Model a five-roller conveyor track module with side plates

Software: Siemens NX

Task statement

Build a five-roller conveyor (roller track) module with side plates as a multi-part assembly, and produce a fully dimensioned assembly drawing. Work in millimetres throughout. Use the supplied dimensioned diagrams diagram_01.png, diagram_01_detail01.png, diagram_01_detail02.png, diagram_01_detail03.png and diagram_01_detail04.png as the design reference.

The module has these components:

- Five identical cylindrical rollers, with chamfered ends and central axles or spindles, set parallel in a single row.
- Two side plates, one on each end of the rollers. Each side plate carries the roller axles at five bolt or bearing points along its length.
- A stepped side profile or rail behind each side plate, with angled (chamfered) edges, as shown in the top and isometric views.

The overall envelope of the assembly is:

- 258 mm wide (across the side plates)
- 160 mm deep (roller face to back of the side profiles)
- 580 mm long (along the track)

Roller positions along the 580 mm length are dimensioned as a chain of 170, 120, 120 and 170 mm, as in the right side view. All five rollers lie on a common plane and their axes are perpendicular to the side plates. The complete assembly should contain 10 solid bodies, built from cylindrical, conical (chamfer) and planar faces.

Organise the work professionally:

- Model each distinct component type in its own part file, using four component part files: roller, side plate, side profile/rail and axle/fastener as appropriate.
- Bring the components together in a single assembly file, with all five rollers and both sides positioned correctly.
- Also export the assembly as a STEP file.

Create a drawing file referencing the assembly, on one sheet, containing:

- Front view, top view and right side view.
- Dimensions including the overall length 580 and the depth 160.
- Centre marks on the roller axles.
- A note that all dimensions are in millimetres.
- A title block giving the drawing number and revision.

Rubrics

- **R1:** The model shall have overall dimensions of 258 mm x 160 mm x 580 mm.
- **R2:** The model shall contain five identical cylindrical rollers arranged parallel in a single row along the 580 mm length.
- **R3:** The model shall position the roller axes according to the chain 170, 120, 120, 170 mm shown in the right side view.

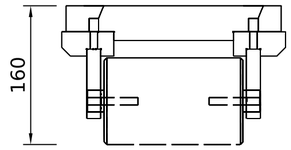
- **R4:** The model shall include two side plates, one at each end of the rollers, each supporting all five roller axles.
- **R5:** The model shall include a stepped side profile with chamfered edges behind each side plate.
- **R6:** The model shall consist of 10 solid bodies in the assembly.
- **R7:** The model shall include chamfers on the roller ends, represented by conical faces.
- **R8:** The drawing shall be a single sheet.
- **R9:** The drawing shall contain front, top and right side views of the assembly.
- **R10:** The drawing shall dimension the overall length 580 and the depth 160.
- **R11:** The drawing shall show centre marks on the roller axles.
- **R12:** The drawing shall have a title block giving a drawing number and a revision.
- **R13:** The drawing shall state that all dimensions are in millimetres.
- **R14:** The model shall be organised as separate component part files combined in one assembly file, with a separate drawing file referencing that assembly.
- **R15:** The model shall use millimetres as its unit system.

Input files

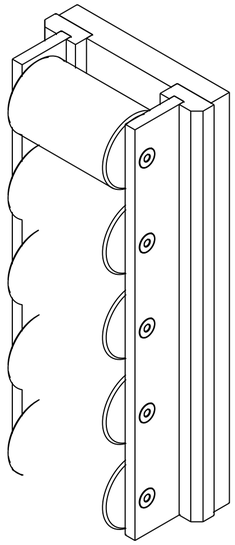
- task_files/diagrams/diagram_01.pdf
- task_files/diagrams/diagram_01.png
- task_files/diagrams/diagram_01_detail01.png
- task_files/diagrams/diagram_01_detail02.png
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Deliverables

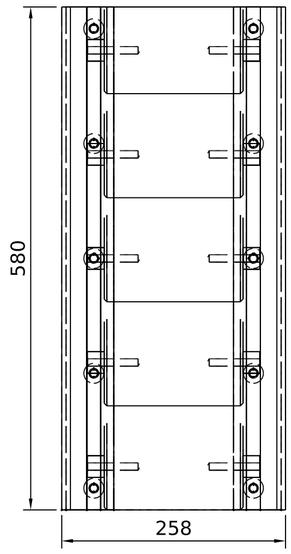
- **.prt:** output_files/project_files/part3.prt: The native deliverable is a set of files: four component part files, one assembly file that combines them into the 10-body five-roller conveyor module, a drawing file holding the dimensioned assembly drawing, and a STEP export of the assembly.
- **.prt:** output_files/project_files/part2.prt: The native deliverable is a set of files: four component part files, one assembly file that combines them into the 10-body five-roller conveyor module, a drawing file holding the dimensioned assembly drawing, and a STEP export of the assembly.
- **.prt:** output_files/project_files/assembly1.prt: The native deliverable is a set of files: four component part files, one assembly file that combines them into the 10-body five-roller conveyor module, a drawing file holding the dimensioned assembly drawing, and a STEP export of the assembly.
- **.prt:** output_files/project_files/dwg1.prt: The native deliverable is a set of files: four component part files, one assembly file that combines them into the 10-body five-roller conveyor module, a drawing file holding the dimensioned assembly drawing, and a STEP export of the assembly.
- **.prt:** output_files/project_files/part1.prt: The native deliverable is a set of files: four component part files, one assembly file that combines them into the 10-body five-roller conveyor module, a drawing file holding the dimensioned assembly drawing, and a STEP export of the assembly.
- **.prt:** output_files/project_files/part4.prt: The native deliverable is a set of files: four component part files, one assembly file that combines them into the 10-body five-roller conveyor module, a drawing file holding the dimensioned assembly drawing, and a STEP export of the assembly.
- **.stp:** output_files/project_files/rollertrackstepfile.stp: STEP export of the model in the same units.



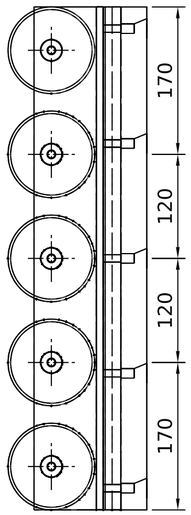
TOP VIEW



ISOMETRIC VIEW



FRONT VIEW



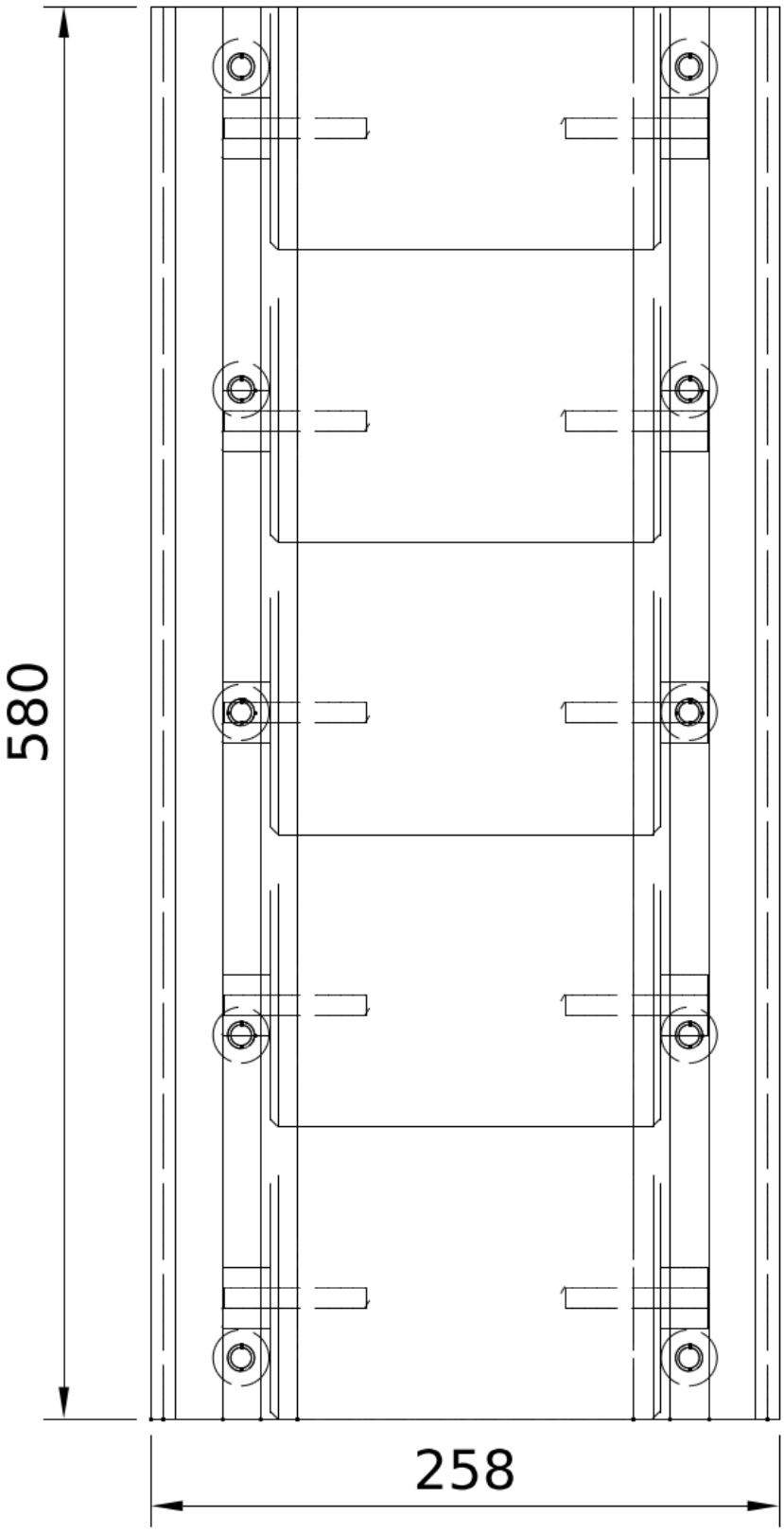
RIGHT SIDE VIEW

NOTES
1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.
2. DO NOT SCALE THE DRAWING; USE THE FIGURED DIMENSIONS.
3. VIEWS IN THIRD ANGLE PROJECTION.

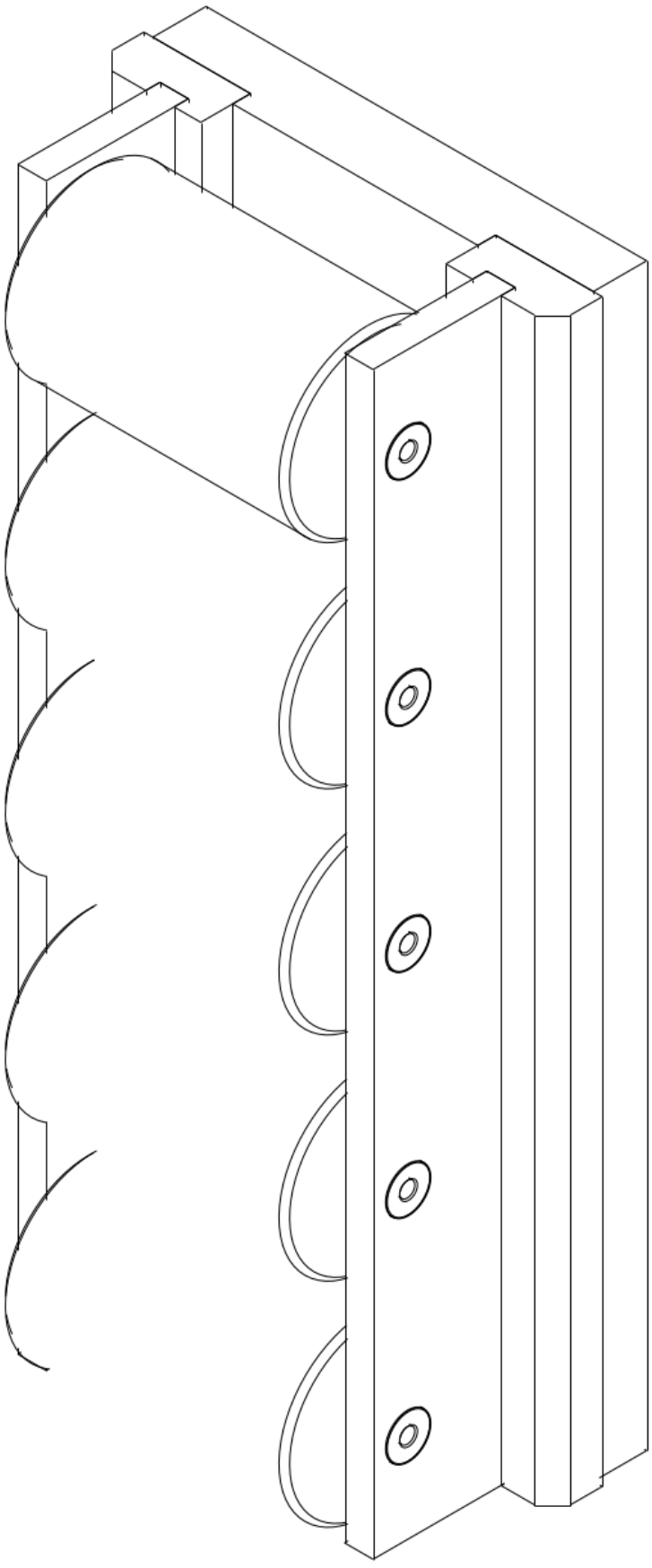
UNITS	SCALE	PROJECTION
MILLIMETRES	**1:5**	

TITLE	SIZE
FIVE-ROLLER CONVEYOR TRACK MODULE WITH SIDE PLATES	**A2**

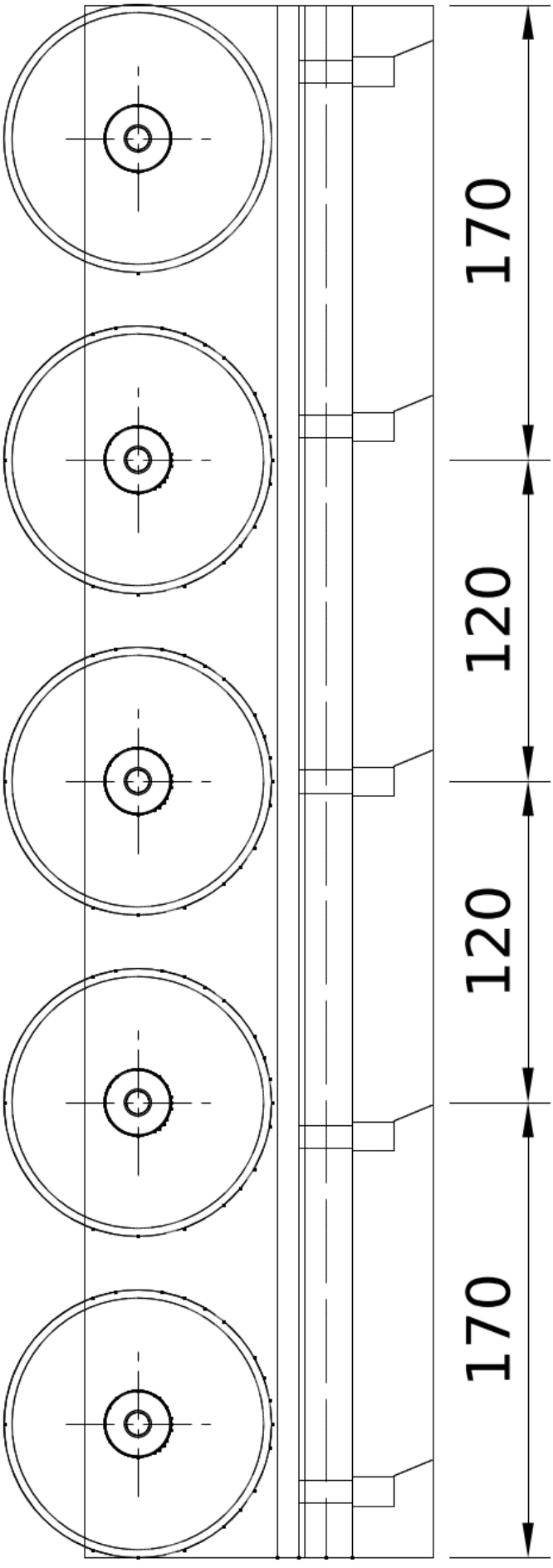
DRAWING NO.	REV	SHEET
MKV-2F743A86-01	**0**	**1 OF 1**



FRONT VIEW

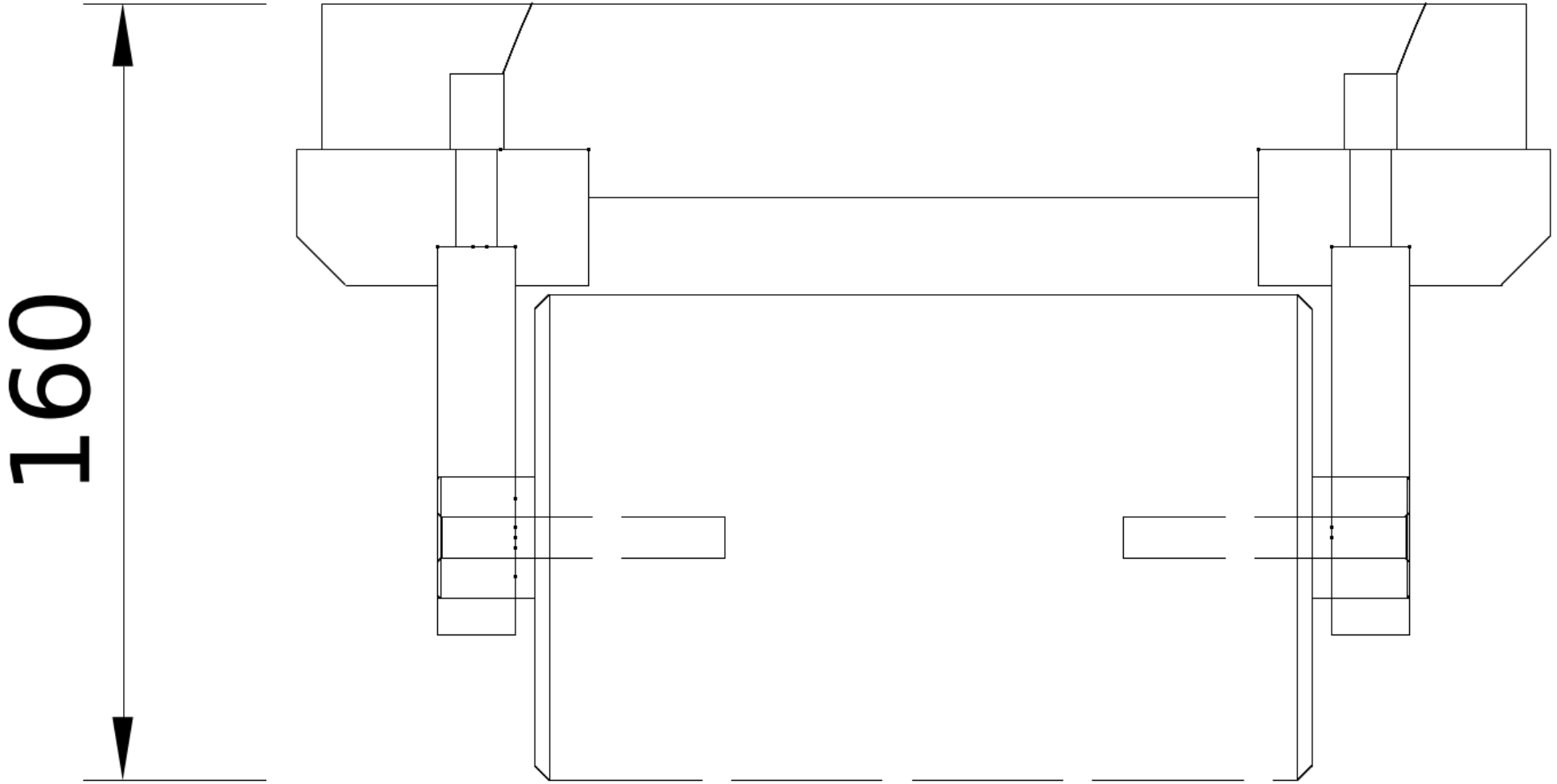


ISOMETRIC VIEW



DETAIL 3 · VIEW 3 · SHEET ZONES E5-H7

MKV-2F743A86-01 · SHEET 1 OF 1


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