



caleva

OPTIONS

PRODUCTION

CALEVA

50 KG PER HOUR EXTRUSION AND SPHERONIZATION SYSTEM

Enhance the utility of your equipment by considering these options

OPTIONS AND COMPANION EQUIPMENT



OPTIONS FOR THE EXTRUDER 35 SCREEN EXTRUDER

When supplied all Caleva machines are fully operational and there are no required options. Some options are available to enhance the utility of the Extruder 35. These are shown below.

✓ ADDITIONAL SCREENS

Screens for the bench-top Extruder 35 and production/pilot scale Extruder 35 are interchangeable (full height screens only). Screens are available in different configurations.

○ Full height screens

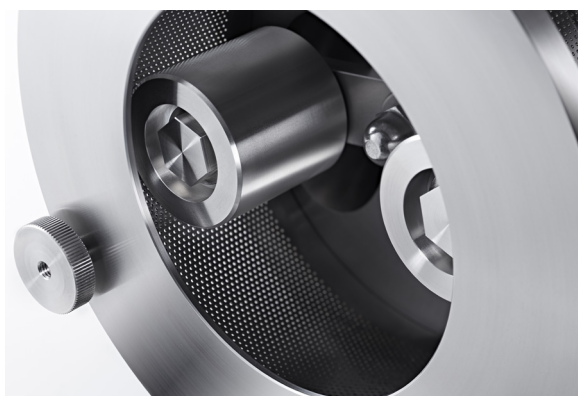
Full height screens (standard screens) with very small hole sizes (0.5 mm–0.7 mm etc.) can contain more than 19,000 holes that are individually drilled. Caleva drill rather than punched or laser cut holes as the quality of the individual

hole is improved. The quality and consistency of the holes is important to ensure a regular extrudate to obtain the best possible consistency and highest usable yield in pellet production. Punched or laser cut screens may lead to inferior and variable hole shapes and can lead to less consistent extrudate which can affect usable yield. A small % reduction in usable yield (of say, 1 or 2 %) can mean a significant total cost over the life time use of a production extruder



○ Standard screens available

A range of screens are available with holes from 0.5 mm to 2 mm diameter. Screen hole depths are generally 1 mm deep but some screens can be manufactured with 2 mm deep holes if a higher density is required.



○ Different hole pitch (% open area)

Screens are offered as standard capacity. Some hole sizes are offered as high capacity screens (greater open area). High capacity screens have more holes per unit area and thus are able to increase the hourly throughput. However, high-capacity screens are not as physically robust as standard screens. A low capacity screen is available for particularly tough products that offer a greater level of strength.

OPTIONS FOR THE 50 KG PER HOUR EXTRUSION AND SPHERONIZATION SYSTEM

 **CONSUMABLE ITEMS** **FDA approved polymer bushes for extruder rollers**

Under normal use the rollers (polymer bushes) holding the extrusion rollers in place would be expected to last for some years however they can be damaged over time from wear or from contact with very aggressive chemicals. These bushes are easy to replace and should be considered as consumable.

 **Screens**

In line with all screen extruders, whilst screens may last for many years, due to the large forces the experience extrusion screens are normally considered as consumable in the long term.



OPTIONS FOR THE PRODUCTION SPHERONIZER 380

When supplied all Caleva machines are fully operational and there are no required options. However, some options are available to enhance the utility of the spheronizer. These are shown below.

✓ **ADDITIONAL SPHERONIZER DISCS WITH DIFFERENT PATTERNS**

○ **Standard cross hatch pitches are:**

Large: 6 mm x 6 mm x 2 mm deep

Standard: 3 mm x 3 mm x 1 mm deep

Fine: 2 mm x 2 mm x 0.67 mm deep

Extra Fine: 1 mm x 1 mm x 0.33 mm deep

The cross hatch serrations are described by parallel cuts with a 90° included angle to a depth equal to 1/3rd of the pitch. Tolerance on pitch is ± 0.010 mm. Tolerance on depth of cut is ± 0.20 mm.

○ **Radial groove disc**

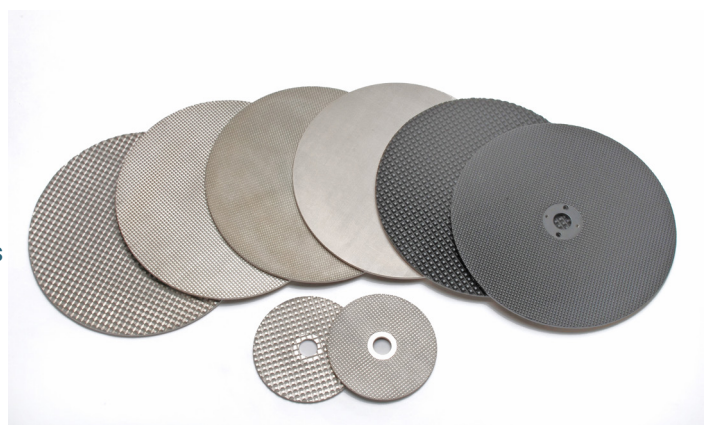
Radial patterned disc are available if required. A radial groove disc provides gentler processing and is somewhat easier to clean in case of products that stick to the crosshatch discs. Generally not required for most standard applications and can be purchased later if needed for special products.

✓ **NON STICK COATING ON THE DISCS**

A US-FDA food use approved PTFE/FEP coating on the discs can be provided if it is foreseen that sticky products might be used at some time in the future. For most products this is not essential but in Research & Development having the disc coated may allow more flexibility in use. If discs are not coated at time of initial purchase then additional discs can be purchased later. Subsequent coating of the discs is possible but not recommended.

✓ **NON STICK COATING ON THE DRUM**

Specification as for disc above. It is sometimes recommended to have drums coated as well as the discs.



OPTIONS FOR THE 50 KG PER HOUR EXTRUSION AND SPHERONIZATION SYSTEM

OPTIONS RELEVANT TO BOTH PARTS OF THE SPHERONIZATION KIT COMPANION EQUIPMENT

✓ SPHERONIZATION 500

The spheronizer 500 is designed to work with the Extruder 35 and forms a part of the 100 kg per hour spheronization kit but the suitability depends on the production requirement. If more flexibility is required then its possible also to use the spheronizer 500 that will significantly increase the possible output.

The Caleva Spheronizer 500 is in many ways similar to the Spheronizer 380. The main difference being the larger bowl size which will offer you the opportunity to achieve higher levels of production. The best decision needs some discussion about your produce and your plans for the future. Please talk to us for additional advice.



✓ PILOT SCALE FLOOR STANDING GEAR EXTRUDER 40

A floor standing pilot scale gear type extruder designed for pilot scale, process development and small batch production work. You can work with a wide range of batch sizes using a single apparatus. Throughput of about 60 kg per hour has been achieved with some products.

This extruder is particularly suitable if your product requires a higher extrusion density and may be susceptible to excessive temperature rise.



✓ CALEVA MIXER TORQUE RHEOMETER

As part of any formulation development program the ability to quantitatively measure the consistency of the granulation produced for extrusion and spheronization will offer significant advantages. Some potential advantages already demonstrated using the Caleva Mixer Torque Rheometer can be seen from several life case studies:-



VALIDATION AND TRAINING

✓ INSTALLATION AND TRAINING AT THE CUSTOMER SITE

- **Training within the UK**
Including one day installation and training and two days travelling.
- **Training in any other European country**
Including one day installation and training and two days travelling. All travel and subsistence costs are included in the cost
- **Training outside Europe**
Including one day installation and training and up to four days travelling depending on the location.

Includes installation, commissioning and training at customer site of up to one day, but does not include IQ/OQ which is separately chargeable. The customer will assist with local transport for the Caleva technician if required. The customer will supply the consumable products required. Trained electricians will be provided by the customer if required (generally not required). Installation does not include any alteration to the customer site and does not include installation or connection of any electrical (or other) services.

The customer will be responsible for the unpacking and location of the machines at the use site. This is not included in any quotation or offer.

- **If more than one item is purchased then training can be done together for other equipment with considerable savings in cost. Contact us for details.**

OPTIONS FOR THE 50 KG PER HOUR EXTRUSION AND SPHERONIZATION SYSTEM

✓ FACTORY ACCEPTANCE TEST AT THE CALEVA SITE

We make our own quality check before the extruder is shipped (a copy is supplied to the customer) and thus a separate FAT is not normally necessary but can be completed with the customer if required. The customer will be responsible for all his or her expenses incurred in getting to and from the Caleva site.

✓ CUSTOMER TRAINING AT THE CALEVA SITE (OVERSEAS CUSTOMERS)

We Training is recommended if extrusion and spheronization is a relatively new technique to the company or if new staff would benefit from it. Contact us for details.

Customers from outside the UK will be collected at any London main airport and transferred to our location, accommodation and all meals for one trainee whilst with us in the UK. Transport to and from the Caleva site is included. Any extras (such as phone calls etc.) at hotel are for guest's account. One night bed & breakfast in London hotel before return flight to home country can be included if requested. Up to two days training (as required) at the Caleva site on customer's own equipment prior to shipment.

Transport to and from the customer's own country to London main airport is not included and is for the customer's account.

If more than one item is purchased then training can be done together with considerable savings in cost. Contact us for details.



OPTIONS FOR THE 50 KG PER HOUR EXTRUSION AND SPHERONIZATION SYSTEM

VALIDATION AND IQ/OQ DOCUMENTATION PACKAGE

The Recommended if required for regulatory purposes.

At Caleva site

The IQ/OQ package can be completed at the Caleva site by us. The customer can attend if he or she wished to do so at their own cost. An additional set of blank documents will be provided to allow the customer to re-do the IQ/OQ in their own facility.

At customer site

IQ/OQ and installation completed as far as possible at the customer site at the same time as installation and training (training will be charged separately). The cost shown is an additional cost for the IQ/OQ in addition to the costs for installation and training.

Note: there may be additional country-specific charges depending on location. Contact us for details.

MATERIAL CERTIFICATES (INCLUDED IN IQ/OQ)

In line with current standards Caleva does not automatically supply copies of material certificates for product contact parts. Caleva can provide free of charge a certificate naming the product contact parts and confirming that we or our suppliers can provide full traceability to original certificates if this is requested.

If certified copies of material certificates are required then these can be provided at an additional cost.

TALK TO US

Please call us without obligation

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Cert No. 1503
ISO 9001