157 'Candymoulder' with flexible moulds

Data sheet 157

157/004
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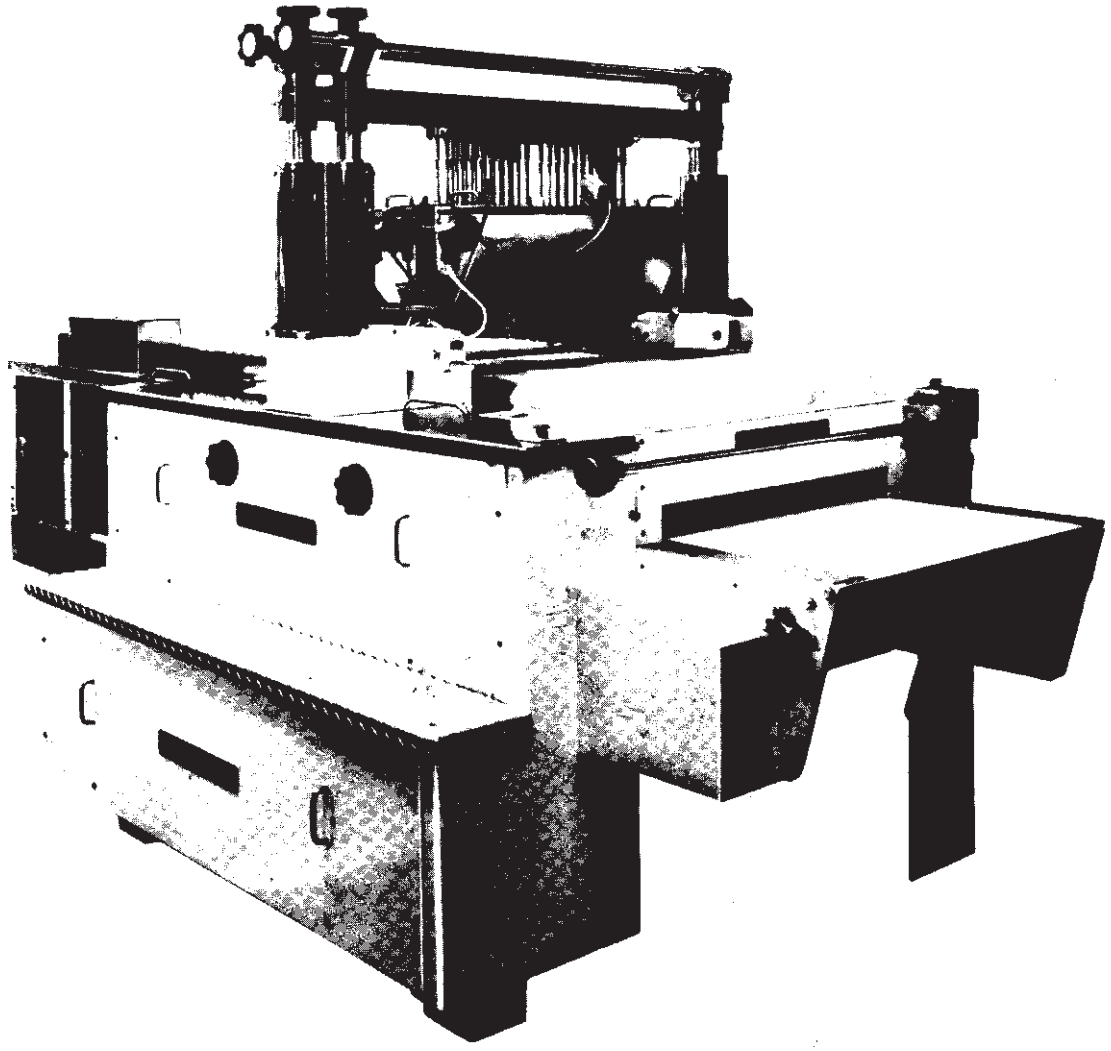
Application The 157 'Candymoulder' continuously produces moulded fondant creams, toffees or jellies.



157 'Candymoulder' with flexible moulds

Introduction

The 'Candymoulder' with flexible moulds is a continuous depositor for low boiled sweets including toffees, caramels, fudge, fondant creams and certain quick setting jellies.

When linked with other machinery such as the 137 'Crememaker' or 132 continuous Toffee Plant, the 157 'Candymoulder' forms part of an integrated production line from raw materials to finished sweets. The line requires the minimum of labour; one man can supervise two production lines. Of particular note, is the ability to link the 157 'Candymoulder' directly to an enrober. The sweets can be discharged from the machine lined up ready for enrobing and later packaging.

The 'Candymoulder' is available in a number of sizes, giving a choice of output dependent upon sweet shape.

A special version of the machine offers the possibility of centre filling.

A whole range of sweet shapes can be produced, in fact several shapes can be produced simultaneously. The simultaneous production of two or more colours and flavours is also possible.

Advantages

The depositing system offers several significant advantages. For toffee production it can be used for the manufacture of the highest quality toffees and caramels with large proportions of fat and milk. For fondant and jelly production, it does away with starch, making it a clean, hygienic, space-saving, rational method of manufacture.

Compared to starch production of fondant centres which are later enrobed, the machine offers a special advantage:

With starch production it can often be up to 24 hours before centres are available for enrobing. This means that both starch depositor and enrobing plant only run for four out of five days of the working week. With the 'Candymoulder' enrobed centres can be ready for packaging within one hour of starting the production line.

Depositing leads to accurate shapes and weights which gives good cost control and high efficiency from packing lines.

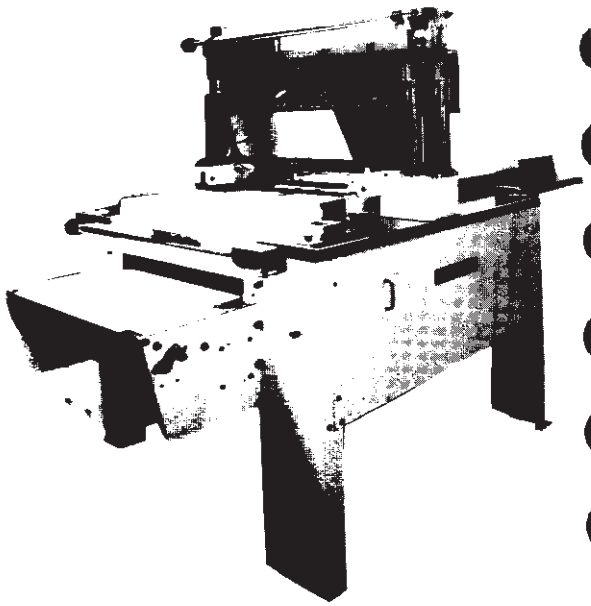
Very little scrap is produced by the depositor and the total line has a very high efficiency.

Description

The 157 'Candymoulder' has a moving depositing head with one or two depositing hoppers, dependent upon plant type, a covered insulated mould circuit with a refrigeration evaporation coil, an air circulating fan (or fans), a full set of moulds and an automatic ejection device onto a discharge conveyor. It is continuous and fully automatic in operation.

Depositing head

The depositing hoppers are made of stainless steel and have electric heating jackets designed in two halves and held in place by spring clips. Facilities for in-plant cleaning are provided or alternatively the hopper is easily removed for cleaning.



The base of the hopper, in which the pumps are housed, is electrically heated. A temperature indicator/controller, controls both the heated base and side jackets of the hopper, each of which have independent variable heat input controls. The control are duplicated for the two hoppers used on the centre filling plant.

The hopper is fitted with stainless steel pistons which work in copper cylinders and are designed to give a measured deposit to each individual mould. The weight of the deposit is easily changed by a single handwheel with an engraved scale.

A pneumatically operated device to lift the moulds at the deposit point is fitted to eliminate the tailing of the more viscous materials. A patented ball valve within the nozzle closes the pump chamber at the end of each stroke. This creates suction conditions within the chamber and results in accurate deposits.

The depositor is driven by a variable speed drive which allows the number of depositing strokes to be varied.

The depositor pumps can be in a single or double row according to the outputs required.

To avoid intermittent movement of the moulds the depositing hopper reciprocates in a horizontal plane and is synchronised with the continuous mould movement.

Moulds

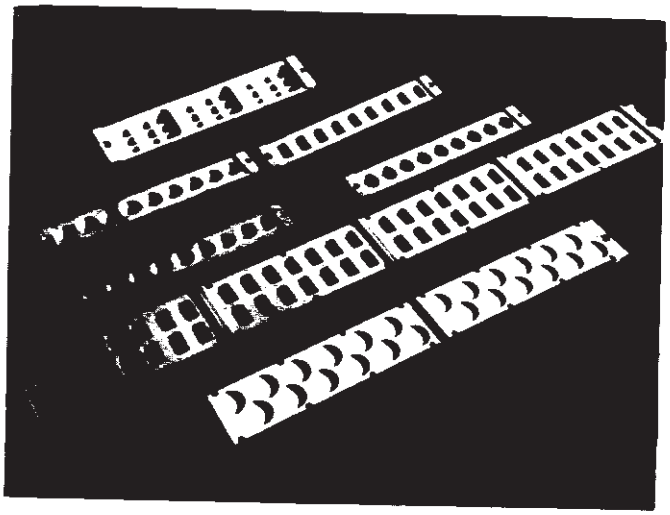
Two basic forms of flexible rubber moulds are used.

a) Standard moulds—individual moulds fixed directly to conveyor chain at 2 in (50.8 mm) pitches.
b) Carrier type—moulds fixed to a common carrier frame which is then fixed to the conveyor chain.

Up to 3 standard moulds are fitted side by side depending upon the output required.

The carrier type is mostly used for plants linked directly to enrobers, but sometimes also used to obtain the most efficient mould configuration which is determined by product shape.

The moulds are made of special hard wearing rubber with a high slip characteristic and generally no lubrication is required. Moulds can be designed to produce an assortment of shapes.



Mould conveyor circuit and cooling tunnel

After receiving the measured deposits, the moulds travel the length of the cooling tunnel and return upside down to the ejection point.

The mould conveyor circuit is insulated and is provided with a refrigeration evaporating coil. Refrigeration compressors are not included but can be supplied as extras. The fan circulates the air on both the outward and return run on the conveyor circuit.

The cooling tunnel is fitted with hinged and removable covers along its full length allowing complete access to the mould circuit.

Quick release spring studs fitted to the conveyor chains enable each mould to be released instantly. This makes it possible for a mould to be removed and replaced without interrupting production.

The main drive is by a D.C. variable speed drive housed within the depositor frames.

Automatic sweet ejection

The ejection stage is next to the depositing head. The mechanism, which is operated by compressed air, consists of pads which press the base of the flexible moulds and deform them making the products fall onto the discharge conveyor which runs underneath the ejection mechanism. The ejection head is linked to the depositing head and swings with the mould movement.

Discharge conveyor

A plastic coated conveyor band fitted underneath the mould circuit conveys the ejected sweets from the point of ejection to the end furthest away from the depositor, thus making the plant a 'straight through' production line. This discharge conveyor driven by a geared motor, extends beyond the end stand.

Tracking rollers are provided and the two ply plastic conveyor band is supported along its working length.

When the 'Candymoulder' is linked direct to an enrober, the discharge conveyor runs in the opposite direction between the depositing head sideframes. The moulding pattern is maintained on the discharge conveyor and is known as a 'regimented discharge' (RD).

Tracking device

An automatic tracking device is fitted to the discharge conveyor and is included in the type 950 wide plants. Types 250 and 600 plants are fitted with a manual tracking device with an automatic device as an option.

Electrical controls

All electrical controls and temperature indicating/control instruments are housed in a free standing floor mounted control console, which can be sited to suit the individual location.

Centre filling

The 157 'Candymoulder' for centre filling has two hoppers, one for the casing, the other for centre filling.

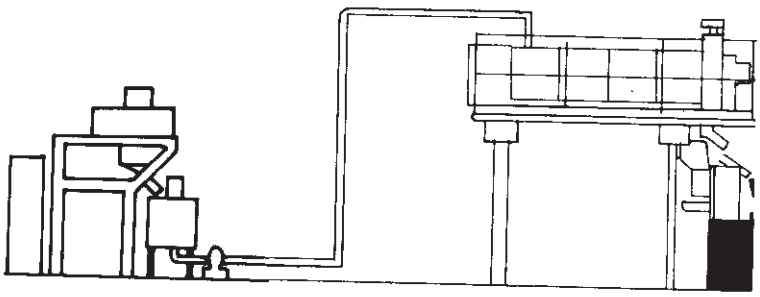
Special nozzle assemblies bring the two materials together to a concentric nozzle where they are deposited simultaneously.

The weight of centre and casing can be adjusted independently. The timing of the two depositing mechanisms can also be adjusted.

The cooler and ejector are the same as on the standard machine. A special version of this machine would permit direct feed to an enrober.

It is not possible to have a staggered row of impressions in the mould.

157 'Candymoulders' supplied without the centre-fill facilities can have these added at a later date if required.



148-AF8M/142 RT

132 CTP or 137FCP

Operation

For efficient continuous operation the 157 'Candymoulder' should be fed from a continuous source such as the 137 'Crememaker' or the 132 Continuous Toffee Plant. In this way the operation of the 157 'Candymoulder' is automatic and requires only occasional supervision.

Alternatively, the 157 'Candymoulder' can be fed by batch methods. Preferably, there should be an intermediate reservoir with continuous feed to the depositor hopper. In the case of toffee, this method of feeding can lead to variations in product colour and taste unless proper care is made to ensure that many small batches are used rather than a few large ones.

The prepared, coloured, flavoured product mass would be fed by chute or pipe into the depositor hopper. From here it is metered precisely into the mould impressions. The accuracy of depositing is high. The combination of the return pump stroke drawing product back into the nozzle and the hopper movement ensures that there are no problems of tailing.

The cooler uses refrigerated air to keep cooling times to a minimum.

Once the sweets have set they are ejected from the moulds. The surface characteristics of the rubber ensure that under proper running conditions there are no problems of sweets sticking in the moulds. Under normal conditions no lubrication is required.

For toffee production, the discharge conveyor should preferably be linked to elevators and conveyors to feed the sweets directly to wrapping machines.

Variations

The 157 'Candymoulder' configuration is varied to produce the most economical arrangement to suit a particular product shape or shapes. The depositing unit pumps are arranged to deposit into a single, double or staggered row of mould cavities to suit the most economical mould design. (The staggered row pattern cannot be used for centre filling).
When linked directly to an enrober, the 'regimented discharge' (RD) form of discharge conveyor is used and the mould cavities spacings are designed to suit the subsequent enrobing operation. Normally the carrier type mould is used with special raised feet, to maintain the gap between the mould and the discharge band to ensure products remain in formation when demoulded.

The depositing unit can be supplied with a double depositing head, each head fitted with independent depositing systems and separately heated hoppers. This arrangement is suitable for high outputs of small confectionery pieces, or for 2 layer depositing.

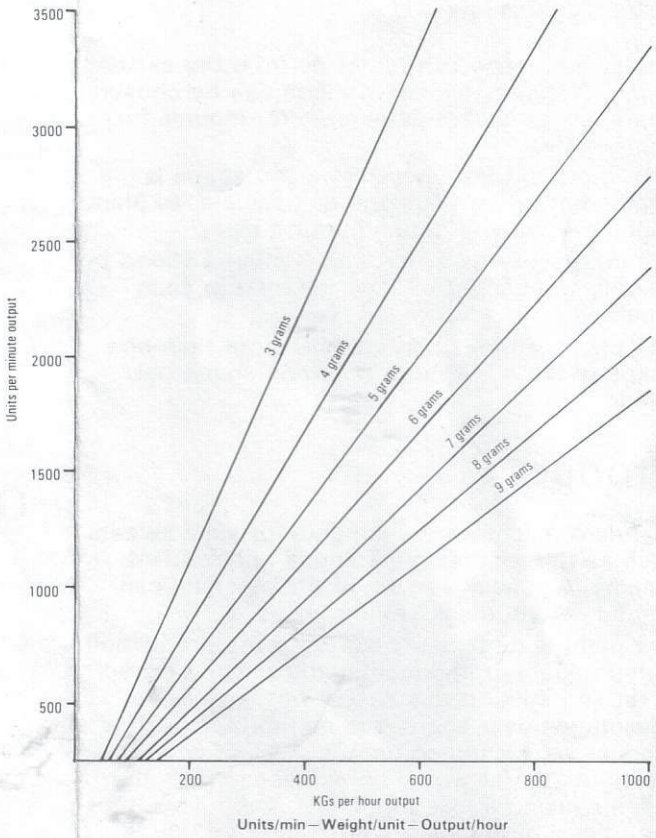
Output

Output depends upon unit weight and shape, and is normally expressed in units per minute, as shown in the data chart and output graph.

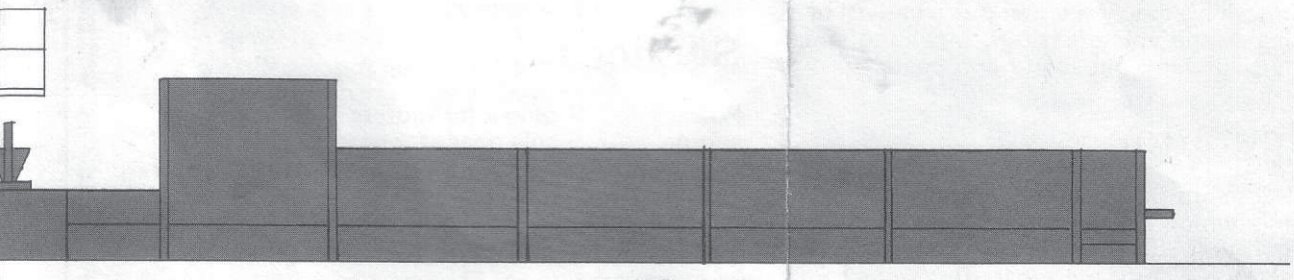
Output also depends upon the cooling time required, and the data chart is based upon a typical 10 minute cooling cycle.

Cooling times depend upon the type of product and recipe, and also upon the proportions of the product shape, (e.g. a thin toffee unit will cool more quickly than a thick one. A low fat recipe can solidify more quickly than a high fat recipe).

The data sheet is to be used as a general guide only.



OUTPUT GRAPH



157 CDFL

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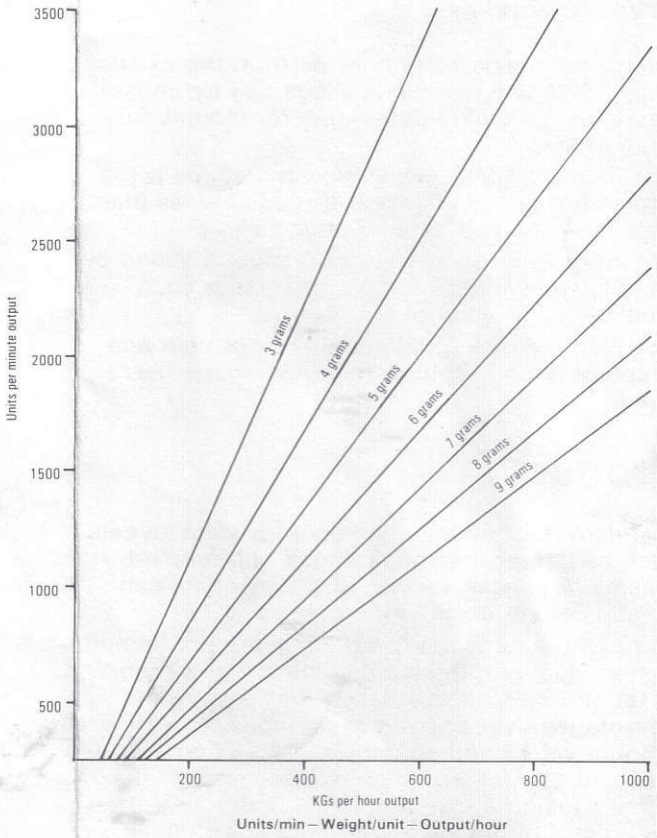
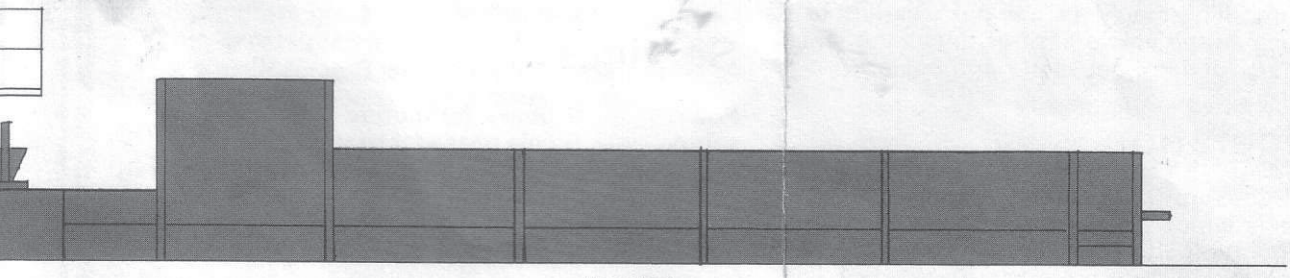


OUTPUT GRAPH



157 CDFL

If the product can be cooled and safely demoulded in, say, 8 minutes, then the cooler can be reduced in length to 8/10ths of that shown on the data chart.

e.g. A size 10 cooler would be reduced to size 8. Alternatively the machine could cycle faster to give an increased output. Note that there are limitations on pump speed not detailed here.

Outputs of 157 'Candymoulder' with carrier type moulds (CTM) cannot be charted because there are too many variables. These permit specifications of the plant to suit the most economic output for a given size, shape and type of product.

A 157CDFL/950/375/CTM282D/C15R26/RD will produce 1000 kg per hour of fondant/creme units at approx. 6.5 grams each, 2500 units per minute, 8.5 minutes cooling at 45 double pump strokes per minute, given that the shape and recipe allows for demoulding in the time allowed.

Sweet shape

The sweet shape can either be from the existing range of shapes or a new shape can be chosen. There are special requirements for moulds for centre-filling.

It is important that sweet size and shape is decided at as early a stage as possible, as plant specifications will depend upon this.

Within reason the sweet shape can be varied by altering the weight of sugar deposit to each mould.

The plant can be supplied with more than one shape of mould or more than one shape per mould.

Products

Standard machines are suitable for solid sweets such as toffees, caramels, fudge and fondant creams. A special version of the machine can handle certain quick setting jellies.

The plant is particularly suited to the production of high quality toffee containing a high proportion of fat and milk. In this case it has significant advantages over alternative methods. If such a product were handled upon a cut and wrap machine, the fat would be expressed from the toffee causing a loss of quality, and a very short shelf life. Cutting such a product upon tables leads to poor shapes and handling problems and is labour intensive. Depositing gives precise regular shapes with no expressing of the fat.

The centre filling machines can put a variety of centres inside the above casings, including jam, jelly, toffee, fondant, chocolate and paste.

Refrigeration

The unit does not include the compressors or condensers which can be supplied if required. The evaporation coil is in four sections and controlled by a 3 term thermostat/controller which automatically switches in or out coil sections to suit the cooling load. The unit is pre-wired and complete with controlling valves.

Machine designation

The basic machine designation for a 'Candymoulder' with flexible moulds is 157CDFL—To this are added various suffices which denote the exact machine specification.

Group a — Plant sizes 250, 600 and 950. For standard type individual moulds plant size 250 has one row of moulds, 600 has two rows and 950 has three. A suffix F to this group denotes centre filling.

Group b — Mould pitch—The standard 2 in pitch is given as 200. A 2.5 in pitch is denoted as 250, etc.

Group c — Mould configuration—Standard type (STM) and carrier type (CTM) are followed by three figures. The first two give the number of cavities across and the right hand figure the number of rows per mould. Suffix S or D denotes single or double row deposit. When a staggered pattern of cavities is used the letters STG are added.

Group d — Cooler—C followed by a figure denoting the number of 1.2 metre long sections including the demoulding section. This is followed by R and a figure giving the refrigeration tonnage. The final letters RD are added when regimented discharge is required.

Example 1 157CDFL/600F/200/STM201S/C10R14/RD. This is a centre filling depositor with 2 in pitch standard type moulds, with 20 cavities in a single row, single row deposit, and a 10 section cooler with 14 tons of refrigeration and regimented discharge.

Optional extras

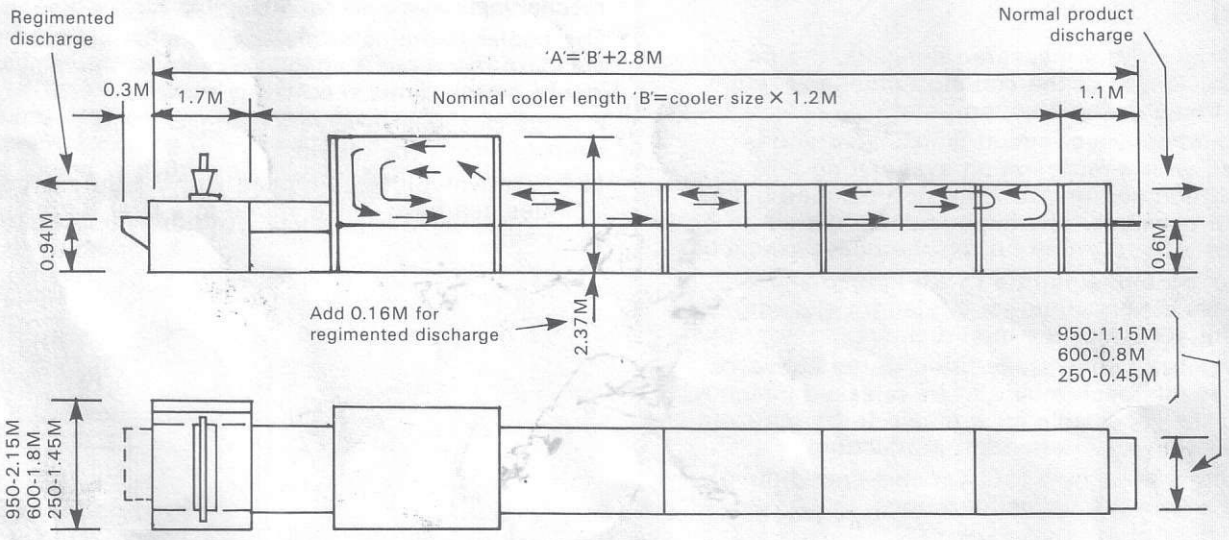
1. A spare set of moulds.
2. A spare hopper complete with depositing pumps and pistons.
3. A stand with hot plate and heating jackets. The stand has its own heating controls and is designed to take the hopper and keep it warmed ready for use.
4. An automatic tracking device for the discharge band. (Fitted as standard to 950 plant.)
5. Oil heated hopper. The hopper side jackets can be made suitable for circulating heated oil instead of the standard electric heating. An oil heating and circulating unit can be supplied.
6. Refrigeration compressor/condensor.

Services

Power supply	3 phase for motors Single phase for heaters	} see data chart
Compressed air	0.12 cu. metre per hour (4 cu. ft.) at 6 kg per sq. cm. (90 psi).	

Data chart

	SOFT CANDY—10 MINUTES COOLING									
	Plant size	**250**			**600**			**950**		
	Moulds	**091**	**101**	**111**	**181**	**201**	**221**	**271**	**301**	**331**
Cooler size	**Max. deposits (grams)**	**9.5**	**8**	**6**	**9.5**	**8**	**6**	**9.5**	**8**	**6**
8	Units/min.	351	390	429	702	780	858	1053	1170	1287
	Pump Cycles/min.	←				39 single				→
	No. of moulds	474	474	474	948	948	948	1422	1422	1422
	Motors-total (kW)									
	Heaters (kW)	1.5	1.5	1.5	2.5	2.5	2.5	4.0	4.0	4.0
9	Units/min.	387	430	473	774	860	946	1161	1290	1419
	Pump Cycles/min.	←				43 single				→
	No. of Moulds	523	523	523	1046	1046	1046	1569	1569	1569
	Motors-total (kW)									
	Heaters (kW)	1.5	1.5	1.5	2.5	2.5	2.5	4.0	4.0	4.0
10	Units/min.	423	470	517	846	940	1034	1269	1410	1551
	Pump Cycles/min.	←				47 single				→
	No. of moulds	572	572	572	1144	1144	1144	1716	1716	1716
	Motors-total (kW)									
	Heaters (kW)	1.5	1.5	1.5	2.5	2.5	2.5	4.0	4.0	4.0
11	Units/min.	468	520	572	936	1040	1144	1404	1560	1716
	Pump cycles/min.	←				52 single				→
	No. of moulds	621	621	621	1242	1242	1242	1863	1863	1863
	Motors-total (kW0									
	Heaters (kW)	1.5	1.5	1.5	2.5	2.5	2.5	4.0	4.0	4.0
12	Units/min.	513	570	627	1026	1140	1254	1539	1710	1881
	Pump cycles/min.	←				57 single				→
	No. of moulds	664	664	664	1328	1328	1328	1992	1992	1992
	Motors-total (kW)									
	Heaters (kW)	1.5	1.5	1.5	2.5	2.5	2.5	4.0	4.0	4.0
13	Units/min.	549	610	671	109	1220	1342	1647	1830	2013
	Pump cycles/min.	←				61 single				→
	No. of moulds	713	713	713	1426	1426	1426	2139	2139	2139
	Motors-total (kW)									
	Heaters (kW)	1.5	1.5	1.5	2.5	2.5	2.5	4.0	4.0	4.0



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