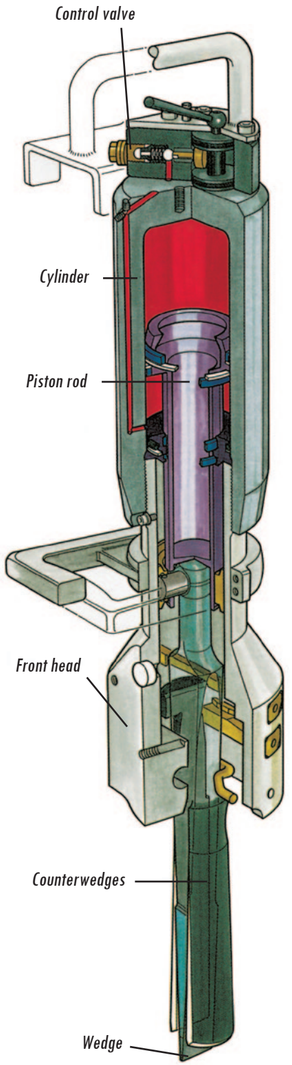
DARDA - splitting cylinder



Darda - general survey

Splitting cylinders

Type	Wedge set	Required drill hole diameter mm	Minimal drill hole depth mm	Splitting-distance mm	Splitting force theoretical kN	to	Splitting force effective kN	to	Weight [2] kg	Length splitting cylinder mm	Length wedge set mm	Order-No
C 2 S	N	31 - 32	270	9	3490	355	1913	195	17	745	150	8381 0402 10
C 4 E	N	35 - 36	430	10	4524	461	2256	230	21	995	250	8381 0406 25
C 4 E	WL	35 - 38	540	14	3267	333	1864	190	22	1145	400	8381 0406 40
C 9	N	45 - 48	410	18 - 53 [1]	2995	305	1962	200	22	1020	230	8381 0409 00
C 9	L	48 - 50	580	18 - 53 [1]	2995	305	1962	200	23	1190	400	8381 0409 40
C 12	N	45 - 48	610	19 - 60 [1]	6061	618	3507	358	31	1290	380	8381 0412 38
C 12	L	45 - 48	680	15 - 44 [1]	8082	824	4048	413	32	1360	450	8381 0412 45
C 12	W	45 - 48	550	24 - 80 [1]	4849	494	3150	321	31	1250	320	8381 0412 50

[1] With one enlarging counter wedge and one special enlarging counter wedge [2] without hydraulic hoses and SV coupeling

Hydraulic pump units (portable)

Type	Type of motor	Weight kg	lbs	Length mm	inch	Width mm	inch	Height mm	inch	Pump capacity low pressure l/min	gal/min	Pump capacity high pressure l/min	gal/min	Volume of oil tank l	gal (USA)	Order-No
AP2	Air motor [1]	40	88	600	23,6	398	15,7	426	16,8	5,0	1,32	1,6	0,42	5,0	1,32	8381 0503 54
BP2	Gasoline motor	40	88	600	23,6	398	15,7	426	16,8	5,0	1,32	1,6	0,42	5,0	1,32	8381 0503 39
EP2	Electric motor 400 V	40	88	600	23,6	398	15,7	426	16,8	5,0	1,32	1,6	0,42	5,0	1,32	8381 0503 47
EP2	Electric motor 230 V	50	110	600	23,6	398	15,7	426	16,8	5,0	1,32	1,6	0,42	5,0	1,32	8381 0503 51
D4	Diesel motor	137	301	1180	46,4	720	28,4	730	28,8	5,4	1,42	5,4	1,42	10,0	2,64	8381 0502 40

[1] max. 0,7Mpa (7bar), Air consumption: 47-195m³/h

Hydraulic hoses

Type	Length m	Suitable for cylinders	Order-No
S 1	10	1	8381 0504 02
S 1	20	1	8381 0504 03
S 2	10	2	8381 0504 10
S 2	20	2	8381 0504 11
S 3	20	3	8381 0504 29

[1] Distance between cylinder and pump unit

Enlarging counter wedges

Type	Enlarging counter wedges Order-No	Special enlarging counter wedges Order-No
C 4 E N	3390 0141 03	–
C 9 N	3390 0246 11	3390 0246 21
C 9 L	3390 0246 31	3390 0246 51
C 12 N	3390 0236 00	3390 0280 00
C 12 L	3390 0236 21	3390 0280 21
C 12 W	3390 0236 11	3390 0280 11

Pressure shells

Suitable for	Required drill hole diameter mm	Minimal drill hole depth mm	Order-No
C 9 N	100	410	3390 0357 00
C 12 N/W	100	610	3390 0429 00

Special lubricant

Quantity / Tin	Order-No
1,00 kg	3391 0942 10
25,00 kg	3391 0980 10

We´ve got the power.

Darda GmbH
Im Tal 1, D-78176 Blumberg
Fon + 49 (0) 77 02 / 43 91 - 0
Fax + 49 (0) 77 02 / 43 91 - 12
info@darda.de
www.darda.de

Our distributor:

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SPLITTER C2-C12

Hydraulic rock and concrete splitters

- Splitting force up to 413 tons (4048 kn)
- Dust free
- Quiet performance
- Also applicable at places of difficult access
- Vibration free
- Easy handling
- Easy to transport
- Splits in seconds
- Controlled splitting
- Dimensionally accurate working

We´ve got the power.

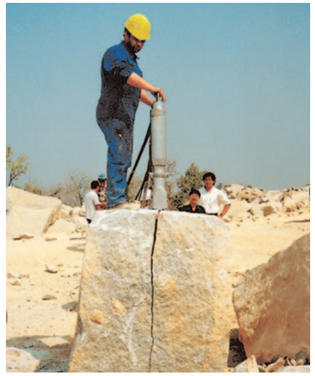
The powerful and economic way to split rock and demolish concrete

Hydraulic rock and concrete splitters provide a powerful and extremely cost-effective alternative to other conventional demolition techniques. Hydraulic splitting means controlled splitting, and this method eliminates shock waves, vibrations, dust and noise that large impact tools usually produce. DARDA rock and concrete splitters have been used with a great sucess in over 80 countries for the past 40 years. The high quality, reliability and durability of the equipment is unsurpassed.

How the splitter works

Conventional demolition techniques destroy rock and concrete by using an external force. However, because of their compressive strength, these materials are highly resistant to impact forces. For optimum results, one should adopt a splitting technique that works from the inside of the material, because rock an concrete have a lower tensile strength. The DARDA hydraulic splitters were developed to do this and work according to a safe and proven wedge principle:

First of all, a hole is drilled to a specified diameter and dept using an ordinary rock drill. Then the wedge set is inserted into the hole with the wedge in a retraced position. The hydraulic pressure then forces the wedge between the two counter wedges, pressing them against the walls of the drilled hole. The effective splitting force of up to **413 tons** or **4048 kN** breaks concrete and rock from the inside, breaking thinner iron rods at the same time.



Advantages

Economical

Blasting usually requires work stoppages and the installation of protective walls and other safety equipment. This costs both time and money. With DARDA high-performance rock and concrete splitters, blasting is not longer necessary. Therefore, there is no potential danger to the workforce or passers-by, and other work in th immediate surroundings can continue unaffected.

Safe

Hydraulic splitting means controlled demolition. The entire force developed is always under full control. There is no danger of flying debris, vibrations or even explosions.

Environmental-friendly

When using the DARDA hydraulic splitting technique, there are unpleasant side effects like vibrations and dust. Even noise emission is extremely low, which means that, all in all, this demolition technique is particularly environmental-friendly. That is why the DARDA splitter is indispansable in densely populated areas or inside buildings.

Durable

Thanks to the extremely robust design, the DARDA rock and concrete splitter can withstand even the toughest conditions. Its durability is quite exceptional. Therefore, next to no maintenance is required. Yet another cost-saving factor.

Autonomy

DARDA splitters and pump units are easy to transport. Operators no longer depend on heavy machinery, e.g. excavators, for their transport to the demolition site. Therefore, even the smallest workplace is no longer a poblem.

Easy to use

The splitters are extremely easy to operate. The lightweight design enables an operator to work on a splitting job single-handedly. Even unskilled workers can learn to use the DARDA splitter in a very short time.

Controlled demolition

DARDA hydraulic rock and concrete splitters enable you to work with a precision that cannot be achieved when using conventional demolition methods. The desired direction of the split and size of material to be removed can be determined beforehand. The portion of a structure that ought to remain intact is not affected by the splitting process.

Technical Details

A complete DARDA rock and concrete splitter compromises 3 components:
1. one or several splitting cylinders
2. one hydraulic pump unit
3. one set of high- and low-pressure hoses

Hydraulic splitting cylinder

The hydraulic splitting cylinder consists of a control valve, a cylinder, a front head and a wedge set (1 wedge and 2 counter wedges). The entire cylinder is made of highest quality aluminium and steel so that although the equipment is light, it is still extremely durable. The counter wedges are also coated with a hard metal (carbide) layer in a specially developed hardening process. This makes them more resistant to very high pressure and forces.

Multitude of applications

There are different types of splitting cylinders available for a variety of applications.

Hydraulic pump unit

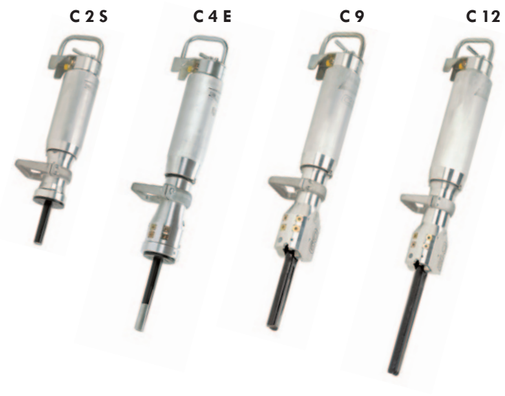
Electric, air, diesel or gasoline motors can be used to drive the high-pressure pump units. The system pressure has been limited to 50 MPa (500 bar) by a pressure limiting valve. Both mobile and portable pump units are available. Depending on the pump model, up to 5 splitting cyclinders can be run simultaneously.

Hydraulic hoses

High- and low pressure hoses connect the splitter to the pump unit. If several splitters are to be connected, a distributor part is attached to the end of the 10 m hose.

Main applications	Type of splitting cylinder	C 2 S	C 4E	C 9	C 12
Demolition of concrete and reinforced concrete					
Demolition of nonreinforced and lightly reinforced concrete				●	●
Demolition of reinforced concrete				○	●
Demolition work in closed spaces and places that are of difficult access (e.g. in elevator shafts)				●	●
Demolition work in extremely cramped spaces				●	○
Demolition work in extremely cramped spaces				●	●
Cutting concrete piles				●	●
Demolition of factory chimneys				●	○
Secondary splitting of concrete slabs (e.g. preparing concrete for recycling)				●	○
Underwater demolition				●	●
Demolition of rock					
Rock demolition (e.g. in trenching or splitting rock for a cellar extension)				○	●
Secondary splitting of large boulders		○	●	●	●
Tunnelling			●	●	○
Enlarging work in underground mining		●	●	●	●
Secondary splitting		○	●	○	○
Pipe jacking/microtunnelling		●	●	●	
Production of blocks in the natural stone industry					
Marble			●		
Granite		○	●		●
Sandstone				●	

● cylinder is most suitable ○ cylinder is suitable

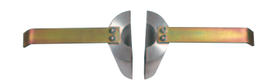


Enlarging counter wedges

If you need to enlarge the crack already made, simply remove the counter wedges initially used and replace with enlarging counter wedges. The crack can now be widened further, allowing heavy duty iron bars and other reinforcements to be cut.

Pressure shells

In a small diameter drill hole, the high splitting force acts on a very small area, exerting extreme surface pressure. In the case of heavily steel- reinforced concrete and under the most unfavorable conditions, attempts at splitting may merely compact the concrete, leaving an oval hole. Only short cracks develop around the hole and the reinforcing rods remain unaffected. In such cases, two large, heavy-gauge pressure shells provide the necessary remedy. These are introduced into a 100 mm diameter core hole and enclose the wedge set of the splitting cylinder. The splitting force is now applied over a large area, resulting in a precise split and forcing the steel rods apart more effectively.



Special lubricant

During the splitting process the wedge set is exposed to extremely high forces. This requires that the inner wedge and counter wedge surfaces be frequently lubricated. Tests carried out over an extended period of time proved beyond doubt that only our special lubricant is capable of significantly reducing the extreme friction. Owing to that, the use of DARDA lubricating paste guarantees the highest splitting performance which is 20 to 50% higher than if conventional lubricants are used.