SVEDALA

H-2000, H-3000, H-4000 AND H-6000 *HYDROCONE* CRUSHERS

ALLIS
MINERAL SYSTEMS

Hydraulically adjusted cone and gyratory crushers have become increasingly popular because hydraulic adjustment offers many advantages.

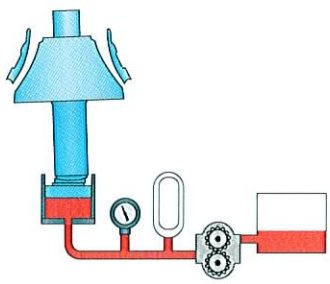
There are many cone crushers which started life as mechanically adjusted machines with coil springs and mainframe threads. The coil springs have later been superseded by hydraulic cylinders in the quest for higher performance. They are still limited by the mainframe threads.

There are not many crusher types that have incorporated hydraulics right from the start in order to provide simple and rapid adjustment. The fact that so many crusher manufacturers have gone over – completely or partially – to hydraulic adjustment seems to us to confirm that sed on the correct principles from the bottom up. Instead of switching from mechanical to hydraulic adjustment we have methodically developed our Hydrocone crushers. We know how hydraulic adjustment can best be utilized for reliable, simple, rapid and – when required – automatic operation. With the 2000-, 3000-, 4000- and 6000-series, the third generation of Hydrocone and Superior crushers is launched.

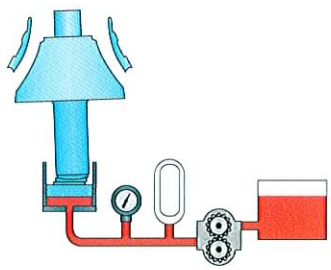
Reliable, simple, rapid, convenient and automatic thanks to the Hydroset system

The *Hydroset* system is a combined safety and setting adjustment system incorporating a heavy-duty hydraulic cylinder which supports and adjusts the position of the mainshaft. Changes in the discharge setting can be carried out in seconds. The *Hydroset* system has been used with great success for many decades.

Setting reduction: oil is pumped from the tank to the Hydroset cylinder, thus raising the mantle to the desired position.



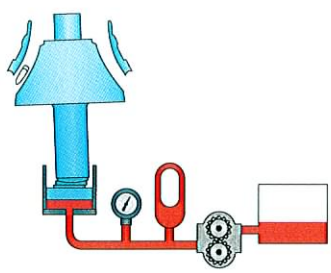
Setting increase: oil is pumped from the Hydroset cylinder back to the tank, thus lowering the mantle to the desired position.



Automatic overload protection

The automatic overload protection provided by the *Hydroset* system allows the mantle to drop to permit the passage of tramp iron or other uncrushable material and then automatically returns the mantle to its original position.

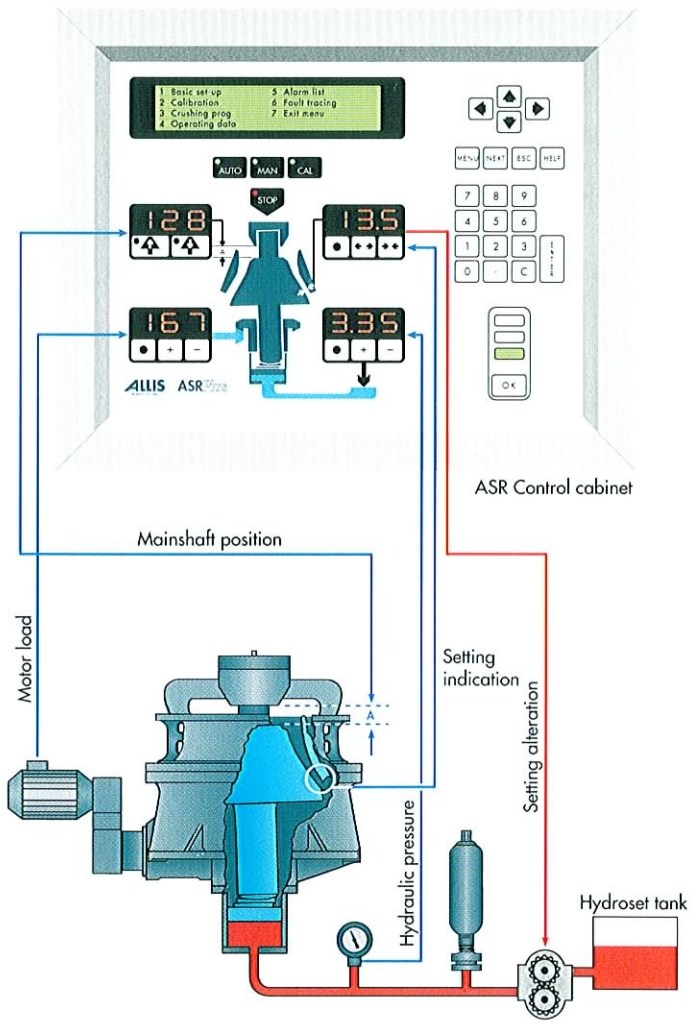
Oil is forced out from the Hydroset cylinder to the accumulator so that the mantle drops to allow the uncrushable object to pass through the crusher. The accumulator forces the oil back to the Hydroset cylinder as soon as the object has left the crushing chamber.



If the crusher stops under load due to a power failure, the mantle can be dropped to make restarting easier.

Improved crushing results with ASR, Automatic Setting Regulation

Hydrocone crushers can be equipped with ASR, an Automatic Setting Regulation system which monitors the load on the crusher. This gives considerably improved results and optimum crusher utilization. Ask for a separate description of ASR, the Automatic Setting Regulation system!



Designed for maximum capacity...

H-2000, H-3000, H-4000 and H-6000 *Hydrocone* crushers are characterized by a robust design and high performance. The crushers are dimensioned for the loads caused by the crushing of extremely hard material.

High motor powers can be used.

Crusher	Max motor size, kW
H-2000 Hydrocone	90
H-3000 Hydrocone	150
H-4000 Hydrocone	220
H-6000 Hydrocone	315

In combination with the CLP crushing chambers (CLP = Constant Liner Performance), the high motor powers give these *Hydrocone* crushers capacities which in most cases are comparable with those of other, larger crushers. Our crushers have large feed openings and can be fed with coarse material.

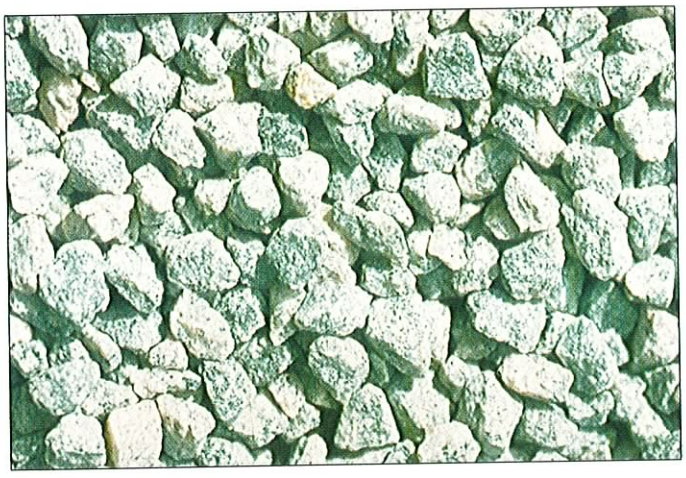
Crusher	Accepts crushed product from jaw crusher running at CSS (mm)
H-2000 Hydrocone	60-75
H-3000 Hydrocone	105-115
H-4000 Hydrocone	130-145
H-6000 Hydrocone	160-180

Both the capacity and the feed acceptance capability remain almost undiminished throughout the whole life of the liners thanks to their CLP-design. Together with the long mainshaft travel, these factors contribute to the favorable wear costs.

...and for the production of high-quality crushed materials

Thousand series *Hydrocone* crushers meet exacting product quality demands. Aggregate specifications have been tightened up and this trend towards higher standards will continue. *Hydrocone* crushers and the CSC technique (Cubical Shape Crushing) developed by us provide the solution. The H-2000, H-3000, H-4000 and H-6000 *Hydrocone* crushers produce material of excellent shape.

Compared to impact breakers, the amount of fines produced can be matched to the demand. In addition, energy consumption is low and *Hydrocone* crushers can be used for a wider range of duties than other crusher types.



Crushing chambers

Numerous standard crushing chambers are available for thousand-series *Hydrocone* crushers.

Crushing chamber	Max feed size mm		Approximate motor power
	CSS*	Screen opening**	kW
H-2000 EF		18	-75
H-3000 EF		25	-132
H-4000 EF		32	-200
H-6000 EF		36	-300
H-2000 F	20-25	35	-75
H-3000 F	25-30	40	-132
H-4000 F	30-35	50	-200
H-6000 F	35-45	60	-300
H-2000 MF	30-35	50	-75
H-3000 MF	35-45	55	-132
H-4000 MF	40-45	65	-200
H-6000 MF	50-60	85	-315
H-2000 M	40-45	65	-75
H-3000 M	50-60	75	-132
H-4000 M	60-70	85	-200
H-6000 M	75-90	115	-315
H-3000 MC	60-75	95	-132
H-4000 MC	75-90	115	-200
H-6000 MC	105-120	150	-300
H-2000 C	60-75	95	-90
H-3000 C	80-95	120	-140
H-4000 C	105-115	150	-200
H-6000 C	130-150	190	-300
H-3000 EC	105-115	150	-150
H-4000 EC	130-145		-220
H-6000 EC	160-180		-280

* CSS of preceding crusher.
** Size of square hole through which feed has passed.

Excellent versatility, *one* topshell for all crushing chambers

Thousand series *Hydrocone* crushers have a wide field of use. Several standard crushing chambers are available. The crushers can easily be matched to changes in production by the proper selection of crushing chamber and eccentric throw.

H-2000, H-3000, H-4000 and H-6000 *Hydrocone* crushers are an excellent choice as secondary crushers in combination with a jaw crusher or as the tertiary crushing stage for sand production. Thanks to their built-in versatility, thousand-series *Hydrocones* will enable you to cope with most production requirements in a changing future.

Crusher	Excellent as the second crushing stage after a jaw crusher up to size (cm)
H-2000 Hydrocone	75x50
H-3000 Hydrocone	105x80
H-4000 Hydrocone	120x100
H-6000 Hydrocone	150x120

If exceptionally coarse material is to be crushed, all thousand-series *Hydrocone* crushers can be transformed into *Superior* secondary gyratory crushers, with feed openings twice as big for increased feed acceptance capabilities.

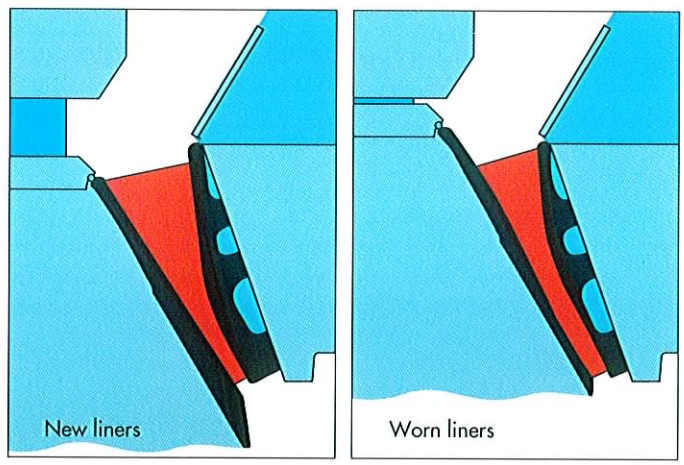
High output and increased liner life thanks to CLP crushing chambers

CLP stands for Constant Liner Performance. The advantages are:

- ☐ constant feed acceptance capability
- ☐ increased output
- ☐ high-quality products
- ☐ increased liner life
- ☐ optimal overall running costs

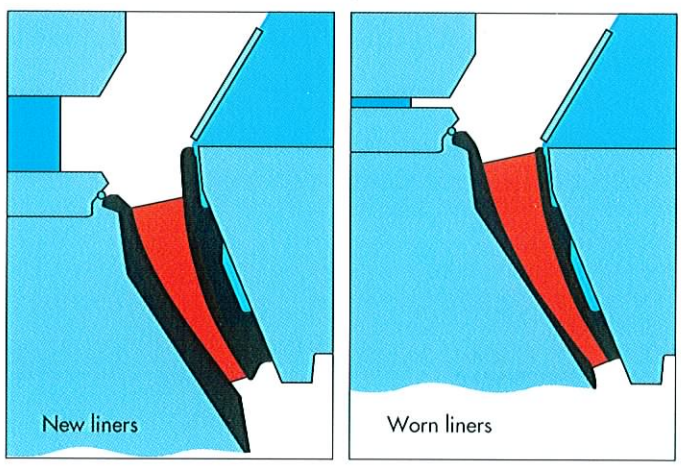
This is achieved by the shape of the CLP crushing chamber and by the fact that the feed opening remains virtually unaltered throughout the life of the liner set. The output of crushed material is greater than that obtained by crushing with conventional liners for the same time. The increase in output can be up to 30% but depends on the nature of the feed material. Feed opening and capacity are normally reduced by some 30% or more in crushers with fully worn conventional, non-CLP liners.

Conventional crushing chamber

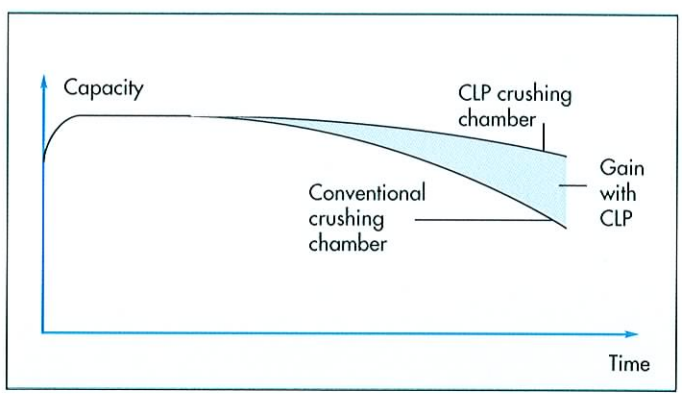


When the mainshaft is raised to maintain the discharge setting, wear alters the shape of the crushing chamber. The feed opening decreases, the liner surfaces become more parallel and capacity drops.

CLP crushing chamber



The almost vertical profile in the feed opening area means that the shape of the chamber is maintained virtually unchanged throughout the wearing life. This gives constant, high production.



Compared with conventional liners, CLP liners produce a greater amount of material, both in a given period and over the whole liner lifetime.

Capacities

Performance figures are approximate and give an indication of what the crusher can produce. They apply for open circuit crushing of dry material with a bulk density of 1600 kg/m³. It is assumed that material finer than the crusher's CSS is removed from the feed.

Consult us regarding the application of the crusher since the degree of reduction, the material's crushability (W_i), the size analysis of the feed, the design of any recrushing circuit and the moisture content in the feed all affect the performance of the crusher.

Product curves

The careful monitoring of results from crushers in the field has given us a lot of knowledge about crusher product curves. The product curve examples shown here indicate the product which can be expected.

EF Extra-fine crushing chambers

With an EF chamber, capacity and product size are particularly depent on the feed fraction – top size, bottom size, moisture content, etc.

H-2000 Hydrocone
Suitable feed size: from 3 up to 16 mm.
Typical production: 30-40 t/h with 80% finer than 5-5.5 mm.

H-4000 Hydrocone
Suitable feed size: from 6 up to 25 mm.
Typical production: 100-110 t/h with 80% finer than 7-8 mm.

H-3000 Hydrocone
Suitable feed size: from 4 up to 20 mm.
Typical production: 60-70 t/h with 80% finer than 6-6.5 mm.

H-6000 Hydrocone
Suitable feed size: from 8 up to 32 mm.
Typical production: 140-160 t/h with 80% finer than 8-10 mm.

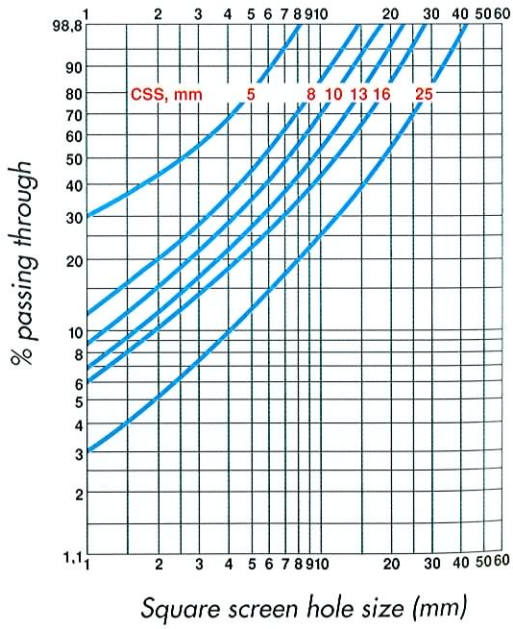
F Fine crushing chambers

Approx. capacities in metric t/h

Crusher	Capacity with crusher running at CSS (mm) 5	6	8	10	13	16	19	22	25	29
H-2000	23 – 30	26 – 41	30 – 53	33 – 57						
H-3000		40	45 – 60	50 – 70	55 – 90	65 – 95				
H-4000				90 – 105	100 – 145	110 – 155	120 – 160			
H-6000				95 – 125	105 – 170	115 – 210	125 – 255	135 – 275	140 – 290	150 – 305

The shape of the product curve and the percentage of the crushed product smaller than the setting, depend on the feed material's crushability (W_i). Percentagevalues between 60 and 75 are normal.

Product curves



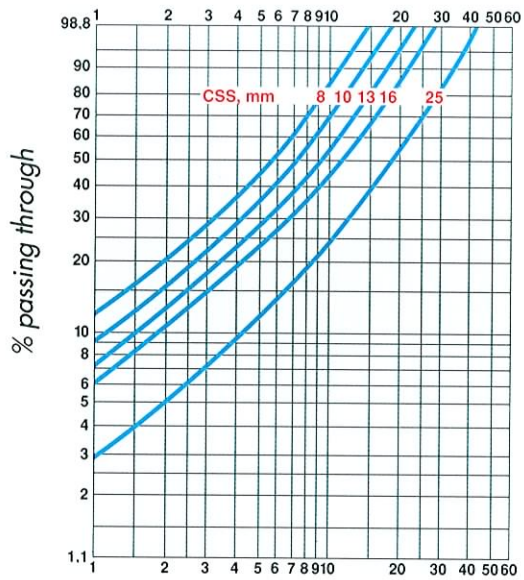
MF Medium-fine crushing chambers

Approx. capacities in metric t/h

Crusher	Capacity with crusher running at CSS (mm) 6	8	10	13	16	19	22	25	29
H-2000	29 | 36	33 | 49	35 | 61	38 | 67					
H-3000		55	60 | 75	65 | 105	70 | 110	85 | 115			
H-4000			90 | 105	100 | 130	110 | 155	120 | 165			
H-6000			110 | 125	120 | 150	130 | 195	140 | 230	150 | 270	160 | 320	170 | 340

The shape of the product curve and the percentage of the crushed product smaller than the setting, depend on the feed material's crushability (W_i). Percentagevalues between 60 and 75 are normal.

Product curves



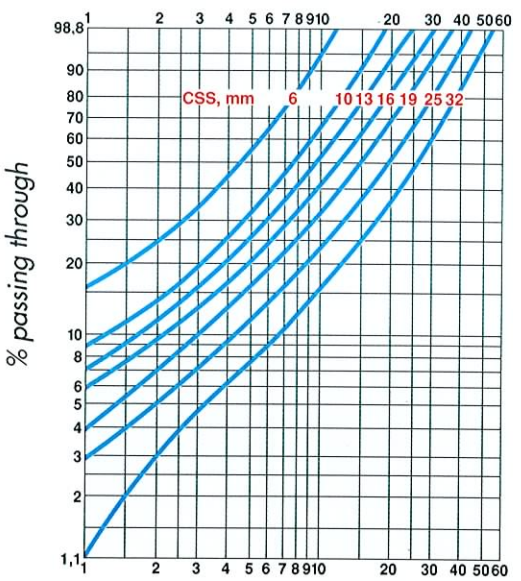
M Medium crushing chambers

Approx. capacities in metric t/h

Crusher	Capacity with crusher running at CSS (mm) 6	8	10	13	16	19	22	25	29	32
H-2000	25	28 | 35	30 | 47	33 | 63	36 | 68					
H-3000			55 | 65	60 | 85	65 | 105	75 | 120	80 | 130	110 | 140		
H-4000				90 | 115	100 | 160	110 | 215	115 | 230	120 | 245	230 | 255	
H-6000				115 | 140	125 | 200	135 | 240	140 | 280	150 | 330	160 | 390	165 | 410

The shape of the product curve and the percentage of the crushed product smaller than the setting, depend on the feed material's crushability (W_i). Percentagevalues between 60 and 70 are normal.

Product curves



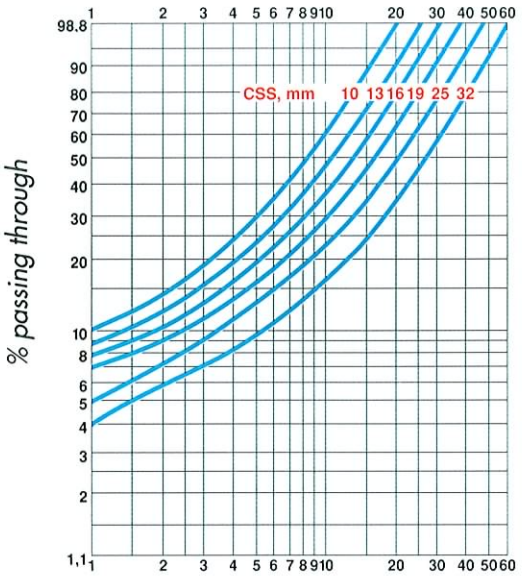
MC Medium-coarse crushing chambers

Approx. capacities in metric t/h

Crusher	Capacity with crusher running at CSS (mm)								
	10	13	16	19	22	25	29	32	35
H-3000	65	70 – 75	75 – 100	80 – 125	85 – 145	90 – 170	100 – 180		
H-4000		90	90 – 120	95 – 170	105 – 185	110 – 250	120 – 290	215 – 310	
H-6000			120 – 140	130 – 200	140 – 215	150 – 290	160 – 330	165 – 355	170 – 410

The shape of the product curve and the percentage of the crushed product smaller than the setting, depend on the feed material's crushability (W_i). Percentagevalues between 55 and 65 are normal.

Product curves



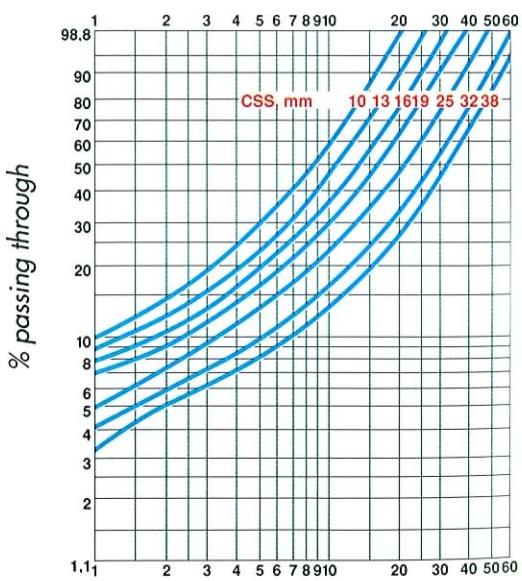
C Coarse crushing chambers

Approx. capacities in metric t/h

Crusher	Capacity with crusher running at CSS (mm)									
	10	13	16	19	22	25	29	32	35	38
H-2000	38	42 – 52	47 – 70	63 – 94	69 – 103	91 – 112				
H-3000		80	85 – 95	90 – 110	95 – 135	100 – 170	110 – 195	170 – 200		
H-4000			100	110 – 135	115 – 175	120 – 210	130 – 255	135 – 305	250 – 320	
H-6000			125	140 – 150	150 – 200	160 – 250	170 – 290	185 – 340	195 – 360	205 – 420

The shape of the product curve and the percentage of the crushed product smaller than the setting, depend on the feed material's crushability (W_i). Percentagevalues between 55 and 65 are normal.

Product curves

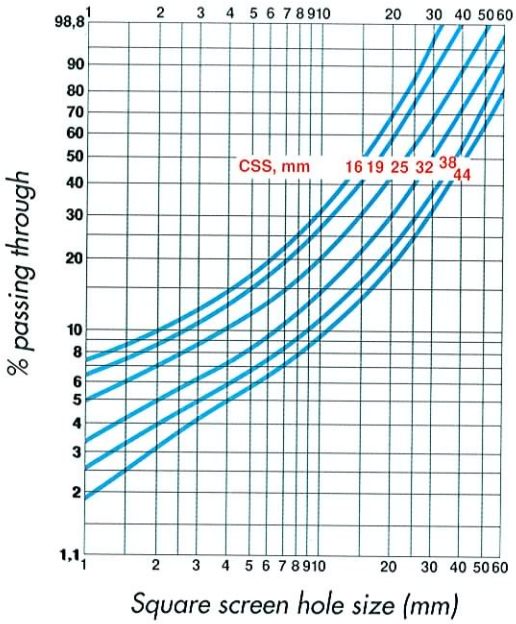


EC Extra-coarse crushing chambers

Approx. capacities in metric t/h

Crusher	Capacity with crusher running at CSS (mm)								
	16	19	22	25	29	32	35	38	44
H-3000	90	95 | 110	100 | 130	105 | 165	110 | 190	115 | 215	120 | 230		
H-4000	120	110 | 140	120 | 155	130 | 195	140 | 240	150 | 290	280 | 345		
H-6000		155	160 | 180	175 | 230	190 | 280	200 | 340	215 | 380	225 | 430	345 | 460

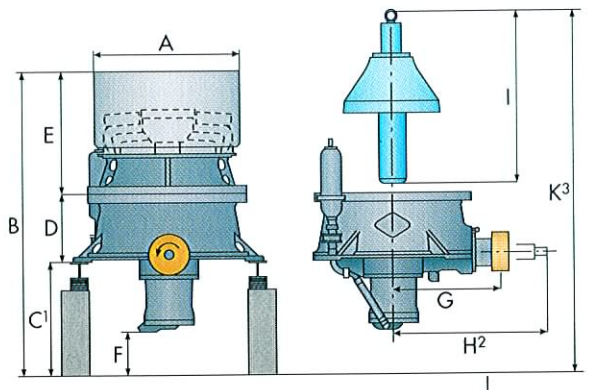
Product curves



The shape of the product curve and the percentage of the crushed product smaller than the setting, depend on the feed material's crushability (W_i). Percentagevalues between 50 and 60 are normal.

S-4000 H-3000

Dimensions (cm)



Note: reference line only, not floor level.

Min. for removal of: 1) Hydroset cylinder components 2) Pinionshaft 3) Mainshaft

Dim.	H-2000	H-3000	H-4000	H-6000
A	Ø 98	Ø 136	Ø 154	Ø 195
B	256	299	341	422
C^1	102	113	130	160
D	54	66	75	86
E	100	121	137	176
F	40	42	45	63
G	84	106	128	150
H^2	127	168	184	216
I	143	169	199	238
K^3	300	357	410	484

Dimensions are intended only as a guide for preliminary planning of the installation and should not be used for the construction of foundations, etc.

Approximate weights (kg)

	H-2000	H-3000	H-4000	H-6000
Heaviest lift during maintenance	1400	2900*	4700*	7300*
Total weight	5300	9200*	14300*	23500*

* *Applies to crusher with fine crushing chamber. With coarse crushing chamber, these weights are reduced by approximately 380 kg for the H-3000 Hydrocone crusher, by 600 kg for the H-4000 model and by 900 kg for the H-6000 Hydrocone.*

Features which make the H-2000, H-3000, H-4000 and H-6000 Hydrocone crushers some of the best crushers on the market

1 An easy-to-maintain crusher.
Maintenance and inspection from above.

2 The crusher has a CLP crushing chamber as standard.
One topshell is used for all crushing chambers.

3 Long life from liners of special alloy steel.

4 An automatic overload protection system is standard.

5 Inspection holes are provided in the bottom shell.

6 The bottom shell arms have liners of special alloy steel.

7 The interior of the crusher is protected from dust by a self-lubricating seal ring.

8 Quiet operation and long life thanks to bevel gears with case-hardened, spiral-cut teeth.

9 Product curve and capacity can be optimized by adjusting the eccentric bushing supplied with the crusher.

10 Prepared for the installation of ASR, the Automatic Setting Regulation system.

11 Large feed opening.
The two topshell arms are protected against wear by robust liners of special alloy steel.

12 Mainshaft protected by replaceable sleeve and inner headnut.

13 CLP crushing chamber design maintains feed opening throughout the entire life of the liners.

14 Rugged design provides the strength and stability necessary for the crushing of extra-hard materials.

15 Easy adjustment of gear backlash.

16 Rugged design of the pinionshaft assembly.
The pinionshaft and its bearings are built as a single unit which can be removed without taking the crusher apart

17 Oil tank unit
- ☐ filtration
- ☐ cooling and heating
- ☐ circulation pump
- ☐ monitors for temperature and flow rate
- ☐ interlocks

Australia
Allis Mineral Systems
Australia Ltd
Lidcombe
Phone +61 2 748 1777
Fax +61 2 748 1939

Austria
Svedala Austria GmbH
Wien
Phone +43 1 836 508
Fax +43 1 812 1423

Belgium
Allis Mineral Systems
(Belgium)
Bruxelles
Phone +32 2 529 8460
Fax +32 2 520 5602

Brazil
Fábrica de Aço Paulista Ltda,
Faço
Taboão Da Serra - SP
Phone +55 11 491 3999
Fax +55 11 491 8776

Canada
Allis Mineral Systems Canada
Kirkland, Québec
Phone +1 514 694 9400
Fax +1 514 694 9413

Chile
Allis Mineral Systems Chile
Providencia - Santiago
Phone +56 2 232 4365
Fax +56 2 232 2691

Denmark
Svedala A/S
Høje Tåstrup
Phone +45 43 719 100
Fax +45 43 719 101

Finland
Oy Rolac Ab
Masaby
Phone +358 0 297 6122
Fax +358 0 297 5587

France
Allis Mineral Systems France SA
Alès (30)
Phone +33 66 546 370
Fax +33 66 305 411

Allis Mineral Systems France SA
Aulnay-Sous-Bois (93)
Phone +33 1 486 625 47
Fax +33 1 486 635 48

Germany
Allis Mineral Systems GmbH
Bad Vilbel
Phone +49 6101 525 80
Fax +49 6101 641 26

Ghana
Svedala International/Minco
Ghana
Accra
Phone +233 21 229 691
Fax +233 21 220 364

Great Britain
Allis Mineral Systems (UK) Ltd
Wishaw
Phone +44 698 355 921
Fax +44 698 351 376

Goodwin Barsby
Rugby
Phone +44 788 532 250
Fax +44 788 546 563

Tidco Croft
Shepton Mallet
Phone +44 749 344 321
Fax +44 749 345 117

Hong Kong
Svedala International (HK)
Hong Kong
Phone +852 804 1183
Fax +852 804 1253

Hungary
Allis Tidco KFT
Budapest
Phone +36 1 155 9884
Fax +36 1 175 0173

India
Svedala Industri India Pvt Ltd
New Delhi
Phone +91 11 688 1659
Fax +91 11 688 1745

Mexico
Minco Mexicana SA de SV
Ciudad Juarez
Phone +52 16 169 297
Fax +52 16 134 620

Netherlands, the
Allis Mineral Systems (Hol-
land)
Dordrecht
Phone +31 78 179 500
Fax +31 78 173 600

New Zealand
Tidco International
Matamata
Phone +64 7 888 5699
Fax +64 7 888 5244

Norway
Svedala A/S
Divisjon Svedala-Arbrå
Oslo
Phone +47 2 328 000
Fax +47 2 328 010

Spain
Minco Ibérica SA
Madrid
Phone +34 1 616 4585
Fax +34 1 616 4835

Sweden
Svedala Svenska AB
Svedala
Phone +46 40 409 090
Fax +46 40 405 980

Switzerland
Svedala-Arbra AG
Otelfingen
Phone +41 1 844 3246
Fax +41 1 844 3664

USA
Allis Mineral Systems
Appleton, Wisconsin
Phone +1 414 734 9831
Fax +1 414 734 9756

Svedala Industries Inc - Tidco
Mobile, Alabama
Phone +1 205 438 6100
Fax +1 205 438 4717

Zambia
Svedala International
Kitwe
Phone +260 2 220 894
Fax +260 2 220 887

Other countries
Svedala International AB
Malmö, Sweden
Phone +46 40 245 800
Fax +46 40 974 202

Divisional headquarters
Allis Mineral Systems AB
Malmö, Sweden
Phone +46 40 245 800
Fax +46 40 784 75

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Printed by: Wallin & Dalholm Boktr. AB, Lund 1994, Sweden