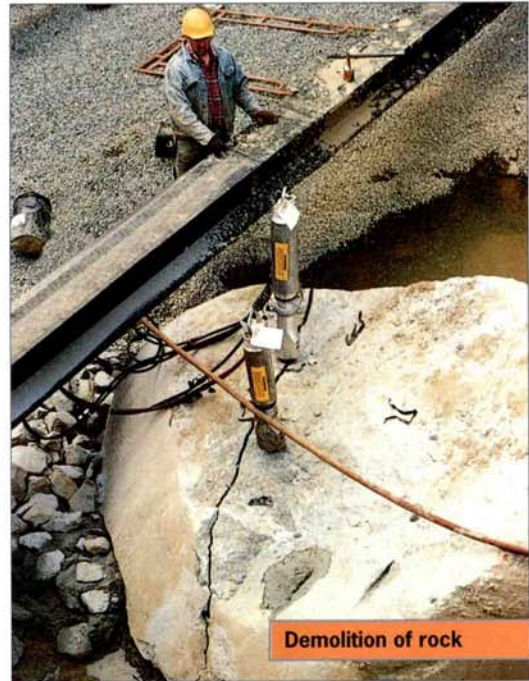
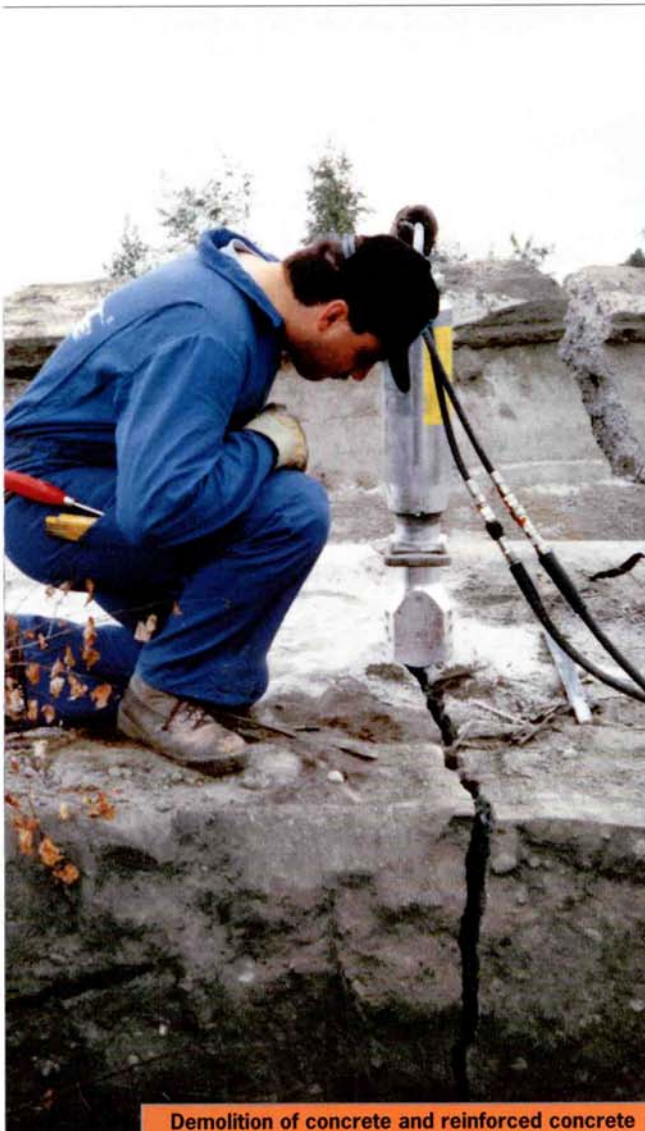


Production of blocks in the natural stone industry

Hydraulic rock and concrete splitters



Demolition of rock



Demolition of concrete and reinforced concrete

*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

darda

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 great success in over 80 countries for the past 25 years. The high quality, reliability and durability of the equipment is unsurpassed.

How the hydraulic 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 and concrete have a lower tensile strength. The DARDA hydraulic splitters were developed to do just this and work according to a safe and proven wedge principle.

First of all, a hole is drilled to a specified diameter and depth using an ordinary rock

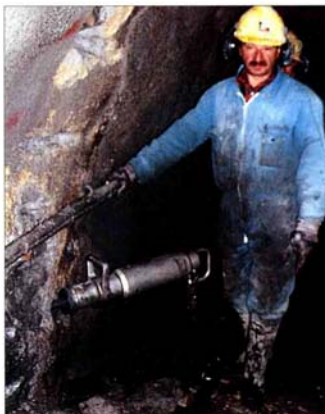
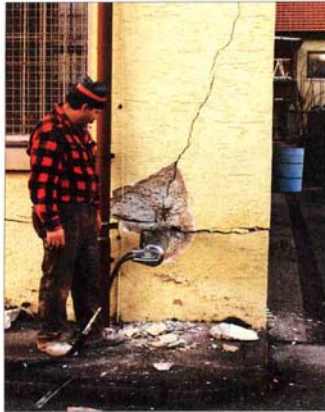


drill. Then the wedge set is inserted into the hole with the wedge in a retracted position. The hydraulic pressure then forces the wedge between the two counter-wedges, pressing them against the walls of the drilled hole. The effective splitting force of up to **413 TONS** or **4048 KN** breaks concrete and rock from the inside, breaking thinner iron rods at the same time.

Advantages of the DARDA splitter

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 no longer necessary. There-



fore, there is no potential danger to the workforce or passers-by, and other work in the 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 no 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 indispensable 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 problem.

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

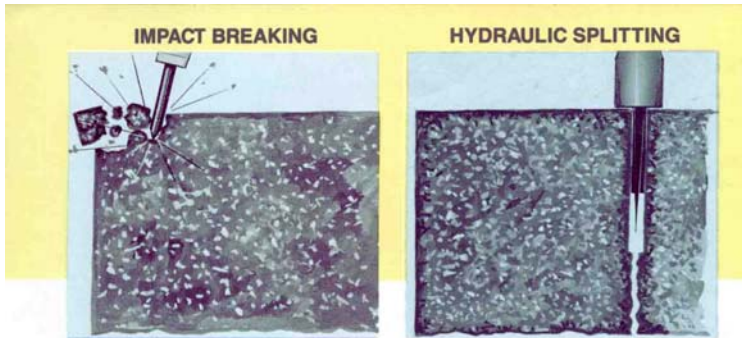
DARDA hydraulic rock and concrete splitters enable you to work with a precision that cannot be achieved when using conventional demolition methods.

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 comprises 3 components:

1. one or several splitting cylinders
2. one hydraulic pump unit
3. one set of high- and low-pressure hoses

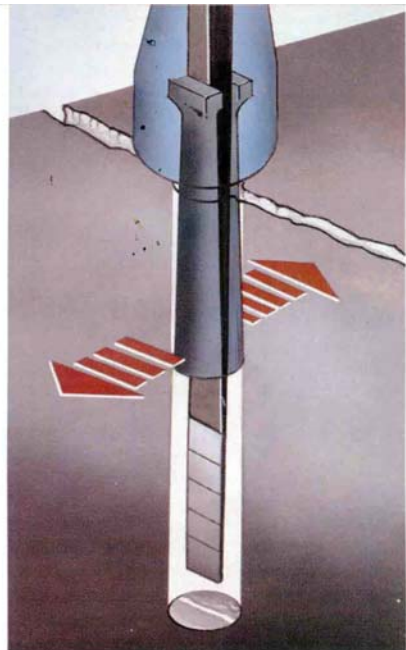


Paving breakers and large mounted impact rams are limited to breaking rock or concrete in small pieces. Noisy impact demolition requires more energy, time and usually more expensive.

Pieces, as large as your equipment can handle, are broken in seconds for removal. The larger pieces can increase production and reduce costs. The method is quiet and direction of breaks can be controlled.

CONTROLLED DEMOLITION FOR INFRASTRUCTURE WORK

Many contractors find they can reduce costs, save time and make demolition work profitable using the hydraulic splitting method. Hydraulic splitting means controlled demolition. As the direction of breaks can be determined, concrete can be cut in sections as large as your equipment can handle. Hydraulic splitting eliminates both shocks and vibrations associated with large impact tools. Engineered for heavy duty work, hydraulic splitters will out perform even large mounted impact machines. It can break large pieces of concrete or rock many times faster than paving breakers. Years of research and the use of hydraulic splitting on hundreds of job sites has proved this new method to be one of the most practical tools for demolition of concrete and rock. With a hydraulic splitter, the operator now has a very powerful tool at his command. With little effort, he can control the demolition as the job requires. The applications for the splitter are many, such as bridge decks, abutments, retaining walls, concrete walls, floor slabs, foundations, wall openings, reinforced concrete, rock and brick walls, locks, dams, culverts, road barriers and underwater demolition of concrete and rock.



HOW SPLITTER WORKS

The hydraulic splitter is powered by a 10,000 P.S.I. pump. (See back page). The cylinder contains a control valve and a piston that moves a plug between two feathers. The plug and feather end is placed into a drilled hole. The plug moves down between the two feathers forcing them against the wall of the hole. When the tension increases beyond the tensile strength of the material, a split will occur. The entire operation of the cylinder is controlled by a single lever on top of the tool. The plug can be advanced and retracted with this lever. An automatic built-in valve reduces pressure after break.

** Two or more hydraulic splitters can be operated at one time increasing the breaking. Example, two cylinders produce 1,400,000 lbs. of breaking force. Up to five splitters can be operated with one pump.*



Left, Hydraulic splitter was used to remove ends of overpass supports to form a keyway. The concrete was separated wide enough to cut reinforcing rods using enlarging feathers. Right, Workman carries splitter used to cut 14 ft. tunnel through base of dam for new penstock.

Trench rock and boulders below grade can be broken with one or more hydraulic splitters. Hydraulic splitting eliminates dangers associated with blasting. These hydraulic splitters will also operate underwater without any modifications.



C 9 splitting cylinder, EP – portable hydraulic pump unit with electromotor C 11 SN splitting cylinder, D 3 – mobile hydraulic pump unit with dieselmotor

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.

MULTITUDE OF APPLICATIONS

The numerous advantages of the DARDA

DARDA general survey

hydraulic rock and concrete splitters mean that the equipment can be used for a variety of applications:

- Demolition of concrete and reinforced concrete, e.g. walls, foundations, repair work on bridges etc.
- Demolition work in closed spaces e.g. in elevator shafts
- Demolition of rock, e.g. in trenching
- Secondary splitting of large boulders and concrete slabs e.g. preparing concrete for recycling
- Making openings in concrete walls
- Demolition of concrete walls
- Demolition of factory chimneys
- Tunnelling and enlarging work in underground mining
- Underwater demolition
- Removing the top section of concrete piles e.g. bridge decks
- Demolition work in extremely cramped spaces e.g. splitting rock for a cellar extension
- Demolition work in places that are of difficult access e.g. foundations of high-voltage pylons
- Precision splitting for the natural stone industry e.g. blocks of marble, granite etc.

Splitting cylinders

Type	Wedge set	Required drill hole diameter mm	Minimal drill hole depth mm	Splitting distance mm	Splitting force theoretical		Splitting force effective		Weight kg	Length splitting cylinder mm	Length wedge set mm	Order-No
					kN	to	kN	to				
C2S	N	32	270	9	3490	355	1913	195	17	745	140	8381 0402 10
C4	N	35-38	430	10-40	4524	461	2256	230	20	995	250	8381 0404 25
C4	WL	35-38	540	14	3267	333	1864	190	21	1145	400	8381 0404 40
C9	N	45-48	410	18-44	2995	305	1962	200	22	1020	230	8381 0409 00
C9	L	45-48	580	18-40	2995	305	1962	200	23	1190	400	8381 0409 40
C10S	N	41-43	630	18-45	4948	504	2551	260	32	1400	380	8381 0408 00
C12	N	45-48	610	20-50	6061	618	3507	358	31	1290	380	8381 0412 38
C12	L	45-48	680	15-35	8082	824	4048	413	32	1360	450	8381 0412 45

Hydraulic pump units

Type	Model	Type of motor	Rating	Suitable for splitting cylinders	Weight kg	Length mm	Width mm	Height mm	Pump capacity l/min	Volume of tank l	Order-No
			kW								
A1	mobile	Air motor ¹	3,8	1-4	113	1180	720	730	5,0	10,0	8381 0501 12
D4	mobile	Diesel motor	5,6	1-5	137	1180	720	730	5,4	10,0	8381 0502 40
D4E	mobile	Diesel motor ²	5,6	1-5	156	1180	720	730	5,4	10,0	8381 0502 41
E2	mobile	Electro motor ³	4,0	1-5	117	1180	720	800	4,8	10,0	8381 0503 12
AP	portable	Air motor ⁴	1,8	1-2	41	460	400	500	2,0	5,0	8381 0503 53
BP	portable	Gasoline motor	3,0	1-2	37	460	400	500	2,0	5,0	8381 0503 38
EP	portable	Electro motor ³	1,5	1-2	40	460	400	500	2,3	5,0	8381 0503 46

¹ Air consumption: 3,9 m³/min (at 6 bar); ² With electro-starter; ³ Electro motor: 3 phases, 400 V, 50 cycles per second; ⁴ Air consumption: 2,4 m³/min (at 6 bar)

Hydraulic hoses

Type	Length ¹	Suitable for cylinders	Order-No
S1 (10 m)	10	1	8381 0504 02
S1 (20 m)	20	1	8381 0504 03
S2	20	2	8381 0504 11
S3	20	3	8381 0504 29
S4	20	4	8381 0504 37
S5	20	5	8381 0504 45

¹ Distance between cylinder and pump unit

Enlarging counter wedges

Type	Enlarging counter wedges Order-No	Special enlarging counter wedges Order-No
C4N	3390 0141 03	-
C9N	3390 0246 11	3390 0246 21
C9L	3390 0246 31	-
C10SN	3390 0261 00	-
C12N	3390 0236 00	3390 0280 00
C12L	3390 0236 21	-

Pressure shells

suitable for	Required drill hole diameter mm	Minimal drill hole depth mm	Order-No
C9N	100	410	3390 0357 00
C12N	100	610	3390 0429 00

DARDA ชุดเล็ก ให้แรงเบ่งรวม 2 หัว 716 TON (358 TON/หัว)

POWER PACK ใช้ลมจากปั๊มลม



Model AP, portable

For 1-2 splitting cylinders

Power output: 1.8 kW

Weight: 41 kg

Order-No.: 8381 0503 53

Powerful hydraulic power units ensure flexibility of use

The right combination for every application

Safe-type hydraulic hoses

DARDA special hydraulic hoses form an integral part of the entire system. Despite strongly pulsating pressures, their quality provides an assurance of exceptional reliability and prolonged endurance.



Outstanding quality ensures security of investment

Like their related splitting cylinders, DARDA hydraulic units and hoses comply with the highest standards of quality and reliability. Every component in every system is made to withstand high forces and to function without any need for maintenance. A range of power units is available for different purposes and requirements. Needless to say, all splitting cylinders, hydraulic units and hoses form part of a fully integrated system capable of operating independently.

POWER PACK ใช้เครื่องยนต์เบนซิน



Model BP (petrol), portable

For 1-2 splitting cylinders

Power output: 3.0 kW

Weight: 37 kg

Order-No.: 8381 0503 38



POWER PACK ใช้ไฟฟ้า 380 V., 3 PH.

หรือ 220 V., 1 PH.



Model EP, portable

For 1-2 splitting cylinders

Power output: 1.5 kW

Weight: 40 kg

Order-No.: 8381 0503 46

DARDA ชุดใหญ่ให้แรงเบ่งรวม 5 หัว 1,790 TON (358 TON/หัว)

POWER PACK ใช้เครื่องยนต์ดีเซล



Models D4 and D4E (diesel), mobile

For 1-5 splitting cylinders

Power output: 5.6 kW

Weight: 137 kg (D 4), 156 kg (D 4 E)

Order-No.: 8381 0502 40 (D 4)

Order-No.: 8381 0502 41 (D 4 E)

POWER PACK ใช้ลมจากปั๊มลม



Model A 1, mobile

For 1-4 splitting cylinders

Power output: 3.8 kW

Weight: 113 kg

Order-No.: 8381 0501 12

POWER PACK ใช้ไฟฟ้า 380 V., 3 PH.



Model E 2, mobile

For 1-5 splitting cylinders

Power output: 4.0 kW

Weight: 117 kg

Order-No.: 8381 0503 12

