Frequency	Hawkeye Maintenance	Sub-area
Daily	inspect load chains and pins on header handling beam for wear or damage	**header handling beam chains & pins**
Daily	inspect load chains and pins on the extruder beam for wear or damage	**load chains & pins**
Daily	inspect the strip assist cyclinder for plumb each day	**strip assist cylinder**
Daily	at the end of each production day, the rubber seal should be rolled up onto the core barrel so the trough can be cleaned out. If the trough is permitted to fill with concrete, wear to the rubber seal will be accelerated	**core to pallet seal**
Daily	inspect to ensure core top isn't wearing (tapering)	**core top**
Daily	pallet locks should be lubricated each day before starting production, without the pallet in the jacket	**chain style pallet lock (stripping lug)**
Daily	ensure pallet lock synchronization (move all the pallet locks to the extended position and check to see if they are all hitting the stops simultaneously)	**chain style pallet lock (stripping lug)**
Daily	spray oil on the chain linkage mechanism of the airforce plock; replace the side linkage plates when worn	**airforce p-lock**
Daily	check the lubricator for sufficient oil	**pallet lock air system**
Daily	check the air valve that is used to actuate the p-locks.	**form equipment**
Periodically	Check the fluid level of the reservoir tank. Add oil if necessary.	**hydraulic unit**
Periodically	form anchors on the base should be checked for wear; if less than 3/16" of steel cover is present over the pin slots, replace the anchors--use only Afinitas replacement parts. The connecting pins are of a special heat-treated material	**base**
Periodically	check the supply bowl to make sure oil is present and fill when necessary. Utilize ISO 3448 vicscosity grade 32 or equivalent	**pressurehead air line lubricator**
Periodically	check the air pressurehead cylinder mounts for wear and replace as required	**pressurehead cylinder mounts**
Periodically	check the water level in the pressurehead air line filter and drain. Water must be drained before the separated moisture and oil reaches the bottom lower baffle. Periodically check the filter element and remove when the pressure differential across the filter unit is excessive	**pressurehead air line filters**
Periodically	check the tongue trowel bottom plate for 'play' at the cam followers. If loose, tighten the bottom plate	**tongue trowel bottom plate**
Periodically	lubricate the latching pivot mechanism, spring, and retainer chain with SAE-30 weight oil	**tongue trowel gear chain**
Periodically	on the extruder beam, check the supply bowl to make sure oil is present and fill when necessary	**extruder beam**
Periodically	Check all the vibrator nuts and bolts for tightness. If any bolts would work free, it is possible that the rotating balance disc inside the vibrator could catch a screw and force it through the vibrator end cover, shattering the end cover and exposing personnel to flying metal particles.	**vibrator**
Periodically	the Martin vibrators require periodic lubrication.	**vibrator**
Periodically	check vibrator cords for wear and abrasion	**vibrator**
Periodically	the linkage should be check for the proper over-center dimension. This over center dimension should be maintained at 1/16" to 1/8". Maintain the rod end and p-lock bearing point in order to maintain this over-center spec	**airforce style pallet lock (p-lock)**
Periodically	inspect bushings on the airforce p-lock and repair if necessary	**airforce p-lock**

Periodically	inspect the air valve that controls the p-locks for proper operation	**pallet lock air system**
Periodically	inspect the jacket and core for cracked welds	**jacket vibration transmission bands**

Weekly	check the water level in the pneumatic system machine air line filter and drain as needed	**pneumatic system**
Weekly	check the supply bowl on the machine air line lubricator to make sure oil is present and fill when necessary. Utilize ISO 3448 vicscosity grade 32 or equivalent	**air line lubricator**
Weekly	a grease hole is provided in the 1 1/4" diameter pivot shaft of the p-lock mechanism. Each week, this shaft should be liberally greased at the 1/8" grease hole on the airforce p lock	**airforce p-lock**
Weekly	the bearings for the short product header anchor clamps should be lubricated weekly	**short product header anchor**
Bi-weekly	brush the guide throughs with a multipurpose grease to prevent wear to pins and trough	**pressurehead guide trough**
Bi-weekly	check tongue trowel abrasion bars for wear and tear; replace as required; Replace the bars before they are worn through to prevent wear to the permanent bars located underneath each of these replaceable bars	**tongue trowel**
Bi-weekly	lubricate the three cam rollers that support the perimeter of the tongue trowel bottom plate. Grease at the zerk on each roller axle with a high-quality multipurpose grease	**tongue trowel cam rollers**
Bi-weekly	under ordinary conditions, biweekly lubrication and cleaning with a solvent is satisfactory, but under hot and/or dirty conditions, it may be necessary to clean the hoist load chain at least once a day and lubricate it several times between cleanings	**hoist load chains**

Monthly	lubricate the cylinder mounts on the pressurehead. Lubricate each of the mounts at three places, a total of 9 locations. A 1/8" oil hole is provided at each location for lubricating with a multipurpose grease	**cylinder mounts on pressurehead**
Monthly	lubricate the center bearing mounted to the stationary structure of the pressurehead; Grease at the zerk with a high-quality multipurpose ball bearing grease	**tongue trowel center thrust bearing**
Monthly	lubricate the roller chain that is around the outside perimeter of the tongue trowel bottom plate with SAE-30 weight oil	**tongue trowel gear chain**
Monthly	lubricate the roller chain with SAE-30 weight oil	**tongue trowel chain gear**
Monthly	lubricate the lower hook thrust bearing	**lower hook thrust bearing**
Monthly	lubricate the extruder beam with a multipurpose grease at the following locations: three pivot arm pipe bearings at the 1/8" diameter oil hole, roller chain idler sprocket at the 1/8" diameter oil hole, adjustable star circular plate at the grease zerk, adjustable star center pivot bearing at the grease zerk	**adjustable star (extruder beam maintenance)**

every 6 months	lubricate the pressurehead safety latch bearings at the zerks with a multipurpose grease	**pressurehead safety latches**
every 6 months	lubricate the hoist chain idler sprocket bearings with a multipurpose spray lubricant	**hoist chain idler sprocket bearings**
every 6 months or 1,000 hours of operation	change the hydraulic return line filter	**hydraulic unit**

400 hours	inspect the strip assist cylinder seals and cylinder shaft and clean/lube as required	**strip assist cylinder**

as needed	the wear plates on the bottom of the core where the jacket rests during production should be replaced when needed	**form wearing surfaces**

Yearly	apply a light film of machine oil to the limit switch shaft threads	**jib limit switch**
Yearly	lubricate the 4 jib bearings at the zerks with a high quality multipurpose ball bearing grease	**jib bearings**
Yearly	perform a complete inspection on the hoist ; refer to figures 1a-1g	**hoist**

Daily Cleaning Guidelines
At the end of the production day all of the remaining concrete must be removed. There must be no concrete in the concrete hopper or on the feeding belt.
Remove all concrete remains on the vibration tabletop, mounting beams, and/or core suspension
Wipe mould equipment and scrape off concrete remains. Especially by the air bleeds as concrete remains must be scraped off in order that they do not accumulate
Wipe mould and core with a rag or a stiff brush
Clean thoroughly all contact faces with rubber packing on mould and core as dirt tends to accumulate where two mould parts are assembled.
After the cleaning a thin coat of mould oil should be applied to all surfaces which are in contact with the concrete except for the rubber feeding belt. This will help prevent the concrete from sticking to the components during the next production shift.
Clean thoroughly all contact faces with rubber packing on mould and core as dirt tends to accumulate where two mould parts are assembled.
Thoroughly clean the production station base at the end of the shift and coat it with a concrete release agent

Frequency	General Cleaning Guidelines
daily	The machine base must be kept free of built-up concrete. This can be best accomplished by thoroughly cleaning the base every night and coating it with a concrete release agent.
2x/day	The concrete hopper walls and other concrete-contact surfaces should be scraped clean. It is suggested that this be done twice daily
daily	After scraping clean, the concrete contact surfaces of the hopper walls should be coated sparingly with oil or a concrete release agent. Do not permit oil or the release agent to get on the rubber conveyor belt or drive pulleys because the belt will slip, and the rubber may deteriorate.
daily	Keep all forms polished and oiled to protect against rust and concrete buildup.
daily	At the end of each day, the pallet locks should be thoroughly cleaned in oil and inspected for proper operation

pg 125
Gearbox for Swivel of Concrete Feeder
Open Gears for Swivel of concrete Feeder
Bearings for Swivel of Concrete Feeder
Gearbox for Concrete Hopper Agitator
Bearings for Concrete Hopper Agitator
Gearbox for Concrete Feeding Belt
Bearings for Concrete Feeding Belt Drums
Gearbox for Distributor
Bearing for Distributor
Bearing for Electrical Collector
Hydraulic Unit for Scissors Connecting Frame
Shot Pins for Scissors Connecting Frame

pg 154	use grease according to standard lubricating chart or similar	
Triple Ram Press Lube and Maintenance	Hours of operation	Symbol No.
1. Air Line Lubricator	200	5
2. Press Cylinder Mounts Inspection	400	Inspect
3. Guide Trough	200	10
4. Press Cylinder Mount Lube	200	9
5. Presshead Safety Latch Lubrication	1200	10
6. Presshead Air Line Filter	400	Inspect
7. Tongue Trowel Bars – Inspection	800	Inspect
8. Tongue Trowel Bottom Plate	400	Inspect
9. Tongue Trowel Cam Wheels	200	9
10. Tongue Trowel Center Thrust Bearing	200	9
11. Tongue Trowel Gear Chain	200	3
12. Tongue Trowel Gearbox	1000	4
13. Tongue Trowel Guide Pins	200	9
14. Press Pivot Gearbox	1000	4
15. Press Pivot Gear Chain	200	3
16. Press Pivot Bearing	200	9
17. Latch Mechanism Lubrication – spring and pivot	200	10

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Hoist		
1. hoist	10	Inspect
2. jib bearings	2000	9

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Extruder Beam		
1. Beam	100	Inspect
2. Chain Assemblies	10	Inspect
3. Adjustable Star	200	9

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Standard Lubrication Chart

No.	Symbol	Application	KUWAIT PETROLEUM	TEXACO CALTEX	CHEVRON	MOBIL EXXON	SHELL	ELF	BP AMOCO	CASTROL	FINA	ARAL
1		HYDRAULIC PLANTS	Handel 46	Rando Oil HDZ LT 46	Rykom Premium Oil 46	DTE 15M	Tellus Oil TX 46	Hydrelf DS 46	Bartran HV 46	Hyspin AWH - M 46	Hydran TSX 46	Vitam HF 46
2		HYDRODYNAMIC COUPLINGS	Handel 15	Rando Oil HDZ LT 15	Rykom Premium Oil 15	DTE 11M	Tellus Oil T 15	Hydrelf DS 15	Bartran HV 15	Hyspin AWH - M 15	Hydran TSX 15	Vitamol ZH-M
3		BEARERS-COLUMNS-CHAINS	Wagner 68	Way Lubricant X 68	Way Oil Vistac 68	Vactra Oil No. 2	Tonna Oil S 68	Moglia 68	Maccurat 68 D	Magna Glide D68	Hydran G 68	Deganit BWX 68
4		CLOSED TOOTHED GEARINGS	Goya 320	Meropa 320	Gear Compound EP 320	Mobilgear 632	Omala Oil 320	Reductelf SP 320	Energol GR-XP 320	Alpha SP 320	Giran 320	Degol BG 320
5		AIR VIBRATORS	Chopin 46	Aries XLX 32	Rock Drill Oil Vistac 32	Almo 525	Torcula Oil 32	Perfora 46	Energol RD-E 46	Kilfrost 400	Finaroc 32 W	Vitam DE 46
6		MOULD OIL FOR PALLET SPRAYER	da Vinci C	Texaform PR 5	Form Oil 22	Formoil 6803	Form 5	Carol BF 17	Energol CM 55 DK	Mi-form 1000		Granitol C
7		OIL LUBRICATED COREVIBRATORS (alt. mix 45% 32 cSt. and 55% 68 cSt.)	Schumann 46	Cetus PAO 46	Tegra Oil 46	Mobil SHC 625	Corena AS 46	Reductelf Synthese 46	Enersyn RC-S 46	Alphasyn T 46	Eolan SPO 46	Motanol SPA 46
8		OIL LUBRICATED BOX VIBRATORS	Schumann 100	Cetus DE 100	Tegra Oil 100	Mobil SHC 627	Omala 100	Reductelf Synthese 100	Enersyn RC-S 100	Alphasyn T 100	Eolan SPO 100	Motanol SPA 100
9		GREASE LUBRICATED VIBRATORS AND ROLLER BEARINGS EXPOSED TO HEAVY CHOCK LOADS	Rembrandt EP 2	StarPlex EP 2	Dura-Lith Grease EP 2	Mobilux EP 2	Retinax EP2	Epexelf 2	Energrease LS-EP 2	Castrol LMX	Lical EP 2	Aralub HLP 2
10		OPEN SLIDING SURFACES GREASE WITH GREAT ADHERSION	Rembrandt Moly	Molytex EP 2	Ultra Duty Grease EP 2	Mobiltac 81	Retinax LX	Epexelf Mo2	MOG 222	Molymax	Marson LM 32 N	Radlagerfett
11		GREASE LUBRICATED GEARS AND GEAR MOTORS	Rubens 00	Marfak 00	Dura-Lith Grease EP 00	Glygoyle Grease 00	Getriebefett H	Multimotive 2	Energrease FG 00-EP	Gear Grease EP 00	Marson ZS	Fließfett N
12		LUBRICANT WITH GREAT ADHERENCE FOR OPEN PINIONS	Giotto	Texclad Premium 2	Open Gear Grease	Mobiltac 81	Malleus Fluid GL 95	Cardrexa GR2	MOG 222	Grippa 355	Ceran EP	Mehrzweckfett F

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All bolted connections, particularly on vibration table and mould equipment, should be tightened with a torque wrench. Use torque from list below.

Maximum torque in Nm for electroplated, oiled bolts, quality 8.8:	
Dimension	**Torque (Nm)**
M8 x 1.25	21
M10 x 1.5	41
M12 x 1.75	71
M16 x 2.0	177
M20 x 2.5	346
M24 x 3.0	598
M30 x 3.0	1190

Hydraulic Connections					
Tube (mm)	**Thread (inches)**	**Torque (Nm)**	**Thread**	**Torque (Nm)**	**Series**
6	G1/8	25	M10x1	25	L Light
8	G1/4	50	M12x1.5	30	L Light
10	G1/4	50	M14x1.5	50	L Light
12	G3/8	80	M16x1.5	80	L Light
15	G1/2	160	M18x1.5	90	L Light
18	G1/2	105	M22x1.5	160	L Light
22	G3/4	220	M26x1.5	285	L Light
32	G1	370	M22x2	425	L Light
35	G11/4	600	M42x2	600	L Light
42	G1 1/2	800	M48x2	800	L Light
6	G1/4	60	M12x1.5	35	S Heavy
8	G1/4	60	M14x1.5	60	S Heavy
10	G3/8	110	M16x1.5	95	S Heavy
12	G3/8	110	M18x1.5	120	S Heavy
15	G1/2	170	M20x1.5	170	S Heavy
18	G1/2	140	M22x1.5	190	S Heavy
22	G3/4	320	M27x2 3	20	S Heavy

32	G1	380	M33x2	500	S Heavy
35	G11/4	600	M42x2	600	S Heavy
42	G1 1/2	800	M48x2	80	S Heavy