

EXTRUDERS

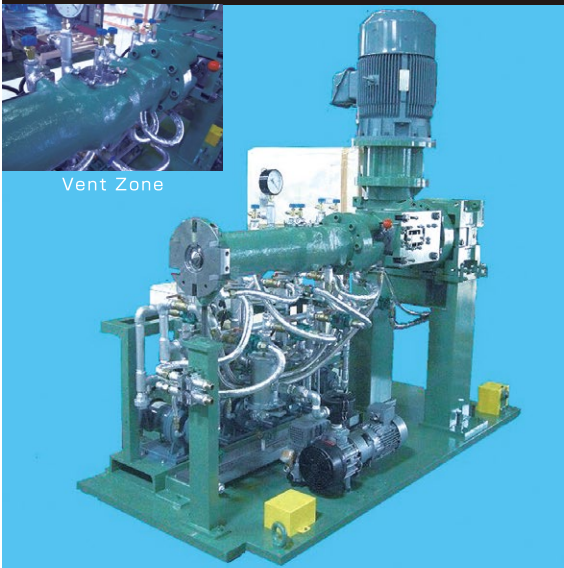
COLD FEED TYPE EXTRUDERS



Cold feed type extruders are constructed with specially designed screws best suited for cold feeding. The primary components of each machine are an extruder unit, a temperature control unit, a drive motor, and a temperature control panel.

1. Ordinary temperature rubber in the form of tapes, pellets or slabs can be fed directly to the extruder, with no preheating in warming mills before the extruder.
2. A range of screws is available for a wide variety of compound and extrusion applications.
3. During the extrusion process, uniform temperature and plasticity is applied to the rubber compound to provide greater in the shape and size of extruded components.
4. Rubber feed to the extruder can be automatic, reducing the number of operating personnel.
5. An automatic temperature control unit, with a circulating pump, controls cylinder temperature to within ± 1 degree C, so the shape and size of the extruded products are uniform.

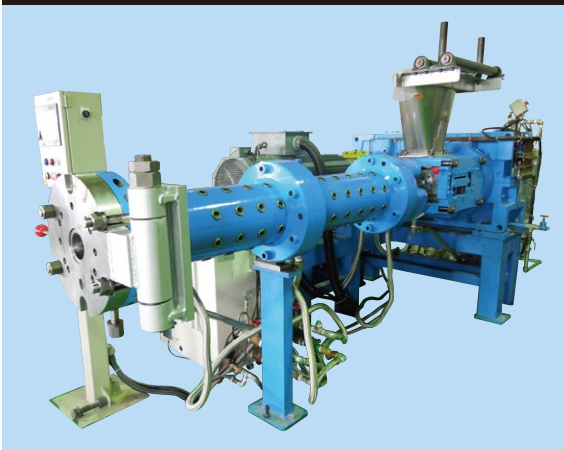
VENT TYPE EXTRUDERS



Single screw vent type extruders have screws of an original and unique design. The primary components of each machine are an extruder unit, a temperature control unit, a drive motor, a temperature control panel, and vacuum pump.

1. Compound can be cold fed to the feed section.
2. A single, specialty geometry screw and vacuum pump completely vent bubbles out of extruded components.
3. Depending on the type of compound, the screw can be replaced quickly when necessary.
4. Because there is minimum of revolving or connecting parts, the costs of upkeep are kept low, and the machine is easy to inspect and maintain.
5. Requires a small floor area.
6. An automatic temperature control unit, with a circulating pump, controls cylinder temperature to within ± 1 degree C, so the shape and size of the extruded products are uniform.

PIN TYPE EXTRUDERS

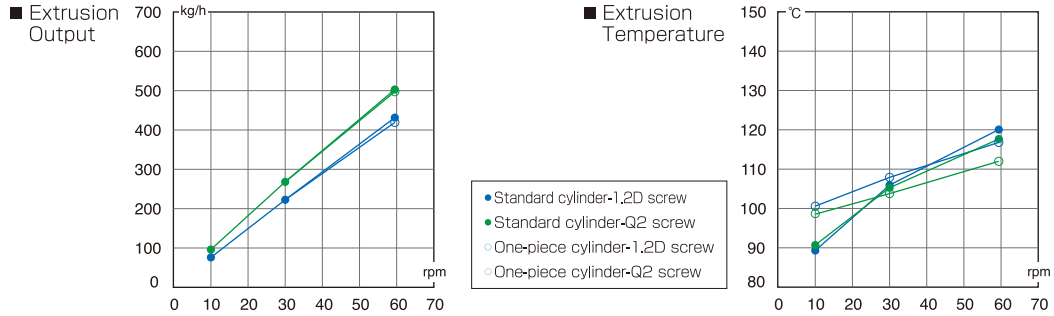


The pin type extruder incorporates a special design with 60 to 100 pins protruding from the cylinder wall toward the screw's center. These pins enhance the mixing and dispersing of the rubber as it is kneaded between the screw and the cylinder, making the pin type extruder extremely flexible as a universal extruder that is applicable to many rubber compound formulations for diverse applications.

1. Applicable to a wide range of rubber compounds.
2. Pins enhance mixing to provide high uniformity in dispersion and plasticization of material.
3. Output is 20% to 60% higher than a conventional cold feed type extruder of the same size.
4. Rubber can be extruded at relatively low temperatures.
5. The low energy consumption (WH/KG) helps keep costs down, while conserving resources.
6. System is self-cleaning.

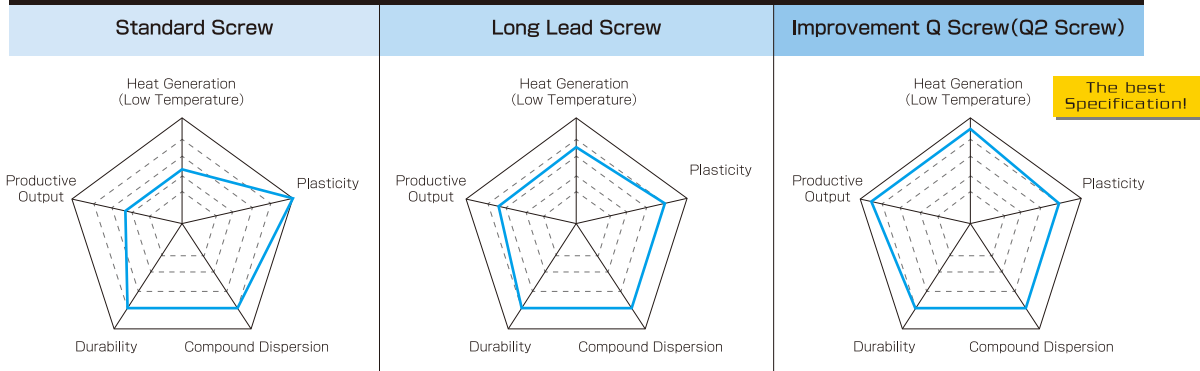
EXTRUDERS

Nakata has a research laboratory that can make a variety of extrusion tests possible. We are studying and developing a new extrusion technology with our own rubber compounds there. Any customers can make use of the facility to study and design their extrusion system optimized according to their needs and conditions. The charts and graphs here are from data given through our latest experiments conducted on our newly developed high output feed screw and cylinder barrels with a new cooling structure.

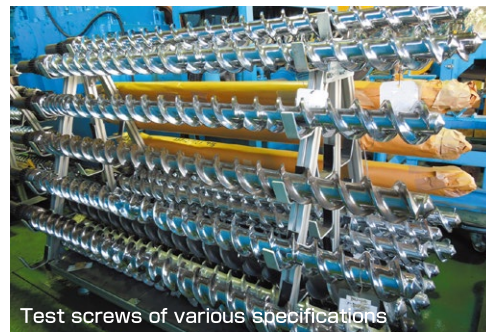


Cylinder			Standard Cylinder		One-piece Cylinder	
Screw			Standard Screw	New Screw(Q2 Screw)	Standard Screw	New Screw(Q2 Screw)
Non SilicaCompound (Low vis)	at112°C	Output index Value	100	127	105	166
		Vis(Before)	34.1	34.1	33.3	33.6
		Vis(After at 59.4rpm)	29.4	29.9	29.3	30.2
High Silica Compound	at120°C	Output index Value	100	155	110	192
		Vis(Before)	80.4	80.4	79.4	81.8
		Vis(After at 59.4rpm)	70.1	70.9	68.3	70.6

EVALUATIONS OF SCREW TYPES BY RADAR CHART



TESTING AND DEVELOPMENT OF EXTRUDERS



Nakata's design engineers can design and test custom extruder screws for customer applications in our testing laboratory.

Customers can select just the right screw to match their extruder needs can be selected from among an extremely wide variety of screws. We can also accept special orders for screws with custom specifications.

- Equipment installed in the Nakata Engineering Extruder Testing Laboratory:
- 90mm cold feed extruder
 - Pin type extruder
 - 60mm duplex roller head extruder apparatus
 - 150mm diameter pin type extruder
 - Vent type extruder
 - Roller head extruder apparatus
 - Gear pump, gear extruder
 - Etc.