VOLUMETRIC FEEDERS

DSL 35/75/150 V



DESCRIPTION

The DSL V series are volumetric screw feeders – a versatile and highly economical solution for feeding bulk materials of varying characteristics and particle sizes at a set flow rate.

Design and operation. The feeder consists of a main trough and a metering element – a screw with core shaft or a spiral, selected to suit the material properties. Capacity is adjusted by changing the speed of the metering element, while even filling of the trough is assisted by a horizontal agitator driven by a separate motor at constant speed. As a result, the feeder handles both free-flowing and poorly flowing materials.

Design. Entire structure in 1.4301 (AISI 304) or optionally 1.4404 (AISI 316L) stainless steel. External and internal surfaces electropolished as standard, continuous internal welds. Hygienic design available – surfaces and welds ground (Ra < 0.8 µm).

DSL V series models can be ordered with hoppers of various capacities – from 30 to 2400 l.

VOLUMETRIC CAPACITY

DSL35V

- Minimum capacity calculated at 10 rpm
- Maximum capacity calculated at 250 rpm
- Turndown ratio (min:max): 1:12
- Maximum dosing error after calibration: ±(2–4) % of setpoint

METERING ELEMENT · V (min – max) [l/h]

Metering el.	V [l/h]
Ø18×9	0,5–30
Ø18×18	1–65
Ø25×12,5	1,5–70
Ø25×25	3,5–160
Ø35×17,5	7–220
Ø35×35	15–450

DSL75V

- Minimum capacity calculated at 10 rpm
- Maximum capacity calculated at 250 rpm
- Turndown ratio (min:max): 1:12
- Maximum dosing error after calibration: ±(2–4) % of setpoint

METERING ELEMENT · V (min – max) [l/h]

Metering el.	V [l/h]
Ø35×17,5	7–220
Ø35×35	15–450
Ø44×22	14–450
Ø44×44	30–900
Ø57×28,5	25–1000
Ø57×57	50–2000
Ø74×37	70–2000
Ø74×74	150–5000

DSL150V

- Minimum capacity calculated at 10 rpm
- Maximum capacity calculated at 200 rpm
- Turndown ratio (min:max): 1:12
- Maximum dosing error after calibration: ±(2–4) % of setpoint

METERING ELEMENT · V (min – max) [l/h]

Metering el.	V [l/h]
Ø74×37	70–2000
Ø74×74	150–5000
Ø89×44,5	120–3500
Ø89×89	250–7500
Ø127×63,5	480–9000
Ø127×127	900–18000
Ø150×75	750–15000
Ø150×150	1500–30000

Drive system.

- 3 × 400 V AC motor with SEW worm gearbox
- Optional 3 × 500 V AC drive or aseptic version
- Optional frequency inverter integrated with the metering element gearbox

Additional options.

* Hopper geometry promoting material flow
* Hygienic design: continuous welds inside and outside, internal surfaces and welds ground (Ra < 0.8 µm)
* Vertical outlet pipe
* Material cut-off valve for batch dosing
* Ex version for hazardous areas
* Round hopper with additional vertical agitator (for poorly flowing, sticky materials)

HOPPERS AND TROUGHS

A hopper with flow-promoting geometry is available for each trough.

Model	Trough cap. [l]	Total cap. with optional hopper [l]
DSL35V	12,5	30 / 40 / 65
DSL75V	40	100 / 200 / 300
DSL150V	60	400 / 600 / 1200 / 1800 / 2400

TYPES OF METERING ELEMENTS

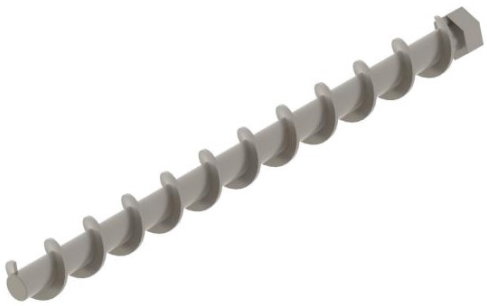


SPIRAL

The most commonly used solution, preferred for poorly flowing, cohesive and adhesive materials. The small product contact area prevents material build-up on the metering element.

SUITABLE FOR MATERIALS THAT ARE

- poorly flowing (e.g. flour, soda ash, granules)
- fine and sticky, liable to build up on the core shaft (e.g. cocoa, titanium dioxide)
- coarse, causing high friction between core shaft and feed tube
- subject to stricter hygiene requirements (e.g. food products)



SOLID-FLIGHT SCREW

Preferred for free-flowing materials with high bulk density (over 1200 kg/m^3) and highly abrasive materials. The core shaft reduces the risk of flushing; the metering element can be supported by bearings at both ends.

SUITABLE FOR MATERIALS THAT ARE

- free-flowing and very free-flowing (e.g. salt, sugar)
- easily aerated, prone to flushing (e.g. carbonates, gypsum)
- highly abrasive (e.g. quartz sand)
- friable (e.g. flakes, instant coffee)

BULK MATERIALS

A bulk material is a granular or friable product in a state that allows it to be conveyed as a flow. Its key properties are bulk density, angle of repose, particle size fraction, particle shape, cohesion and adhesion. Bulk materials can behave like fluids – flowing once the activation energy is exceeded – while the product particles do not change shape during conveying. Together, these properties determine one very important parameter: the flowability of the material.

A BULK MATERIAL MAY BE:

- free-flowing (e.g. salt, maize, sugar)
- moderately free-flowing (e.g. flour, soda ash)
- easily aerated, prone to flushing (e.g. carbonates, fly ash, gypsum)
- fluidisable (e.g. cocoa)
- cohesive (e.g. titanium dioxide, stearates)
- adhesive – sticky (e.g. carbon black, pigments)
- abrasive (e.g. quartz sand, silicon carbide)
- compressible (e.g. chalk)
- friable (e.g. flakes, instant coffee)

VOLUMETRIC OR GRAVIMETRIC FEEDER?

Volumetric feeders deliver a constant volume of material per unit of time, and capacity is adjusted by changing the speed of the metering element. In screw feeders, this is the speed of the screw with core shaft or the spiral.

Gravimetric feeders deliver a defined mass of material per unit of time. Thanks to weighing feedback, the controller knows exactly how much material has been fed and controls dosing regardless of changes in product bulk density.

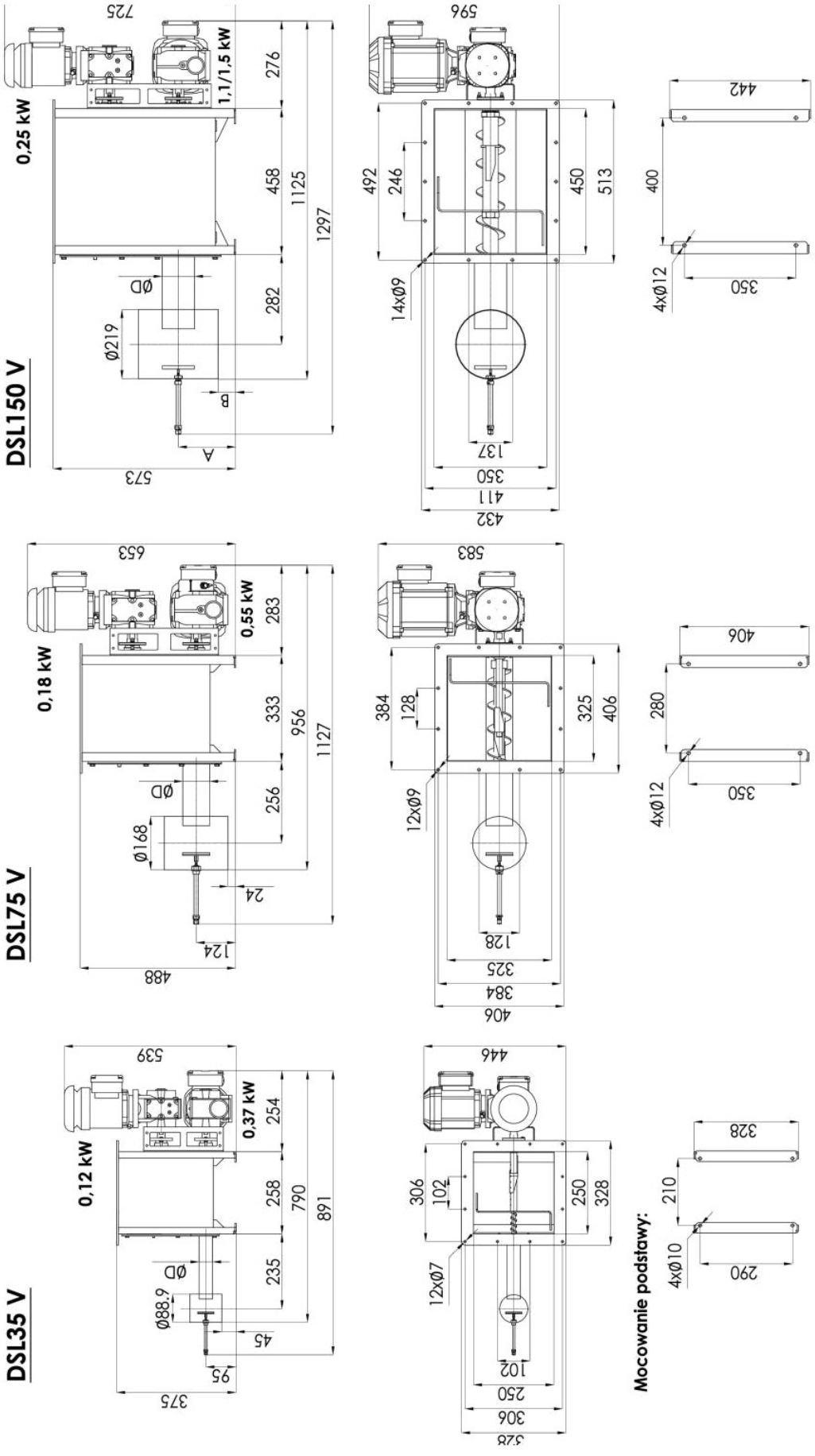
Batch mode (batching). Modern control systems split dosing into a coarse stage (e.g. 90 % of the batch at full speed) and a fine stage (the last 10 % at 30 % speed), and for subsequent batches take account of previous weighing results to stop dosing at the right moment. Continuous dosing uses PID controllers and real-time feed control.

METERING ELEMENT – DIAMETERS

DSL model	Screw Ø [mm]	Ø D [mm]	A [mm]	B [mm]
35	18	22	–	–
35	25	32	–	–
35 / 75	35	42,4	–	–
75	44	50	–	–
75	57	63,5	–	–

DSL model	Screw Ø [mm]	Ø D [mm]	A [mm]	B [mm]
75 / 150	74	85	180	55
150	89	101,6	180	55
150	127	139,7	146	21
150	150	168	146	21

DIMENSIONS



Dimensions are approximate. Certified installation drawings are available on request.