



Crushing Plant--Hydraulic Cone Crusher



Shanghai Joyal Mining Machinery Co., Ltd

Hydraulic Cone Crusher

• Profile

The JOYAL Hydraulic Cone Crusher is widely used for secondary and fine crushing in the fields of mining, building materials, metallurgies and so on. The hydraulic cone crusher can crush materials with middle and high hardness such as, ironstone, copper ore, granite, basalt, cobblestone, marble, limestone and so on. The Hydraulic Cone Crusher is popular to be used in high automatic crushing line which has strict requirement for finished products' shape and ratio.



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Hydraulic Cone Crusher adopts computer optimization design to speed up main shaft speed. The unique crushing chamber replace system can quickly replace components in crushing chamber to meet different size requirement.

The friction disc design and rotation of eccentric shaft bushing around fix cone plus more reasonable "labyrinth seal" system are unique features of Hydraulic Cone Crusher, which have more advantages like easier operation, larger application scope, more reliable, more smooth functioning comparing with spring and traditional cone crusher.

It is the most ideal equipment for large stone crushing factory and mining industry.

Componets



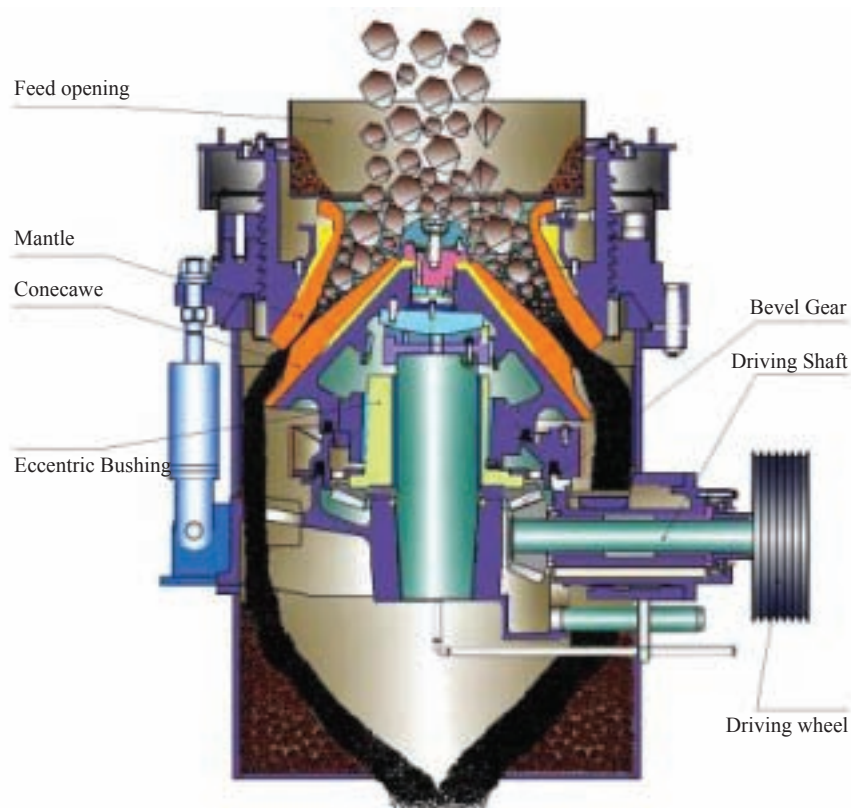
Working Principle

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As is shown, the motor drives eccentric bushing revolve via V-belt, driving shaft and bevel gear. The mantle is revolved under the action of eccentric bushing. Sometimes, the concave is near to mantle sometime, sometimes, the concave is far from mantle. The raw material is being pressed and impacted all the time in the crushing chamber. Then the crushed the material is discharged from the discharge opening.



Hydraulic Cone Crusher



HP Series of highly efficient Hydraulic Cone Crusher has a better performance compared with spring cone crusher and ordinary Hydraulic Cone Crusher:

- ❶ 1. High crushing ratio and production efficiency.
>> Connection of higher turning speed and stroke makes rated power and passing capacity improved greatly and crushing ratio and capacity increased.
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- ❷ 2. Less spare part consumption and low operation cost.
>> advanced crushing principle and technical data, reliable operation and low operation cost. All parts of the crusher have anti-wearing protection, which can make the life time of spare parts increased by 30% and the maintenance cost decreased to the lowest. The crusher avoids the disadvantages of impact crusher like low average crushing ratio, large energy consumption, fast abrasion of blow bar, impact plate and lining board.
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- ❸ 3. Between-layer pressuring crushing and better finished product shape.
>> The crusher adopts between-layer pressuring crushing principle and suitable turning speed, not the traditional single particle crushing principle. The special crushing cavity can make the crusher crush materials selectively, thus the proportion of fine product and product of cubic shape is increased distinctly and product of lump size is decreased by a large extent.
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- ❹ 4. Hydraulic protection and hydraulic cavity clearing, high automatization and less stopping production and repairing time.
>> Discharge opening is adjusted by hydraulic device and overload protection makes performance of the crusher increased by a large extent, maintenance and operation are easier, repairing time is shorter.; the bidirectional metal releasing hydraulic vat makes slab pass through crushing cavity: the crusher can discharges material automatically when the hydraulic device works under the condition of iron passing and instantaneous overloading, thus there is no trouble of stopping the crusher to discharge material by hand.
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- ❺ 5. Thin oil lubrication makes the life time increased.
>> Unique design of thin oil lubrication system prolongs life time of the crusher, high performance and not touchable labyrinth airproof part block off dust and remove common disorders like mixture of oil and water in spring cone crusher.
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- ❻ 6. Various crushing cavity.
>> It only need change fixed cone lining board and movable cone lining board; , the type of crushing cavity can be changed from standard coarse cavity to short head fine cavity, which can meet various kinds of requirements.
.....
- ❼ 7. Easy maintenance and operation.
>> all parts of HP series of cone crusher can be assembled, disassembled and repaired from the top and side part, including the fixed cone and movable cone. If change, no need to disassemble the crusher body and fasten the bolts. Hydraulic motor makes the performance of crusher better.
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- ❽ 8. The crusher can provide customers larger capacity, better product shape, and easy operation.

Common problems for Hydraulic Cone Crusher

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The performance of ordinary hydraulic cone crusher acts as the reference for the performance of HP series of cone crusher. As a composing unit of the production line, its performance can be influenced by other units like feeder, belt conveyor, vibrating screen, motor, transmission part and hopper, etc.



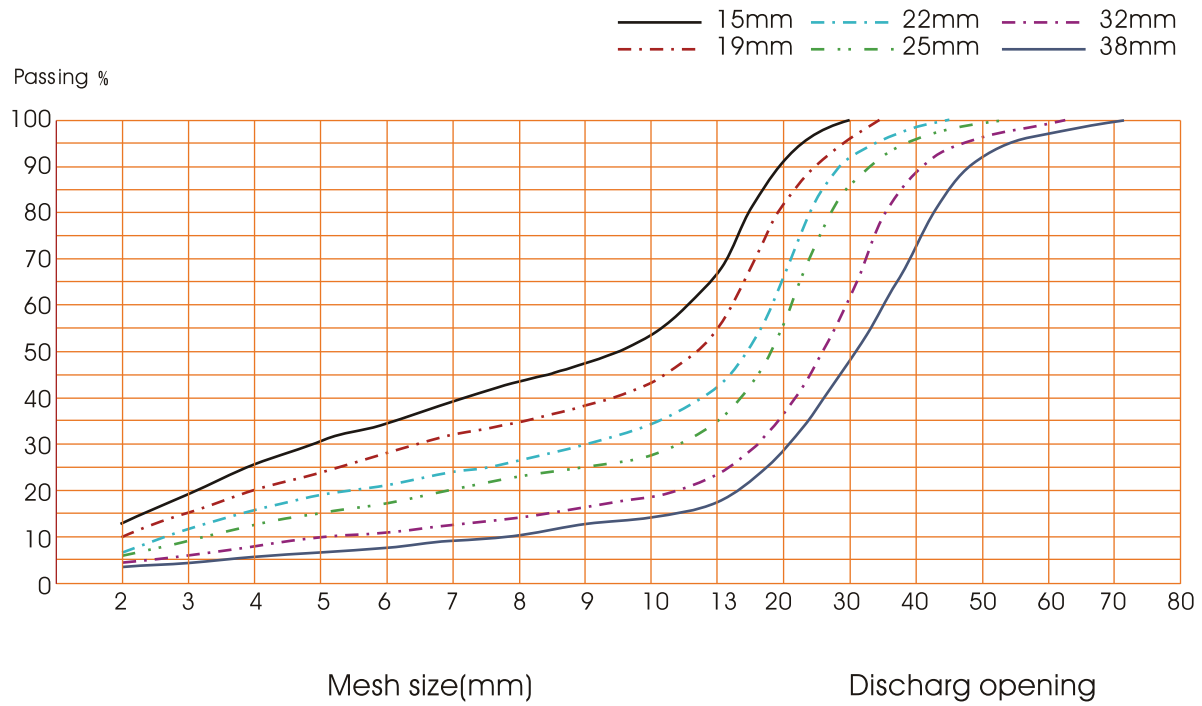
Pay attention to the following factors which can influence the performance of Hydraulic Cone Crusher:

- ▶ Choose right crushing cavity according to the materials to be crushed;
- ▶ The feeding size should be right;
- ▶ Materials are distributed equally around the crushing cavity;
- ▶ Automatically control system is applied;
- ▶ Discharge opening of cone crusher works normally;
- ▶ The model of belt conveyor depends on the max. processing ability of the crusher;
- ▶ Choose the right screen model for advance screening and closed screening.



Hydraulic Cone Crusher grading curve

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Gradation (%) at close side setting >> E-Mail:joyal@crusherinc.com >> Http://www.joyalcrusher.com

Close Side Settings (mm)	6	8	10	13	16	19	22	25	32	38	45	51
102	100	100	100	100	100	100	100	100	100	100	100	100
76	100	100	100	100	100	100	100	100	100	100	98	95
63.5	100	100	100	100	100	100	100	100	100	99	95	90
50.8	100	100	100	100	100	100	100	100	96	90	80	66
38.1	100	100	100	100	100	100	97	95	90	76	62	50
31.8	100	100	100	100	100	100	91	88	68	50	40	35
25.4	100	100	100	100	99	90	82	78	52	44	35	29
22.2	100	100	100	100	93	86	75	64	43	35	29	26
19.1	100	100	100	94	87	80	65	57	37	30	26	23
15.9	100	100	97	88	78	68	54	45	28	23	19	17
12.7	100	93	86	74	62	52	40	33	20	16	14	13
9.5	93	79	70	60	50	40	30	25	16	12	10	10
7.9	81	70	59	53	44	36	27	23	13	11	9	9
6.4	70	58	48	45	37	32	24	20	12	9	8	7
5	55	44	36	32	30	26	18	15	8	7	6	5
3.75	41	32	28	26	22	18	14	12	6	5	4	4
2	29	24	20	17	13	11	8	7	4	3	3	2

Gradation(%) at Close Side Setting

- 1.The above data is based on the medium hardness material and the cone crusher is fed equably;
- 2.The data will be different if the raw material is of different hardness and feeding.



Main Specifications

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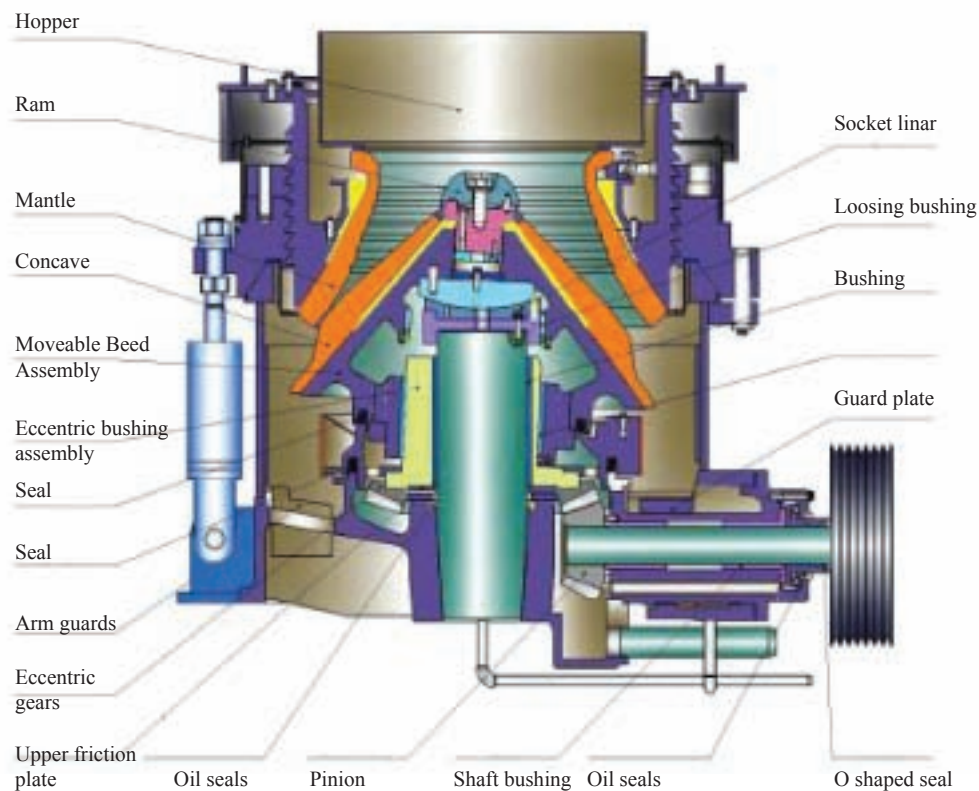
Model	Cavity Size (Coarse/Fine)	Minimum Discharging Size (mm)	Max Feeding Size (mm)	Capacity (t/h)	Weight (t)	Power (kw)
HP-160	C	13	150	120-240	13	160
	F	6	76	55-180	13	160
HP-220	C	13	225	150-430	18	220
	F	6	86	90-260	18	220
HP-315	C	13	290	190-610	26	315
	F	6	100	108-320	26	315
HP-400	C	16	320	230-700	33	400
	F	8	110	145-430	33	400



Structure

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Hydraulic Cone Crusher consists of Frame assembly , eccentric bushing assembly, driving shaft assembly, motor assembly, mantle assembly and concave assembly etc. The accessories parts are electric control system, lubrication system and hydraulic system.



Crushing Plant

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The JOYAL Crushing plant includes vibrating feeder, jaw crusher, impact crusher or cone crusher, vibrating screen, belt conveyor and centrally electric controlling system, etc.

The designed capacity is from 40t/h to 600t/h.

To meet customer's specific requirement for the stone crushing, we can also add other equipments such as cone crusher, dust catcher on the crushing plant.



Process of Crushing Plant

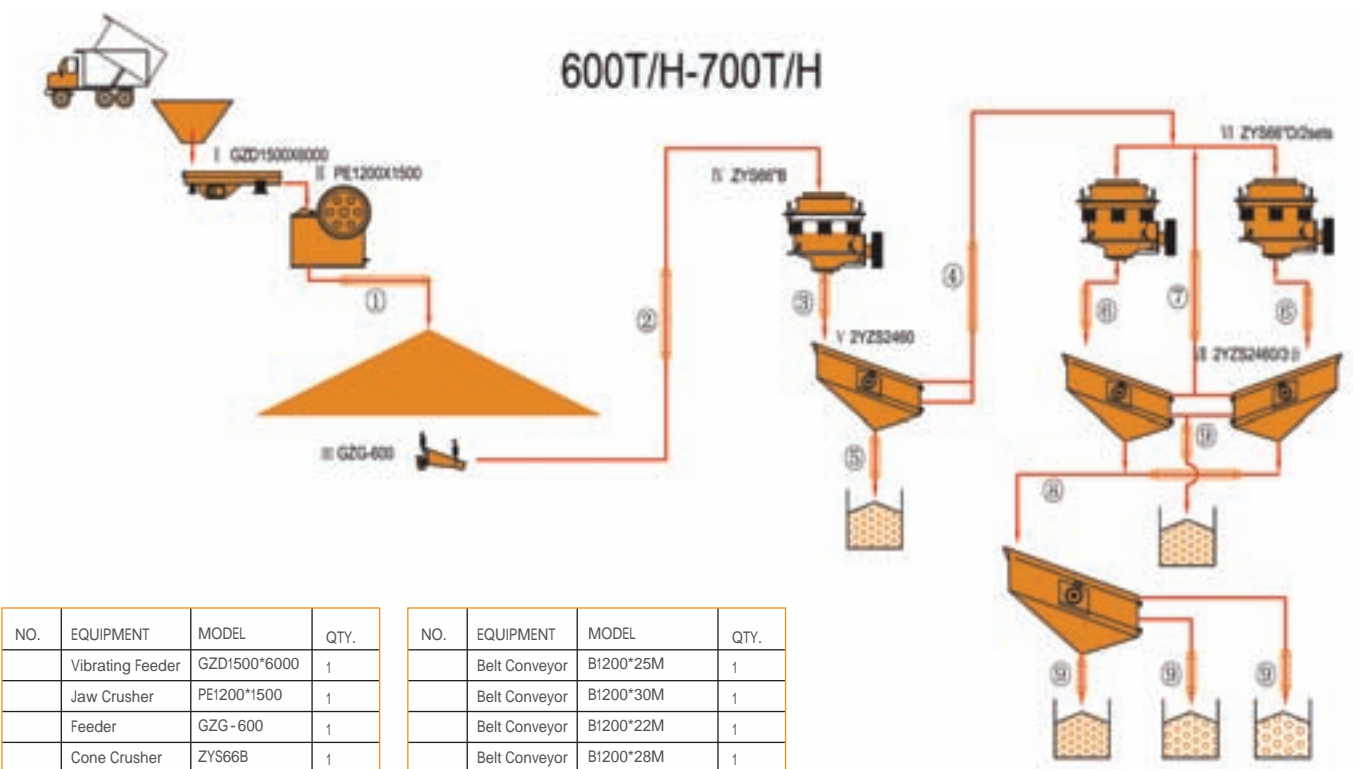
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The Big materials are fed to the jaw crusher evenly and gradually by vibrating feeder through a hopper for the primary crushing.

After first crushing, the material will transferred to impact crusher or cone crusher by belt conveyor for secondary crush; the crushed materials will then transferred to vibrating screen for separating.

After being separated, the parts that can meet standard will be taken away as final products, while the other parts will be returned to impact crusher, thus forming a closed circuit.

Size of final products can be combined and graded according to customer's specific requirement. We can also equip dust catcher system to protect environment.



NO.	EQUIPMENT	MODEL	QTY.
	Vibrating Feeder	GZD1500*6000	1
	Jaw Crusher	PE1200*1500	1
	Feeder	GZG-600	1
	Cone Crusher	ZYS66B	1
	Vibrating Screen	ZY2S2460	1
	Cone Crusher	ZYS66D	2
	Vibrating Screen	ZY2S2460	3

NO.	EQUIPMENT	MODEL	QTY.
	Belt Conveyor	B1200*25M	1
	Belt Conveyor	B1200*30M	1
	Belt Conveyor	B1200*22M	1
	Belt Conveyor	B1200*28M	1
	Belt Conveyor	B800*20M	4
	Belt Conveyor	B800*22M	2
	Belt Conveyor	B650*28M	1
	Belt Conveyor	B800*(7+23)M	1
	Belt Conveyor	B650*18M	4

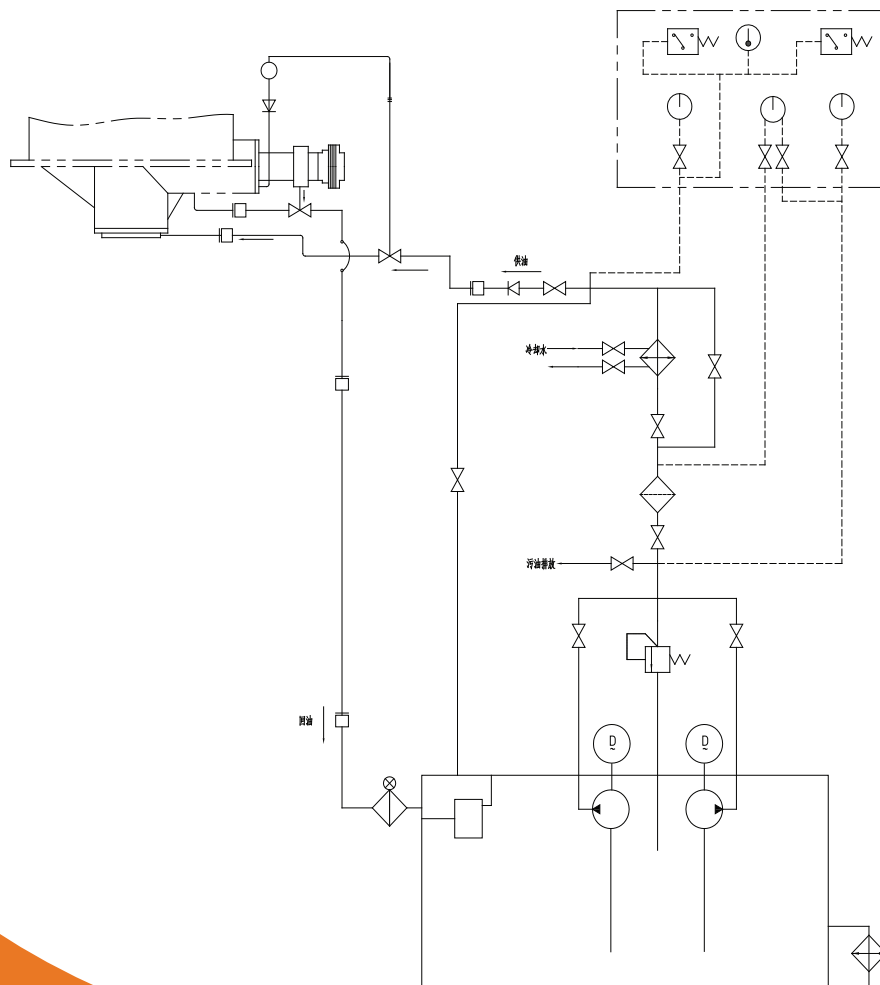
■ The Lubricating System

Since the friction surface receives much pressure, lubrication is very important to the crusher. The crusher is centrally lubricated with watery oil.

Oil route

There are two routes for the oil to enter the machine,

- >> one is through the oil hole at the bottom of the crusher, then to the hollow eccentric shaft surface, bowl-shaped bearing and the big and small gears through 3 separate ways.
- >> The other is through the hole in the transmission shaft support, then to the transmission bearing. The return route is a spill hole at the bottom of the small bevel gear and another spill hole in the dust-proof cover.



Adjustment and locking of hydraulic system

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Start thin oil station before start the main unit, if the lubrication system is ok, start the main unit, then start the vibrating feeder if the machine running normal without load. Stop feeding before stop crusher, ores in crushing chamber is exhausted totally, stop the main unit, and stop the thin oil station at last. Before start the thin oil station, open relative oil valve and switch, adjust the pressure adjust device, keep the pressure between 0.04-0.1MPa, the oil temperature should be in 30-40℃, if the temperature is too low, start the resistance heater first. Please refer to the electricity control cabinet instruction for all electric switch function. And put them in proper position before start the main unit.



Trouble	Cause	Trouble shooting
1. oil flow indicator shows no flow. Oil pump running but oil pressure less than 0.04Mpa	1. low oil temperature 2. oil path switch is not start properly 3. oil pump not good	1. heat oil 2. check oil path switch 3. overhaul or change oil pump
2. too much pressure difference between filter forwards and backwards	Block in filter	Clean the filter when pressure difference surpass 0.05MPa
3. oil pressure and oil temperature increase	Oil pipe or oil path block	Stop the machine and find out the block point and remove
4. oil temperature surpass 60℃ but oil pressure not increases	Problem in rolling rubbing parts	Stop the machine and check ball tile, bushing, thrust mat, find out the causes and remove
5. oil level decreases	1. leak machine bottom end cap 2. leak in transmission shaft flange 3. block in bowl baring base or oil return tunnel	1,2 stop the machine and fix bolt or change mat 3. stop the machine, check and clean the oil path and tunnel, adjust oil level and remove the the problem
6. water enter oil, oil level increases	1. water pressure bigger oil pressure cooler 2. leak water in cooler 3. too much water in water seal 4. block in water return pipe	1. adjust the water pressure lower than oil pressure 2. check the leak parts 3. adjust water amount 4. clean the water return pipe , oil tank, change new oil
7. oil in water seal, oil temperature not increases	Oil tunnel block	Clean oil tank and oil return pipe
8. crusher vibrates strongly Too fast cone rotation	1. Oil lack or dust in oil between main unit and bushing 2. bowl tile damaged 3. not enough gap between cone bushing	Stop the machine, check the causes and do the needful
9. frequent vibrating during machine working	1. not enough pressure in spring 2. fine and sticky material feed 3. uneven or too much feeding	1. tighten nut in spring or change the spring 2,3. feed properly
10. crushing chamber moves up with strong noise then work normally	Uncrushed material falls into crushing chamber, which will cause main shaft broken	Remove iron before feeding, use metal detector



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