DESCRIPTION

The DSL G model is **volumetric screw feeder.** It is the most universal solution to the problem of feeding both well-flowing, fine-grained bulk materials and dificult-flowing with tendency to rat-holing and brinding. The device is capable to dose in a continous or batch mode.

The device consist of a main trough, hopper, and precise scale. Material flow is generated by feeding tool– screw. Depending on the product characteristics, it is a screw with center rod or a spiral. The product weigh loss is constantly measured during operation. Thanks to this operation, it is possible to control the feed rate (screw's rotational velocity) using the PID regulator. The flow of material is supported by horizontal agitator powered by separate electric motor that operates with constant rotational velocity.

Elements that come into contact with material are made of 1.4301 (AISI304) or 1.4404 (AISI316L) steel, while other elements are powder-painted. Internal surfaces and welds may be additionaly ground for customers from food and pharmaceutical industries.

DSL35 FEED RATES

- Minimum feed rate calculated for 10 (rpm)
- Maximum feed rate calculated for 250 (rpm)
- Turndown ratio (min:max) 1:12
- Maximum feed error after calibration: 2-3% of set value

SCREW [mm]	FEED RATE (min -max) [l/h
Φ18x9	0,5-30
Φ18x18	1-65
Φ25x12,5	1,5-70
Φ25x25	3,5-160
Φ35x17,5	7-220
Φ35x35	15-450

DSL75 FEED RATES

- Minimum feed rate calculated for 10 (rpm)
- Maximum feed rate calculated for 250 (rpm)
- Turndown ratio (min:max) 1:12
- Maximum feed error after calibration:

SCREW [mm]	FEED RATE (min-max) [l/h
Φ35x17,5	7-220
Φ35x35	15-450
Φ44x22	14-450
Φ44x44	30-900
Φ57x28,5	25-1000
Φ57x57	50-2000
Φ74x37	70-2000
Φ74x74	150-5000

DSL150 FEED RATES

- Minimum feed rate calculated for 10 (rpm)
- Maximum feed rate calculated for 250(rpm)
- Turndown ratio (min:max) 1:12
- Maximum feed error after calibration:

SCREW [mm]	FEED RATE (min-max) [l/h
Φ74x37	70-2000
Φ74x74	150-5000
Φ89x44,5	120-3500
Φ89x89	250-7500
Φ127x 63,5	480-9000
Φ127x127	900-18000
Φ150x75	750-15000
Φ150x150	1500-30000

TROUGHS & HOPPERS

- For each trough it is possible to make a hopper with geometry facilitating material flow.

MODEL	TROUGH CAPACITY [l]	OPTIONAL HOPPER CAPACITY [l]
DSL35V	12,5	30 / 40 / 65
DSL75V	40	100 / 200 / 300
DSL150V	60	400 / 600 / 1200 / 1800 / 2400

MOTOR

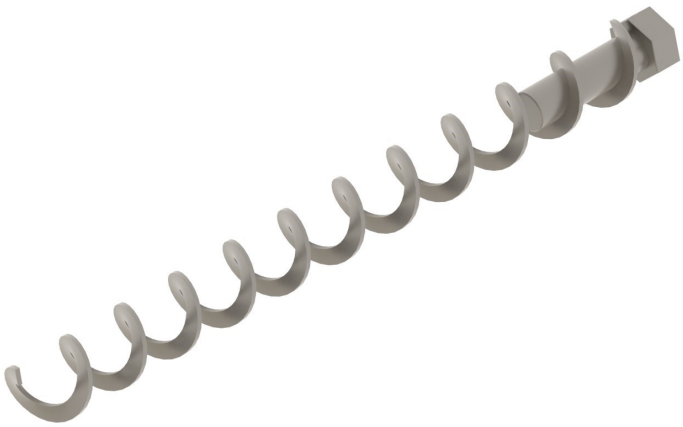
- **3x400 [V]** SEW AC motor with gearbox, IP65 protection class
- Optionally possible to deliver a **3x500 [V]** AC motor or aseptic.
- Optionally possible to equip with a **frequency inverter**

OPTIONS

- Feeder equipped with a hopper
- Hygienic execution, continuous welds inside and outside of the construction, internal surfaces and welds ground(Ra<0,8µm)
- Vertical outlet pipe
- Shut-off valve for batch dosing material stream
- For Ex-zones
- Outlet insulation
- Hopper with round cross-section with additional vertical agitator (for difficult-flowing and viscous materials)

FEEDING TOOL TYPES

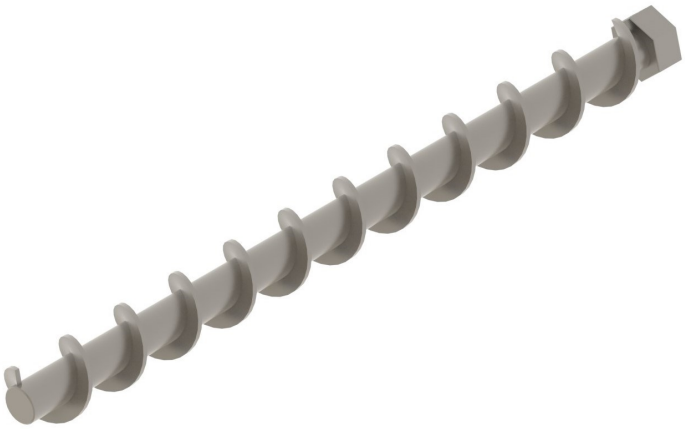
Spiral screw - the most often used solution preferred for difficult-flowing, cohesive, and adhesive material. It is characterised by small surface of contact with product, which prevents depositing of the material on feeding tool.



Used for:

- difficult-flowing material (e.g. flour, soda, granulates)
- small and viscous material and material that can collect on leading pin (e.g. cocoa, titanium white)
- material consisting of big segments that may collect and cause a great friction between leading pin and surface of through pipe
- material that requires much better hygienic conditions (e.g. food material)

Full screw (with center rod) - solution preferred for well-flowing material with high bulk density (above 1,200 [kg/m3]) and highly abrasive material. Center rod reduces the risk of uncontrollable flow occurrence. Additionally, it is possible to apply **bearings on both ends** of feeding tool.



Used for:

- well-flowing and very loose material (e.g. salt, sugar)
- material that easily aerates with tendency for uncontrollable flow (e.g. carbonates, gypsum)
- highly abrasive material (e.g. quartz sand)
- brittle material (e.g. flakes, soluble coffee)

BULK MATERIAL

Bulk material is a granular or brittle product in a state that enables to transport it mechanically. The most important properties of bulk material are bulk density (expressed e.g. in [kg/m3]), tipping angle (angle between forming and basis of cone created during free infilling of bulk material), granulation fraction, shape of granules, cohesion, and adhesion. In addition, bulk material can behave like a fluid, i.e. it can flow if the activation energy is exceeded. However, product segments do not change their shape during transport and in fact are preserved. All properties contribute to one, exceptionally important parameter - **material looseness**.

Bulk material can be classified as:

- well-flowing product (e.g. salt, corn, sugar)
- medium-flowing product (e.g. flour, soda)
- products that easily aerates with tendency for uncontrollable flow (e.g. carbonates, fly ash, gypsum)
- fluidizable product (e.g. cocoa)
- cohesive (compact) product (e.g. titanium white, stearates)
- adhesive (sticky) product (e.g. soot, pigments)
- abrasive product (e.g. quartz sand, silicon carbide)
- compressible product (e.g. chalk)
- brittle product (e.g. flakes, soluble coffee)

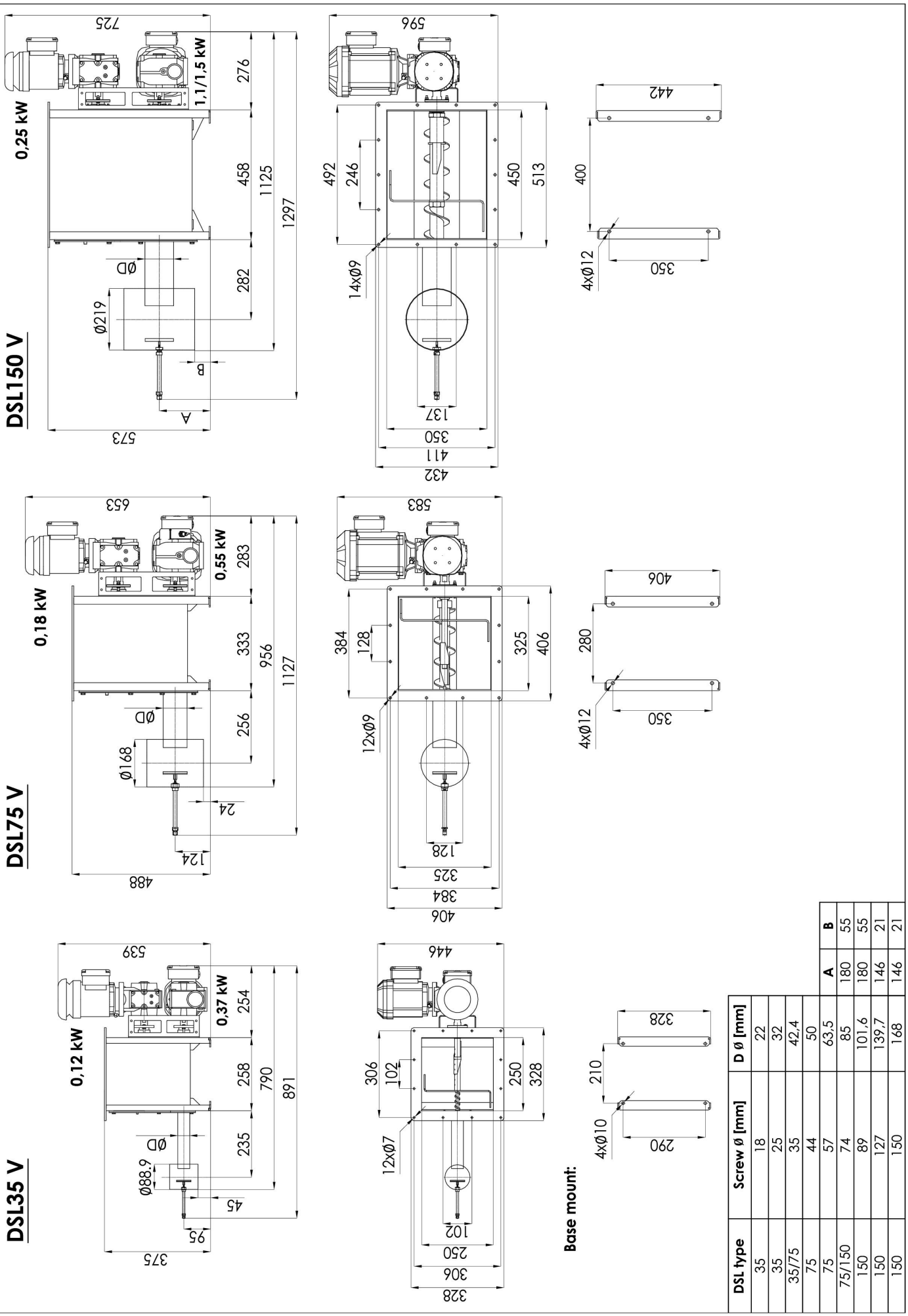
VOLUMETRIC OR GRAVIMETRIC SCREW FEEDER?

Volumetric feeders control flow by measuring a constant volumetric amount in time using the change of feeding tool velocity. In case of screw feeders, it is the rotational velocity of the full screw with center rod or spiral screw.

Gravimetric feeders are devices that can measure a weighed amount of material in time. Thanks to a feedback in the form of a scale, the controller receives a precise information on the fed amount of material. Gravimetric feeder is able to appropriately control the material feed regardless of change of bulk density or other parameters of a product.

Thanks to the application of modern control systems, the feeder operating in a batching mode will not only divide feeding into two stages: coarse feeding (e.g. 90% of a batch, material feed with full velocity) and precise feeding (e.g. last 10% of a batch, material feed with velocity equal to 30% of full velocity), but also will take the results of previous weighing results in next batches and will disable feeding appropriately earlier. The use of constant adjustment algorithms is related to application of PID regulators and real-time control of material feed that aim to achieve appropriate flow.

DIMENSIONS



DSL type	Screw Ø [mm]	D Ø [mm]	A	B
35	18	22	180	55
35	25	32	180	55
35/75	35	42,4	180	55
75	44	50	180	55
75	57	63,5	180	55
75/150	74	85	180	55
150	89	101,6	180	55
150	127	139,7	146	21
150	150	168	146	21