

Exercise 4.1

A company wants a screw conveyor design so that sand can be transported from the bottom of a pit to the interior a bin or hopper located at a certain height above ground. The screw conveyor has to have a minimum capacity of 80 t/h. For this reason, the company has an engine that wants to use it for this purpose. Its characteristics are:

$n = 175$ rpm

Power: 20 CV

It is known that screw conveyor inclination with the horizontal is 7.5° and the total distance between the lower part of the screw and the discharge is 15 metres.

Sand density: 1.6 t/m^3 .

Due to terrain geometric limitations the maximum allowed screw diameter is 400 mm

SCREW CONVEYOR BROCHURE

External diameter (mm)	Internal diameter (mm)	Pitch (mm)	Interior thickness (mm)	Exterior thickness (mm)
60	21	60	3	1.5
70	21	70	3	1.5
75	21	75	3	1.5
80	27	80	3	1.5
85	27	85	3	1.5
90	21	90	3	1.5
95	27	90	3	1.5
95	21	95	3	1.5
100	27	100	3	1.5
100	21	100	3	1.5
120	33	120	3	1.5
125	33	125	3	1.5
140	41	140	3	1.5
150	48	150	4	2
180	48	180	4	2
200	60	200	5	2.5
200	60	150	5	2.5
200	48	200	5	2.5
200	48	220	5	2.5
250	60	200	5	2.5
250	60	250	5	2.5
300	90	300	6	3
300	90	250	6	3
300	90	200	6	3
300	76	300	6	3
300	76	250	6	3
350	90	350	6	3
350	90	300	6	3
350	90	200	6	3
400	140	400	6	3
400	140	300	6	3
400	140	250	6	3
400	140	200	6	3