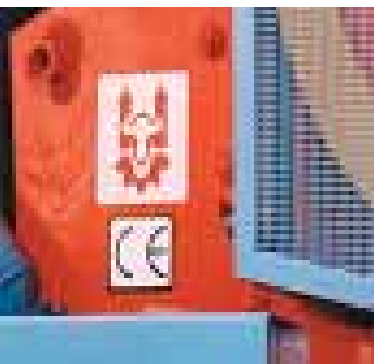




IMPACT CRUSHERS

- high operating reliability
- low costs for operation and maintenance
- simple attendance and maintenance





Impact crushers

CRUSHING



Impact crusher 1000t/h – cement material crushing



Impact crusher 150t/h – dolomite crushing

PSP Engineering has been producing and supplying impact crushers both with the horizontal and vertical shafts of the rotor used in primary, secondary or tertiary stages of crushing as well as in recycling of building materials. These crushers are also suitable for the one-stage material preparation in the cement industry.

The material is disintegrated by means of the rotating bars and impacts from the fixed plates. Impact crushers are manufactured with capacities ranging from several tons to more than 1800t/h.

The exceptional operating properties of impact crushers are:

- High operating reliability
- Low cost for operating and maintenance
- Hydraulic opening of the crusher casing for adjustment and easy exchange of crushing elements
- Utilization of the crushing bars up to 40% of the total weight – reduction of operating cost
- Fast exchange of bars thanks to simple original fixing system
- Simple attendance and maintenance
- Crusher capacity does not change when bars are worn
- Highly wear resistant materials of main crushing components
- High throughput
- Degree of comminution higher than with other crusher types
- Outstanding shape index ($b_{13} < 20\%$)

Primary and secondary impact crushers ODH and ODN

Primary impact crushers ODH are used for crushing of medium hard materials such as limestone with the L.A. test higher than 30% usually for a single-stage primary crushing in cement plants where vertical mills are used for raw material grinding. In view of the inlet piece size (up to 1.5 m³) the crusher is equipped with the third finish crushing plate positioned underneath the rotor. The finish crushing plates

calibrate the outlet size of the product. They can also be used for crushing of recycling material.

Secondary crushers ODN and ODH are used in the second or third stages of crushing for medium hard or hard materials. In view of hard material crushing, the crushers ODH are equipped with rotors with fixed bars.

Principle parameters of primary impact crushers ODH

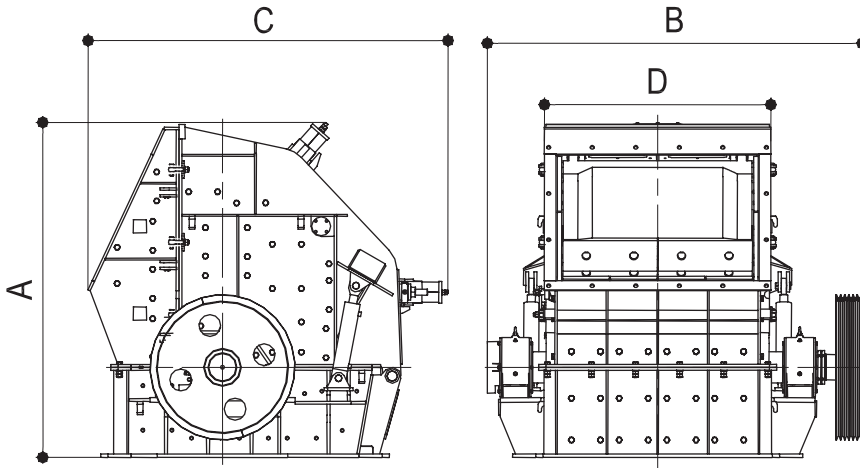
Type	Inlet opening size	Entrance		Capacity	EI. motor
	mm	m ³	mm	t/h	kW
ODH 0907 - 1x	600x670	0.03	500	30 - 70	45 - 75
ODH 0910 - 1x	600x1000	0.05	500	60 - 120	75 - 110
ODH 0913 - 1x	600x1324	0.06	600	90 - 160	75 - 160
ODH 1110 - 1x	760x1000	0.1	800	110 - 200	110 - 200
ODH 1113 - 1x	760x1324	0.12	800	120 - 250	132 - 250
ODH 1313 - 1x	970x1324	0.24	900	200 - 300	160 - 315
ODH 1316 - 1x	970x1655	0.3	1000	250 - 380	200 - 400
ODH 1616 - 1x	1250x1655	0.75	1500	300 - 550	315 - 630
ODH 1623 - 1x	1250x2310	0.9	1500	450 - 800	450 - 1000
ODH 2023 - 1x	1570x2310	1.2	2000	600 - 1000	630 - 1200
ODH 2030 - 1x	1570x2966	1.5	2000	900 - 1400	1000 - 1750
ODH 2530 - 1x	2000x2966	1.5	2500	1000 - 1800	1250 - 2250

Principle parameters of secondary impact crushers ODH and ODN

Type	Inlet opening size	Entrance	Capacity	EI. motor
	mm	mm	t/h	kW
ODH 0907 - 2x	400x670	300	30 - 70	45 - 75
ODH 0910 - 2x	400x1000	300	60 - 120	75 - 110
ODH 0913 - 2x	400x1324	400	90 - 160	75 - 160
ODH 1110 - 2x	550x1000	400	110 - 200	110 - 200
ODH 1113 - 2x	550x1324	400	120 - 250	110 - 250
ODH 1116 - 2x	550x1655	400	190 - 280	160 - 315
ODH 1316 - 2x	640x1655	400	250 - 380	200 - 400
ODH 1616 - 2x	850x1655	400	300 - 550	250 - 500
ODH 1623 - 2x	850x2310	400	450 - 700	400 - 630
ODN 1181	600x700	300	30 - 70	45 - 75
ODN 1171	466x1044	300	60 - 120	75 - 110
ODN 1172	625x1044	400	110 - 200	110 - 200
ODN 1174	800x1544	400	200 - 380	200 - 400

ODH crushers can be manufactured in two-plate or three-plate design, the number on the “x” position means the number of crushing plates. Stated capacities are only informative and depend on the properties and composition of the crushed material and way of feeding.

Impact crushers

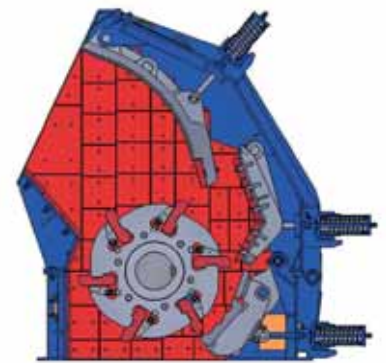


Dimensions principales

Type	A	B	C	D
	mm	mm	mm	mm
ODH 0907-xx	1860	1600	2150	900
ODH 0910-xx	1860	1940	2150	1230
ODH 0913-xx	1860	2250	2150	1560
ODH 1110-xx	2290	1960	2480	1230
ODH 1113-xx	2290	2284	2480	1560
ODH 1116-xx	2290	2650	2480	1900
ODH 1313-xx	2860	2350	3000	1580
ODH 1316-xx	2860	3000	3000	1940
ODH 1616-xx	3690	3462	3760	2000
ODH 1623-xx	3690	4102	3760	2660
ODH 2023-1x	4740	4750	4730	2670
ODH 2030-1x	4740	5411	4730	3326
ODH 2530-1x	5790	5800	5970	3350
ODN 1181	2000	1635	2220	930
ODN 1171	1920	1926	2320	1224
ODN 1172	2265	2060	2600	1244
ODN 1174	3200	2890	3500	1810

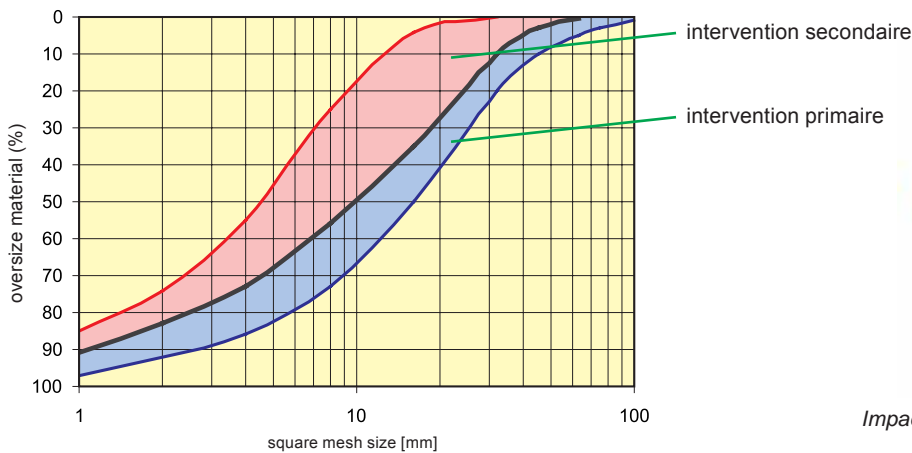


Impact crusher 700t/h – cement material crushing



Impact crusher ODH 1623 - section

Grain size composition of the product during crushing of aggregates



Impact crusher ODH 1623 – 3D model

The field between black and blue curves characterizes the crushing ability of crushers used in primary crushing, the field between black and red curves in secondary crushing.



Impact crushers

CRUSHING



Impact crusher ODJ 1122 – limestone crushing

Secondary impact crushers ODX

Impact crushers ODX are used for secondary crushing of hard materials such as gravel, sand, phonolite, greywacke, basalt and granite.

Principle parameters of impact crushers ODX

Type	Size of inlet opening	Entrance	Capacity	Crusher height	Crusher width	Crusher length	Power input
	mm	mm	t/h	mm	mm	mm	kW
ODX 1160	400x740	150	30 - 50	1845	1877	2320	45 - 90
ODX 1161	400x1090	200	50 - 90	1845	2227	2320	75 - 132
ODX 1162	600x1090	300	90 - 130	2308	2305	2695	130 - 200
ODX 1163	600x1390	300	130 - 180	2308	2605	2695	160 - 250

Outlet grain size of the final product:

0 – 25 mm: 85%

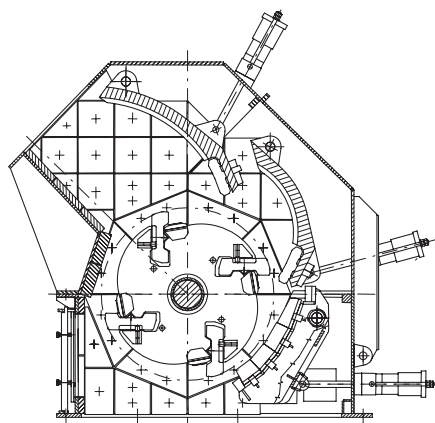
0 – 40 mm: 99%

Tertiary impact crushers ODJ

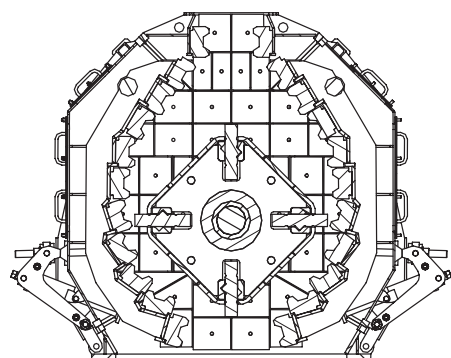
Tertiary impact crushers ODJ are used in final stages of crushing of medium hard or hard materials where a higher degree of fineness of the final product is required.

Material is crushed by means of rotating bars and impacts on stationary plates. Reverse crushers ODJ are equipped with a vertical material supply directly to a rotor and impact plate on both sides of the rotor.

The advantage of this design is that the shape index is very good ($b_{13} < 20\%$) and the degree of comminution is high. The final product achieved by destruction along the natural cleavage planes contains minimum cracks without residual stress.



Section of the impact crusher ODX



Section of the impact crusher ODJ

Principle parameters of impact crushers ODJ

Type	Size of inlet opening	Entrance*	Capacity	Crusher height	Crusher width	Crusher length	Power input
	mm	mm	t/h	mm	mm	mm	kW
ODJ 1121	250x640	50**/125***	35 - 75	1800	1750	2250	90 - 132
ODJ 1122	250x990	50**/125***	50 - 110	1800	2100	2250	132 - 200
ODJ 1123	250x1290	50**/125***	65 - 135	1800	2450	2250	160 - 250

* underside of square mesh size

Outlet grain size of the final product:

Up to 5 mm: ** 85%

*** 55%

Impact crushers



Recycling impact crushers ODR

Recycling impact crushers ODR are necessary for processing secondary materials such as building debris, plain concrete, reinforced concrete and bituminous surfaces of roads. Crushers ODR are adaptable for a single-stage crushing in cases of large inlet grain sizes.

Crushers ODR are also used in conventional treatment plants for medium hard and hard materials. The finish crushing plate positioned in the lower part of the crusher calibrates the outlet size of the product. In such cases the size of inlet material is adapted. The variability of the ODR crusher design allows operation in crushing stages where the materials are softer. The structure of the crusher is adaptable so that it can be mounted on wheels and for semi-mobile installations.

At present the use of recycled materials is wide-ranging. Impact crushers are used typically for the processing of quality products with guaranteed properties. The advantage of the design of crushers ODR is highly yielding for smaller fractions ($< 45 \text{ mm}$) with an excellent shape index ($b_{13} < 20\%$). The final product achieved by destruction along the natural cleavage planes contains a minimum number of cracks without residual stress.

Principal parameters of impact crushers ODR

Type	Size of inlet opening	Entrance		Capacity	Crusher width	Crusher length	Crusher height	Power input
	mm	m ³	mm	t/h	mm	mm	mm	kW
ODR 1051	770x680	0.03	500	30 - 70	1900	1600	1970	75
ODR 1052	770x1030	0.05	800	80 - 160	1900	1950	1970	100
ODR 1053	770x1330	0.06	1000	120 - 200	1900	2250	1970	132 (160)

Outlet grain size of the product

Bitumen	Building debris	Concrete	Gravel sand*
0 - 45 mm	0 - 40 mm	0 - 30 mm	0 - 45 mm
95%	99%	99%	95%

*inlet piece up to 200mm

Stated capacities are only informative and depend on the properties and composition of the crushed material and way of feeding.

The rotor is designed with fixed bars facilitating rotation. At the crusher inlet there is a hydraulically controlled flap for unblocking of impaction material.

Pictures show examples of applications of crushers ODR in mobile and semi-mobile units which are fitted with a vibrating screen feeder VTP 1000x3000 for sorting of smaller portions before feeding to the crusher. The material is charged to the hopper by a wheel loader or conveyor belt.

CRUSHING



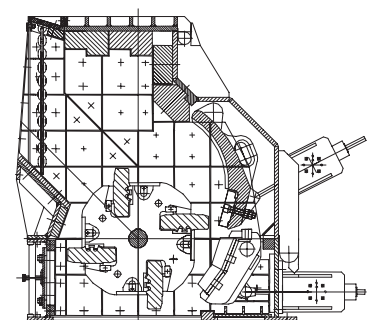
Semi-mobile crushing unit with the crusher ODR 1052



Opened housing of the impact crusher ODR 1051



Semi-mobile crushing unit with the crusher ODR 1051



Section of the crusher ODR



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PSP Engineering a.s. is a leading supplier of specialized products and entire processing plants for the building material and mineral processing industries. PSP Engineering has been involved in the design and construction of cement plants, lime works, quarry and crushing plants, as well as gravel and sand pits for more than 50 years.

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Crushing and screening technology/Raw material crushing, screening, and recycling systems EN 04/09
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