

# Conveyor Safe Operating Procedures



# SAFETY AND ENVIRONMENT EDUCATION FOR DEVELOPMENT

## SAFE OPERATING PROCEDURES

### BEFORE INITIAL START-UP:

1. Lockout / tag out all power.
2. Lubricate all bearings in accordance with manufacturer's instructions.
3. Lubricate all gear reducers in accordance with manufacturer's instructions. Gear reducers are normally shipped without lubrication.
4. Check conveyor to ensure all tools and foreign materials have been removed.
5. Turn drive unit by hand to check for alignment and obstructions.
6. Check conveyor to ensure all covers, guards and safety devices are installed and operating properly.

### INITIAL START-UP (WITHOUT MATERIAL):

1. Reenergize power to conveyor.
2. Start conveyor momentarily to check for proper conveyor rotation. If conveyor rotation is NOT correct, quickly shutdown and have qualified electricians change wiring.
3. Operate conveyor without material for several hours as a break in period. Observe for excessive bearing temperature, unusual noise or drive misalignment. If these conditions occur refer to Troubleshooting Section of this document.
4. Stop the conveyor and lockout / tag out all power.
5. Remove covers and check tightness of coupling bolts. Torque bolts to proper torque rating.
6. Replace covers.
7. Check all assembly and mounting bolts. Torque bolts to proper torque rating.

## SAFETY AND ENVIRONMENT EDUCATION FOR DEVELOPMENT

8. Check conveyor discharge. Discharge must be clear to ensure that material flow out of conveyor will not be impeded.

### INITIAL START-UP (WITH MATERIAL):

1. Reenergize power to conveyor.
2. Start conveyor and operate without material for several minutes.
3. Feed material gradually until design capacity is reached.
4. Do not exceed conveyor speed, capacity and material density.
5. Start and stop conveyor several times. Operate conveyor for several hours with material.
6. Check motor amperage when conveying at design capacity and compare to full load amperage of motor. Problems may exist if amperage is excessive. Check voltage to ensure that it is within normal operating limits.
7. Stop the conveyor and LOCKOUT/TAGOUT ALL POWER.
8. Remove covers and check tightness of coupling bolts. Torque bolts to proper torque rating.
9. Check hanger bearings and realign if necessary.
10. Replace covers.
11. Check all assembly and mounting bolts. Torque bolts to proper torque rating.

Annexure – 1

INSPECTION PROCESS

- (1) Conveyor shall be of proper construction, sound material and free from defects and shall be properly maintained.
- (2) 'In running nips' shall be securely fenced by safeguard of substantial construction or by any other suitable device.
- (3) Conveyors shall be installed in such a way that a clearance of at least 45 centimeters shall be provided between conveyors side of the passageway and the conveyor. Hand rails or railings shall be provided on open sides of the walkway all along the belt.
- (4) When workers have to cross over conveyor, regular crossing facilities affording safe passage shall be provided.
- (5) Suitable device like gongs, whistles or signal lights shall be provided to the operator to warn the workers before starting the conveyor.
- (6) (a) The starting button or switch for the conveyor shall be so located that the operator can see as much of conveyor as possible. The starting and stopping devices shall be marked distinctly and so located that they can be clearly seen and safely approached.  
(b) All personal working on or around the conveyor shall be made to have knowledge about the location and operation of all stopping device.
- (7) Side guard of sufficient height and strength shall be provided to prevent falling of material from the conveyor.
- (8) (a) Conveyors shall be tested and the parts thereof thoroughly examined by a competent person before being taken into use for the first time or after it has undergone any alteration or major repairs liable to affect its strength or stability.  
  
(b) A certificate of such tests and examinations signed by the competent person making the tests and examinations specifying the maximum safe conveying load shall be obtained and available to the Inspector on demand.

## SAFETY AND ENVIRONMENT EDUCATION FOR DEVELOPMENT

- (c) Conveyors shall be thoroughly examined at least once in every twelve months by the competent person and report of the person shall be made available to the Inspector on demand.
- (9) Belt conveyors carrying materials which might stick to tail drums or belts, shall be provided with fixed scrappers or revolving brushes for removing the deposits to avoid the hazards in cleaning the moving parts by hand or shovels while the belts are in motion.
- (10) Conveyor shall be provided with automatic and continuous lubrication systems or with lubricating facilities so arranged that oiling and greasing can be performed without the oils coming within the dangerous proximity to moving parts.
- (11) Before commencing any maintenance work, electrical or mechanical, 'permit' to work shall be obtained from the manager or any person so authorized by the manager for the purpose and the procedure laid down in the permit shall be strictly followed.
- (12) The workers working on conveyors shall be adequately trained.
- (13) No person shall be required or allowed to raid on conveyors.

### Conveyor Guarding –

- 1) The Underpasses of the conveyor shall be securely guarded.
- 2) All the transfer points of conveyor s system shall be adequately enclosed.
- 3) Where the top of hopper for feeding conveyor is less than 90 centimeters above floor, the opening shall be adequately guarded.
- 4) All the areas underneath the counter weight of the conveyor system shall be suitable barricaded so as to prevent any person getting injured due to accidental fall of the 'counterweight'.
- 5) Gears, Sprockets, Sheaves and other moving parts shall be either adequately guarded or positioned in such a way as to protect workers against personal injuries.

## Safety Devices

(1) A conveyor shall –

- i. stop when its driving power is cut-off and remain stopped until the power is reconnected ;
- ii. have a provision at each point of loading or delivery of the conveyor, to stop the conveyor ;
- iii. not be capable of being restarted after having been stopped until the device, if any, by which it is stopped is reset in the running position ; and
- iv. Where the conveyor can be stopped by means of a push button have provision whereby the push button can be secured in the stop position.

(2) (a) Chord shall be provided on both sides of the belt along the walkway covering the entire length of the belt when pulled shall stop the conveyor.

And the distance between two consecutive emergency stopping devices of the chords shall not exceed 23 (twenty three) meters.

(b) For conveyors other than belt conveyors emergency stopping devices shall be provided at the accessible point throughout the length of the conveyors and distance between the two consecutive devices shall not be more than 8 (eight) meters.

(3) Overload protection device shall be provided so that when overload all starting devices shall get automatically tripped off. In addition to such overload protection customarily provided for electric motors, there shall be an overload device designed to protect the conveyor and mechanical drive parts. In the event of an overload, the device shall shut off the electric power quickly, disconnect the conveyor or drive parts from the motive power, or limit the applied torque.

(4) When a conveyor has stopped because of an overload, all starting devices shall be locked out and the cause of the overload removed. The entire conveyor shall be inspected before it is restarted.

## SAFETY AND ENVIRONMENT EDUCATION FOR DEVELOPMENT

(5) If two or more conveyors are operated in series, conveyors shall be interlocked in such way that if one conveyor is stopped all other conveyors fed by it shall be stopped simultaneously.

(6) Conveyors which carry load up inclines shall be provided with mechanical devices that will prevent machinery from reversing and carrying the load back towards the loading point in the event of the power being cut-off.

(7) The precautions necessary to avoid the accumulation of the static electricity shall be taken.