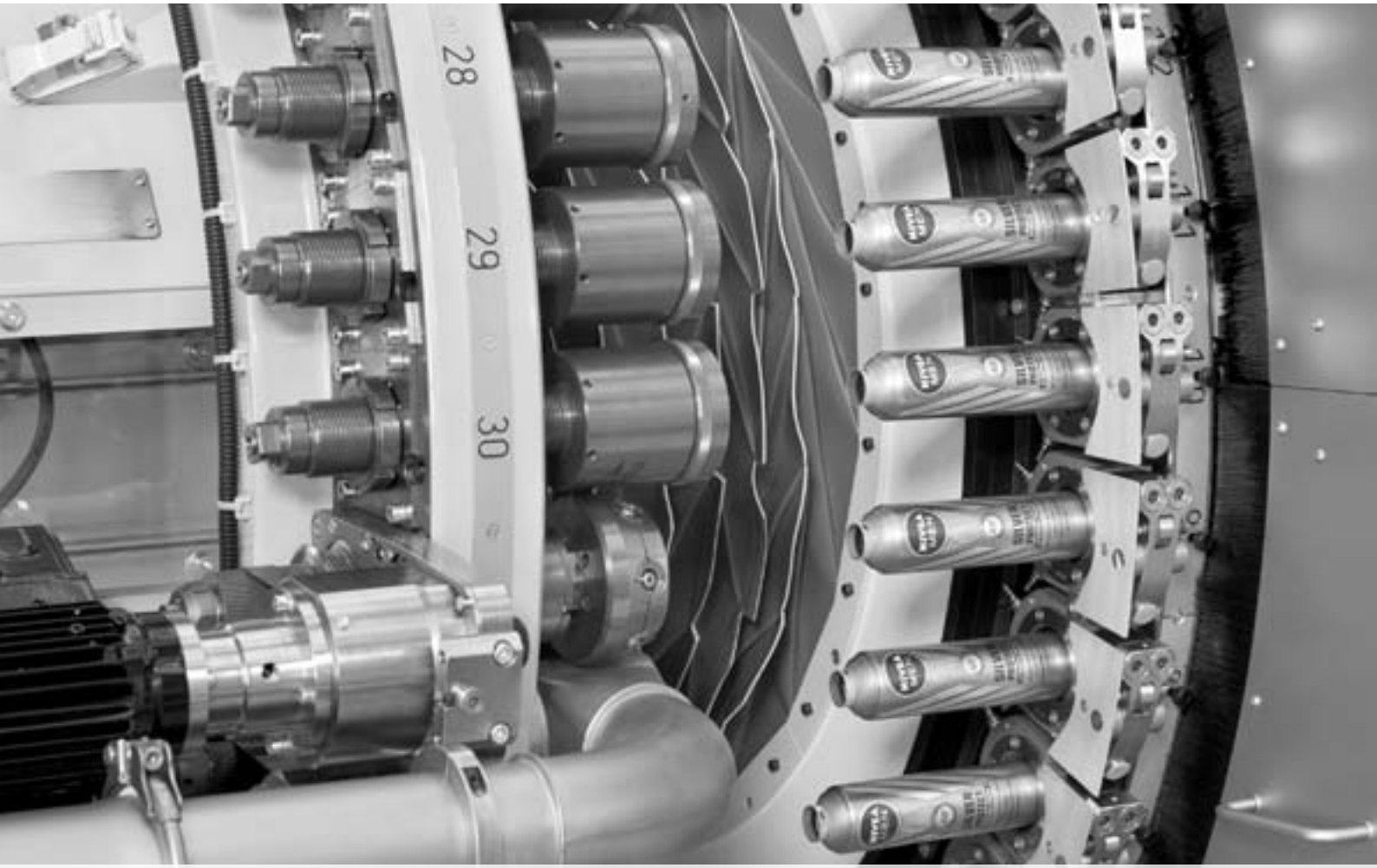
HINTERKOPF
technology partnership



N40.3

Necking Machine

N40.3

Necking Machine

The shape makes the difference

At their headquarters in Eislingen/Fils, HINTERKOPF, the long-established packaging specialist develops and builds machines that are in worldwide use for the fully-automated production of cans, tubes and sleeves made from aluminum and plastics. Besides printing, coating and washing machines the HINTERKOPF product range also comprises capping and trimming machines and last but not least necking machines for aluminum cans and bottles.

In the necking process a can is given its final shape. In numerous steps the shoulder is formed, the edge is flanged, a thread can be cut if so required, the opening is face-milled so that it can be used as a seal face,

and a snap-in groove for the closure can be rolled in just below the shoulder.

As all these necking processes are done on the finished decorated and coated can, the machine, the tools, the lacquers and the forming technology have to meet highest demands. It is vital that the lacquer has the right elasticity, the tools have to be perfectly dimensioned and designed.

Premium quality and lasting satisfaction of your customers is ensured with necking machines and the expertise of HINTERKOPF.

N40.3 – maximized product output

The advanced N40.3 necking machine sets new standards in terms of speed, precision, quality and its ease of operation and maintenance.

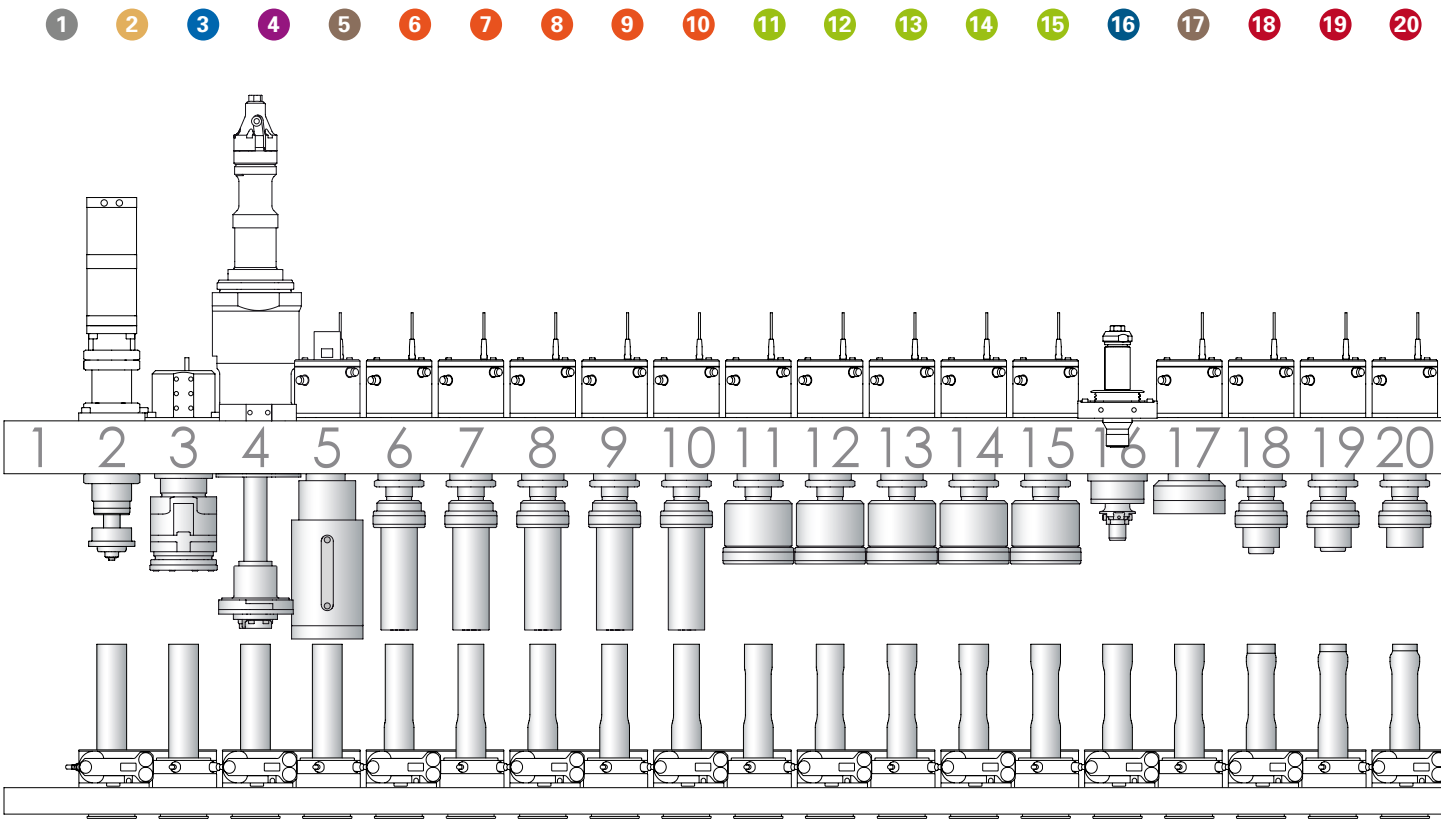
In the N40-series machines N40.2 and N40.3 a variable stroke and a new concept enable highest production speed. With the necking machine **N40.3**, even complex shapes can be produced with **up to 240 cans/min**.

The bearing arrangement of the machine, consisting of linear ball slides, makes the machine more precise than other machines on the market and more precise also than its predecessor model, the N30, despite its increase in production speed and in the number of necking stations.

Moveable and adjustable (in height and angle) infeed and exit conveyors for good access

N40.3

Necking Machine



40 processing stations for individual shaping

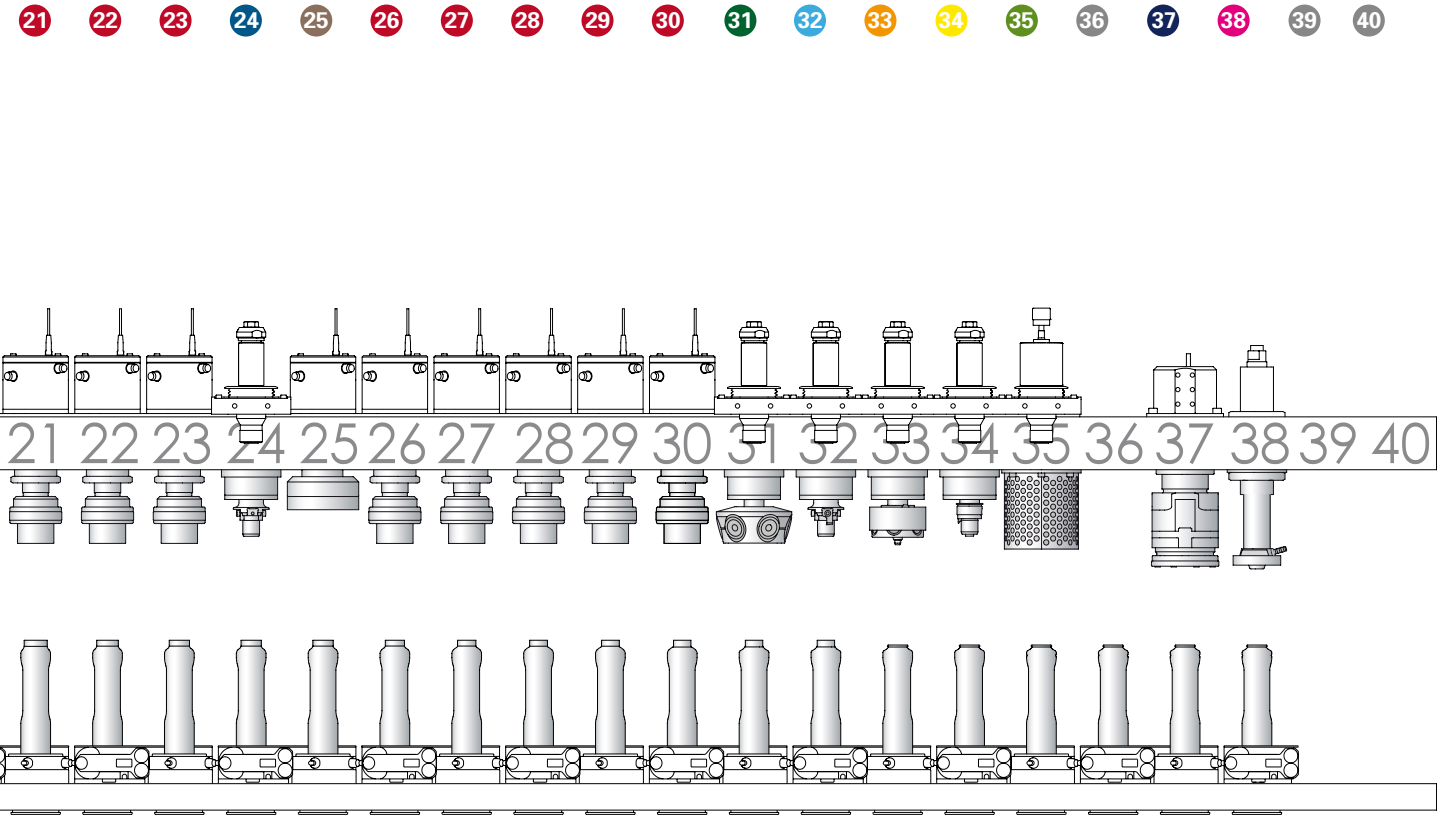
Higher demands in respect to value and differentiation of consumer products lead to increased requirements on the overall design and appearance of the product´s packaging. For the customers of HINTERKOPF, manufacturers of aluminum cans and bottles, this results in **higher requirements** on the decoration and **in particular on the product shape**.

New market requirements not only demand the forming of can or bottle necks, but the respective body also has to be necked, for example by the formation of a characteristic “waist”.

To do so, the body of the completely decorated and lacquered cylinder first undergoes a narrowing process (deep necking, in e.g. 3–6 steps), then the body above the waist is widened again gradually (again in 3–6 steps). Once this is accomplished, the shoulder and neck can be shaped.

The necking machine N40.3 contains 40 working stations, 10 more than its predecessor N30, which is still available, thus enabling the more detailed shaping of products such as cans, bottles and the like. Since the N40.3 is even more compact than its predecessor model and despite the higher functionality, it can be integrated into every existing production line.

By using lightweight clamping chucks, the variable stroke of the machine, and other optimizations **the N40.3 necking system allows speeds of up to 240 parts/min.** and at the same time a high versatility for many products.



1 *Loading*
2 *Bottom forming*
3 *Camera*
4 *Positioning*
5 *Lubrication*

6 *Long necking*
7 *Long necking*
8 *Long necking*
9 *Long necking*
10 *Long necking*

11 *Expanding*
12 *Expanding*
13 *Expanding*
14 *Expanding*
15 *Expanding*

16 *Length milling*
17 *Lubrication*

18 *Necking*
19 *Necking*
20 *Necking*
21 *Necking*
22 *Necking*
23 *Necking*

24 *Length milling*
25 *Lubrication*

26 *Necking*
27 *Necking*
28 *Necking*
29 *Necking*
30 *Necking*

31 *Flatshoulder rolling*
32 *Length/ Diameter milling*
33 *Curl rolling*
34 *Curl milling*

35 *Gorge rolling*
36 *Empty*
37 *Camera inspection*
38 *Leak testing*
39 *Unloading*
40 *Empty*

Example for an arrangement of the work stations of the N40.3 necking machine.
The configuration of the stations with tools depends on the manufactured product.

N40.3

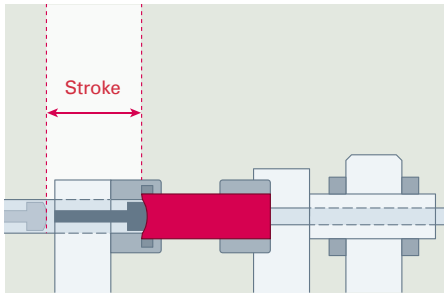
Necking Machine

Variable stroke with optimum speed

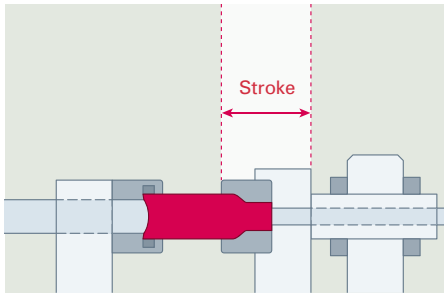
In order to create a can with a waist on the lower body, a large working stroke of the necking machine is needed. However, since **all sorts of aerosol cans and bottles need to be shaped on this one necking machine**, it does not always require the maximum stroke.

HINTERKOPF therefore developed a **variable stroke** for the N40 machines, allowing the use of one single machine for shaping cylinders over their complete wall length or just for making the usual type of aerosol cans, each with its optimum speed. This way overall output is optimized and flexibility is increased tremendously – see the table below.

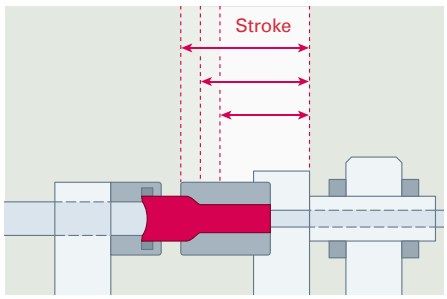
Thanks to its very high maximum speed of **up to 240 parts/min. the N40.3 is particularly efficient and economical in production**. With the available working stroke of 58–143 mm the N40.3 specializes in medium to small necking depths. An even deeper shaping up to 187 mm is enabled by the large working stroke of the N40.2 necking machine (see separate brochure).



Can bottom forming on one working station with a bottom forming punch



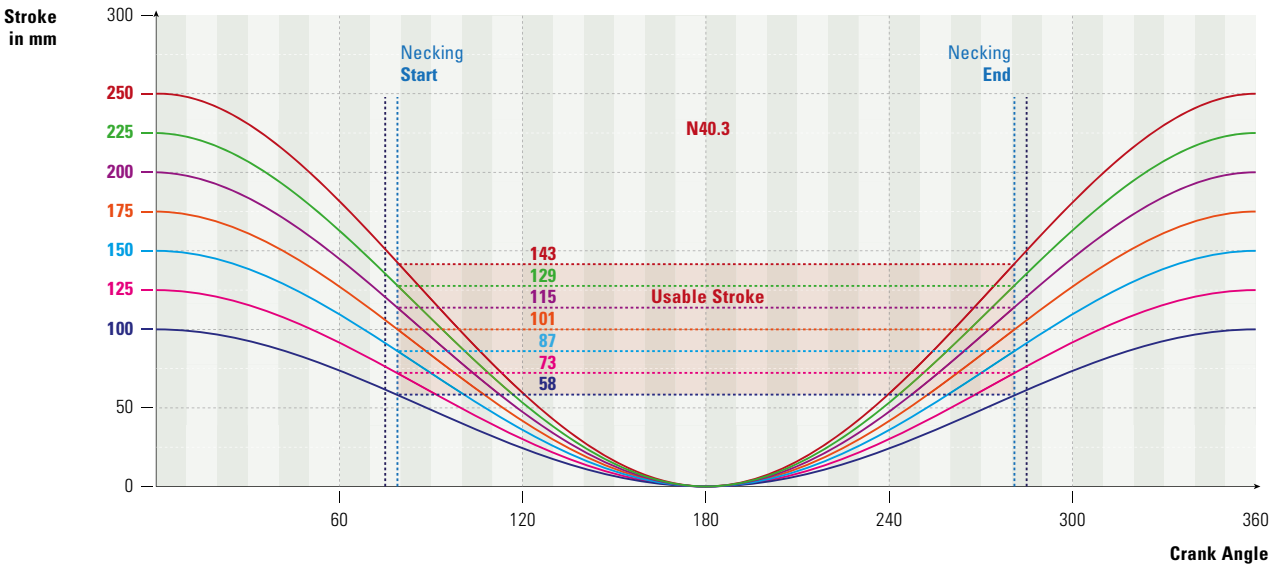
Short stroke for the forming of the upper neck of the can



Different lengths of the stroke can be chosen for shaping the can body

Stroke in mm	**Usable Stroke** in mm	**max. Speed** 1/min.
100	58	240
125	73	240
150	87	230
175	101	210
200	115	190
225	129	170
250	143	160

Different characteristic lines can be chosen to obtain the necessary working stroke.



Technology and overall concept

Besides rotation-symmetric necking processes, also asymmetric embossing processes of the cylinder wall of cans or bottles can be accomplished.

An automatic quality check of the finished can by a camera system is of course available as an option, a tightness check of the product in one of the work stations is under consideration.

Besides an extremely precise, fast and reliable mechanical machine base an advanced necking machine like the N40.3 requires much more: synchronized product handling including infeed and exit conveyors, the necking tools, the lightweight clamping chucks and also the entire safety concept with integrated protective housing. Altogether they form a well aligned concept.

The controls and the operating system with 2 touch panels allow an easy operation during the production process, as well as for engineering purposes.

1

2

3

1 *Tool plate with tools and clamping chucks*
2 *Easy tool exchange*
3 *Simple user guidance with touch panel*

Technical data
Characteristics
Operating range

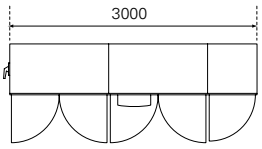
Stations:
40

Can diameter:
35–53 mm
45–74 mm

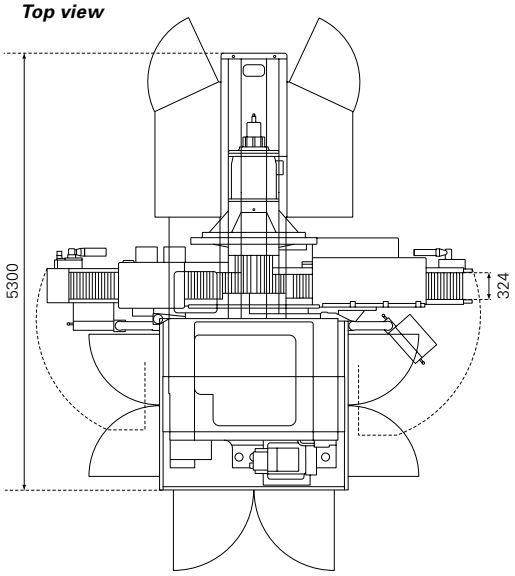
Trimmed can length:
95–260 mm

Longitudinal adjustment:
90–280 mm

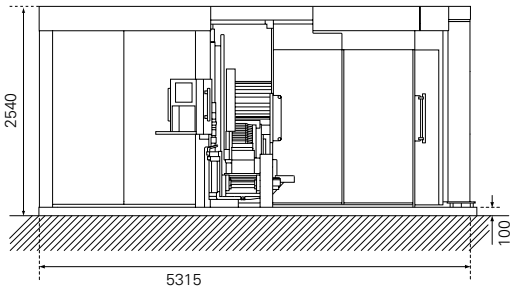
Weight:
20 000 kg without foundation plate



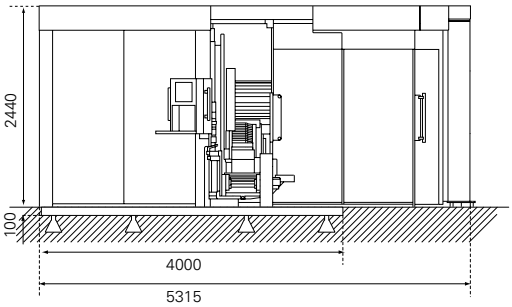
Top view



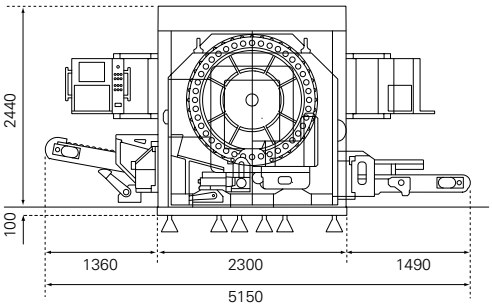
Side view *foundation plate on ground*



Side view *foundation plate in ground*



Front view



Information is subject to change.

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