



DEFINING BATCH PLANT EXCELLENCE.

The Vince Hagan Company Equipment Manual Index

- 1 General Concrete Batching Plant**
 - A Concrete Plant Safety
 - B Terms and Definitions
 - C Standard Plant Operations
 - D Holding Hopper Plants Operations
 - E Dual Alley Plant Operations
 - F Concrete Plant Maintenance
 - G Trouble Shooting
 - H Recommended Spare Parts
 - I Standard Lubrication Guidelines



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DEFINING BATCH PLANT EXCELLENCE.

PLANT SAFETY

This Manual has been prepared and provided to you for your use solely in connection with your use of the equipment described herein. Use of this information for any other purposes is not authorized by The Vince Hagan Company and is strictly prohibited without our written consent. All information is subject to change without notice.

WARNING

All personnel involved in the operation, maintenance, repair or other use of this equipment must be properly trained with respect to such operation, maintenance, repair or other use. No person should operate, maintain, repair or otherwise use this equipment if such person is under the influence of alcohol, prescription drugs, or any other substance that may impair such person's perception or reflexes. All personnel involved in the operation, maintenance, repair or other use of this equipment must read this manual in its entirety. Failure to observe the foregoing precautions may result in serious injury or death.

NOTICE

THESE INSTRUCTIONS DEAL WITH THE NORMAL INSTALLATION AND OPERATION OF THE EQUIPMENT DESCRIBED WITHIN. THE INSTRUCTIONS SHOULD NOT BE INTERPRETED TO ANTICIPATE EVERY POSSIBLE CONTINGENCY OR TO ANTICIPATE THE FINAL CONFIGURATION OF THE EQUIPMENT.

THE INFORMATION CONTAINED IN THIS MANUAL IS CONFIDENTIAL AND IS THE PROPERTY OF THE VINCE HAGAN COMPANY. THIS MANUAL HAS BEEN PREPARED AND PROVIDED TO YOU FOR YOUR USE SOLELY IN CONNECTION WITH YOUR USE OF THE EQUIPMENT DESCRIBED HEREIN. TRANSMISSION OF ALL OR ANY PART OF THIS INFORMATION TO OTHERS, OR USE OF THIS INFORMATION FOR ANY OTHER PURPOSES, IS NOT AUTHORIZED BY THE VINCE HAGAN COMPANY AND IS STRICTLY PROHIBITED WITHOUT OUR WRITTEN CONSENT. ALL INFORMATION CONTAINED HEREIN IS SUBJECT TO CHANGE WITHOUT NOTICE.

Please call The Vince Hagan Company if you do not understand these procedures or if you have any questions. Our toll free number is (800) 354-3238.



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DEFINING BATCH PLANT EXCELLENCE.

GENERAL SAFETY



Hard hats, steel-toed shoes, and adequate eye protection must be worn around powered equipment. Loose fitting or baggy clothing is dangerous and should not be worn around power equipment under any circumstances.

Keep all caution plates and warning stickers conspicuously posted and legible. Should caution plates become damaged, or obscured, replacements are available from our factory. (See sticker samples in this section)

Equipment must be shut down with a "Do Not Start" tag on the motor control panel(s) at all times when personnel are performing maintenance, adjustments or repairs (Refer to Lockout/Tag-out procedures).

Equipment must be connected to an external ground that meets local codes before power is applied.

Use a sturdy, well-built ladder to provide access to all areas that cannot be reached from the ground. Be sure the ladder is securely placed before climbing.

Shut off the air and drain the air pressure from the system before attempting to disconnect any air lines or fittings.

Remove all tools, rags, and other stray objects from the vicinity of the equipment before starting.

SAFETY FIRST - Production with safety, both equal, both important, and both everyone's responsibility.

REGARDLESS of the care used in the design and construction of this machinery, there are many points that cannot be completely safe guarded without interfering with its accessibility and efficient operation.



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DEFINING BATCH PLANT EXCELLENCE.

LOCKOUT/TAG-OUT PROCEDURE

ON ANY AND ALL ELECTRICAL APPLICATIONS, ALL ELECTRICAL WORK MUST BE DONE BY A QUALIFIED, LICENSED ELECTRICIAN.

RESPONSIBILITY: It shall be the customer's responsibility to provide and implement his or her own Lockout/Tag-out procedure.

The following is one example of a Lockout/Tag-out procedure. You should not rely on these procedures but must independently analyze your operations and use and supplement or otherwise customize procedures for use with your equipment.

PURPOSE:

This procedure establishes requirements for the lockout/tag-out of machines or equipment whenever maintenance, adjustment or repairs are done on such machines or equipment. The machine or equipment must be stopped, isolated from all potentially hazardous energy sources, and locked out before employees perform any maintenance, adjustment or repairs. Lockout/Tag-out shall be used wherever possible.

COMPLIANCE:

All employees and other persons must comply with the restrictions and limitations imposed upon them during the use of lockout/tag-out. The authorized employees are required to perform the lockout/tag-out in accordance with this procedure. All employees and other persons, upon observing a machine or piece of equipment, which is locked or tagged out to perform maintenance, adjustment or repairs, shall not attempt to start, energize, or use that machine or equipment.

SEQUENCE OF LOCKOUT/TAG-OUT:

1. Notify all affected employees and other persons that maintenance, adjustment or repairs are required on a machine or equipment and that the machine or equipment must be shut down and locked and tagged out to perform the maintenance, adjustment or repairs.
2. The authorized employee shall identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3. If the machine or equipment is operating shut it down by the normal stopping procedure.



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4. De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).
5. Lock and tag out the energy isolating device(s) with assigned individual lock(s) and tag(s).
6. Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
7. Additional steps must be taken in order to ensure that the equipment is disconnected from the energy source(s). The isolation of the machine or equipment must be relieved by operating the normal operating control(s) or by testing to make certain the machine or equipment will not operate.

CAUTION: Return operating control(s) to neutral or "off" position after verifying the isolation of the machine or equipment.

8. The machine or equipment is now locked/tagged out.

RESTORING EQUIPMENT TO SERVICE:

When the maintenance, adjustments and repairs are completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken.

1. Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
2. Check the work area to ensure that all employees and other persons have been safely positioned or removed from the area.
3. Verify that the controls are in neutral.
4. Remove the lockout devices
5. Notify affected employees and other persons that the maintenance, adjustment or repairs is completed and the machine or equipment is ready for use.



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CONFINED SPACE - ENTRY PERMIT REQUIREMENTS

The Occupational Safety and Health Administration (OSHA) have issued rules designed to protect employees who work in confined spaces. OSHA has set standards for entry into confined space, designated as permit - required confined space, that pose danger to employees entering due to hazards such as toxic, explosive, or asphyxiating atmosphere.

Items manufactured by the Vince Hagan Company have been evaluated as permit-required confined spaces due to the configuration or contents.

If employees are not to enter and work in confined spaces, employers are required by OSHA to take effective measures to prevent their employees from entering.

If employees are to enter permit-required spaces, the employer should develop a written permit space program in accordance to local confined space regulations as required by OSHA. This program shall be made readily available for employees and their representatives.

This information is intended to call your attention to the OSHA rules and is not intended to be exhaustive nor to substitute for your own research and consideration of the particular needs of your work force and locality.

You should consult your own safety personnel and consultants, as well as the applicable OSHA literature to develop a program, which meets the requirements and recognizes the circumstances of your own specific needs in the use and maintenance of the equipment.

GENERAL BATCH PLANT SAFETY

The following is one example of a SAFETY RULES LIST that can be used. You should not rely on these rules but you must independently analyze your operations and use and supplement or otherwise customize rules to your "site specific" equipment.

Most accidents are caused by someone's failure to follow simple and fundamental safety rules or precautions.

A careful operator is the best insurance against an accident.



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Additional safety warnings will be found as they apply throughout this manual. We strongly urge you to take note of these warnings and follow them closely.

Be sure a caution plate or danger plate is posted on, or near, each motor starter so the operator will see it. We have posted caution plates to satisfy normal requirements. Check to be sure they meet all of your requirements. (Local state & federal)

Keep all caution plates, warning, and danger stickers posted and legible. Should these plates become damaged or obscured, replace them immediately. Replacements are available from our factory.

GENERAL BATCH PLANT SAFETY RULES

RESPONSIBILITY: It shall be the customer's responsibility to provide and implement their own plant safety rules and shall be responsible for all personnel at the work site.

1. Equipment must be shut down with a "DO NOT TURN ON" tag on the motor control panel with power turned off and locked out at times when personnel are performing maintenance or adjustments on it. Padlock and place key in your pocket before servicing this equipment.
2. Equipment must be connected to an external ground, which meets all local codes before power is applied.
3. Use a sturdy, well-built ladder to provide access to all areas that cannot be reached from the ground. Be sure the ladder is securely placed before climbing.
4. Shut off the air and drain the air pressure from the system before attempting to disconnect any air-lines or fittings.
5. Remove all tools, rags and other stray objects from the vicinity of the equipment before starting.
6. Install and sound an audible alarm, and be sure that all personnel are well clear before starting any equipment or components. Due to the varying conditions at the plant sites, it is left to the plant owner to select and install the warning systems.



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DEFINING BATCH PLANT EXCELLENCE.

7. When preparing to checkout or calibrate the scales using test weights, be sure that the test weight hangers are supported adequately from the weight hopper and be sufficiently strong to support all of the weight to be applied. Test weight hangers must be long enough to apply the test weights from the working area.
8. Be careful of your hands and feet when applying the test weights. A 50-pound test weight can severely injure a hand or foot if the weight is carelessly handled.
9. Report hazardous working conditions, defective tools or equipment, or unsafe acts promptly to your supervisor.
10. Wear hard hats, safety glasses and suitable type work shoes or hard sole shoes at all times.
11. Use safety goggles or welding shield when grinding, cutting, welding, chipping, sanding or chiseling.
12. Report any injury, however minor, immediately to your supervisor, and keep your supervisor informed as to your condition and medical treatment if treatment was necessary.
13. Never attempt to do any job if you are in doubt about the safety of yourself or others. Ask your supervisor for help if necessary.
14. Keep work area clean - free of grease, spare parts, tools, rags, etc.
15. Gloves will be worn when handling a piece of equipment whereby injury may occur.
16. No person will place hands on a cable passing through a sheave or being wound around a drum within a distance of 12 feet of the sheave or drum.
17. Never direct compressed air toward yourself or another person. Compressed air for cleaning shall not exceed 30 PSI.
18. Be sure all electrical tools and equipment is properly grounded.
19. Keep oxygen and gas cylinders upright and chained. Caps will be kept on tanks not in use.
20. When operating electrical switches, stand on insulated mat. Keep switch panel front closed - guard eyes against possible flash.



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DEFINING BATCH PLANT EXCELLENCE.

21. Do not enter silo, bin, hopper, batcher (scale) or tank without supervisor's knowledge, life belt and attended safety line.
22. Operate equipment with extreme caution around and on stockpiles.
23. No one will work on or from raised equipment unless it has been securely blocked.
24. Open flame heating units are strictly prohibited.
25. Do not run on or near the equipment - watch your step - keep firm footing and proper balance at all times.
26. Employees are required to notify their supervisor if they are taking prescription drugs that may affect their performance.
27. Employees are required to wear back support belts while working.
28. Make sure everyone is clear before starting or moving any machine or piece of equipment.
29. Do not repair, operate, or ride any machine or piece of equipment without authorization from your supervisor.
30. No person shall get on or off of moving equipment at any time.
31. No equipment or machinery will be repaired while engine is running unless operation of engine is necessary for adjustment.
32. Keep guards and protective devices in place at all times except for repairs or preventive maintenance. Lock out equipment before removing guards.
33. When making repairs to any equipment, disconnect will be tagged and locked out.
34. Do not wear loose clothing, torn sleeves, key chains, rings, bracelets, etc. that may get caught in machinery.
35. Outside contractors, performing work on the plant site property, will abide by all safety rules, including the lock out procedure and the wearing of proper safety equipment.
36. Hearing protection shall be worn in any high noise area.
37. There will be no parking of any vehicles in the working area of any heavy equipment or mobile equipment. Plant mobile equipment has right-of-way at all times.



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DEFINING BATCH PLANT EXCELLENCE.

38. When entering any building, other than office buildings, you will remain alert, checking for any overhead loads or swinging loads or moving equipment that may be operating within any particular building.

39. You shall not work on scaffolding or high work places without proper guardrails, toe boards or other proper fall protection except where precautions such as safety belt or harness or life line or lanyard are used.

40. All "No Smoking" signs must be strictly obeyed.

GENERAL BATCH PLANT ELECTRICAL SAFETY RULES

ON ANY AND ALL ELECTRICAL APPLICATIONS, ALL ELECTRICAL WORK MUST BE DONE BY A QUALIFIED, LICENSED ELECTRICIAN.

RESPONSIBILITY: It shall be the customer's responsibility to provide and implement their own plant safety rules and shall be responsible for all personnel at the work site.

1. Turn the MAIN power off before doing any work on the plant.
2. Make sure the MAIN power is turned off and lockout. Padlock the MAIN disconnect than place the key in your pocket.
3. Check and make sure the MAIN power is off.

Operation of electrically powered equipment can be as safe as or as hazardous as you make it. Proper maintenance and repairs will keep it safe. Follow these simple rules for your safety and for the safety of others in the vicinity.

1. All electrical equipment must be properly grounded in order to be operated safely.
2. Always turn the main power disconnect "off" and lockout. Padlock the main disconnect and place key in your pocket before servicing the equipment.



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DEFINING BATCH PLANT EXCELLENCE.

3. Never grease, adjust, or repair the machine without turning the power off.
4. Use only the proper size and style of fuses. Keep a supply on hand and never substitute pieces of metal.
5. Keep electrical cables in good condition at all times and keep them out of water.



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! DANGER

KEEP HANDS CLEAR AT ALL TIMES

A safety sign with a black background. At the top is a red oval with a white exclamation mark and the word 'DANGER' in white. Below this is a white illustration of a hand with red blood dripping from the fingers. To the right of the hand, the text 'KEEP HANDS CLEAR AT ALL TIMES' is written in bold, black, sans-serif capital letters.

DANGER

**CONFINED SPACE
ENTER BY
PERMIT ONLY**

A safety sign with a black background. At the top is a red oval with the word 'DANGER' in white. Below this is a white silhouette of a hand. To the right of the hand, the text 'CONFINED SPACE ENTER BY PERMIT ONLY' is written in bold, black, sans-serif capital letters.

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**CAUTION
KEEP HANDS
CLEAR**

**CAUTION
KEEP OUT**

**CAUTION
WATCH HEAD**

**CAUTION
PINCH POINT**



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DEFINING BATCH PLANT EXCELLENCE.

PELIGRO

**MANTENER LAS
MANOS ALEJADAS**

A warning sign with a black background and a red oval containing the word 'PELIGRO' in white. Below it is a black and white illustration of a hand with red blood dripping from the fingers. To the right of the illustration, the text 'MANTENER LAS MANOS ALEJADAS' is written in bold black letters.

PRECAUCION

NO OPERAR

SIN EL PROTECTOR

A large yellow rectangular sign with bold black text. The text reads 'PRECAUCION' at the top, 'NO OPERAR' in the middle, and 'SIN EL PROTECTOR' at the bottom.

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DEFINING BATCH PLANT EXCELLENCE.

DEFINITIONS

Absorption - The soaking up of moisture (water) by aggregate.

Actuator - a device that initiates the action of controllers and is manually operated. The actuator may be a push button, toggle switch; foot pedal hand set timer, or any other device that performs the described function.

ACPA - AMERICAN CONCRETE PAVING ASSOCIATION

Admixtures - Ingredients other than cement, water and aggregates that are added to a concrete mix for any or all of the following reasons: reduce construction costs; alter plastic properties; alter curing characteristics; improve inclement weather concrete quality; improve durability; etc.

Admixture - A substance other than cement, water or aggregate added to a batch of fresh concrete to alter one of the normal properties of concrete.

Aggregate - Mineral material, such as sand, gravel, crushed stone, slag, or the combinations thereof, with which cement or bituminous material is mixed to form a mortar or concrete. "Fine Aggregate" may be considered as the material that will pass a 1/4-inch screen, and "coarse aggregate" as the material that is retained thereon.

Aggregate Base - The layer of specified, compacted material placed on the sub grade to serve as a base for pavement.

Agitation - Slow stirring or turning over of freshly mixed concrete to keep it in workable condition until placed into forms.

Air-dry Aggregate - that is dry at the surface but contains some interior moisture. Aggregate that is air dry is considered somewhat absorbent because it does not contain all the moisture it is capable of holding (less than SSD).

Air compressor - A machine that compresses or pressurizes air. It is a pump whose purpose is to create pressurized air. This air can be used to power such things as the air-cylinders, air clutches, etc.

Air line lubricator - Is a glass bowl inside a metal frame, mounted on the output side of the pressure regulator. Unit provides lubrication to air equipment in that air line.



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DEFINING BATCH PLANT EXCELLENCE.

Air Entrained Cement -Cement into which the air entrainment admixture has been incorporated at the cement plant when the cement was ground.

Air entraining Admixtures - designed to purposely distribute microscopic air bubbles admixture throughout a batch of concrete. Air entrainment significantly improves the durability of concrete to freeze-thaw cycles, improves workability, and reduces segregation and bleeding. All FDOT concrete is required to have an air-entraining admixture.

Asphalt Concrete Base - A type of asphalt concrete, which is used as a base course in the construction of a pavement. Two types of asphalt concrete base are 301 and 302.

ASTM - AMERICAN STANDARD OF TESTING & MEASURES

Automatically controlled - describes the operation by the action of a mechanism that is initiated by some impersonal influence, such as a conveyor that is started by a low-level bin indicator.

Backstop - a mechanical device to prevent reversal of a loaded conveyor under action of gravity when forward travel is interrupted.

Batch - The combination of amounts of cement, aggregate, water and admixture, which will be mixed at one time in a mixer.

Batch Weights -The individual weights of the cement, aggregate and water used in each batch of concrete. Aggregate is adjusted for moisture content and specific gravity.

Batchers – bin and / or hopper connected to a solid frame via a load cell system. Used to weigh various materials then discharge through a gate.

Batching Operation - Proportioning and assembling the materials, which will comprise one batch.

Batching Plant - The plant either on or off the work site where the materials are assembled by batches for the mixer. Water and admixtures usually are added as the batch is introduced into the mixer.

Bleed water - Water that has migrated to the surface of freshly placed concrete. It is caused by the settlement and consolidation of the solids in the mix due to vibration and gravity.

Bleeding -Flow of water to the surface of freshly placed concrete.



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DEFINING BATCH PLANT EXCELLENCE.

Bed - (a) that part of a conveyor upon which the load or carrying medium rests or slides while being conveyed.

(b) In bulk material conveyors, the mass of material being conveyed.

Bed Idler- a roller or series of rollers that supports the belt of a belt conveyor.

Belt tripper - a device incorporating a system of pulleys that causes the conveyor belt to discharge material at one or more points along the length of the conveyor.

Boom - a cantilevered member or structure that may be hinged, fixed, or pivoted.

Bracing - members used to stabilize the supporting structure.

Brake - a friction device for slowing down conveyor components, bringing conveyor equipment to a controlled stop, holding traveling or traversing equipment in a selected location, preventing reverse travel, and controlling over speed due to the action of gravity.

Bulkhead -

1. A partition made of timber, concrete or steel plate, between stockpiles to prevent their intermingling.
2. A temporary form placed at the completion of a portion of concrete structure or pavement, or whenever production is interrupted for an extended period of time.

Bunker - a large bin or compartment for the storage of bulk materials.

Butterfly valve - A throttling valve, found on a batcher, made up of a disc that rotates on an axis within the valve body, thereby varying the cross-section that is open to material or fluid passage.

Cement - The bonding agent of concrete. All cements are hydraulic which set and harden due to a chemical reaction with water called hydration.

Cement - A mixture of clay, limestone and other selected materials heated to high temperature to form clinker. The clinker is then ground into powder. Mixed with water it forms a paste to surround and bind the aggregate into a solid and durable mass.

Cementitious - Substances that have hydraulic cementing properties. Although pozzolans materials have little or no cementitious value, they are included in the total weight of cementitious material in a mix design. (For example, fly ash)



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DEFINING BATCH PLANT EXCELLENCE.

Chain - a series of links pivotally joined together to form a medium for conveying or transmitting motion or power. General classes of chain common to conveyors are detachable, pintle, combination, roller, rivetless, coil, inverted tooth, and bar link chains.

Charging - Filling. Charging a mixer is placing the ingredients for concrete into it.

Chloride - The water-soluble chloride-ion content in concrete measured in content weight/volume of concrete. Used to accelerate the hydration process of concrete. Note: not recommended due to the corrosive effect on rebar in concrete.

Chute - a trough through which bulk materials or objects are directed and lowered by gravity. The trough may be opened or enclosed, straight or curved.

Control - the system governing the starting, stopping, direction of motion, acceleration, speed, retardation, identification, and function of the moving member in a predetermined manner.

Coarse Aggregate - substantially retained on the No.4 [4.75 mm] sieve. There is a aggregate wide range of grading in classifying coarse aggregates.

Compaction - A consolidation or compression of materials resulting in an increase in density of the materials.

Controller- an electromechanical device or assembly of devices for starting, stopping, accelerating, or decelerating a drive, or serving to govern in some predetermined manner the power delivered to the drive.

Conveying medium - that portion of a conveyor that moves or carries materials, packages, or objects.

Conveyor- a horizontal, inclined, or vertical device for moving or transporting bulk material, packages, or objects, in a path predetermined by the design of the device, and having points of loading and discharge, fixed or selective. Included are skip hoists, ad vertical reciprocating and inclined reciprocating conveyors. Typical exceptions are those devices known as industrial trucks, tractors, and trailers, tiring machines, cranes, hoists, power shovels, power scoops, bucket drag lines, platform elevators designated to carry passengers or the operator, man lifts, moving walks, moving stairways (escalators), highway or rail vehicles, cableways, tramways, pneumatic conveyors, robots, or integral machine transfer devices.



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DEFINING BATCH PLANT EXCELLENCE.

Conveyor screw- the material propelling medium of a screw conveyor generally consisting of an assembly of helical flights mounted on a rotating pipe or shaft.

Conveyor belt- an endless fabric, rubber, plastic, leather, or metal belt operating over suitable drive, tail end, and bend terminals and over belt idlers or slider bed for handling bulk materials, packages, or objects directly upon the belt.

Conveyor, declining - a conveyor transporting down a slope.

Conveyor, live roller - a series of rollers over which objects are moved by the application of power to all or some of the rollers. The power-transmitting medium is usually belting or chain.

Conveyor, mobile - conveyor, supported on a structure, which is movable under its own power and includes, but is not limited to, radial stackers, winged stackers, reclaiming conveyors, and ship loaders. These conveyors normally handle bulk material.

Conveyor, overland - a single or series of belt conveyors designed to carry bulk material across country, usually following the general contour of the land.

Conveyor, portable - a transportable conveyor, which is not self-propelled, usually having supports that provide mobility.

Conveyor, roller - a series of rollers supported in a frame over which objects are advanced manually, by gravity, or by power.

Conveyor, screw - a conveyor screw revolving in a suitably shape stationary trough or casing fitted with hangers, trough ends, and other auxiliary accessories.

Conveyor, shuttle - any conveyor such as a belt, chain, apron, screw, etc., in a self-contained structure, movable in a defined path parallel to the flow of the material.

Counterweight - a weight to balance or impose a load.

Course - A layer or layers of a given material or mixture placed as a part of the pavement structure.



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DEFINING BATCH PLANT EXCELLENCE.

Cure - The treatment given concrete to assure sufficient water and heat necessary for chemical action so that concrete attains the strength and durability for which it was designed.

Deflector - (a) a device across the path of a conveyor placed at an angle and designed to deflect objects.

(b) A plate inserted in the trajectory of a bulk material discharge to change direction.

Degradation - A reduction in aggregate particle size due to breakage and water.

Density - The relation of weight to volume. The greater the weight to a given volume, the greater the density.

Emergency stop - a stop arising from a sudden and unexpected need, and not as a part of the normal operation.

Emergency stop device - a device that must be actuated in an emergency situation to stop a conveyor.

Enclosed - describes guarding or moving parts in such a manner that physical contact by parts of the body is precluded as long as the guard remains in place. The guarding may make use of hinged, sliding, or removable doors for inspection or lubrication.

Entrained Air - Millions of microscopic voids introduced into concrete through an admixture to permit the cured concrete to undergo freezing and thawing without damage.

Entrapped Air - Large air bubbles that enter concrete through mixing or handling. Being undesirable, they can be removed by vibrating, spading or rodding.

FHWA - Federal Highway Administration, U.S. Department of Transportation.

Fine Aggregate - Aggregate, which passes the No.4 (4.75 mm) sieve.

Gate - a device or structure by means of which the flow of material may be stopped or regulated; also, a section of conveyor equipped with a hinge mechanism for movable service, often called a hinged section.

Gradation - The distribution of particle sizes in an aggregate or concrete mixture.



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DEFINING BATCH PLANT EXCELLENCE.

Gradation - The classification of different sizes of aggregate within a given size of aggregate as determined by sieve tests.

Grating - (a) a coarse screen made of parallel or crossed bars to prevent passage of oversize material.
(b) A series of parallel and crossed bars used as platform walkways floors, or as covering for pits and trenches over which traffic may pass. Generally removable to permit access to conveying equipment for servicing.
(c) A series of parallel or crossed bar units, or both, fastened to or propelled by the conveying medium, used for carrying large lump-sized bulk material for objects. Usually used to permit passage of air for cooling or heat to maintain temperature.

Guard - (a) a covering or barricade to prevent entry into operating components such as gears, chains, and belts.
(b) A structure mounted below an overhead mounted conveyor to protect personnel from falling materials.

Guarded - shielded, fenced, enclosed, or otherwise protected by means of suitable enclosure, covers, casing, shields, troughs, railings, or by nature of location so as to reduce foreseeable risk of personal injury.

Guarded by location - describes moving parts so protected by their remoteness from the floor, platform, walkway, or other working level, or by their location with reference to frame, foundation, or structure as to reduce the foreseeable risk or accidental contact by persons or objects. Remoteness from foreseeable, regular, or frequent presence of public or employed personnel may in reasonable circumstances constitute guarding by location.

High-Early-Strength Concrete - Concrete made with a special cement type that reaches design strength and hardness in considerably shorter time than concrete made with regular Portland cement.

Honeycombing - Large voids in the concrete, which are due to excess, bleed water escaping from the forms.

Hopper - a box having a funnel-shaped bottom, or a bottom reduced in size, narrowed, or necked to receive material and direct it to a conveyor, feeder, or chute.



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DEFINING BATCH PLANT EXCELLENCE.

Inactive controls- those controls that are not a part of or do not contribute to the present or future contemplated use of the conveyor or system, as presently installed and wired.

Intermingling - The unintentional dilution of one size of aggregate by aggregate of a different size as a result of improper storage or careless handling.

Limit switch - an electrical device by which the movement of a conveyor and allied equipment may be controlled within predetermined limits.

Load cells - Load Cell measures the force applied to the test piece. Load Cells come in various capacities. It is a force transducer used to measure forces and torques. It is a transducer for the measurement of force or weight, usually based on a strain gauge bridge or vibrating wire sensor.

Mineral Filler - limestone dust, Portland cement, or other inert mineral matter.

Mixing - Combining the ingredients of a batch of concrete into a homogenous mass through raising and dropping action of a revolving drum. Specifications cover the rate and number of revolutions, which are acceptable for proper mixing.

Moisture Content - The percentage by weight of water contained in aggregate as compared to the same aggregate in a completely dry condition.

Mortar - A mixture of water, sand and cement. Mixed with coarse aggregate this mortar completely envelops each particle of coarse aggregate to form concrete.

NRMCA - NATIONAL READY MIX CONCRETE ASSOCIATION

Operator's station- location at which actuators are placed for the purpose of starting, stopping, reversing, or otherwise controlling the conveyor or system of conveyors in the course of normal operation.

Overload device - a mechanical or electrical device designed to disconnect the drive equipment from the driving equipment in event of an overload on the conveyor.

PCA - PORTLAND CEMENT ASSOCIATION

Placement Rate - The placement of paving materials on the basis of a given weight and area covered. Placement rate is described in detail in section 401.21.



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DEFINING BATCH PLANT EXCELLENCE.

Plant - The plant where aggregate and asphalt material are mixed together or the plant that produces the aggregate or the asphalt material.

Plant Bins - Bins at the batching plant for temporary storage of aggregate and cement for use in proportioning concrete batches.

Platform - a working space for persons, elevated above the surrounding floor or ground (such as a balcony) for the operation of machinery and equipment.

Profile - A line on a drawing shows elevation of points along a selected route. A profile usually shows both ground elevations and grade-line elevations.

Proportioning Concrete - Determination of the amount of each ingredient used in a class of concrete with adjustments as determined by tests called for in the specifications.

Pulley - a wheel, usually cylindrical, but sometimes polygonal in cross section, with its center bored for mounting on a shaft.

Qualified person - a person who, by possession of a recognized degree or certificate of professional standing, or who, by extensive knowledge, training, and experience as successfully demonstrated his ability to solve problems relating to the subject matter and work.

Rail - (a) one of the longitudinal members in a conveyor frame.
(b) the supporting surface under the wheels or rollers of a chain conveyor.
(c) the supporting track for equipment mounted on wheels, such as belt tripper.

Rail clamp - an attachment or device for clamping a mobile conveyor or belt tripper to the rail to hold it in a fixed location.

Rail stop - a stop mounted on the conveyor rails to limit the travel of traversing machinery.

Rated capacity - the capacity at the rated speed, as established by the manufacturer or a qualified person, at which safe and satisfactory service can be expected.

Rated speed - the speed of the conveyor, as established by the manufacturer or a qualified person, at which safe and satisfactory service can be expected.



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DEFINING BATCH PLANT EXCELLENCE.

Remote control - any system of controls in which the actuator is situated in a remote location.

Remote location - any location, with respect to the conveyor, from which the presence or position of personnel relative to the conveyor cannot be readily determined from the operator's station.

Retarder - An admixture placed in concrete, which slows the setting of the concrete.

Roller - (a) a revolving cylinder or wheel over which something is moved. The face may be straight, tapered, crowned, concave, or flanged; corrugated, ribbed, or fluted.
(b) A component part of a roller chain in which it may serve only to reduce frictional loss occurring as the chain passes over the sprockets. Rollers may also serve as the rolling support for the chain and the load being conveyed.
(c) The rotating element upon which a conveyor belt or chain or the object being transported is carried.

Safety device - a mechanism or an arrangement placed in use for the specific purposes of preventing an unsafe condition, preventing the continuation of an unsafe condition, warning of an unsafe condition, or limiting or eliminating the unsafe effects of a possible condition.

Saturation - Condition of aggregate when it is completely soaked and will not absorb additional water.

Segregation - The unintentional separation of the larger pieces of aggregate from the smaller pieces within one size of aggregate or within a mixture of sizes in fresh concrete.

Shall - indicates that the rule is mandatory and must be followed.

Shear point or line - the point at which, or the line along which, a moving part meets or passes close enough to a stationary or moving part or object so that part of the human body can be caught, trapped, or pinched between them.

Sheave - a grooved wheel or pulley used with a rope or chain to change the direction and point of application of pulling force.

Shield guard - a full or partial enclosure or cover, either framed or solid, made from material sufficiently rigid to prevent accidental contact with moving parts.



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DEFINING BATCH PLANT EXCELLENCE.

Should - indicates a recommendation, the advisability of which depends on the facts in each situation.

Sieve Analysis - Determination of the gradation of an aggregate sample by passing through a series of screens with specified openings and weighing the separated particle sizes.

Slump - A measure of the consistency and workability of plastic concrete.

Snub roller - any pulley used to increase the arc contact between a belt and drive or tail pulley.

Spading - Repeatedly inserting a flat steel blade edgewise into fresh poured concrete for consolidation and to drive out entrapped air, particularly where the concrete meets the forms or imbedded objects.

Spalling - The breaking away of hardened parts of concrete from the main body at surface points.

Specific Gravity - The ratio of weight of any volume of a substance to the weight of an equal volume of water.

Speed - a measurement of the length of belt, chain, cable, or other linkage that passes a fixed point within a given time.

Spill guard - a stationary device of sufficient strength and capacity to catch, retain, and contain any reasonably foreseeable spillage from a conveyor-passing overhead that might cause personal injury.

Sprocket - a wheel with suitably shaped and spaced cogs or teeth to engage the links of a chain.

Stacker - a conveyor adapted to piling or stacking bulk materials, packages, or objects

Stockpile - A large amount of aggregate placed in a pile for storage until ready for use.

Strike Off - A blade used to cut off material at the desired elevation or thickness.

Switch - (a) a devices for connecting two or more continuous package conveyor lines.
(b) an electrical control device.



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DEFINING BATCH PLANT EXCELLENCE.

(c) A mechanism that transfers a trolley, carrier, or truck from one truck to another at a converging or diverging section.

Take-up - the assembly of the necessary structural and mechanical parts that provides the means to adjust the length of belts, cables, chains, etc., to compensate for stretch, shrinkage, or wear, and to maintain proper tension.

Test Weights - Ten 50-pound (22.7 kg) steel weights that must be readily available for checking weighing devices at concrete plants.

Terminal - a term normally applied to the extreme ends of a belt system, i.e., and heads and tail pulleys.

Tracks - the beams, shapes, or formed section on which trolleys, rollers, shoes, or wheels roll or slide while being propelled.

Transfer car - any wheeled device used for transferring loads from one conveyor line to another; may be manually or automatically operated.

Transfer mechanism - any mechanism that transfers objects onto or off a conveyor line or from one conveyor line to another.

Transition - The distance in which a change is made gradually from one pavement cross-section to another.

Trolley - an assembly of wheels, bearing, and brackets used for supporting an moving suspended loads or for carrying load connecting and conveying elements such as chains, cable, or other linkage.

Truck (also known as cart) -

- (a) An assembly that supports another unit in either a fixed or adjustable position and that provides mobility.
- (b) A wheeled vehicle that can be detached from a conveying medium (usually chain) and pushed by hand.

Validation - The signature or initials of an authorized individual on any form or ticket denoting that the information is as stated.

Vents - Various devices used for releasing air from an envelope such as a silo or batcher.



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DEFINING BATCH PLANT EXCELLENCE.

Verification - The steps necessary to determine that the work or materials described are in conformance with plans and specifications.

Walkway - an elevated passageway for persons above the surrounding floor or ground level, including catwalks, foot walks, runways, and elevated walkways.

Water-Cement Ratio (W/C) - The proportion of an amount of water to the specified amount of cement used to produce concrete. Such amount of water is the sum of the calculated amount of water contained in the aggregates, plus all the water added both at the plant and at the site, less the calculated amount of water absorbed by the aggregates.

Water meters - An instrument for recording the quantity of water passing through a particular outlet

Yield - A check on the mix design made by dividing the total batch weight by the determined unit weight, weight per cubic yard (weight per cubic foot). The actual volume thus obtained is compared to the design volume.



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HAGANATOR BATCHING PROCEDURE

NOTE: Make visual check of all parts of the plant for any potential trouble areas and refer to your Manual for additional lubrication and maintenance instructions.

Suggested decal to be placed at the Operator's station

ORIGINAL START UP AND DAILY START UP MAINTENANCE

CAUTION: The Main Power Switch Must Be in the OFF Position During These Checks.

COMPRESSOR

1. Check filter on the intake and clean if required.
2. Check the oil in the compressor.
3. Drain the holding tank. Air Line Filter - Drain and clean if required.

AIR LINE LUBRICATOR

1. Fill to proper level with 10W non-detergent oil as often as required.
2. For added instructions see below.

CONTROL VALVES

1. Before the air is turned on, be sure all valves operate freely.
2. Air Cylinders - Check for oil film on rods and alter lubrication as required.
3. For added instructions see below "cylinders" and "valves".

SHAFT MOUNTED REDUCERS

1. Check oil level and for metal shavings in the oil.

TURN MAIN POWER SWITCH TO ON POSITION.

START AIR COMPRESSOR ONLY.



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DEFINING BATCH PLANT EXCELLENCE.

AIR SYSTEM

1. Check for leaks.
2. Air Vibrators - Check exhaust. Be sure it is clear and clean. Run vibrator before starting operation. Piston vibrators require oil, but ball vibrators do not require oil.
3. Air filters – clean and clear.
4. Air regulators – proper pressure being delivered to each component.

WATER SYSTEM

1. Check for leaks
2. For added instructions see below

GENERAL OPERATION PROCEDURE FOR BATCHING CONCRETE

PROCEDURE ASSUMES MATERIALS ARE DELIVERED AND STORED IN THEIR RESPECTIVE BINS / HOPPERS / TANKS / SILOS ETC.

Materials Into Truck Mixers permits blending of materials to start as the water, aggregates, and cement cascade into the truck. There can be problems with "head-packs" and "cement balls" (balls of dry cement and aggregate) unless proper procedures are followed. The loading sequence should start with water and coarse aggregate going into the head end of the drum. If dry, fine material, namely cement and sand, precedes the stone and water, they can pack in the head of the drum. If the "head-pack" does not break loose during mixing, dry lumps or balls of this material tend to break loose during discharge and come out as "cement balls" or sand streaks. Again, the charging sequence should conclude with some aggregate followed by about 20% (max) of the batch water. This final water improves mixing and cleans the truck hopper. Modern truck mixers do not have water nozzles in the head end and in the open end of the drum as many older trucks did, so water can only be introduced from the open-end of the mixer drum. This makes a well-time loading sequence all the more important.



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AIR LUBRICATOR INSTRUCTIONS

1. Installation:

- a. Install lubricator with bowl vertical in pipe line so that air flows in the direction of the arrow located on the lubricator body. The lubricator cannot be filled while under pressure. Drain air and remove the oil full plug and fill clean lubricant to level limit line.

2. Operation:

- a. Oil feed rate can be varied by the adjusting screw. Clockwise rotation of the screws decreases oil feed rate. Line lubricator should be checked frequently and kept full of 10 W non-detergent oil. Never overfill. Please observe the Full Mark. Also observe the Low level mark. When starting a plant, open the oiler to its maximum. When the components show enough lubrication, begin cutting the flow a little at a time until you have proper lubrication. Observe the sight glass for flow and loosen for more flow. Refer to your service manual for filling instructions. If there is air flow and no oil, check three things:

1. Overfilled Cup
2. Oil below pickup tube
3. Pickup tube stopped up (remove and clean up)

3. Caution:

- a. Do not use the lubricator near or in contact with such organic solvent as lacquer thinners, alcohol, etc., as these materials will damage the plastic bowl. If necessary to clean the plastic bowl, use neutral cleanser only.

Temperature and operating pressure should not exceed the maximum limits marked the lubricator bowl.



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AIR VALVE INSTRUCTIONS

Control valves **MUST** have proper lubrication to function. Manual or electric spring-returned valves when activated and then released must go back to the relaxed position. If not, they must be lubricated. In most cases, increased oil from the lubricator will correct the problem. Temporary help can be obtained by putting WD40 or equivalent in the exhaust ports. Severe cases will require breaking the valve down and checking the seals and applying a silicone lubricant before reassembly. If air is escaping from the exhaust port, it can be checked by clamping the adjacent air line to the cylinder. When this is accomplished and air continues to exhaust, the valve must be repaired or replaced. If you clamp the hose and the air stops, check the cylinder. The discharge gate valves are equipped with flow regulator valves on the closing side exhaust. Loosen the lock nut and tighten the screw to slow the closing of the gate, or loosen the screw to speed the closing of the gate. Excessive oil or moisture will sometimes cause a lock in the solenoid piston on electric valves. If this occurs, remove the end cap on the solenoid and drain. The smaller valves used for aeration and vibrators are poppet type and spool type. The poppet valve does not require lubrication, but the spool type does.

AIR CYLINDER INSTRUCTIONS

All cylinders on the plant gates are 4" x 10". (Different water meters require different operators. Please refer to the service manual for this cylinder.) All actuators **MUST** have lubrication. A simple check for lubrication is to run your fingers on the extended rod. If you feel a film of oil, the cylinder is receiving lubrication. If the rod is dry, oil immediately. Remove the hoses and put oil in the cylinder. Increase the oil dispensed by the lubricator. The double cylinders on the elevated silos are equipped with quick dump valves to speed the closing of the gate. This valve allows air to the cylinder but will exhaust at the cylinder, not the valve. The cylinder operating the water valve is a totally enclosed cylinder. Check the exhaust of the control valve to see if it is getting lubrication.

AIR VIBRATOR INSTRUCTIONS.

The piston type vibrator on the cement batcher receives lubrication from the inline oiler. If for some reason the piston does not move, remove the four cap bolts and the top and move plunger manually until it is free. The exhaust ports must remain free for the unit to work. The ball type vibrators used in the bag houses do not require lubrication, but again the exhaust port must be clear and clean. If either of these units don't work, check the air supply and the amount of air flow.



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AIR FILTER INSTRUCTIONS

1. Installation:
 - a. Install Filter with bowl vertical in pipe line so that air flows in the direction of the arrow located on the filter body. Daily, or more often if required, drain and inspect the line filter. If any large particles or oil gum are present, the filter should be removed and cleaned
2. Operation:
 - a. Open drain clockwise periodically to drain off any collected liquid before it reaches level of baffle plate.
3. Cautions:
 - a. Do not use the filter near or in contact with such organic solvents as lacquer thinners, alcohol, etc., as these materials will damage the plastic bowl. If necessary to clean the plastic bowl, use neutral cleanser only. Temperature and operating pressure should not exceed the maximum limits marked on the filter bowl.

AIR PRESSURE REGULATOR INSTRUCTIONS

1. Installation:
 - a. Install Regulator in pipe line so that air flows in the direction of the arrow located on the regulator body. For easier maintenance, leave a clearance of more than 3 inches from the bottom plug.
2. Operation:
 - a. Clockwise rotation of the adjusting screw increases the secondary pressure and counter clockwise rotation reduces the pressure. Adjusted lower secondary pressure with non-relieving type regulator will be obtained only when air is flowing or down stream air is bled off. The lock nut must be tightened after the pressure is adjusted. Use only the pressure required to achieve a crisp action on the gates (approx. 90 psi). Regulator control should be run up and down weekly to check regulator and gauge. If air is escaping from the weep hole in the regulator body, this is an indication the diaphragm is ruptured or bad and must be replaced.



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DEFINING BATCH PLANT EXCELLENCE.

3. Caution:

- a. Operating pressure should not exceed the limit marked on the regulator.
Operating temperature should not exceed 140F or 60C.

WATER SYSTEM

Water Systems valve - check to see that butterfly is not stuck shut or open.

Water - manual/electric

1. Check for obstruction in line by taking loose and cleaning the plug on the strainer and lines.
2. Check manual counter.
3. Check whether meter is turning.
4. Check surge standpipe for air.
5. Check admix entrance by discharge.

CONVEYOR BELT Run out of line - obstruction

1. Adjust head and tail pulley - tail pulley to be perpendicular at centerline belt conveyor. Take a carpenter's square and square up troughing idlers perpendicular to long axis of conveyor. Head pulley should be perpendicular to long axis of conveyor. Correct by shimming pillow block bearings that hold head pulley.
2. Tension - put equal turns on each side of the take-ups to add more tension.
3. Belt splice - use square to determine whether it is perpendicular to long axis of belt.
4. Conveyor belt elongated on one side - skew top idlers. Check to see if troughing idlers are in correct direction and returning perpendicular.
5. Idlers & returns - arrows to indicate direction. Belt scraper - even pressure on belt.



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DEFINING BATCH PLANT EXCELLENCE.

6. If side boards are pressing too hard on belt - cut back skirtboards to cover 3" of edge of belt. Striked-off gate - adjust to allow right contour of materials going up belt.

STANDARD MANUAL/AIR BATCHING.

- A. **MANUAL LEVER START - AUTOMATIC STOP** (Semi-automation/reed type). Set outer pointer(s) on dial scale to desired weight(s). Pull lever on valve of first material required. When dial scale pointer reaches the preset outer pointer, the gate will automatically close. Repeat this procedure for each additional material.
- B. **PUSH-BUTTON START - AUTOMATIC STOP** (Semi-automation/reed type). Set outer pointer(s) on dial scale to desired weight(s). Push START button offirst material required on control panel. When dial scale pointer reaches the preset outer pointer, the gate will automatically close. Repeat this procedure for each additional material.
- C. **SINGLE PUSH-BUTTON BATCHING OPERATION** (Single preset automation/reed type). Set outer pointers on dial scales to desired weights. (Be sure selector witch on control panel is turned to AUTOMATIC.) Push START button and all materials will automatically batch in sequence, and automatically shut off at the required preset quantities.

Pull lever on aggregate valve for first material required. Watch dial scale pointer until it reaches desired weight and release valve lever to close bin gate. Repeat procedure for second and third aggregates.



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DEFINING BATCH PLANT EXCELLENCE.

SINGLE HOLDING HOPPER OPERATION

The Vince Hagan Company offers a holding hopper feature that allows increased capacity in batching cycles. A single 12 cubic yard holding hopper added to a standard plant can increase plant production to up to 25 to 30 batches an hour. A dual lane 12 cubic yard holding hopper can increase plant production to up to 35 to 40 batches an hour. A typical discharge cycle time for a 10 cubic yard batch can be accomplished in 1 ½ to 2 minutes.

This is accomplished by holding pre-weighed batches of aggregate, cement and water in our holding hopper for gravity discharge into your transit mixers. The materials are held in separate compartments for aggregate, cement and water, each having its own individual discharge gate. The materials are then discharged in proper sequence through our special design gravity type choke feed discharge, allowing your transit mixers to charge at the fastest rate possible without spillage. This can be accomplished manually or with an automatic discharge sequence controlled by a standard batching computer. As material is discharged from the holding hopper, the next batch is already in the process of weighing up for the next load. Once the holding hopper reaches an empty signal from the load cell assembly, the next batch will automatically start transferring the aggregate, cement and water from the weigh batchers into the holding hopper. You actually have two (2) complete weighed-up batches ready for your truck mixers at all time.

HOLDING HOPPER DISCHARGE CYCLE

The batching computer weighs up a complete batch of aggregate, cement and water in each weigh batcher. Quantity can be from one (1) to twelve (12) cubic yards depending on mix design.

Computer starts batch at maximum discharge rate into holding hopper (48" batch transfer belt runs at full speed of 650 FPM). No flow control restrictions are required on the materials into the holding hopper so a maximum discharge speed can be established on all batches.

Once the aggregate, cement and water batchers are empty and receive an empty signal and closed gate status from the limit switches on the batch gates, the next batch can be weighed up complete.



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DEFINING BATCH PLANT EXCELLENCE.

When the transit mixer is positioned under the holding hopper the batchman will start a timed sequenced discharge from the batching computer as follows:

1. Main discharge gate will open to allow discharge of aggregate in gravity flow manner into transit mixer.
2. Batching computer will open discharge gate of water compartment to flow in the mixer truck with the aggregate. The timed feed will allow for an adjustment of the percentage of the initial water discharged, usually up to 80%. A float valve is also provided for holdback water.
3. Admixture can be discharged directly to the transit mix truck or through the water compartment in the holding hopper depending on the admixture used. Note: Please consult your admix representative for recommendations.
4. When the initial water is discharged a timed delay will occur before the cement valve opens.
5. The cement valve opens and aeration turns on and allows gravity feed of cement into the transit mixer along with the continuing aggregate flow. The cement vibrator turns on to insure that the cement empties completely.
6. Cement timed feed ends and the final water discharge will proceed into the transit mixer with the remaining aggregate. The aggregate vibrator turns on and continues to run till an empty signal is registered on the load cell system.
7. When an empty signal is received on the computer from the load cell on the holding hopper and the limit switches indicate a closed signal at all holding hopper gates, the batching and discharge cycle is complete.
8. The batch man can now allow automatic fill of the holding hopper from the aggregate, cement and water batchers for the next load.
9. The weigh-up cycle begins again in the batchers after they receive an empty signal. The cycle continues over and over for maximum production.

Note:

- a. The batch man has the option to manually override the batching computer and hold the next batch from discharge into the holding hopper.
- b. The batch man has the option to manually override the batching computer and hold the next batch from discharge from the holding hopper.



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DEFINING BATCH PLANT EXCELLENCE.

DUAL HOLDING HOPPER OPERATION

The Vince Hagan Company offers a two (2) holding hopper feature that allows increased capacity in batching cycles. A dual lane 12 cubic yard holding hopper plant can increase plant production to up to 35 to 40 batches an hour. A typical discharge cycle time for a 10 cubic yard batch can be accomplished in 1 ½ to 2 minutes for each lane. Two ready mix trucks can be charged simultaneously. Besides having both holding hoppers ready to charge a ready mix truck, you may draw up another complete batch in your weigh batchers, thereby having three (3) batches ready for your production cycle.

This is accomplished by holding pre-weighed batches of aggregate, cement and water in both holding hopper for gravity discharge into your transit mixers. The materials are held in separate compartments for aggregate, cement and water, each having its own individual discharge gate. The materials are then discharged in proper sequence through our special design gravity type choke feed discharge, allowing your transit mixers to charge at the fastest rate possible without spillage. This can be accomplished manually or with an automatic discharge sequence controlled by a standard batching computer. As material is discharged from the holding hopper, the next batch is already in the process of weighing up for the next load. Once one of the holding hoppers reaches an empty signal from the load cell assembly, the next batch will automatically start transferring the aggregate, cement and water from the weigh batchers into the available holding hopper. Therefore, the batching continues even when the trucks are pulling in or out of both driveways. You actually have three (3) complete weighed-up batches ready for your truck mixers at all time.

HOLDING HOPPER DISCHARGE CYCLE

The batching computer weighs up a complete batch of aggregate, cement and water in each weigh batcher. Quantity can be from one (1) to twelve (12) cubic yards depending on mix design.

Computer starts batch at maximum discharge rate into an available holding hopper "A" or holding hopper "B" (48" batch transfer belt runs at full speed of 650 FPM). No flow control restrictions are required on the materials into the holding hopper so a maximum discharge speed can be established on all batches.

On a dual holding hopper plant the aggregate batch belt is equipped with a flop tray assembly that discharges the aggregate into either holding hopper "A" or "B". Likewise, the cement and water batchers have a dual discharge feature that allows cement or water to be discharged into either holding hopper "A" or "B".



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DEFINING BATCH PLANT EXCELLENCE.

Once the aggregate, cement and water batchers are empty and receive an empty signal and closed gate status from the limit switches on the batch gates, the next batch can be weighed up complete and discharged to an available empty holding hopper.

When the transit mixer is positioned under a holding hopper the batch man will start a timed sequenced discharge from the batching computer as follows:

1. Main discharge gate will open to allow discharge of aggregate in gravity flow manner into transit mixer.
2. Batching computer will open discharge gate of water compartment to flow in the mixer truck with the aggregate. The timed feed will allow for an adjustment of the percentage of the initial water discharged, usually up to 80%. A float valve is also provided for holdback water.
3. Admixture can be discharged directly to the transit mix truck or through the water compartment in the holding hopper depending on the admixture used. Note: Please consult your admix representative for recommendations.
4. When the initial water is discharged a timed delay will occur before the cement valve opens.
5. The cement valve opens and aeration turns on and allows gravity feed of cement into the transit mixer along with the continuing aggregate flow. The cement vibrator turns on to insure that the cement empties completely.
6. Cement timed feed ends and the final water discharge will proceed into the transit mixer with the remaining aggregate. The aggregate vibrator turns on and continues to run till an empty signal is registered on the load cell system.
7. When an empty signal is received on the computer from the load cell on holding hopper "A" or "B" and the limit switches indicate a closed signal at all holding hopper gates, the batching and discharge cycle is complete.
8. The batch man can now allow automatic fill of holding hopper "A" or "B" from the aggregate, cement and water batchers for the next load.
9. The weigh-up cycle begins again in the batchers after they receive an empty signal. The cycle continues over and over for maximum production.

Note:

- a. The batch man has the option to manually override the batching computer and hold the next batch from discharge into holding hopper "A" or "B".
- b. The batch man has the option to manually override the batching computer and hold the next batch from discharge from holding hopper "A" or "B".



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DEFINING BATCH PLANT EXCELLENCE.

DUAL LANE HOLDING HOPPER AND CENTRAL MIX OPERATION

The Vince Hagan Company offers a dual lane plant with a holding hopper and a Vince Hagan TM12 central mix feature that allows increased capacity in batching cycles. A 12 cubic yard holding hopper and a 12 cubic yard tilt mixer plant can increase plant production to up to 35 to 40 batches an hour. A typical discharge cycle time for a 10 cubic yard batch can be accomplished in 1 ½ to 2 minutes for each lane. Two ready mix trucks can be charged simultaneously. Besides having the holding hopper and tilt mixer ready to charge a ready mix truck, you may draw up another complete batch in your weigh batchers, thereby having three (3) batches ready for your production cycle.

HOLDING HOPPER/TILT MIXER DISCHARGE CYCLE

The batching computer weighs up a complete batch of aggregate, cement and water in each weigh batcher. Quantity can be from one (1) to twelve (12) cubic yards depending on mix design.

Computer starts batch at maximum discharge rate into either the holding hopper or the tilt mixer (48" batch transfer belt runs at full speed of 650 FPM). No flow control restrictions are required on the materials into the holding hopper or tilt mixer so a maximum discharge speed can be established on all batches.

On a holding hopper/central mix plant the aggregate batchbelt is equipped with a flop tray assembly that discharges the aggregate into either the holding hopper or the tilt mixer. Likewise, the cement and water batchers have a dual discharge feature that allows cement or water to be discharged into either the holding hopper or the tilt mixer.

Once the aggregate, cement and water batchers are empty and receive an empty signal and closed gate status from the limit switches on the batch gates, the next batch can be weighed up complete and discharged to either the holding hopper or the tilt mixer.

Once the aggregate, cement and water batchers are empty and receive an empty signal and closed gate status from the limit switches on the batch gates, the next batch can be weighed up complete and discharged to an available empty holding hopper.



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DEFINING BATCH PLANT EXCELLENCE.

When the transit mixer is positioned under a holding hopper the batch man will start a timed sequenced discharge from the batching computer as follows:

1. Main discharge gate will open to allow discharge of aggregate in gravity flow manner into transit mixer.
2. Batching computer will open discharge gate of water compartment to flow in the mixer truck with the aggregate. The timed feed will allow for an adjustment of the percentage of the initial water discharged, usually up to 80%. A float valve is also provided for holdback water.
3. Admixture can be discharged directly to the transit mix truck or through the water compartment in the holding hopper depending on the admixture used. Note: Please consult your admix representative for recommendations.
4. When the initial water is discharged a timed delay will occur before the cement valve opens.
5. The cement valve opens and aeration turns on and allows gravity feed of cement into the transit mixer along with the continuing aggregate flow. The cement vibrator turns on to insure that the cement empties completely.
6. Cement timed feed ends and the final water discharge will proceed into the transit mixer with the remaining aggregate. The aggregate vibrator turns on and continues to run till an empty signal is registered on the load cell system.
7. When an empty signal is received on the computer from the load cell on holding hopper "A" or "B" and the limit switches indicate a closed signal at all holding hopper gates, the batching and discharge cycle is complete.
8. The batch man can now allow automatic fill of holding hopper "A" or "B" from the aggregate, cement and water batchers for the next load.
9. The weigh-up cycle begins again in the batchers after they receive an empty signal. The cycle continues over and over for maximum production.

Discharge on the tilt mixer can be found in "Section 4B" in the Concrete Mixer section of the manual.

Note:

- a. The batch man has the option to manually override the batching computer and hold the next batch from discharge into holding hopper or tilt mixer.
- b. The batch man has the option to manually override the batching computer and hold the next batch from discharge from holding hopper or tilt mixer.



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DEFINING BATCH PLANT EXCELLENCE.

USE THE BATCH PLANT CHECK LIST AT THE END OF THIS SECTION

GENERAL MAINTENANCE GUIDELINES

1. Maintain head and tail pulleys square with the conveyor frame and at 90 degrees to the centerline of the belt. All idlers must be in line, square, and level transversely. Alignment of the belt is accomplished with the trougher and return idlers, Not the Pulleys. Return idlers adjust belt when unloaded and trougher rolls adjust belt when loaded. (SEE CHAPTER 2 CONVEYORS)
2. Check pulleys, troughing idlers, and return idler rolls for build-up. A build-up of sticky or frozen material on pulleys and idlers can cause belt misalignment and other malfunctions that can damage a belt. CAUTION: Do not attempt to remove the adhering material manually unless the conveyor has been stopped and the master electrical control locked off. Idlers must roll freely. Check belt, and splice for unusual wear.
3. Set up schedule for regular belt fastener inspection. Check for damage, too loose, and too tight conditions.
4. The proper placement of skirt board rubber can prevent loss of material. Rubber should fold down on belt. The opening between the skirt boards will control the amount of material going up the belt.
5. Setting the proper belt tension requires a vigilant and careful operator to observe when take up is required, and then adjust the take up just to the point required to maintain proper traction at the head pulley. Too much tension can cause damage to the belt, splice, or mechanical parts.
6. All bolts should be tightened and checked at normal maintenance schedule.
7. Check motor and drive, tighten bolts, check tension and wear on V -Belts.
8. Inspect bearing and shafts for unusual movement and wear.
9. Follow lubrication requirements listed in the manufacturers specifications.

Use the Maintenance, Lubrication, and Troubleshooting with this Maintenance Check List. All equipment should be checked at least once a day to prevent costly down time.



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DEFINING BATCH PLANT EXCELLENCE.

AERATION SYSTEM: MAINTENANCE GUIDELINES

Aeration System

1. Check air supply. Be sure air pads are receiving air.
2. When possible, air pads should be removed and cleaned.

AIR VENTS: MAINTENANCE GUIDELINES

Air Vents

1. All silo and batcher vents (or filter bags) must be free to allow air passage in both directions for proper operation.
2. All bag houses requiring removal of collected waste should be monitored and waste removed when hoppers are 2/3 full.

AIR BLOWER: MAINTENANCE GUIDELINES

Air Blower

Should excessive amounts of material pass through the blower, it is suggested that the cover(s) and impeller(s) be removed periodically and cleaned to avoid impeller imbalance. Impeller imbalance greatly speeds bearing wear, thus reducing blower life.



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AIR SYSTEM: MAINTENANCE GUIDELINES

A. Air Compressor – Is the heart of the air system and the batch plant and therefore must be inspected daily. Due to the differences in size and components of each compressor, please, review the service manual provided by the compressor manufacturer.

1. Check inlet filter daily and keep clean.
2. Check oil level in compressor daily and use service manual for servicing frequently.
3. All compressors will have an electrical pressure cut-off. Compressors 10 HP and larger will have dual cut-offs. Along with the electrical pressure cut-off, there will be a valve lock out switch to stop the compressor from pumping but leave the electric motor running.
4. The pet cock at the base of the holding tank should be opened to drain moisture from the tank daily. More often, if the humidity is high.
5. If the compressor works at maximum, or if automation is used in a high production plant, an after cooler is recommended.
6. The V -belts on the drive should be checked weekly and, if damaged or cracked, should be replaced.
7. With the air compressor on, check for air leaks, broken hoses, crimped or pinched hoses, cylinder or air valve leaks, Check operation of filters, regulators, and lubricators. Check the operation of all vibrators.
8. Check to make sure the mounting bolts are tight to prevent vibration.
9. Weekly, check operation of pressure relief valve for working condition.
10. Compressor frame oil – inspect for contamination monthly. Change if necessary.
11. Compressor frame oil – change every 12 months minimum.
12. Compressor valves – inspect and clean every 12 months minimum.



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DEFINING BATCH PLANT EXCELLENCE.

13. Compressor intercooler – inspect and clean exterior weekly.
14. Compressor low oil level switch – check operation every 12 months minimum.
15. Compressor cooling fins – clean and inspect weekly.
16. Compressor motor bearings – inspect, lubricate and clean once a month minimum. Dirty applications will require more.

Due to differences in size & components. Please check service manual

B. Air Filter

1. Wash the filter element and blowout from the inside. When abnormal amount of liquid comes out of the downstream air line, drain the bowl as this is an indication of filter element being soaked in the filter.

2. Cautions:

- a. Do not use the filter near or in contact with such organic solvents as lacquer thinners, alcohol, etc., as these materials will damage the plastic bowl. If necessary to clean the plastic bowl, use neutral cleanser only. Temperature and operating pressure should not exceed the maximum limits marked on the filter bowl.

C. Air Regulator

1. When the regulator is unable to adjust the pressure the unit is installed in the wrong direction, or the adjusting spring is broken. Re-install the unit or replace the spring.
 - a. When unable to reduce the secondary pressure to ZERO... Valve is not closing completely by the foreign matter lodged on the valve seat, or rubber lining on the valve is damaged. Clean part carefully using only clear, warm water or neutral cleanser such as kerosene or replace the valve.

2. Caution

- a. Operating pressure should not exceed the limit marked on the regulator. Operating temperature should not exceed 140F or 60C.



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DEFINING BATCH PLANT EXCELLENCE.

D. Air Lubricator

1. If oil does not flow from oil drip tube
 - a. Make sure the lubricator is installed in the correct direction. If not, reinstall it.
 - b. Check the oil level. Adjust oil quantity if the level exceeds the limit line or does not reach the end of siphon tube.
 - c. Check nozzles for blockage and clean them.

2. If oil leaks around the adjusting screw .
 - a. Check if the screw is open excessively. If so, close it to the right position.
 - b. Check "O" Ring. If the "O" Ring is damaged, replace it.

3. Caution:
 - a. Do not use the lubricator near or in contact with such organic solvent as lacquer thinners, alcohol, etc., as these materials will damage the plastic bowl. If necessary to clean the plastic bowl, use neutral cleanser only.

Temperature and operating pressure should not exceed the maximum limits marked the lubricator bowl.

E. Air cylinders

Very little is required for the operation of your air cylinder.

1. Minor and routine:
 - a. If the filter is not of the self-bleeding type, turn off air pressure, empty contents and replace filter element, if necessary.
 - b. If lubricator is empty, turn off air pressure and refill with lightweight petroleum base oil.



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2. Major maintenance:

a. To replace rod-bushing seals:

1. Remove socket head cap screws which hold circular bushing retainer to cylinder and remove bushing. Remove old seals and replace with new seals making sure that you use some lubricant such as light-weight motor oil to aid inserting seals into grooves.
2. To replace rod bushing assembly into cylinder, lubricate inside and outside of bushing lightly and slide over piston rod by turning bushing clockwise while pushing bushing gently over the piston rod.
3. Replace circular retainer; replace socket head cap screws one by one being sure that all four are loosely assembled so as not to cock the bushing in the head. Now tighten each socket head cap screw just a little at a time to prevent binding the bushing in the head. The following are the torque values on these socket head cap screws which hold the circular retainer in place: #10-32 socket head cap screw used on 2 & 2 1/2" bores --5 ft. lbs., 1/4-28 socket head cap screw used on 3 1/4, 4, & 5" bores--12 ft. lbs., 5/16-24 socket head cap screw used on 6 & 8" bores--25 ft. lbs.

b. To replace piston seal's:

1. Disassemble cylinder by loosening the tie rod nuts at either end of cylinder, using standard box end or open end wrenches. Remove head and bushing assemble from remaining cylinder: now pull piston rod assemble gently from cylinder tube. Remove piston seals from grooves in piston, being careful not to scratch bottom of grooves, as this may allow some small amount of air leakage by the piston when cylinder is put into operation again. Place new seals in piston grooves, being careful not to cut or nick new piston seals. Be sure the seal lips are pointing outward toward each end of piston. It is usually wise to remove and replace tube end seals in the head and cap at this time.
2. Clean entire inside of cylinder tube, piston rod assembly, and all other parts of cylinder prior to assembling. Coat cylinder tube inside, O.D. of piston and piston seals with a light weight petroleum base oil (a 10 weight oil is fine) before assembling cylinder.



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c. Reassemble cylinder in the following manner:

1. Place cap end on table with tube groove facing up.
2. Position cylinder tube in tube groove.
3. Insert piston rod assembly into tube making sure lip of piston seal enters tube properly. Insert fully to bottom of tube.
4. Place head and bushing over end piston rod pushing gently while turning head and bushing assembly until bushing has cleared wrench flat area of piston rod.
5. Be sure cylinder tube is seated into cylinder tube groove in head.
6. Replace tie rods, one by one, being sure that all four are loosely assembled so as to allow head and cap to rotate slightly so that head and cap will be squarely in line while finish torqueing tie rod nuts. Be sure to tighten each nut just a little at a time so as to prevent binding of the cylinder assembly. Use the following torque tie rod nuts.

1 1/2" Bores require 5- 7 ft. lbs. of torque.

2 & 2 1/2" Bores require 12-14 ft. lbs. of torque.

3 1/4, 4 & 5" Bores require 23-25 ft. lbs. of torque

6" Bores require 50-55 ft. lbs. of torque.

8" Bores require 110-120 ft. lbs. of torque.

WATER SYSTEM: MAINTENANCE GUIDELINES

WATER SYSTEM

Water Systems valve - check to see that butterfly is not stuck shut or open.

A. Water - manual/electric

1. Check for obstruction in line by taking loose and cleaning the plug on the strainer and lines.
2. Check manual counter.



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3. Check whether meter is turning.
4. Check surge standpipe for air.
5. Check admix entrance by discharge.

B. TURBO METERS

The purpose of preventive maintenance for turbo meters is to ensure efficient operation and long life by detecting and correcting any defects before damage or failure occurs to the meter. Preventive maintenance consists of periodic inspection and cleaning procedures. The procedures should be performed at regular intervals and any defects discovered should be corrected before attempting further operation of the meter.

1) PERIODIC INSPECTION

- A. Visually inspect the turbo meter for missing hardware, loose connections, broken or scratched register lens, damaged wiring or any other signs of wear or deterioration. Repair or replace components as required.
- B. Verify that the meter operates at the proper flow rate and pressure. A loss in pressure, coupled with the resulting decrease in flow rate, may indicate the screen in the upstream pipeline is clogged with material and requires cleaning.

2) CLEANING

- A. Clean all dust, dirt, grease, moisture or other foreign material from the exterior of the meter and meter-mounted accessory. Use a dry cleaning solvent or volatile mineral spirits to remove grease or oil. After cleaning, rinse with water and dry thoroughly.
- B. If the facility piping arrangement include a flushing system (see Figure 2-1), shut off liquid flow to the meter and flush the interior of the meter with clean water or other appropriate cleaning fluid to remove any buildup of internal deposits or corrosion.



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C. WATER METERS

1. Check operation of control valves for freedom of movement.
2. Check for leaks; both water and air.
3. Follow lubrication requirements listed in the manufacturers specifications.

SCALES: MAINTENANCE GUIDELINES

Scales

1. Check scale pivots. Pivots must move freely and be clean. Maintain a scale test and certification procedure.

DISCHARGE GATE: MAINTENANCE GUIDELINES

Gates

1. Inspect gate pivots for movement and wear.
2. Gates should work freely.
3. Gates must close tight.
4. Check for wear and moisture deterioration on gate leaves and check the gate box.
5. Follow lubrication schedule.

BUTTERFLY VALVE: MAINTENANCE GUIDELINES

Butterfly Valve

1. Check for leaks.
2. On the maintenance schedule, open inspection doors and remove any build up inside valve.
3. Follow lubrication schedule.



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CEMENT SCREW FEEDER: MAINTENANCE GUIDELINES

Cement Screws Feeders

1. Inspect outboard bearings and shafts for unusual wear and movement.
2. The inboard bearings and shafts should be inspected at least every 6 months; on high production plants, every 3 months.
3. Check motor and drive, tighten all bolts and maintain belt tension.
4. The flexible boot from the feeder to the batcher should be water and cement tight. This boot must have enough slack to allow the scale to weigh properly.

Notes:

1. All items connecting to the batchers, hoses, cables, electrical wiring, or canvas boots, must be free enough to allow the scales to work properly.
2. All bolts on the plant must be checked and tightened on a regular maintenance schedule.
3. When daily visual check is made, any deformed, broken, or deteriorated metal, or broken welds, on the plant, must be brought to the attention of the plant manager, or supervisor.
4. Please read and follow the maintenance, lubrication, and troubleshooting guide and manufacturers instructions.

CONVEYOR BELT: MAINTENANCE GUIDELINES

CONVEYOR BELT

1. Run out of line - obstruction
2. Adjust head and tail pulley - tail pulley to be perpendicular at centerline belt conveyor. Take a carpenter's square and square up troughing idlers perpendicular to long axis of conveyor. Head pulley should be perpendicular to



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- long axis of conveyor. Correct by shimming pillow block bearings that hold head pulley.
3. Tension - put equal turns on each side of the take-ups to add more tension.
 4. Belt splice - use square to determine whether it is perpendicular to long axis of belt.
 5. Conveyor belt elongated on one side - skew top idlers. Check to see if troughing idlers are incorrect direction and returning perpendicular.
 6. Idlers & returns - arrows to indicate direction. Belt scraper - even pressure on belt.
 7. If side boards are pressing too hard on belt - cut back skirtboards to cover 3" of edge of belt. Strike-off gate - adjust to allow right contour of materials going up belt.

BUTTERFLY VALVES: MAINTENANCE GUIDELINES

BUTTERFLY VALVES

(Standard Product with Elastomer Seal)

Maintenance: Routine maintenance or lubrication is not required.

Repairs: The butterfly valve is field repairable. If in time it is necessary to replace certain parts, the valve must be removed, from the line. Proceed by turning the disk to the nearly closed position, loosen all flange bolting, remove necessary bolting, spread the flanges if necessary and remove the valve from between the flanges.

Valve Disassembly: Turn the disk to the almost open position. Proceed by removing the operator or actuator, disk screws with "O" rings, stem, packing and busing. Remove the disk by pulling or "rolling" the disk out of the seat bore. To remove the seat from the body, pry

under both seat edges at one point, collapse the seat into the shape of a round bottom heart configuration (), and pull the seat out of the body bore. Discard the parts to be replaced.



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Valve Assembly: Clean all reusable parts. If possible, use Silicone base oil or lubricant to facilitate assembly. Collapse the seat into the shape of a round bottom heart configuration (), firmly place the "bottom" part of the seat into position taking care to align the lower stem

holes, snap the seat into position within the body, and check all stem holes for proper alignment. Install the disk with the screw holes toward the body top plate and align the stem

holds. Install the packing, bushing, and stem. Use a rotary downward pressure on the stem to facilitate assembly while paying particular attention that the seal is not damaged due to any misalignment of the stem holes. Align the counter- drilled portion of the stem screw holes with the disk screw holes. Place "O" rings on the disk screws. Install the disk screws and tighten securely.



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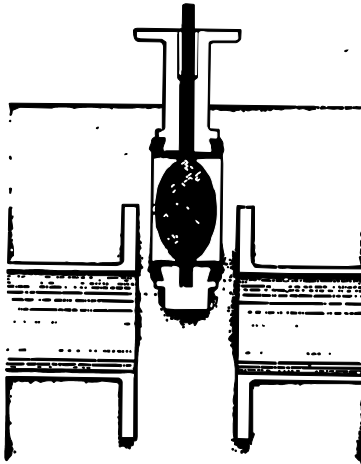




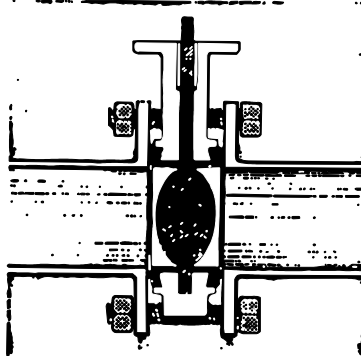
DEFINING BATCH PLANT EXCELLENCE.

INSTALLATION PROCEDURES

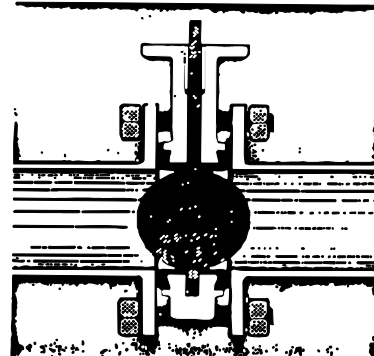
for Optimum Resilient-Seated
Wafer-Style Butterfly Valve Performance



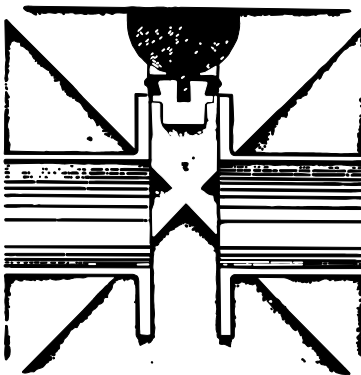
Open pipework to allow free valve entry. Rotate valve stem clockwise to position disc edge about $\frac{3}{8}$ " from the outside edge of the seat (semi-closed position). This will protect disc edge, and reduce rubber interference and initial torque build-up.



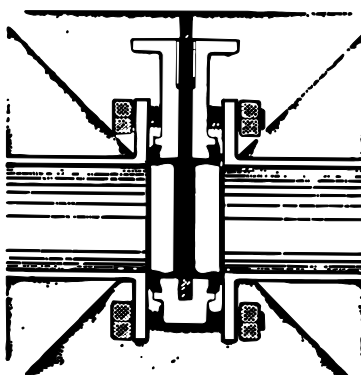
Insert the valve between the flanges and assemble the valve body to the flanges with all required flange bolts. **DO NOT USE FLANGE GASKETS.** The Keystone Butterfly Valve seat has a moulded-in O-ring that effects a positive seal against standard ANSI flange faces.



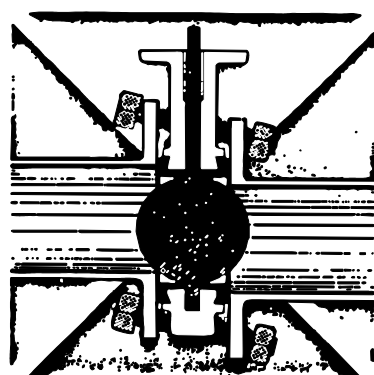
Turn the disc to full-open position. Center the valve body to the flanges, and tighten the bolts hand-tight. Slowly close the valve to check for adequate disc clearance. Return disc to full-open position and cross-tighten all bolts to proper torque specification.



DO NOT install valve with pipework spread insufficiently. This will damage the valve seat. Installing valve with disc in fully open position as shown, will impact flange and damage disc edge.



DO NOT install with disc in fully closed position. This will cause seat distortion. When flange bolts are tightened, rubber will close around disc edge creating excessive torque in initial operation.



INCORRECT pipe alignment will cause interference between disc edge and flange face creating leakage, excessive torque and damage to disc and seat.



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Rev: 1/22/2005

Inspected by: _____ Date: _____

Lock out and tag all equipment related to this inspection before beginning

	daily	weekly	monthly	as required
<input type="checkbox"/> All items connecting to batchers must be free enough for the scale to work.				X
<input type="checkbox"/> All bolts should be tightened and checked.				X
<input type="checkbox"/> Any broken welds must be brought to the attention of the plant manager.	X			
<input type="checkbox"/> Any deformed metal must be brought to the attention of the plant manager.	X			
<input type="checkbox"/> Any deteriorated metal must be brought to the attention of the plant manager.	X			
<input type="checkbox"/> Any broken metal must be brought to the attention of the plant manager.	X			
<input type="checkbox"/> Read and follow the maintenance manual instructions.				X
<input type="checkbox"/> Read and follow the lubrication schedule.				X
<input type="checkbox"/> Read and follow the troubleshooting guide.				X
<input type="checkbox"/> With the air compressor on check for leaks in cylinders and valves.	X			
<input type="checkbox"/> With the air compressor on check for broken, crimped, or pinched hoses.	X			
<u>Bin feed conveyor system</u>				
<input type="checkbox"/> Visual inspection of tail pulley, bearings and guard.	X			
<input type="checkbox"/> Lubricate tail bearings.		X		
<input type="checkbox"/> Visual Inspection of feed hopper for build up and excessive wear.		X		
<input type="checkbox"/> Visual Inspection of skirt board rubber for proper seal to the belt.	X			
<input type="checkbox"/> Visual inspection of take-up assembly pulleys, bearings and guard.	X			
<input type="checkbox"/> Lubricate take-up assembly bearings.		X		
<input type="checkbox"/> Visual inspection of carry side belt training (adjust idlers with loaded belt).		X		
<input type="checkbox"/> Visual inspection of return side belt training (adjust idlers with un-loaded belt).		X		
<input type="checkbox"/> Visual inspection of idlers for material build up and remove it.	X			
<input type="checkbox"/> Visual inspection of idler bed (idlers must move freely).	X			
<input type="checkbox"/> Visual inspection of stacker wheel drive.		X		
<input type="checkbox"/> Lubricate wheel drive components.		X		
<input type="checkbox"/> Check reducer oil level in the wheel drive.		X		
<input type="checkbox"/> Visual inspection of travel limits on radial stacker runway.		X		
<input type="checkbox"/> Visual inspection of safety pull cord and switch.	X			
<input type="checkbox"/> Visual inspection of drive and snub pulley, bearings, lagging and guard.	X			
<input type="checkbox"/> Lubricate drive and snub bearings.		X		
<input type="checkbox"/> Visual inspection of drive, motor, v-belt tension / wear, and guards.	X			
<input type="checkbox"/> Check reducer oil level on the conveyor's main drive.		X		
<input type="checkbox"/> Check belt cleaner tension and remove material build-up.	X			
<input type="checkbox"/> Visual inspection of belt splice (tighten loose bolts).		X		
<input type="checkbox"/> All bolts should be tightened and checked.				X
<input type="checkbox"/> Follow lubrication requirements listed in the manufacturers specifications.	X			

| | | | |

Batch Plant Check list VHCO serial number = _____

Rev: 1/22/2005

Inspected by: _____ Date: _____

Lock out and tag all equipment related to this inspection before beginning

	daily	weekly	monthly	as required
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Aggregate bin system

<input type="checkbox"/>	Visual inspection of turnhead or flip flop gate for material build-up.	x			
<input type="checkbox"/>	Lubricate turnhead or flip flop gate door bearings.		x		
<input type="checkbox"/>	Visual Inspection of limit switches on turnhead for build up of material.	x			
<input type="checkbox"/>	Visual Inspection of level indicators for build up on paddles.	x			
<input type="checkbox"/>	Visual Inspection of the bin walls and partitions for excessive wear.		x		
<input type="checkbox"/>	Remove material build up on walkways and or platforms.		x		
<input type="checkbox"/>	Visual Inspection of the bin gate pivots for movement and wear.	x			
<input type="checkbox"/>	Visual Inspection of the bin gates (work freely and close tight).	x			
<input type="checkbox"/>	Lubricate gates per the lubrication schedule.				x
<input type="checkbox"/>	Visual Inspection of the bin gate valves and cylinders.	x			

Aggregate batcher system

<input type="checkbox"/>	Visual Inspection of the batcher walls and partitions for excessive wear.		x		
<input type="checkbox"/>	Remove material build up on walkways and or platforms.		x		
<input type="checkbox"/>	Visual Inspection of the batcher vibrator and valve.	x			
<input type="checkbox"/>	Visual Inspection of limit switches on batcher gates.	x			
<input type="checkbox"/>	Visual Inspection of the batcher gate pivots for movement and wear.	x			
<input type="checkbox"/>	Visual Inspection of the batcher gates (work freely and close tight).	x			
<input type="checkbox"/>	Lubricate gates per the lubrication schedule.				x

Batching conveyor system

<input type="checkbox"/>	Visual inspection of tail pulley, bearings and guard	x			
<input type="checkbox"/>	Lubricate tail bearings.				x
<input type="checkbox"/>	Visual Inspection of loading skirts for build up and excessive wear.		x		
<input type="checkbox"/>	Visual Inspection of skirt board rubber for proper seal to the belt.	x			
<input type="checkbox"/>	Visual inspection of safety pull cord and switch.	x			
<input type="checkbox"/>	Visual inspection of idler bed and belt path for obstructions.	x			
<input type="checkbox"/>	Visual inspection of drive and snub pulley, bearings, lagging and guard.	x			
<input type="checkbox"/>	Lubricate drive and snub bearings.				x
<input type="checkbox"/>	Visual inspection of drive, motor, v-belt tension / wear, and guards.	x			
<input type="checkbox"/>	Check reducer oil level.	x			
<input type="checkbox"/>	Check belt cleaner tension and remove material build-up.	x			

Inspected by: _____ Date: _____

Lock out and tag all equipment related to this inspection before beginning

Air system

	daily	weekly	monthly	as required
<input type="checkbox"/> 1" regulator to free standing dust collector set to 100 psi.		x		
<input type="checkbox"/> 1/2" regulator to silo top dust collector set to 60 psi.		x		
<input type="checkbox"/> 1/2" regulator to silo aeration set to 8 psi.		x		
<input type="checkbox"/> 1/2" regulator to gates set to 110 psi. (120 psi for high production)		x		
<input type="checkbox"/> Regulator control run up and down to check regulator and gauge.		x		
<input type="checkbox"/> Visual inspection of main air line filter (remove and clean as required).	x			
<input type="checkbox"/> Visual inspection of line lubricators. (fill level must be correct)	x			
<input type="checkbox"/> Visual inspection of valve banks for proper lubrication.	x			
<input type="checkbox"/> Visual inspection of cylinders for proper lubrication.	x			
<input type="checkbox"/> Visual inspection of piston vibrators for proper lubrication.	x			
<input type="checkbox"/> Check and clean the air compressor filter.	x			
<input type="checkbox"/> Check oil level in the air compressor.	x			
<input type="checkbox"/> Check operation of filters, regulators, and lubricators.	x			
<input type="checkbox"/> Drain moisture from compressor holding tank (use petcock at the base)	x			
<input type="checkbox"/> Visual inspection of drive, motor, v-belt tension / wear, and guards.		x		
<input type="checkbox"/> Check and tighten air compressor mounting bolts to prevent vibration.				x
<input type="checkbox"/> Check operation of pressure relief valves for working condition.		x		
<input type="checkbox"/> Follow manufacturer's guidelines for servicing the air compressor				x
<input type="checkbox"/> Compressor intercooler - inspect and clean.		x		
<input type="checkbox"/> Compressor low level oil switch - check operation.			x	
<input type="checkbox"/> Compressor cooling fins - inspect and clean		x		
<input type="checkbox"/> Compressor motor bearings - lubricate, inspect, and clean.			x	

Cementitious materials silos

<input type="checkbox"/> Visual inspection of pressure relief valve (free to move).	x			
<input type="checkbox"/> Visual inspection of roof man hole (secure and sealed).				x
<input type="checkbox"/> Visual Inspection of silo top dust collector.	x			
<input type="checkbox"/> Visual Inspection of silo vents for free air passage in both directions.	x			
<input type="checkbox"/> Visual Inspection of dust return pipe for wear, holes and missing caulk.		x		
<input type="checkbox"/> Visual Inspection of level indicators for build up on paddles. (remove build-up)	x			
<input type="checkbox"/> Visual Inspection of over flow pinch gates on fill pipes. (gate must move freely)	x			
<input type="checkbox"/> Visual Inspection of fill pipes for wear, holes and missing caulk.		x		
<input type="checkbox"/> Visual Inspection of fill pipe warning lights.		x		
<input type="checkbox"/> Visual Inspection of emergency shut off gates. (remove material build-up)	x			
<input type="checkbox"/> Visual Inspection of butterfly gates and valves. (remove material build-up)	x			
<input type="checkbox"/> Be sure all aeration system air pads are receiving air.	x			
<input type="checkbox"/> Aeration system air pads should be removed and cleaned.				x

Batch Plant Check list VHCO serial number = _____

Rev: 1/22/2005

Inspected by: _____ Date: _____

Lock out and tag all equipment related to this inspection before beginning

	daily	weekly	monthly	as required
<u>Cementitious materials screw feeders.</u>				
<input type="checkbox"/>		x		
<input type="checkbox"/>		x		
<input type="checkbox"/>			x	
<input type="checkbox"/>		x		
<input type="checkbox"/>	x			
<input type="checkbox"/>		x		
<input type="checkbox"/>		x		
<input type="checkbox"/>	x			
<input type="checkbox"/>				
<u>Cementitious materials batcher</u>				
<input type="checkbox"/>	x			
<input type="checkbox"/>		x		
<input type="checkbox"/>	x			
<input type="checkbox"/>	x			
<input type="checkbox"/>	x			
<input type="checkbox"/>	x			
<input type="checkbox"/>				x
<input type="checkbox"/>		x		
<input type="checkbox"/>				
<input type="checkbox"/>				
<u>Holding hopper</u>				
<input type="checkbox"/>	x			
<input type="checkbox"/>	x			
<input type="checkbox"/>	x			
<input type="checkbox"/>	x			
<input type="checkbox"/>	x			
<input type="checkbox"/>	x			
<input type="checkbox"/>		x		
<input type="checkbox"/>		x		
<input type="checkbox"/>	x			



DEFINING BATCH PLANT EXCELLENCE.

GENERAL BATCH PLANT TROUBLE SHOOTING

⚠ WARNING

All personnel involved in the operation, maintenance, repair or other use of this equipment must be properly trained with respect to such operation, maintenance, repair or other use. No person should operate, maintain, repair or otherwise use this equipment if such person is under the influence of alcohol, prescription drugs, or any other substance that may impair such person's perception or reflexes. All personnel involved in the operation, maintenance, repair or other use of this equipment must read this manual in its entirety. Failure to observe the foregoing precautions may result in serious injury or death.

NOTICE

THESE INSTRUCTIONS DEAL WITH THE NORMAL INSTALLATION AND OPERATION OF THE EQUIPMENT DESCRIBED WITHIN. THE INSTRUCTIONS SHOULD NOT BE INTERPRETED TO ANTICIPATE EVERY POSSIBLE CONTINGENCY OR TO ANTICIPATE THE FINAL CONFIGURATION OF THE EQUIPMENT.

THE INFORMATION CONTAINED IN THIS MANUAL IS CONFIDENTIAL AND IS THE PROPERTY OF THE VINCE HAGAN COMPANY. THIS MANUAL HAS BEEN PREPARED AND PROVIDED TO YOU FOR YOUR USE SOLELY IN CONNECTION WITH YOUR USE OF THE EQUIPMENT DESCRIBED HEREIN. TRANSMISSION OF ALL OR ANY PART OF THIS INFORMATION TO OTHERS, OR USE OF THIS INFORMATION FOR ANY OTHER PURPOSES, IS NOT AUTHORIZED BY THE VINCE HAGAN COMPANY AND IS STRICTLY PROHIBITED WITHOUT OUR WRITTEN CONSENT. ALL INFORMATION CONTAINED HEREIN IS SUBJECT TO CHANGE WITHOUT NOTICE.

Please call the Vince Hagan Company if you do not understand these procedures or if you have any questions. Our toll free number is (800) 354-3238.



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DEFINING BATCH PLANT EXCELLENCE.

GENERAL SAFETY



Hard hats, steel-toed shoes, and adequate eye protection must be worn around powered equipment. Loose fitting or baggy clothing is dangerous and should not be worn around power equipment under any circumstances.

Keep all caution plates and warning stickers conspicuously posted and legible. Should caution plates become damaged, or obscured, replacements are available from our factory. (See sticker samples in this section)

Equipment must be shut down with a "Do Not Start" tag on the motor control panel at all times when personnel are performing maintenance, adjustments or repairs (Refer to Lockout/Tag-out procedures).

Equipment must be connected to an external ground that meets local codes before power is applied.

Use a sturdy, well-built ladder to provide access to all areas that cannot be reached from the ground. Be sure the ladder is securely placed before climbing.

Shut off the air and drain the air pressure from the system before attempting to disconnect any air lines or fittings.

Remove all tools, rags, and other stray objects from the vicinity of the equipment before starting.



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DEFINING BATCH PLANT EXCELLENCE.

TROUBLESHOOTING BY PART OR ITEM

OIL

Do not let oil exceed the Full line. Use non-detergent 10 W or less.

AIR LINE LUBRICATOR

Is glass bowl inside metal frame, mounted on output side of pressure regulator. To refill lubricator bowl:

1. open larger of the two valves on top of lubricator and then turn the connecting nut (at top of the bowl below the cap) until the bowl comes loose. Add the oil to the top line. Re-install the bowl and re-close the larger valve (filler plug).
2. When cement batcher vibrator is open and operating, adjust smaller of two top valves so drops of oil are visible through glass bowl on the top, dripping at a rate of three drips every second.
3. Air line should be adjusted when plant is new to have a steady flow of oil at the beginning to make sure lubrication gets to all cylinders and control valves. After plant has been well lubricated and been in operation for a few days, it should be adjusted to a position where you will visibly notice one drop of oil when a valve is opened and when the valve is closed. After any extended shut-down of the batch plant, it should be reset to the higher flow rate until the valves have been re-lubricated.

START-UP OF PLANT

The oil flow control knob on top of the lubricator should be run all the way down and then backed off to start the flow of oil. If oil should not flow at any time through the sight tube on the top, the bowl should be removed and checked that the plastic pick up tube is connected. At any time that the oil in the lubricator bowl becomes milky, it is due to the presence of moisture mixed with the oil. First, the moisture filter should be drained, then the oil in the lubricator should be drained by opening the bottom valve and letting all the oil drain out. After closing the valve, the lubricator should be refilled with new oil. The recommended oil for use in the lubricators supplied with this plant is Air Lube 10W/NR or its equivalent. This oil should be consistently stored in a clean environment, and all containers used to handle the oil should be kept clean at all times to prevent any dirt or moisture from being introduced into the oil and/or the air line lubricators. It is extremely important that the container used to fill the air lined lubricator be kept clean and capped. The reason for the recommendation of



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DEFINING BATCH PLANT EXCELLENCE.

this oil is that, in addition to being proper weight consistency, it also aids in absorbing moisture which may be introduced into the system.

AIR LINE PRESSURE REGULATOR

Mounted between the moisture filter trap and the air line lubricator, this pressure regulator is adjusted by rotating the knob on the bottom of the pressure regulator in a clockwise direction after loosening the locking nut and by viewing the gauge on the face - the pressure should be set to between 80 and 100 PSI, with 90 PSI recommended. No more pressure should be set than is required for operating of the gate valves. The gauge should be replaced if damaged or if moisture were allowed to enter it. Further, the diaphragm should be replaced if the pressure regulator does not function.

If it is suspected that the diaphragm might be damaged and it is possible that by putting your hand around the lower part of the body to feel air pressure coming out of the relief hole, this would be an indication that the diaphragm is damaged.

CYLINDER RESPONDS SLUGGISHLY

Would be lack of oil to the cylinder or the fact that the manual control or solenoid control valve is sluggish. The first check to do would be to see if the cylinder has a film of oil on the shaft; if so, you would suspect that the control valve was dry. To find out if such is the case, add some oil directly into the hose line going to that valve, either by removing the hose at the control valve or by removing it at the cylinder.

STICKY VALVE

Easiest way to free sticky valve would be to use WD-40 in spray can with a slight extension on it to get up into the exhaust port to free up the valve. If the valve has been sticky for some time, you may notice that it has worn the o-rings in the valve and they will need replacement in addition to lubrication. To replace the o-rings, it is necessary to take the valve off the mounting and remove the four nuts on the long rods that pass through the length and take the valve apart as shown on the attached cut away, then replace all o-rings, which come in a kit form. This has to be done when pressure is off on the plant. Another possible source of sluggish valves could be a kinked airline or restriction in the supply line. A method of checking this would be to pinch the discharge line (out put side), which can be done by removing the line from the supply line to the control valve and checking for sufficient pressure. On the discharge side, go to the control cylinder and remove supply line to check for sufficient pressure and flow. Another possible cause of a sluggish valve could be a flow restriction in the exhaust line.



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DEFINING BATCH PLANT EXCELLENCE.

SPRING RETURN VALVES

Any problem can be checked to determine whether it is in the supply line or the valve by removing the air pressure to the valve and by manually operating the valve and letting it snap back.

If there is a definite snap-back of the spring return, it would be suspected that the cause is in the supply line or the output line. Another possible source of sluggish valves could be oil build up in the 10W point of the supply line.

SLUGGISH VALVES

An additional cause of a sluggish valve could be that a restriction in the exhaust caused an obstruction in the pilot air cylinder. To determine whether a valve could possibly be causing the problem, remove the lines from the suspect valve and attach them to a valve known to be working, which would indicate whether it is a valve or the other components that are being controlled. A means of determining whether a leakage is caused in the valve or in the air cylinder, itself, is to squeeze the supply line to the air cylinder and determine if the leakage can be heard at the valve. This may be done by the use of vise grip pliers to pinch the return line from the cylinder to the valve (exhaust line) for air coming through the exhaust port of the valve, without the valve being energized.

When it had been determined whether the leakage is in the valve or the air cylinder, it will be necessary to replace the o-rings in that device to stop the leakage. When these new o-rings are installed, a lubricant should be applied to them; then, verify whether or not lubrication is getting to the cylinder and valve from the oiler.

CEMENT

Blow Pipe / fill pipe connection - Connects truck line to blow pipe.

Installing silo type bag house - Take into consideration where the cement blow pipe enters the silo so as to not send delivery of cement into bag house (should be far as possible from blow pipe).

Pressure relief (pop-off) valve - Put on plant after shipped - mounted in cover of manhole.



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DEFINING BATCH PLANT EXCELLENCE.

Adjust valve - check once a month - clean once a week - cannot be adjusted until cement truck has loaded the silo and is blowing out its tanks - cannot be done at factory.

Aeration - Splash water on outside of pads to seal pads. Be sure oil free and moisture free line. Increase air initially to fluff cement (if cement has set for awhile).

Bag House - Anytime you overfill the bag house, bags should be taken out and sent to laundry. Fly ash/cement will close the pores of the bags so they cannot shake clean (blinding). Overfill warning- recommend horn instead of lights. Required by State of Texas.

Feeders - Do not use aeration in excess. Keep tail bearing greased. Do not reverse feeder without opening clean out plate.

Cement Batcher - Keep vent on batcher free from cement build up, as well as spiral tube that goes to discharge hood and opening in discharge hood that vent is connected to. If all the proceeding items are okay, close slide gate and remove the inspection plate on the side of the feeder and on the bottom of the feeder. When closing slide gate, if there is a build up of hard (solidified) cement, loosen all bolts and hammer it closed. Discharge end of screw where there is an inspection plate must be checked to see that the discharge directly out of the tube of screw has not built up and caused a plug. Therefore, attempt to reverse the screw. The reversing switch is located on the side of the motor starter enclosure, put into reverse and attempt to start the screw with a jogging motion. Two inspections at bearing connections of flight should also be inspected. If screw does not reverse, get up on head section and work sheave back and forth until it starts off itself - use motor again.

Vent - Needs to be checked frequently on top of batcher. If vent is plugged and there is a back pressure, it can cause problems with screw and result in erratic reading of your scales (floating and back reading).

Plant Discharge - flexible shroud attached to rotary valve going into the discharge hood. If an excess build up occurs there, the scales will have an erratic reading. Needs to be checked frequently because there is more cement built up at this part as a result of moisture coming up through the discharge hood. Vent plugged - Notice slow down in batching time and frequent blowing of fuses. Notice cement coming in lumps.

Rotary valve leakage - continual dribble of cement when there is no truck. Needs to be adjusted. Two inspection plates, one on each side of rotary valve, can be removed to inspect sealing of rubber seal on rotary valve. Break loose build up. Bearings (one on each end) should be lubricated.



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DEFINING BATCH PLANT EXCELLENCE.

Discharge hood - Entrance of cement, batcher canvas boot, cement discharge boot, and belt wiper. Discharge hood of belt conveyor on main plant is so designed that the cement boot to the discharge is placed looser than the pipe to allow for movement of the batcher and to prevent folds from hindering proper discharge/flow of cement out of the batcher.

Air Flow Control Valve - located on cement batcher discharge valve at the cement batcher valve rack. Adjust correctly for slow opening of discharge.

AGGREGATE BIN

If overhead gate on sand will not open, check air ram, adjust air on pressure regulator.

Batcher - Adjust flow control valve (on gates) at discharge end of pilot air valve. Adjust speed of opening on air ram by the setting of the screw adjustment. Get it to proper setting and use jam nut to keep it at that setting - slow open, fast close. Electric/air - two sets for each gate: manual valve (to open and shut that gate) and electric solenoid valve. Speed control on each that are both operated from electric panel and from the manual valve.

Batcher is tied down for travel. Upon arrival, see that the hold down bolts are removed and the batcher is lifted up at least two revolutions on all four of the hanger bolts. Visually inspect and clean all pivot points. Check that all hanger bolts are vertical. Scales must be free of obstructions. Level knife edges and bearings. Extension lever weights and shelf lever weights are to be tight.

CEMENT SCALES

Check cable on quadrants. Batcher should be free of obstructions. Aggregate and cement scales must be level. Level knife edge and bearings. Extension lever weights and shelf lever weights are to be tight. Secure weights so they do not vibrate out of position. Consult factory if you feel you have problems before working on scales yourself

CEMENT FEEDER

Rotation is when running counterclockwise, when looking in the direction from screw input to output.

DUST CONTROL

Refer to dust collector section



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AIR VIBRATOR

1. Vibrator will not start:
 - a. Check to see that quick-opening valve is properly installed.
 - b. Vibrator should be within 10 - 12 feet of operating valve.
 - c. Be sure vibrator has adequate air pressure and volume available.
 - d. Check for broken or missing spring on horizontal mount (SP) units.
2. Vibrator is sluggish and slow to start:
 - a. Check for adequate lubrication.
 - b. Check for leaking air line or defective operating valve.
 - c. Check air supply for pressure and volume.
 - d. Scale or other contaminants may need to be removed from interior.

AIR CYLINDERS WILL NOT OPERATE

- A. Check list for a cylinder that will not operate
 1. Load binding. Check:
 - a. Load for function, movement
 - b. Check alignment of cylinder mounts.
 2. Pneumatic Operator valve will not function.
 - a. Check pneumatic Valve operation cycle through manual Override on valve.
 - b. If valve is malfunctioning see replacement parts list for the valve.
 3. Seals passing air
 - a. Replace seals.

BUTTERFLY GATE WILL NOT OPERATE

1. Remove actuator from gate and see if actuator functions while not attached to the gate. If no go to step 2. If yes go to step 3.
2. Replace the actuator.
3. The gate is frozen and will have to be manually opened and cleaned. The butterfly gate has been attached to the rubber seal by a material build up that the actuator will not move. Use a wrench to open the gate and clean the rubber seal so that the gate diaphragm sets and seals against the rubber seal.
4. Replace the actuator and operate the gate.



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DEFINING BATCH PLANT EXCELLENCE.

REGENERATIVE BLOWERS (Single Phase or 3-Phase)

Impeller does not turn

A. Humming Sound

1. One phase of power line not connected.
 - a. Establish connection.
2. One phase of stator winding open.
 - a. Contact Factory
3. Bearings defective
 - a. Change bearings.
4. Impeller jammed by foreign material.
 - a. Clean the material causing the jam.
5. Impeller jammed against housing or cover.
 - a. Adjust the impeller away from the jam.

B. No Sound

1. Two phases of power line not connected.
 - a. Establish connection.
2. Two phases of stator winding open.
 - a. Contact Factory

Impeller Turns

A. Blown fuse

1. Insufficient fuse capacity
 - a. Use fuse of proper rating
2. Short Circuit
 - a. Repair

B. Motor Overheated or Protector Trips

1. High or Low Voltage
 - a. Check input voltage
2. Operating in single phase condition
 - a. Check connections
 - b. Lost one phase
3. Bearings defective
 - a. Check bearings
4. Impeller rubbing against housing or cover



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- a. Adjust

- 5. Impeller or air passage clogged by foreign material
 - a. Clean
- 6. Unit operating beyond performance range
 - a. Contact Factory
- 7. One phase of stator winding short circuited
 - a. Contact Factory

- C. Abnormal
 - 1. Impeller rubbing against housing or cover
 - a. Adjust the impeller away from the jam.
 - 2. Impeller or air passages clogged by foreign material
 - a. Clean
 - 3. Bearing defective
 - a. Change bearings

- D. Performance Below Stand
 - 1. Leak in piping
 - a. Tighten
 - 2. Piping and air passage clogged
 - a. Clean
 - 3. Impeller rotation reversed
 - a. Check wiring
 - 4. Leak in Compressor
 - a. Tighten cover flange
 - 5. Low voltage
 - a. Check input voltage



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RECOMMENDED

SPARE PARTS LIST

FOR A STANDARD VINCE HAGAN

BATCH PLANT



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DEFINING BATCH PLANT EXCELLENCE.

RECOMMENDED SPARE PARTS FOR A STANDARD PLANT

- (ONE) – Double acting solenoid air valve. (Aggregate batcher gate)
- (ONE) – Single acting solenoid air valve. (Aggregate bin, silo, and water gates)
- (ONE) – Double acting solenoid air valve. (Cement batcher gate)
- (ONE) – Single acting solenoid air valve. (Aeration and vibrator)
- (ONE) – Belt conveyor splice kit. (For each belt width)
- (ONE) – Air Cylinder. (Aggregate bin gates)
- (ONE SET) – Belt conveyor v-belts (for each belt conveyor)
- (ONE SET) – Cement Screw feeder v-belts. (For each Screw feeder)
- (ONE) – Cement Screw feeder hard iron bearing.
- (ONE) – Cement Screw feeder coupling shaft.
- (ONE) – Cement batcher load cell.
- (ONE) – Aggregate batcher load cell.
- (THREE) – Troughing idler roll for the belt conveyors. (Three per belt width)
- (ONE) – Flat return idler roll for the belt conveyors. (One per belt width)
- (ONE) – Air compressor inlet filter.
- (ONE) – Aeration blower inlet filter.
- (TWO) – Cement Return system blower filters.
- (ONE SET) – Electrical starter panel fuses.
- (ONE) – Head Pulley pillow block bearing. (One for each size shaft)



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DEFINING BATCH PLANT EXCELLENCE.

(ONE) – Tail Pulley take-up bearing. (One for each size shaft)

(ONE) – Water meter rotor and spindle.

(ONE) – Water meter scalar board.

This is the basic spare parts list for Vince Hagan Company plants: MODEL LPM, MODEL HT, MODEL HSM, MODEL LP, and MODEL HS. The spare parts list is customized to each plant based on the serial number of a particular plant.

Please call The Vince Hagan Company at 800-354-3238 or Fax 214-333-4470 for all your spare part needs.



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RECOMMENDED

SPARE PARTS LIST

FOR A STANDARD VINCE HAGAN

MODEL HS BATCH PLANT



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DEFINING BATCH PLANT EXCELLENCE.

RECOMMENDED SPARE PARTS FOR A MODEL HS PLANT

- (ONE) – Double acting solenoid air valve. (Aggregate batcher gate)
- (ONE) – Single acting solenoid air valve. (water gates)
- (ONE) – Double acting solenoid air valve. (Cement batcher gate)
- (ONE) – Single acting solenoid air valve. (Aeration and vibrator)
- (ONE) – Belt conveyor splice kit. (For each belt width)
- (ONE) – Air Cylinder. (Aggregate batcher gates)
- (ONE SET) – Belt conveyor v-belts (for each belt conveyor)
- (ONE SET) – Cement Screw feeder v-belts. (For each Screw feeder)
- (ONE) – Cement Screw feeder hard iron bearing.
- (ONE) – Cement Screw feeder coupling shaft.
- (ONE) – Cement batcher load cell.
- (ONE) – Aggregate batcher load cell.
- (THREE) – Troughing idler roll for the belt conveyors. (Three per belt width)
- (ONE) – Flat return idler roll for the belt conveyors. (One per belt width)
- (ONE) – Air compressor inlet filter.
- (ONE SET) – Electrical starter panel fuses.
- (ONE) – Head Pulley pillow block bearing. (One for each size shaft)
- (ONE) – Tail Pulley take-up bearing. (One for each size shaft)
- (ONE) – Water meter rotor and spindle.



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(ONE) – Water meter scalar board.

This is the basic spare parts list for Vince Hagan Company plant MODEL HS. The spare parts list is customized to each plant based on the serial number of a particular plant.

Please call The Vince Hagan Company at 800-354-3238 or Fax 214-333-4470 for all your spare part needs.



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MOBILE DECUMULATOR



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RECOMMENDED SPARE PARTS FOR A MOBILE DECUMULATOR

- (ONE) – Double acting solenoid air valve. (Aggregate batcher gate)
- (ONE) – Single acting solenoid air valve. (water gates)
- (ONE) – Belt conveyor splice kit. (For each belt width)
- (ONE) – Air Cylinder. (Aggregate gates)
- (ONE SET) – Belt conveyor v-belts (for each belt conveyor)
- (ONE) – Aggregate batcher load cell.
- (THREE) – Troughing idler roll for the belt conveyors. (Three per belt width)
- (ONE) – Flat return idler roll for the belt conveyors. (One per belt width)
- (ONE) – Air compressor inlet filter.
- (ONE SET) – Electrical starter panel fuses.
- (ONE) – Head Pulley pillow block bearing. (One for each size shaft)
- (ONE) – Tail Pulley take-up bearing. (One for each size shaft)
- (ONE) – Water meter rotor and spindle.
- (ONE) – Water meter scalar board.

This is the basic spare parts list for Vince Hagan Company Mobile Decumulator. The spare parts list is customized to each plant based on the serial number of a particular plant.

Please call The Vince Hagan Company at 800-354-3238 or Fax 214-333-4470 for all your spare part needs.



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RECOMMENDED

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MODEL HTS BATCH PLANT



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RECOMMENDED SPARE PARTS FOR A MODEL HTS PLANT

- (ONE) – Double acting solenoid air valve. (Aggregate batcher gate)
- (ONE) – Single acting solenoid air valve. (Aggregate bin, silo, and water gates)
- (ONE) – Double acting solenoid air valve. (Cement batcher gate)
- (ONE) – Single acting solenoid air valve. (Aeration and vibrator)
- (ONE) – Belt conveyor splice kit. (For each belt width)
- (ONE) – Air Cylinder. (Aggregate bin gates)
- (ONE) – Air Cylinder. (Aggregate batcher gates)
- (ONE SET) – Belt conveyor v-belts (for each belt conveyor)
- (ONE SET) – Cement Screw feeder v-belts. (For each Screw feeder)
- (ONE) – Cement Screw feeder hard iron bearing.
- (ONE) – Cement Screw feeder coupling shaft.
- (ONE) – Cement batcher load cell.
- (ONE) – Aggregate batcher load cell.
- (THREE) – Troughing idler roll for the belt conveyors. (Three per belt width)
- (ONE) – Flat return idler roll for the belt conveyors. (One per belt width)
- (ONE) – Air compressor inlet filter.
- (ONE) – Aeration blower inlet filter.
- (TWO) – Cement Return system blower filters.
- (ONE SET) – Electrical starter panel fuses.



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DEFINING BATCH PLANT EXCELLENCE.

(ONE) – Head Pulley pillow block bearing. (One for each size shaft)

(ONE) – Tail Pulley take-up bearing. (One for each size shaft)

(ONE) – Water meter rotor and spindle.

(ONE) – Water meter scalar board.

This is the basic spare parts list for Vince Hagan Company plant MODEL HTS. The spare parts list is customized to each plant based on the serial number of a particular plant.

Please call The Vince Hagan Company at 800-354-3238 or Fax 214-333-4470 for all your spare part needs.



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DEFINING BATCH PLANT EXCELLENCE.

LUBRICATION RECOMMENDATION AND SCHEDULE

No definite period of lubrication can be given as this depends on the application and environment. The purpose of greasing bearings and other mechanical equipment is to lubricate the bearing and to force foreign material and contaminated grease out of the seals.

For best results, it is recommended that bearings on every new installation be greased frequently and the grease emerging from the seals be observed for contamination. If the grease appears to be quite clean, the time between lubrications can be extended. In this manner, a suitable lubrication schedule can be established.

The purpose of preventive maintenance and periodic lubrication is to ensure efficient operation and long life by detecting and correcting any defects before damage or failure occurs to the equipment. Preventive maintenance consists of periodic inspection and cleaning procedures. The procedures should be performed at regular intervals and any defects discovered should be corrected before attempting further operation of the equipment.

CAUTION: Lubricate motors at standstill only.

BEARING LUBRICATION (FLANGE, PILLOW BLOCK, BALL, ETC.)

Lubrication-Units must be adequately lubricated. A bearing not properly lubricated can run to destruction and possibly cause damage to other components. ADD GREASE SLOWLY. Rapid application may blow the seals and allow the grease to escape.

Cartridge inserts are pre-lubricated and no additional lubricant is required for start-up, Bearing inserts must be lubricated after rebuilding. Use one of the greases (or equivalent) Listed in "Lubrication guidelines" and fill units approximately 75% full. The suggested re-lubrication schedules under "Lubrication guidelines" are general guidelines.

The specific condition on an application such as exact hours of operation, temperature, moisture, speed, and dirt govern the required lubrication cycle. This can be determined by inspection of the flushed out lubricant during a trial period of operation. Add grease slowly, Use a sufficient volume of grease to purge the bearing seals of old lubricant. It is preferable to rotate bearings during re-lubrication where good safety practice permits. Inspection of bearing installations at least every six months is recommended. Any unusual noise or vibration changes should be immediately investigated.

High Speed Operation - In the higher speed ranges too much grease will cause overheating, The amount of grease that the bearing will take for a particular high speed



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DEFINING BATCH PLANT EXCELLENCE.

application can only be determined by experience. (See Operating Temperature below). If excess grease in the bearing causes overheating, it will be necessary to remove grease fitting to permit excess grease to escape. The bearing has been greased at the factory and is ready to run. When establishing a re-lubrication schedule, note that a small amount of grease at frequent intervals is preferable to a large amount at infrequent intervals.

Operation in Presence of Dust, Water or Corrosive Vapors - Under these conditions the bearing should contain as much grease as speed will permit since a full bearing with consequent slight leakage is the best protection against entrance of foreign material. In the higher speed ranges too much grease will cause overheating (see "High Speed Operation" above). In the lower speed ranges it is advisable to add extra grease to a new bearing before putting into operation, Bearings should be greased as often as necessary (daily if required) to maintain a slight leakage at the seals.

Average Operation - The bearing has been greased at the factory and is ready to run. The following "Lubrication Guideline" table is a general guide for re-lubrication. Take note that certain conditions may require a change of lubricating periods as dictated by experience. (See "High Speed Operation" and Operation in Presence of Dust, Water or Corrosive Vapors" above).

Operating Temperatures - Abnormal bearing temperatures may indicate faulty lubrication. Normal temperature may range from "cool to warm to the touch" up to a point 'TOO HOT to touch for more than a few seconds," depending on bearing size and speed and surrounding conditions. Unusually high temperature accompanied by excessive leakage of grease indicates too much grease. High temperature with no grease showing at the seals, particularly if the bearing seems noisy, usually indicates too little grease. Normal temperature and a slight showing of grease at the seals indicate proper lubrication.

Kind of Grease - Many ordinary cup greases will disintegrate at speeds far below those at which bearings will operate successfully, if proper grease is used. Bearings have been lubricated at the factory with No.2 consistency lithium base grease which is suitable for normal operating conditions. Re-lubricate with lithium base grease or a grease which is compatible with original lubricant and suitable for ball bearing service. In unusual or doubtful cases the recommendation of a reputable grease manufacturer should be secured.



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DEFINING BATCH PLANT EXCELLENCE.

LUBRICATION OF IDLERS (NOT SEALED FOR LIFE) LUBRICATION PROCEDURE

All safety precautions being taken, the best results will be obtained if the idlers are Lubricated while running.

For idlers equipped with the SYNCHRO-LUBE system and which have a connection between rollers without threaded fittings the lubricant should not be applied at a pressure exceeding 200 PSI. The system provides for a metered amount of grease at each bearing. Therefore should the greasing method used tend to introduce the grease at a rate of flow exceeding the capacity of the idler assembly, high pressure would develop in the system which could result in the rupture of the connection between rollers. This situation is not liable to occur when the lubrication is performed with a hand pump. High capacity powered pumps should be adjusted to relief at 200 PSI maximum. The quantity of lubricant required to lubricate one idler indicated below is such that the slow feed requirement should not appreciably increase the lubrication time.

Before re-greasing wipe the grease fitting so as not to introduce foreign material with the fresh lubricant. As to the quantity of lubricant this will depend on the established schedule. The amount of fresh lubricant should be such as to flush all bearing cavities of contaminated grease. This will generally amount to about one tablespoon of grease per roller. After lubrication, wipe off excess grease from lubrication fitting. Excess grease should also be removed from roller ends if practical. This will preclude grease dripping on the belt and prevent gathering contaminants in the seal area which could reduce the idler's normal life.

RECOMMENDED LUBRICANTS FOR IDLERS

It is important that the idlers be re-lubricated with a grease compatible with that used in the factory. Greases of different soap type generally react on each other with separation of oil and base. Partial or total obstruction of lubricant lines and orifices could occur rendering effective lubrication impossible. (See Lubrication Guidelines)

LUBRICATION OF SHAFT MOUNTED REDUCERS

Horizontal Mounting - Oil Levels. Face input shaft side when determining position. All Shaft-Mounted speed reducers are furnished with oil level, drain and breather plugs arranged for horizontal mounting as in Position I. The user can reposition plugs for other positions

Standard speed reducers may be mounted with input shaft inclined upward or downward from horizontal, to a maximum of 20 degrees without modification. If the reducer is to be



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DEFINING BATCH PLANT EXCELLENCE.

installed at an angle greater than 20 degrees upward or downward, consult the manufacturer.

Vertical Mounting - Standard shaft-mounted speed reducers can be supplied with minor modifications for either input shaft up or input shaft down Consult manufacturer.

LUBRICATION OF AIR COMPRESSOR (RECIPROCATING)

Proper lubrication for your compressor is essential!

Paraffin base oils are superior lubricants. Their service life is excellent because of their resistance to oxidation. These oils can, however, cause severe, hard carbon deposits when used to lubricate compressor cylinders. For single-acting compressors a compromise must often be made.

One compromise is a Naphthentic base lube oil. Properly formulated with a fatty type adder, this oil is particularly well suited to cylinder lubrication for two reasons:

1. Cylinder coating is superior in the presence of moisture.
2. Carbon formation is powder-like and easily removed by the action of the valves.

The best lubricant is ANDEROL 500 or equal. This lubricant does not allow carbon formation on valves.

The oils listed in the Lubrication Guidelines meet the various specifications published by various compressor manufacturers, but quality certainly varies. Most of the lubricants mentioned are normally stocked by automotive aftermarket stores.

LUBRICATION OF REGENERATIVE BLOWERS

Shell Dolium R grease is used at the factory. Any grease used MUST be compatible. Wipe fittings clean before applying grease gun.



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DEFINING BATCH PLANT EXCELLENCE.

GENERAL LUBRICATION MINIMUMS

All ball bearings (except as noted) are in the 200 series, which need lubrication approximately every 500 hours of operation

All motors are capped and should have grease fittings put in at least once a year (or as required by the manufacturer) and the bearings flushed out with grease

At the bolts on each of the gate quadrants, there is a grease fitting. This fitting should be greased daily.

On the rotary cement valve, the shaft bearings should be greased every 200 hrs, or as needed.

CAUTION: Lubricate motors at standstill only.

LUBRICATION GUIDELINES ARE ATTACHED FOR REFERENCE.



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LUBRICATION GUIDELINES - LUBRICATION DEPENDS ON WEATHER CONDITIONS AND HOURS OF OPERATION. THE FOLLOWING IS A SUGGESTED MINIMUM					
	ITEM TO BE LUBRICATED	LOCATION(S) ON PLANT	MINIMUM CYCLES PER YEAR	APPLICATION	LUBRICATION SPECIFICATION
1	conveyor idlers (re-greasable)	bin feed conveyors, batch belt conveyor.	4	Grease slowly at operating speeds until fresh grease appears at both seals. Excess grease is easily purged	NLGL Grade 2, Mobil LUX-EP2, Shell Alvania EP-2, Texaco Multifax EP-2
2	conveyor idlers (sealed for life)	bin feed conveyors, batch belt conveyor.	never	All idlers are "sealed for life" and require no lubrication.	-
3	Motor bearings	bin feed conveyors, batch belt conveyor, mixers, turnheads, screw conveyors, dust collectors	12	Wipe fittings clean before applying grease gun. Grease slowly at until fresh grease appears at both seals. Excess grease is easily purged. Lubricate motors as standstill only.	Mobil grease 2B, Shell dolium R, Texaco premium RB
4	Pillow block bearings	bin feed conveyors, batch belt conveyor, mixers, turnheads, flip flop doors.	12	Grease slowly at operating speeds until fresh grease appears at both seals. Excess grease is easily purged	NLGL Grade 2, Mobil LUX-EP2, Shell Alvania EP-2, Texaco Multifax EP-2
5	Flange bearings	screw conveyors, bin feed conveyors, batch belt conveyor, mixers, turnheads, flip flop doors, live bottom cement batchers.	12	Grease slowly at operating speeds until fresh grease appears at both seals. Excess grease is easily purged	NLGL Grade 2, Mobil LUX-EP2, Shell Alvania EP-2, Texaco Multifax EP-2
6	Chain drives	bin feed conveyors, mixers	4	Check Fluid Level	SAE 50 Wt
7	Turn head bearings	bin feed conveyors, top of aggregate bin	12	Grease slowly at operating speeds until fresh grease appears at both seals. Excess grease is easily purged	NLGL Grade 2, Mobil LUX-EP2, Shell Alvania EP-2, Texaco Multifax EP-2
8	Turn head motor bearings	bin feed conveyors, top of aggregate bin	12	Wipe fittings clean before applying grease gun. Grease slowly at until fresh grease appears at both seals. Excess grease is easily purged. Lubricate motors as standstill only.	Mobil grease 2B, Shell dolium R, Texaco premium RB
9	Turn head reducer	bin feed conveyors, top of aggregate bin	Never	Lubricated For Life	-
10	"Flip-Flop" tray / door bearings	conveyors, top of aggregate bin, batch belt conveyor.	12	Grease slowly at operating speeds until fresh grease appears at both seals. Excess grease is easily purged	NLGL Grade 2, Mobil LUX-EP2, Shell Alvania EP-2, Texaco Multifax EP-2
11	"Flip-Flop" tray operators	conveyors, top of aggregate bin, batch belt conveyor.	12	Check cylinder rod for oil film	-
12	Aggregate bin gates	bottom of the aggregate bin	12	Check cylinder rod for oil film	-
13	Aggregate batcher gates	bottom aggregate batcher	12	Check cylinder rod for oil film	-
15	Gear couplings	bin feed conveyors, batch belt conveyor, mixers.	12	Relubricate after approximately the first 3 million revolutions (30 hours @ 600 rpm)	Mobil EP-1, Shell Alvania EP-1, Texaco Lotemp EP
16	Wheel hubs	bin feed conveyors, turn heads.	1	pack wheel hubs with grease	NLGL Grade 2, Mobil LUX-EP2, Shell Alvania EP-2, Texaco Multifax EP-2
17	Shaft mounted reducer (OIL)	bin feed conveyors, batch belt conveyor, mixers, screw conveyors, dust collectors	12	Check fluid level fill as necessary	15-60 degrees, 50-125 degrees AGMA 4ep AGMA 5ep

LUBRICATION GUIDELINES - LUBRICATION DEPENDS ON WEATHER CONDITIONS AND HOURS OF OPERATION. THE FOLLOWING IS A SUGGESTED MINIMUM

	ITEM TO BE LUBRICATED	LOCATION(S) ON PLANT	MINIMUM CYCLES PER YEAR	APPLICATION	LUBRICATION SPECIFICATION
18	Gear reducer (OIL)	bin feed conveyors, batch belt conveyor, mixers, turnheads, screw conveyors, dust collectors	12	Check fluid level fill as necessary	15-60 degrees, 50-125 degrees AGMA 4ep AGMA 5ep
19	Air supply Lubricator	at the cylinders on the cement section, at the cylinders on the aggregate section	Daily	Fill as needed with 10wt oil	Non-Detergen
20	Gate Operators (air cylinders)	bottom of the aggregate bin, bottom of the aggregate batcher, bottom of the cement batcher, bottom of silos, bottom of live bottom batchers	Daily	Fill lubricator	Non-Detergen
21	Piston Vibrators	bin feed conveyor loading hopper, bottom of the aggregate batcher, bottom of the cement batcher, bottom of silos, bottom of live bottom batchers	Daily	Fill lubricator	Non-Detergen
22	Air compressor case (OIL)	tail end of the plant	12	Check fluid level fill as necessary	Mobile DTE Heavy, Extra Heavy Mobile DTE
24	Dust collection air blower motor bearings	at the dust collector	12	Wipe fittings clean before applying grease gun. Grease slowly at until fresh grease appears at both seals. Excess grease is easily purged. Lubricate motors as standstill only.	Mobil grease 2B, Shell dolium R, Texaco premium RB
25	Dust collection discharge fan motor bearings	at the dust collector	12	Wipe fittings clean before applying grease gun. Grease slowly at until fresh grease appears at both seals. Excess grease is easily purged. Lubricate motors as standstill only.	Mobil grease 2B, Shell dolium R, Texaco premium RB
26	Dust collection discharge fan bearings	at the dust collector	12	Wipe fittings clean before applying grease gun. Grease slowly at until fresh grease appears at both seals. Excess grease is easily purged. Lubricate motors as standstill only.	Mobil grease 2B, Shell dolium R, Texaco premium RB
27	Dust collection rotary air lock bearings	at the dust collector	12	Wipe fittings clean before applying grease gun. Grease slowly at until fresh grease appears at both seals. Excess grease is easily purged. Lubricate motors as standstill only.	NLGL Grade 2, Mobil LUX-EP2, Shell Alvania EP-2, Texaco Multifax EP-2
28	Dust collection rotary air lock motor bearings	at the dust collector	12	Wipe fittings clean before applying grease gun. Grease slowly at until fresh grease appears at both seals. Excess grease is easily purged. Lubricate motors as standstill only.	Mobil grease 2B, Shell dolium R, Texaco premium RB