Roll Crusher Model Selection and Roll Configuration Guide

2PG smooth double-roll and 2PGC double-geared roller crusher selection reference

2PG Smooth Double Roller Crusher

Models: 2PG250 x 400 to 2PG1200 x 1000
Feed: below 32-40 mm
Output: 2-12 mm
Capacity: 5-120 t/h

2PGC Double-Geared Roller Crusher

Models: 2PGC450 x 500 to 2PGC1200 x 1500
Feed: 100-1000 mm by model
Output: approx. 25-150 mm
Capacity: 12-260 t/h

Primary Selection Inputs

Material hardness and brittleness
Maximum regular feed size

Required product size
Moisture and tramp material

Roll Configuration Decision

Smooth rolls for prepared fine feed
Toothed rolls for larger irregular feed

Gap controls principal output range
Feeder must cover full roll width

Selection Flow

Material Review → Smooth or Toothed → Roll Diameter & Width → Gap Setting → Capacity Check

2PG Smooth Double Roller Crusher Parameters

Prepared feed, compression crushing and controlled fine-to-intermediate output

2PG models use smooth cylindrical roll surfaces and are selected for smaller, relatively uniform feed. The operating roll gap provides direct control over the principal discharge-size range.

Model	Roll Size (mm)	Feed Size (mm)	Output Size (mm)	Capacity (t/h)	Motor Power (kW)	Weight (t)
2PG250 x 400	250 x 400	<32	2-8	5-10	2 x 5.5	1.9
2PG400 x 600	400 x 600	<36	2-9	10-20	2 x 11	3.6
2PG600 x 400	600 x 400	<40	2-10	15-30	2 x 15	5.2
2PG750 x 500	750 x 500	<40	2-10	20-40	2 x 15	7.6
2PG800 x 600	800 x 600	<40	2-10	30-50	2 x 22	12.8
2PG1000 x 800	1000 x 800	<40	3-10	40-70	2 x 55	22
2PG1200 x 1000	1200 x 1000	<40	3-12	50-120	2 x 75	45.8

Model-Selection Notes

- Smooth rolls reduce prepared brittle feed mainly by compression, with limited high-speed impact.
- The listed feed limit must be respected; uncontrolled oversize can bounce above the nip zone or overload the rolls.
- Wear of the roll shell increases the effective operating gap and can make the discharged product progressively coarser.
- Published capacity is a catalogue range and must be checked against feed gradation, moisture, material strength and full-width feeding.

Preliminary selection rule: choose the roll size from the largest regular feed and required output, then verify feeder capacity and actual operating gap.

2PGC Double-Geared Roller Crusher Parameters

Larger-feed gripping through toothed rolls, nipping, compression and shear

2PGC models use toothed roll surfaces to grip larger and less-uniform lumps. Tooth profile, roll diameter and operating gap must be selected together with the material and required product size.

Model	Roll Size (mm)	Feed Size (mm)	Output Size (mm)	Capacity (t/h)	Motor Power (kW)	Weight (t)
2PGC450 x 500	450 x 500	100-200	25-100	12-32	<11	3.1
2PGC600 x 700	600 x 700	300-600	50-125	50-75	<22	7.4
2PGC900 x 900	900 x 900	<800	75-150	60-110	<30	13.7
2PGC920 x 1200	920 x 1200	<800	40-100	90-150	<75	16.7
2PGC1200 x 1500	1200 x 1500	<1000	Approx. 100	150-260	2 x 55	52

Operating and Selection Notes

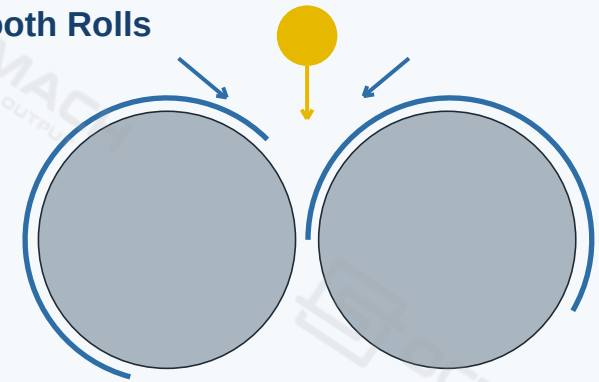
- Toothed rolls combine nipping, splitting, compression and shear to accept larger brittle lumps.
- The tooth form must match the feed lump size; unsuitable teeth can reduce gripping or generate an uncontrolled product.
- Metal removal remains necessary because repeated tramp-material release accelerates wear and can damage teeth or bearings.
- Sticky clay-rich feed can fill the tooth spaces and reduce effective capacity.

Important: the large feed values shown are model-specific limits, not recommended average feed sizes. Confirm lump shape, tooth profile and feeder arrangement before final selection.

Smooth and Toothed Roll Configuration Comparison

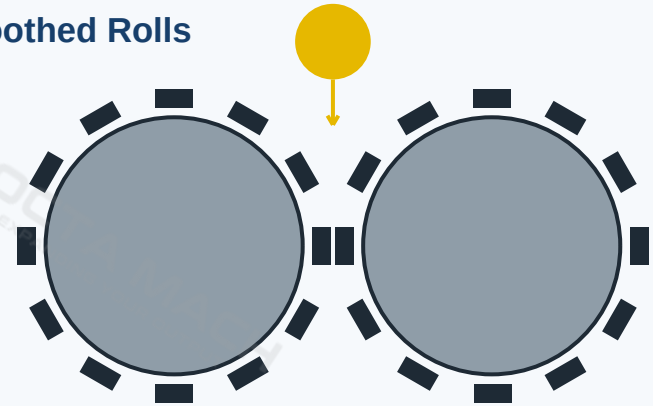
Select the roll surface from feed behavior and reduction duty

2PG Smooth Rolls



Compression through an adjustable gap

2PGC Toothed Rolls



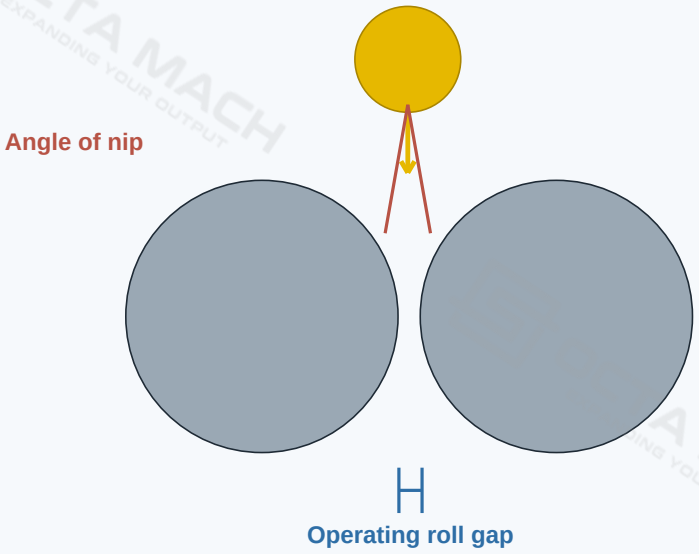
Stronger nipping, splitting and shear

Configuration	Feed Condition	Crushing Action	Typical Duty	Main Limitation
2PG smooth rolls	Small, prepared and relatively uniform feed	Mainly compression	Fine or intermediate reduction	Limited large-lump acceptance
2PGC toothed rolls	Larger and less-uniform brittle lumps	Nipping, compression and shear	Coarse or intermediate reduction	Tooth profile must match the feed
Narrow-gap smooth rolls	Prepared brittle feed requiring smaller output	Compression through reduced gap	Fine product preparation	Higher load and faster shell wear
Large-tooth configuration	Coal, coke, gangue and similar bulk feed	Tooth penetration and splitting	Larger-feed reduction	Effective tramp-metal removal required

Roll Gap, Nip Angle and Discharge-Size Control

The mechanical gap is important, but it is not the only factor controlling output

Nip and Gap Schematic



Feed must be gripped reliably and spread across the roll width.

Factor	Controls	Confirm
Roll gap	Principal discharge-size range	Actual gap under operating load
Roll diameter	Feed gripping and nip condition	Largest regular feed lump
Roll width	Crushing area and throughput	Full-width feed distribution
Angle of nip	Whether feed enters the rolls	Lump shape, friction and tooth profile
Roll surface	Compression or additional shear	Smooth or toothed configuration
Roll speed	Material draw and residence time	Feed behavior and fines generation
Roll wear	Effective gap and product size	Shell diameter or tooth profile
Overload release	Passage of uncrushable material	Protection setting and metal removal

Engineering note: narrowing the roll gap can produce a smaller output, but it also increases crushing load and wear. An excessively small gap cannot compensate for insufficient roll diameter, poor nipping or an unsuitable roll surface.

Material and Application Matching

Confirm brittleness, abrasivity, moisture and tramp contamination before model selection

Material	Recommended Configuration	Typical Duty	Main Review Point
Coal	Toothed for large lumps; smooth for smaller product	Coarse, intermediate or controlled fine reduction	Moisture, fines and tooth profile
Coke	Smooth or toothed according to lump size	Brittle coke reduction	Brittleness and tooth wear
Limestone	Smooth rolls for prepared feed	Secondary or fine reduction	Abrasivity and target output
Clinker	Smooth or toothed according to feed size	Cement clinker preparation	Feed temperature and roll material
Slag	Selected brittle slag only	Intermediate reduction	Metal contamination
Gypsum	Smooth rolls	Controlled fine reduction	Sticky-feed tendency
Coal gangue	Toothed rolls	Coarse or intermediate reduction	Lump size and abrasivity
Mineral feed	Depends on hardness and wear level	Selected mineral preparation	Roll-surface service life

Application Boundaries

- Roll crushers are best matched to soft-to-medium-hard, brittle or relatively low-abrasion feed.
- Highly abrasive hard rock requires a specific wear-life review before smooth or toothed rolls are accepted.
- Sticky clay-rich feed can adhere to smooth rolls or pack between teeth, reducing effective capacity.
- Uncontrolled tramp metal should be removed upstream rather than handled repeatedly by the overload system.
- Actual plant output must include feeder performance and downstream screening restrictions.

Final Model Selection Checklist

Confirm the machine, roll surface and connected process as one system

Material and Roll Selection

- ☐ Material type confirmed
- ☐ Hardness and brittleness reviewed
- ☐ Abrasivity reviewed
- ☐ Maximum feed size confirmed
- ☐ Lump shape reviewed
- ☐ Moisture and clay checked
- ☐ Smooth or toothed rolls selected
- ☐ Roll diameter confirmed
- ☐ Roll width confirmed
- ☐ Required output size confirmed
- ☐ Roll-gap range checked

Circuit and Supply Confirmation

- ☐ Required capacity confirmed
- ☐ Full-width feed distribution reviewed
- ☐ Feeder capacity checked
- ☐ Downstream screen checked
- ☐ Tramp-metal removal confirmed
- ☐ Overload protection checked
- ☐ Roll-shell or tooth material confirmed
- ☐ Bearing and lubrication requirements confirmed
- ☐ Maintenance access confirmed
- ☐ Spare-parts scope confirmed
- ☐ Electrical and motor scope confirmed

Final selection principle: choose the roll crusher according to material behavior, maximum feed size, roll configuration, operating gap and the complete feeding-screening circuit - not by catalogue capacity alone.