AUTOMATIC MIXER BULL GEAR LUBRICATION

Proper lubrication of the mixer bull gear prolongs the gear life of not only the large bull gear, but also the two pinion drive gears, main rollers and edge rollers. Automatic lubrication requires minimal manual labor and is therefore more cost effective. Automatic lubrication also takes the human element out of the equation; making it a more fail safe and reliable lubrication method.

HOW THE SYSTEM WORKS

Mounted on the mixer bull gear guard are three lube injection nozzles, one nozzle at the center of the bull gear and two nozzles at each side for lube coverage on the edge roller and main roller tire tracks. Since the edge roller and main roller tire tracks do not require as much lube, the lubrication rate is adjustable with both of these nozzles.

The lube dispensing pump is mounted on the mixer platform adjacent to the mixer hydraulic power unit. Connections to the manifold assembly and the air and lube nozzles are via flexible hoses provided.

A Siemens PLC controller and expansion module are mounted in a junction box on the mixer deck. Wiring is ran to/from via flexible conduit containing:
L1 – Hot
L2 – Neutral
GND – Ground Wire
M7 – Hydraulics Running (Input)
X41 – Mixer Running (Input)
M11 – Mixer Home (Input)
X72 – Bull Gear Lube Valve (Output)
X73 – Bull Gear Air Valve (Output)
P57 – Auto Signal to Manual Control Panel (Output)
X74 – Lube Low Signal to Manual Control Panel (Output)

Compressed air at 125 pounds per square inch (8.62 bars) is supplied to an Erie provided manifold assembly that includes air line filters, pressure regulators, a lubricator and pilot valves for lube application and air dispersal. The manifold assembly is mounted adjacent to the mixer hydraulic power unit.

The lube nozzles are tied into a manifold which is connected by flexible hose to a 5-gallon (19 liter) bucket containing lube pneumatically injected by a pump at 70 pounds per square inch (4.83 bars). The lube valve is energized automatically every 60 minutes for a period of 8 seconds when the mixer is the down (home) position and running.

Each lube nozzle has an integrated air dispersing nozzle. The air nozzle sprays the lube in a uniform fan pattern. Each air nozzle is connected to a manifold which is supplied with 40 to 60 pound per square inch (2.75 to 4.14 bars) air supply. The dispersal on time solenoid is energized for approximately 12 seconds of the 60-minute lubrication cycle. This time allows the lube to be sprayed in a fan pattern and clean out the nozzle.

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The timing cycle above is based on requirements for a high-speed paving plant. Reduced lubrication cycle times can be used for ready mix applications.

SYSTEM OPERATION / EXTENDED COMPONENT LIFE

The system automatically lubes the mixer bull and pinion gears / main and edge rollers, every 60 minutes. The traditional practice of applying lube to these components once or twice a day, causes the maintenance person to over lubricate the gears, which in turn quickly flings off and creates excess mess. This system constantly maintains a thin film of lubrication on the gears, providing maximum wear protection. Lube automation eliminates any need for mixer down time during the busy workday. The mixer lube reservoir can be easily and quickly refilled between cycles. The automatic greasing system is highly recommended for paving, dam, project and high production ready mix plants.

SAEFTY CONCERNS

The auto lubrication system eliminates several safety concerns involved with lubing the mixer. Some of these concerns are:

Lock Out / Tag Out - Eliminates the requirement of maintenance personnel to access to the mixer gearing area, which would require locking and tagging out the machine.

Slips, Trips and Falls – Eliminates the requirement of maintenance personnel to access the lubricated and potentially slippery areas of the mixer.

Safety Tie Off / Fall Arrest – Eliminates the requirement of maintenance personnel to access an area without handrails. The bucket of lubricant is easily accessed on the mixer platform.