased, and Lyco is NOT supplying the controls to the screen. A variable Frequency Drive (VFD) is required to be purchased and used by the customer for the mechanical traveling spray motor. The installation needs to be done by a licensed and qualified electrician who follows all Federal, State, and Local codes. Motor nameplate data should be referred to for sizing incoming electrical lines and establishing fusing an overload protection. The speed of the traveling spray will need to be adjusted throughout the day to prevent the nozzle spraying the same locations on the screen, or else the areas the nozzle does not hit will start to plug and blind over.

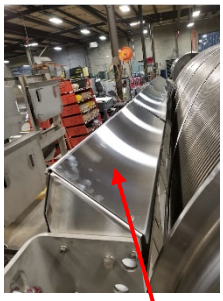
Mechanical Traveling Spray Chain Tensioning

1) Be sure to turn off any power to the screen before performing any maintenance on the screen. Use your company's "Lock-Out Tag-Out" instructions.
2) Remove (1) section of guard to verify the chain need to be adjusted.
   Note: You may need to take off the back-side chain guard panel prior to the outside panel. *(Only if NO screen canopy is provided. See pictures below).*
   Note: You can use a chain tensioning device to see if the chain tension is adequate.
3) If the chain needs to be adjusted, loosen the (4) bolts on driven sprocket mounting plate.
   Note: This sprocket is on the discharge end of the screen. On longer units (120" or longer), the plate will be found in the middle of the machine.
4) Use the threaded adjustment screw to adjust the tension in the Mechanical Traveling Spray chain.
5) Once the chain is at its proper tension, tighten the bolts on the driven sprocket end plate.
6) Reattach the chain guard on the section removed from the previous step.
7) Reintroduce the power to the machine and continue use of your Lyco Screen.

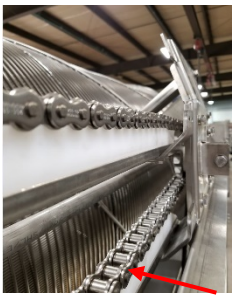
Mechanical Traveling Spray with Canopy

Mechanical Traveling spray with Canopy

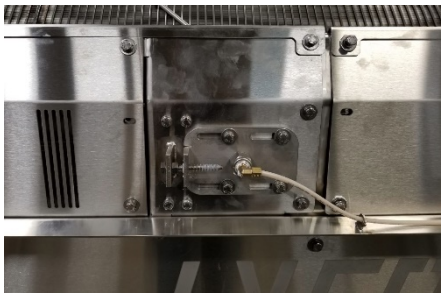
Mechanical Traveling Spray without Canopy



Back Panel of MTS without Canopy
(Will Need to Remove to Get at Front Panel)

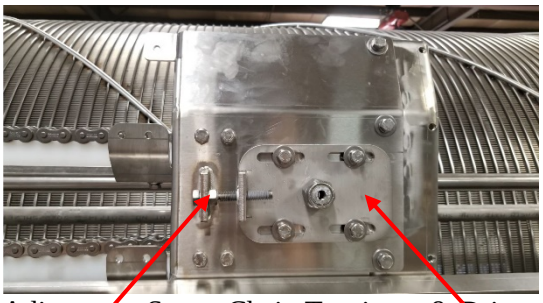


Mechanical Traveling Chain *(Check Chain Tensioning)*



MTS Mounting Bracket

Panels on Mechanical Traveling Spray



Adjustment Screw Chain Tensioner & Driven Sprocket Mounting Plate

CIP Nozzle(s) Clean-Out

If a nozzle or nozzles have become plugged and have stopped spraying water.

1) Be sure to turn off any power to the screen before performing any maintenance on the screen. Use your company's "Lock-Out Tag-Out" instructions.
2) Unscrew the nozzle from the CIP system.
3) Use pressurized air or a small wire (smaller than the orifice of the nozzle) to remove any debris in the nozzle head.
4) Rewrap the thread with thread tape before reinserting the nozzle.
5) Screw in the nozzle back into the CIP system.
6) Reintroduce the power to the machine and continue use of your Lyco Screen.

CIP Manifold

CIP Nozzles

CIP Nozzle

(Make Sure Nozzle Orifice is Cleaned to Effectively Spray Screen)

Chain Oiler

If a chain oiler was purchased from Lyco Manufacturing, then you will need to refill when oiler becomes empty. The chain oiler is a gravity oil dispenser with an on/off and adjustable flow rate – 16oz capacity. It is located on the Infeed end, and on top of the chain guard.

Soft Starts

The primary reason Inverter Drives MUST be used is for the unit can have a full 10-second to 30-second ram up start. This means the screen can build up speed from zero to full speed within the 10 to 30 seconds. One can program an Inverter to achieve this by setting the acceleration time (See Manufacturer's Manual for Inverter).

Attention

Soft starts or Inverter Drives are the responsibility of the Purchaser and are required on all Lyco Rotary drum Screens. See the Inverter Drives Manufacturer's Manual for programming acceleration time.

"Jerk Starting" cylinder without a soft start causes serious damage to the motor / gearboxes, sprockets, chain, and structural damage to the main cylinder. Longevity of the entire machine is greatly improved by using soft start and will result in lower maintenance costs.

LYCO'S WARRANTIES ARE VOID IF VARIABLE FREQUENCY DRIVES ARE NOT USED!

Recommended Spare Parts to Stock

Lyco recommends carrying in inventory:

3152875 Trunnion Assembly

5420690 3 HP Gearbox and motor

Service

Whenever service is required, you may contact the factory directly or your local representative. The main contact information for Lyco Manufacturing is:

Lyco Manufacturing
115 Commercial Drive
Columbus, WI 53925

Phone: (920) 623-4152
Fax: (920) 623-3780

Preventative maintenance Schedule for Lyco Screens

WEEK OF (_____)

(4) MAIN TRUNNIONS	**MON**		**TUES**		**WED.**		**THURS.**		**FRI**		**SAT**		**SUN**
EVERY 12 HOURS OR	AM	☐	AM	☐	AM	☐	AM	☐	AM	☐	AM	☐	AM
2 TIMES PER DAY 3-6	PM	☐	PM	☐	PM	☐	PM	☐	PM	☐	PM	☐	PM
SHOTS OF JAX HALOGUARD FG-2													
OR EQUIVILANT													

(2) MAIN THRUST WHEELS	**MON**		**TUES**		**WED.**		**THURS.**		**FRI**		**SAT**		**SUN**
EVERY 12 HOURS OR	AM	☐	AM	☐	AM	☐	AM	☐	AM	☐	AM	☐	AM
2 TIMES PER DAY 3-6	PM	☐	PM	☐	PM	☐	PM	☐	PM	☐	PM	☐	PM
SHOTS OF JAX HALOGUARD FG-2													
OR EQUIVILANT													

CHECK MAIN CYLINDER DRIVE	**SAT**	
CHAIN ONCE EVERY 7 DAYS	AM	☐
ENSURE CHAIN IS NOT LOOSE	PM	☐
IF THE CHAIN IS LOOSE TIGHTEN		
MAIN DRIVE MOUNT		

(OPTION IF PURCHASED
TRAVELING SPRAY)

CHECK TRAVELING SPRAY	**SAT**	
CHAIN ONCE EVERY 7 DAYS	AM	☐
ENSURE CHAIN IS NOT LOOSE	PM	☐
IF THE CHAIN IS LOOSE TIGHTEN		
MAIN DRIVE MOUNT		

LUBRICATE MAIN CYLINDER DRIVE	**SAT**	
CHAIN ONCE EVERY 7 DAYS	AM	☐
(OR FILL CHAIN OILER IF	PM	☐
OPTION WAS PURCHASED)		

Expanded Replacement Parts List

Part No	Description
3152875	Trunnion Assembly, Complete with Shaft (See Drawing)
3152873	Trunnion Shaft Only
5050071	Bearing Only, INA G52062RSN for #3152875 Trunnion Assy
5170111	Trunnion Wheel Only for #3152875 Assembly
5000429	Chain, Roller #80, Perfect Coat (15' required. Comes 10' per box)
5000447	Chain Offset Link, #80 Neptune
5000469	Chain Master Link #80 Neptune
5300767	Pressure Gauge, 0-400 PSI
5000467	Pressure Gauge, 0-1500 PSI
5000596	Sprocket, 80SF20, MS, 1-1/2" Bore with QD Bushing
3133390	Sprocket, 80A90, 20.312 ID
5370032	Nozzle, Vee-Jet, Brass, H-1/8-U-8020, (Qty 19)
5420690	Gearbox and Motor, 3 HP, SK9022AFBH-180TC-100L (for Screen)
5421194	Gear box and Motor, 1 HP SK93172.1AFB (for Spray)
3154097	Shaft for Nord, 3 HP Gearbox and Motor SK9022AF 13.25" Long

See drawing # 3134909 for a breakdown on the Mechanical Traveling Spray.