



STATE OF NEW JERSEY

DEPARTMENT OF LABOR June 15, 1937

ENGINEERS' LICENSE, STEAM BOILER & REFRIGERATION PLANT INSPECTION BUREAU

REGULATIONS COVERING THE BRACING AND OPERATION OF ROTARY TYPE FULL STEAM DRUM DRYERS WHERE PRESSURE REQUIRED IS GREATER THAN 30 LBS.

BUT NOT IN EXCESS OF 60 LBS. PER SQUARE INCH

- 1. STEAM FEED LINE TO DRYER MUST HAVE A REDUCING VALVE SET AT A PRESSURE NOT HIGHER THAN SIXTY (60) LBS.
2. A SPRING LOADED LEVER TESTING TYPE SAFETY VALVE MUST BE ON THE STEAM LINE BETWEEN REDUCING VALVE AND DRYER, SET AT A PRESSURE NOT HIGHER THAN SIXTY (60) LBS. AND SEALED.
3. SAFETY VALVE MUST BE THE SAME SIZE AS PIPE LINE LEADING TO THE ROTARY DRYER.
4. THE EXHAUST PIPE OUTLET CAN BE EQUIPPED WITH SUITABLE TRAPS AND SHUT OFF HAND OPERATING VALVES FOR REGULATION AS REQUIRED.
5. NO SHUT OFF VALVE IS PERMITTED ON STEAM LINE BETWEEN DRYER AND SAFETY VALVE.
6. A SHUT OFF VALVE ON MAIN STEAM LINE BETWEEN SAFETY VALVE AND REDUCING VALVE IS PERMISSIBLE.
7. DRYER MUST BE EQUIPPED WITH VACUUM BREAKER.
8. ONE HEAD OF DRYER MUST BE TAPPED AND THREADED FOR A 3/8" TO 1/2" NIPPLE AND SHUT OFF VALVE AT A POINT ABOUT 1-1/2" FROM THE OUTER RIM; TO BE USED AS A CONDENSATE DRAIN. WHEN DRYER IS OUT OF SERVICE IT MUST BE STOPPED SO THAT DRAIN IS AT LOWEST POINT, DRAIN VALVE OPENED AND LEFT OPEN UNTIL DRYER IS PUT BACK IN SERVICE.
9. BRACE RODS SHOULD BE EVENLY SPACED AS NEAR AS POSSIBLE SO THAT EACH BRACE WILL CARRY ITS PROPER LOAD.
10. COMPUTATIONS GIVEN BELOW FOR THE BRACING OF ROTARY DRYERS USING A MAXIMUM PRESSURE OF SIXTY (60) LBS. PER SQUARE INCH, IS BASED ON USING WELDLESS THROUGH RODS THREADED FOR NUTS AND WASHERS AT EACH HEAD INTERNALLY AND EXTERNALLY, THE ALLOWABLE LOAD FOR EACH BRACE BASED ON CROSS SECTIONAL AREA TAKEN AT THE ROOT OF THE THREAD IN EACH CASE.

THROUGH RODS:

THE ALLOWABLE LOAD PER BRACE IS BASED ON A STRESS OF 9500 LBS. PER SQUARE INCH

- 1" ALLOWABLE LOAD 5362 LBS. ON EACH ROD 12 THREADS PER INCH
1-1/4" ALLOWABLE LOAD 9120 LBS. ON EACH ROD 12 THREADS PER INCH
1-3/8" ALLOWABLE LOAD 11205 LBS. ON EACH ROD 12 THREADS PER INCH

THE NUMBER OF RODS WILL BE INCREASED OR DECREASED, DEPENDING ON THE DIAMETER OF THE DRUM, IN ALL CASES RETAINING THE PROPER PITCH AND EQUALLY DISTRIBUTING THE LOAD PER ROD.

FOR EXAMPLE:

- A FIVE FOOT DRUM WOULD REQUIRE 32 ONE INCH THROUGH RODS
19 ONE AND ONE QUARTER INCH THROUGH RODS
16 ONE AND THREE EIGHT INCH THROUGH RODS

OWING TO THE TYPE OF WELD IT IS NOT SAFE TO GO BEYOND THE MAXIMUM PRESSURE OF SIXTY (60) LBS. PER SQUARE INCH.

PERCY A. MILLER, JR.
COMMISSIONER OF LABOR

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