



# OMNI - IC OC SERIES CONE CRUSHER

**Maximum Reduction Ratio and excellent shape from Large Feed Materials**

**IDEAL SECONDARY CRUSHER with CONE, HSI or VSI as THIRD CRUSHING STAGE, or as THIRD STAGE FINE CONE**

**POTENTIAL to REDUCE ONE CRUSHING STAGE**

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# OMNI - IC OC CONE CRUSHER

## 1 - DESCRIPTION

Designed by OMNI Crushing & Screening Ltda., in Brazil, and manufactured by International Combustion (India) Ltd. The Omni - IC OC cone crushers are modern and robust machines which deliver high productivity, low operating costs and a reliable and long operating life.

The crusher body is manufactured from high quality ASTMA216/A steel and welded to a massive cast central boss on both the interior and exterior of the body to provide unmatched strength. The crushing members are the fixed concave and the mantle – both are equipped with austenitic manganese steel liners, machined to avoid the need for backing material, for easy replacement with minimum downtime.

The tramp release system (for non-crushable materials) uses hydraulic cylinders with hydro-pneumatic pressure accumulators, providing ample clearance for removal of obstructions, guaranteeing crusher protection and restricting stoppage time to the minimum. Adjustment of the crusher closed side setting is carried out using a hydraulic motor (either manually or automatically initiated) for rapid adjustment via the control system.

Two hydraulic systems are provided – one for lubrication and cooling, the other for adjustment and protection. An electrical command panel, fully interlocked with all system monitors and sensors, controls both hydraulic systems and, in the event of any operational abnormality, will initiate an alarm and safely shut the crusher down.

## 2 - MAIN FEATURES

- Up to 30% reduction in energy consumption
- Simple and compact design
- Large open feed aperture will accept large feed sizes, eliminating any possibility of the material bridging
- High feed and production capabilities
- Easy access to internal components – 100% maintenance carried out from above the crusher
- Easy maintenance, with rapid liner changes
- Simple and rapid adjustments through hydraulic system, minimizing downtime
- Low operating costs
- Ideal as a secondary crusher to feed the next stage - either fines cone, HSI, VSI or Sand Impactor, or as a tertiary crusher

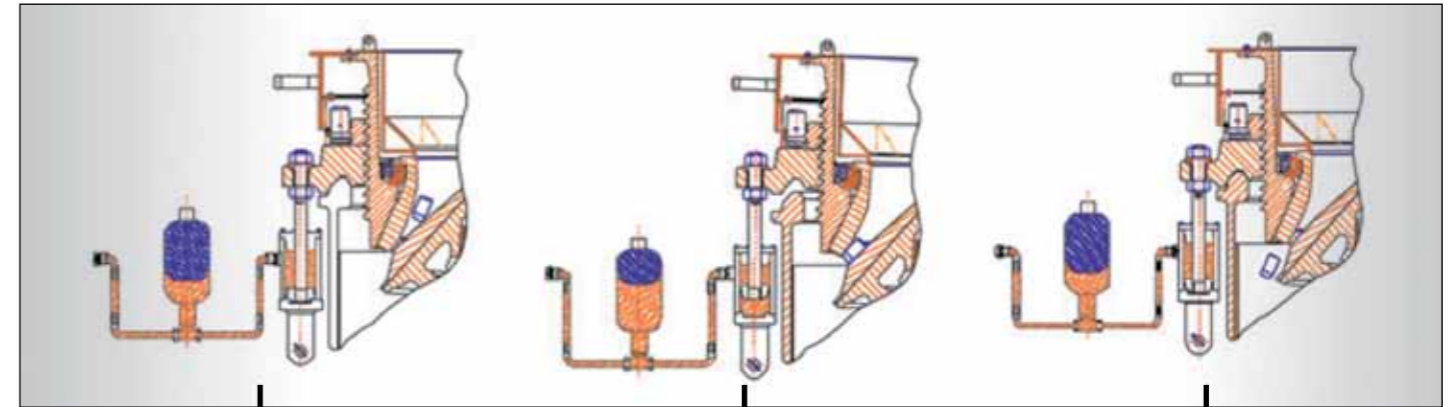


1. Hydraulic motor for simple and rapid adjustment – the rotation of the concave eliminates preferential wear of the liners
2. Bronze head spherical to support the head
3. Overload protection cylinders provide instantaneous response to the ingress of tramp material and ensure total protection
4. Strong cast steel head to withstand extreme crushing forces
5. Eccentric assembly with bronze sleeve bushes
6. XHD case hardened bevel gears
7. Crushing chamber is available with wide range of feed openings to suit duty – unique ribbed liner style increases crushing efficiency and reduces wear whilst reducing crushing forces into the crusher itself. The totally unrestricted access prevents bridging by large lumps
8. Locking cylinders firmly clamp the upper shell to the crusher body whilst in operation, and are released for adjustment
9. Simple and effective labyrinth dust seal prevents any dust ingress
10. Rigid and independent countershaft assembly

## 3 - OVERLOAD RELIEF SYSTEM

The hydraulic system has been engineered as an integral part of the crusher. This unit incorporates the lubrication circulation system (with heating, cooling and multi-function interlocked safety devices), as well as locking/unlocking of the clamping cylinders, adjustment and protection against overload, this also being used for clearing and removing obstructions from the crushing cavity. The following illustrate the operating principles:

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1. In normal working conditions, the hydraulic oil pressure in the overload protection cylinders is the same as the gas pressure in the accumulators, and the overload safety system is totally balanced so that the adjusting ring sits firmly on the crusher main frame during crusher operations
2. If the machine is overloaded, or uncrushable material enters the crusher, the adjusting ring, together with the upper frame and liners, is raised, transferring some of the hydraulic oil from the overload protection cylinders to the pressure accumulator, thereby compressing the nitrogen bladder.
3. Once the non-crushable crushing material exits, the crushing chamber, the hydraulic oil previously transferred to the accumulator, instantly returns to the overload cylinder, returning everything to its correct working position with the system once again balanced.

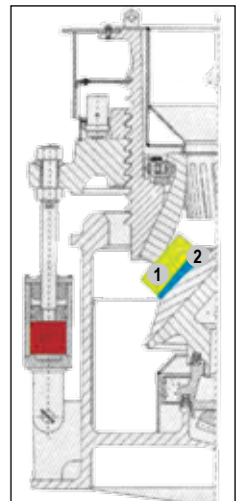
## 4 - CLEARING AND UNBLOCKING OF THE CRUSHER

Should obstruction of the equipment occur due to overfeeding, ingress of non-crushable material or power failure the problem can simply be remedied as follows:

- By using a touch button on the command panel, the overload cylinders are extended, thus raising the adjusting ring set and upper frame to enable the removal of any obstruction from the crushing chamber.
- After the chamber is cleared, the cylinders return to their normal working position. This clearing procedure will not affect the closed side setting of the crusher.

**Sectional view shows:**

1. Additional cavity cross section with raised adjusting ring and extended overload cylinder for removal of obstruction.
2. Normal working position with cavity restored to preset C.S.S.



## 5 - CRUSHING CHAMBER

Using the latest technology for profile design and cavity shape, the OMNI- IC OC cones feature uniquely grooved mantle and bowl liners of high grade austenitic manganese steel. This profile of the mantle and bowl liners provides better grip on the material being crushed, resulting in an enhanced crushing chamber in comparison with other brands, and gives the OMNI - IC OC a significant advantage in crushing capacity throughput when compared with similar sized machines. Thus the OMNI - IC OC can perform as a combined secondary and tertiary crusher in both open and closed circuit conditions. The net effect of this is potentially one less crushing stage in the circuit. In addition to these advantages, the OMNI - IC OC bowl and mantle liner configuration also allows a higher production rate as there is a significant reduction in the crushing forces. Therefore the installed power is better utilized to increase the throughput of the machine, with a higher reduction ratio and improved cubicity.



## 6 - HYDRAULIC UNIT

The dual function hydraulic unit controls lubrication and the hydraulics for locking the frame, adjusting the crusher setting and clearing the crushing chamber. It incorporates a state-of-the-art electric panel which is responsible for controlling all machine operations.



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## 7 - HYDRAULIC LOCKING SYSTEM

A set of interlocked transducers monitor the system and will automatically switch on the oil pump to maintain the correct pressure, should the system pressure drop, thereby ensuring that the pressure levels remain consistent during operation.



## 8 - TECHNICAL INFORMATION

AVERAGE PRODUCTION IN MTPH (FOR MATERIAL WITH A BULK DENSITY 1.6 TONNE/M3)

MODEL	MAX FEED OPENING (mm)		MIN (mm) CSS	CLOSED SIDE SETTING (mm)							
	OS	CS		15	19	22	25	32	38	45	55
OC1000XC	270	250	22			175-210	180-230	200-245	215-265		
OC1000C	220	200	20		165-200	175-210	180-230	200-245	215-265		
OC1000M	180	160	15	145-190	165-200	175-210	180-230	200-245	215-265		
OC1300XC	320	300	28					255-325	310-385	350-440	390-470
OC1300C	280	260	25				230-290	255-325	310-385	350-440	
OC1300M	210	190	22			220-265	230-290	255-325	310-385		
OC1500XC	400	380	32					420-545	460-610	510-715	580-790
OC1500C	350	330	25				380-475	420-545	460-610	510-715	580-790
OC1500M	255	235	22			350-445	380-475	420-545	490-610	510-715	580-790

N.B. The capacities shown above are intended as a guide only. Please consult us for the correct application. Accurate prediction of capacity depends on physical characteristics of the material, full grading analysis, moisture content etc.

## PARTICLE SIZE DISTRIBUTION (FOR MATERIAL WITH AN AVERAGE HARDNESS)

(% passing square aperture at given C.S.S. – mm.)

PASSING SIEVE (mm)	CLOSED SIDE SETTING (mm)									
	10	12	16	19	22	25	32	38	45	50
100										100
75								100	100	98
63							100	99	95	90
51						100	98	93	83	68
38					100	98	92	78	61	50
32			100	100	94	92	70	52	44	36
25			96	93	86	75	48	41	32	28
22	100	100	94	87	74	63	42	35	28	24
19	98	96	90	82	70	56	38	30	26	23
16	96	90	82	70	54	47	30	24	20	18
13	90	76	67	57	42	36	22	17	16	13
10	80	65	54	45	33	30	19	16	13	12
8	68	55	44	37	27	24	16	14	10	10
6	52	40	35	30	20	18	14	10	8	8
4	37	30	25	20	15	15	10	7	5	4

## DIMENSIONS/WEIGHTS/MOTOR POWER

MODEL	DIMENSIONS (mm)							POWER (kW)	WEIGHT (KG)
	A	B	C	D	E	F	G		
OC1000	1960	2545	2750	1075	1975	420	1980	110-150	12,000
OC1300	2240	3035	3280	1280	2355	500	2230	185-225	18,000
OC1500	2910	3775	4080	1594	2930	600	2775	260-300	28,000