

LuBo[®]



ADS

ADP/M/T

ACST

ADU

APU

**TECHNICAL
INFORMATION**

ADS SERIES

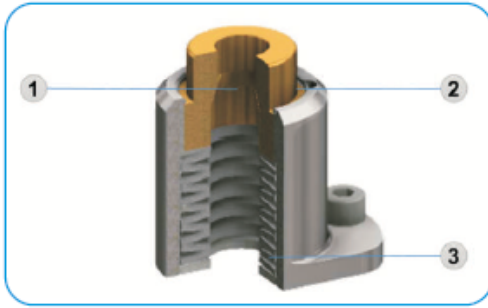
PATENTED



FEATURES

- ADS is the disc spring integral stripping unit available in any standard retainer various series depending on retainer specifications and maker (Retainer thickness 25 mm, 30 mm, 41 mm, Dayton/Misumi)
- The variable standard series are based on the punch blank diameter (10, 13, 16, 20, 25).
- The stripper can be replaced by one step.
- Assembled on the retainer without machine work.

ADS, ADS-M, ADS-B



- Disk springs were assembled non-removable structure to maintain the optimum disc spring stacking structure.

PATENTED

No.	Part	Spec.
1	Stripper	CAC304 *SM45C
2	Retaining Ring	
3	Power Unit	
-	Spring	Schonorr
-	Wrench Bolt	M8x25
-	Disk Washer	M8

* MoS2 coated Steel stripper is option

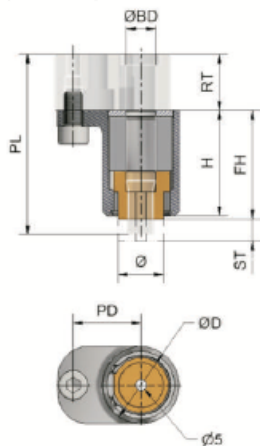
Series	Retainer Thickness			Stripping Force kN (kgf)	Punch Length		
	25t	30t	41t (Ball Lock)		80	90	100
ADS-10 (L:⊙)	●			4,4 (455)	●	●⊙	●⊙
ADS-13 (L:⊙)	●			4,7 (480)	●	●⊙	●⊙
ADS-16	●			5,4 (550)		●	●
ADS-20	●			6 (620)		●	●
ADS-25	●			9,7 (990)		●	●
ADS-10M (L:⊙)		●		4,4 (455)	●	●⊙	●⊙
ADS-13M (L:⊙)		●		4,7 (480)	●	●⊙	●⊙
ADS-16M (L:⊙)		●		5,4 (550)	●	●⊙	●⊙
ADS-20M (L:⊙)		●		6 (620)	●	●⊙	●⊙
ADS-25M (L:⊙)		●		9,7 (990)	●	●⊙	●⊙
ADS-10B			●	4,4 (455)		●	●
ADS-13B			●	4,7 (480)		●	●
ADS-16B			●	5,4 (550)		●	●
ADS-20B			●	6 (620)		●	●
ADS-25B			●	9,7 (990)		●	●

- Due to the characteristics of the disc spring stacking structure, the maximum spinning power can vary by about 7 %.

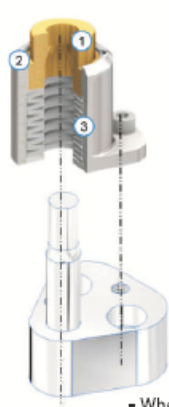
ADS, ADS-L, ADS-B

ADS, ADS-L, ADS-B (①②③)

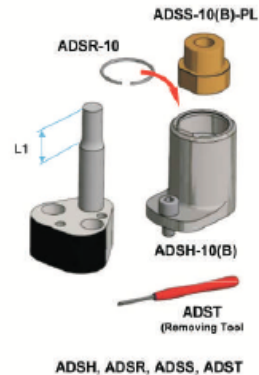
PATENTED



- The stripper has Φ 5mm hole



- When ordering with punch and retainer, Delivery with assembled



ADSH, ADSR, ADSS, ADST

Series	BD	D	PD	H	* Retainer Thickness(RT)		Punch Length PL / Retal Height FH			ST.	* Max. Force kN (kg.)
					25mm	41mm	80mm	90mm	100mm		
ADS-10(B)	10	30	25.9	46.6			48.2	58.2	68.2	8.3	4.4 (455)
ADS-10L				56			X	56.5	66.5	10.0	
ADS-10B				54			X	48.2	58.2	8.3	
ADS-13(B)	13	34	30	46.6			48.2	58.2	68.2	8.3	4.7 (480)
ADS-13L				56			X	56.5	66.5	10.0	
ADS-13B				54			X	48.2	58.2	8.3	
ADS-16	16	43	31.8	45.7			56	66	10.5	7	5.4 (550)
ADS-16B				47			X	50	60	7	
ADS-16L				54.4			X	56.5	66.5	10.0	
ADS-20	20	50	33.5	47			56.5	66.5	10.0	7	6 (620)
ADS-20B				54.5			X	50	60	7	
ADS-20L				46			X	56.5	66.5	10.5	
ADS-25	25	60	40.6	46			49	59	8.3	8.3	9.7 (990)
ADS-25B							X				

ORDER

CODE	PL	Mat'l
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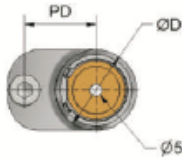
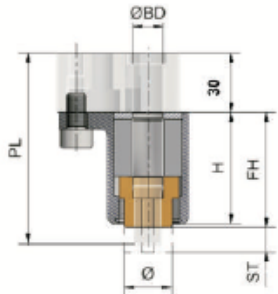
ADS-10 - 80 - C
 ADS-10B - 90
 ADS-10L - 90

* C: MoS2 coated steel stripper / SM45C

- *Due to the characteristics of the disc spring stacking structure, the maximum stripping force can vary about 7 %.
- * ADS, ADS-B for Dayton 30t standard retainer, For Misumi 25t retainer refer to ADMS
- Disk springs were assembled non-removable structure to maintain the optimum disc spring stacking structure.
- Ordered with Punch code, will be delivery with additional machine work on the stripper

ADS-M/ML

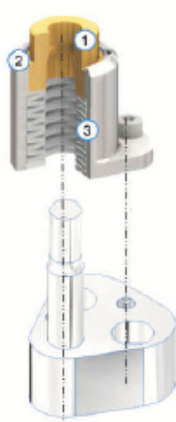
ADS-M/ML (①②③)



- The stripper has Φ 5mm hole

* ML: Long stroke

PATENTED



ADSH, ADSR, ADSS, ADST

- When ordering with punch and retainer, Delivery with assembled

Series	BD	D	PD	H
ADS-10M	10	30	29	43.5
ADS-10ML				51
ADS-13M	13	34	32	43.5
ADS-13ML				51
ADS-16M	16	43	34	43
ADS-16ML				50.5
ADS-20M	20	50	36	43
ADS-20ML				50.5
ADS-25M	25	60	39	43
ADS-25ML				50.5

Series	Punch Length PL/ Final Height FH			ST.	* Max. Force
	80mm	90mm	100mm		
ADS-10M	45	55	65	6.5	4.4 (455)
ADS-10ML	X	52.5	62.5	9	
ADS-13M	45	55	65	6.5	4.7 (480)
ADS-13ML	X	52.5	62.5	9	
ADS-16M	45	55	65	6.5	5.4 (550)
ADS-16ML	X	52	62	9.5	
ADS-20M	45	55	65	7	6 (620)
ADS-20ML	X	52	62	9.5	
ADS-25M	45	55	65	7	9.7 (990)
ADS-25ML	X	52	62	9.5	

ORDER

CODE	PL	Mat'l
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ADS-10 - 80 - C

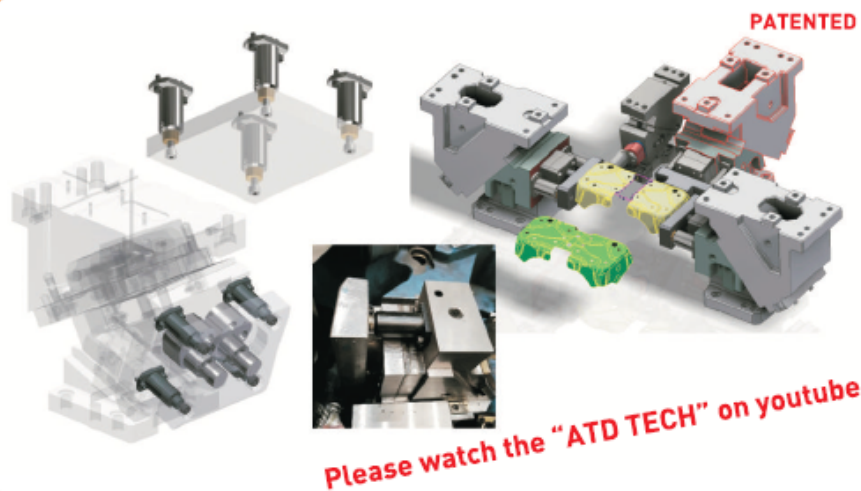
ADS-10M - 90

ADS-10ML - 100

* C: Mos2 coated steel stripper / SM45C

- *Due to the characteristics of the disc spring stacking structure, the maximum stripping force can vary about 7 %.
- * ADS-M, ADS-ML for Misumi 25t retainer, For Dayton retainer refer to ADS
- Disk springs were assembled non-removable structure to maintain the optimum disc spring stacking structure.
- Ordered with Punch code, will be delivery with additional machine work on the stripper

ADP, ADPT, ADPM SERIES

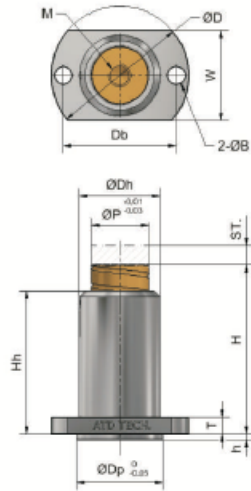


FEATURES

- ADP was developed for pad guiding part with disc springs inside.
- Applicable for Cam Pad, Upper Die Pad, Lower Die Pad
- More performance for high-speed SPM.
- The guide pin diameter and the padding forces are specified.
- Modular products with rectangular standard shape also standardized, it makes easy to design and die making.
- Depending on the assembly space and the working conditions, can select two or four unit modules.
- The pad module can be supplied with additional machine works.

ADP

ADP



CODE	ST	Hh	H	Max. Force
ADP-30x8	8.3	82.5	67.5	455kg
ADP-30x13	13	74	79	455kg
ADP-34x8	8.3	82.5	68.5	480kg
ADP-34x13	13	79	85	480kg
ADP-42x10	10.5	75	80	550kg
ADP-42x15	15	89	95	550kg
ADP-50x10	10	73.5	80	620kg
ADP-50x15	15	91.5	98	620kg
ADP-60x10	10	74.8	85.5	990kg
ADP-60x15	15	91.5	102	990kg

• Due to the characteristics of the disc spring stacking structure, the maximum spinning power can vary by about 7 %.

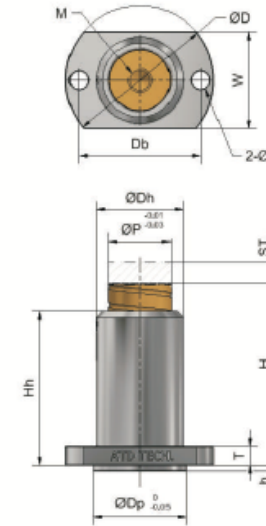


- Delivery with pad plates refer to ADPM Series.
- Contact regional distributor for more information.

• Final Position.

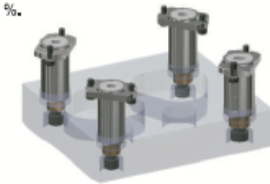
ADPT

ADPT



CODE	ST	Hh	H	Max. Force
ADPT-30x8	8.3	62.5	67.5	455kg
ADPT-30x13	13	74	79	455kg
ADPT-34x8	8.3	62.5	68.5	480kg
ADPT-34x13	13	79	85	480kg
ADPT-42x10	10.5	75	80	550kg
ADPT-42x15	15	89	95	550kg
ADPT-50x10	10	73.5	80	620kg
ADPT-50x15	15	91.5	98	620kg

• Due to the characteristics of the disc spring stacking structure, the maximum spinning power can vary by about 7 %.



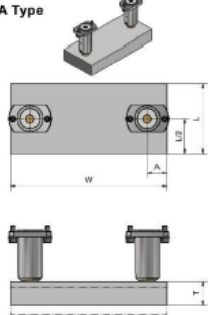
- Delivery with pad plates refer to ADPM Series.
- Contact regional distributor for more information.

• Final Position.

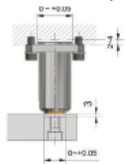
ADPM

ADPM, ADPMT

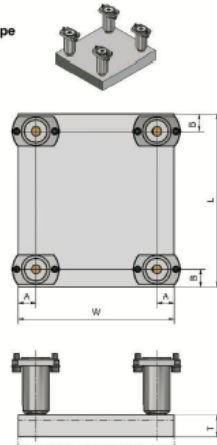
A Type



• Recommend Assembly Structure



B Type



• Final Position.

* W, L Dim. Is every 10 mm

ORDER

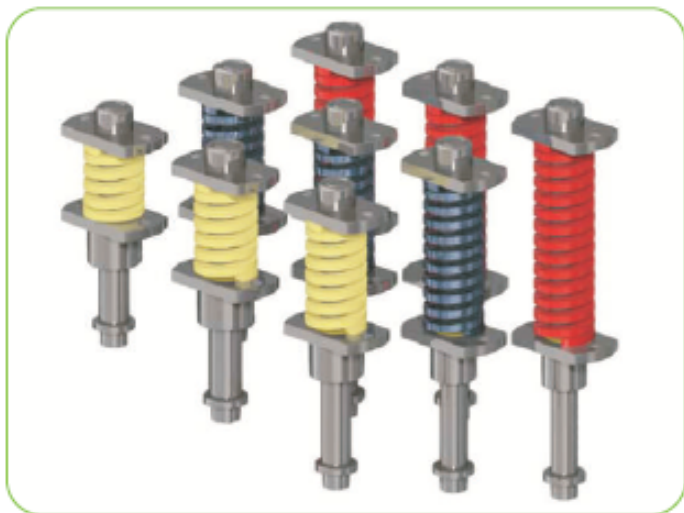
SERIES x **ST** - **TYPE** - **W** x **L** x **T** x **A** x **B** x **Mat'i**

ADPM=30x13- A - 55 x 150 x 20 x 15 x 15 x 5M45C

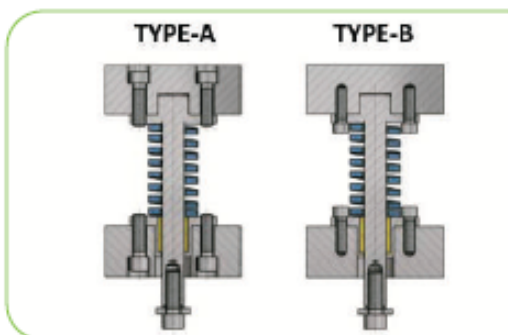
- Material: SS400 (Standard)
- Only for guide unit ADP, ADPT
- Contact regional distributor to delivery with additional machine work
- Due to the characteristics of the disc spring stacking structure, the maximum spinning power can vary by about 7 %.

SERIES	Max. Force	
	A type	B type
ADPM(T)-30	910 kg	1,820 kg
ADPM(T)-34	960 kg	1,920 kg
ADPM(T)-42	1,100 kg	2,200 kg
ADPM(T)-50	1,240 kg	2,480 kg
ADPM-60	1,980 kg	3,960 kg

ACST SERIES

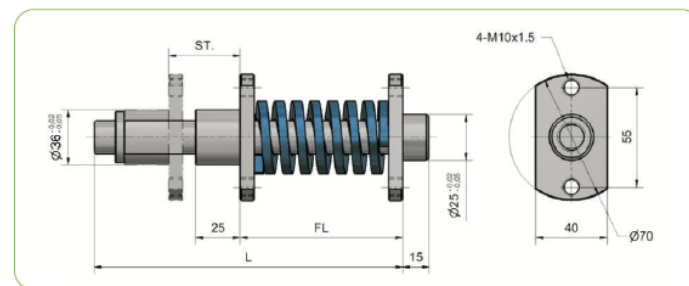


(UNIT: mm, kgf)

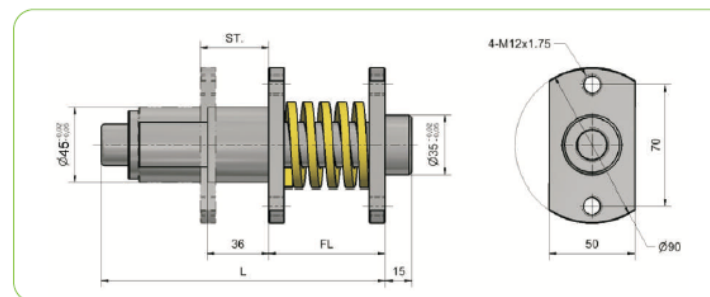


CODE	Type A	Type B
ACST - 40	M10	M8
ACST - 50	M12	M10
ACST - 60	M16	M12

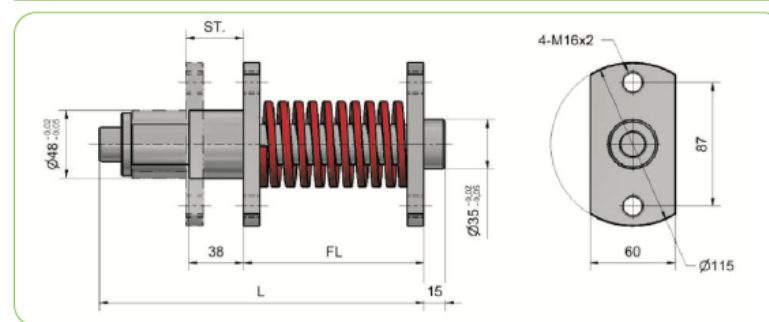
ACST 40 SERIES



ACST 50 SERIES



ACST 60 SERIES



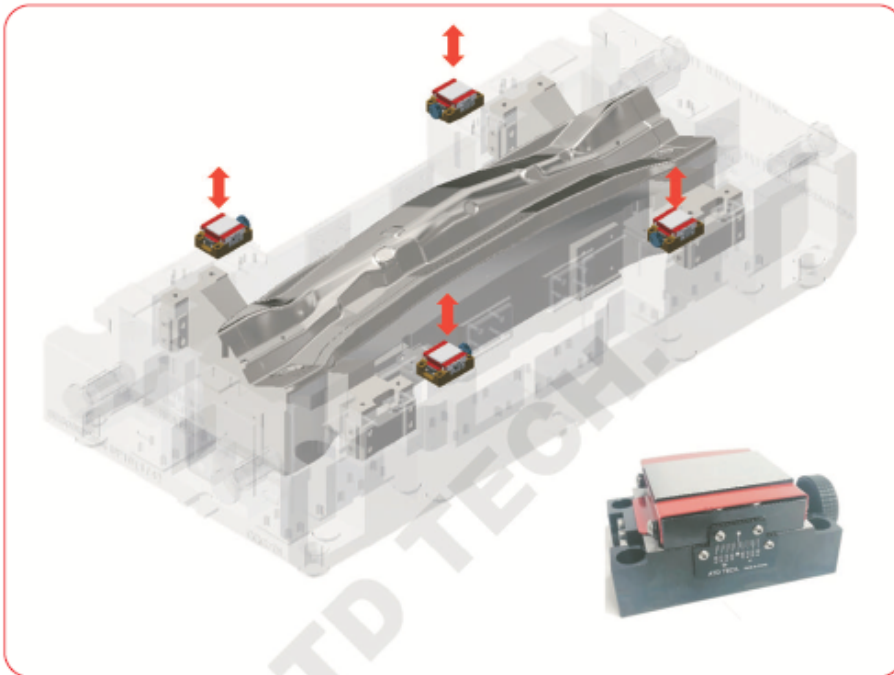


ATD TECH.

Analog To Digital Technologies

ADJUSTABLE DISTANCE UNIT

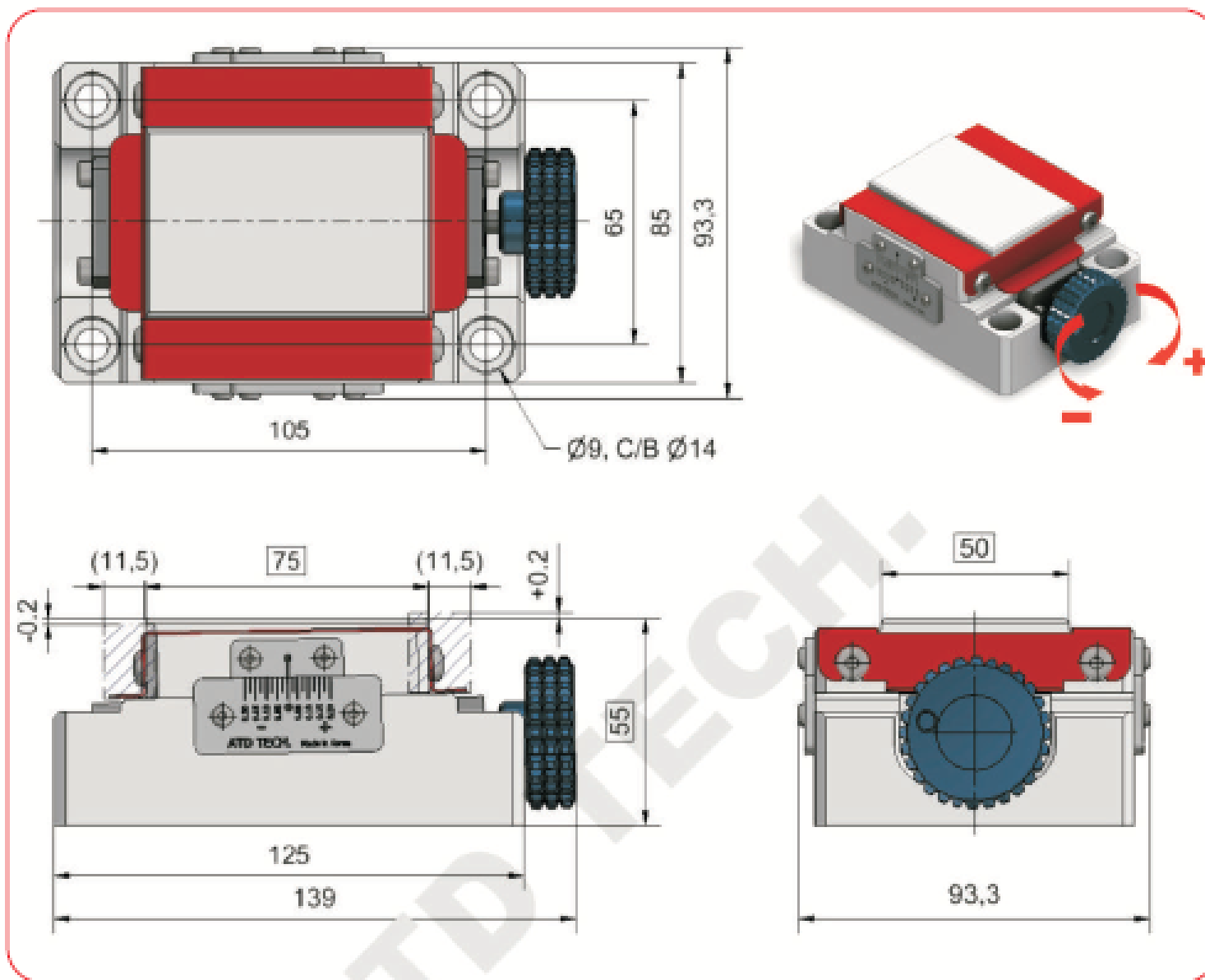
ADU-55



FEATURES

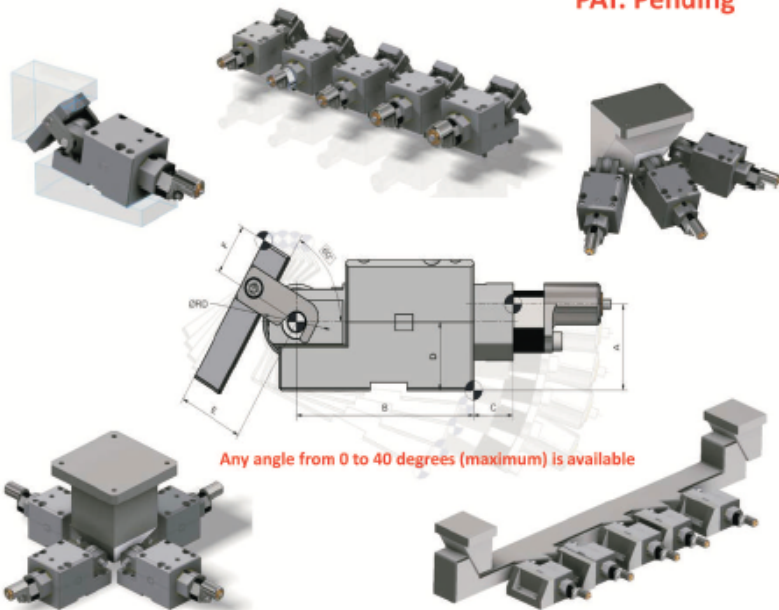
- No seam plate is required for distance block height adjustment.
- Precise height adjustment is possible by the adjustment handle.
- Easily adjustment on the stamping line.
- Adjustable height range is $-0.2 \sim +0.2$
- Maximum allowable load: 120 ton.
- The metric scale is mounted on both sides.

ADU-55



APU

PAT. Pending



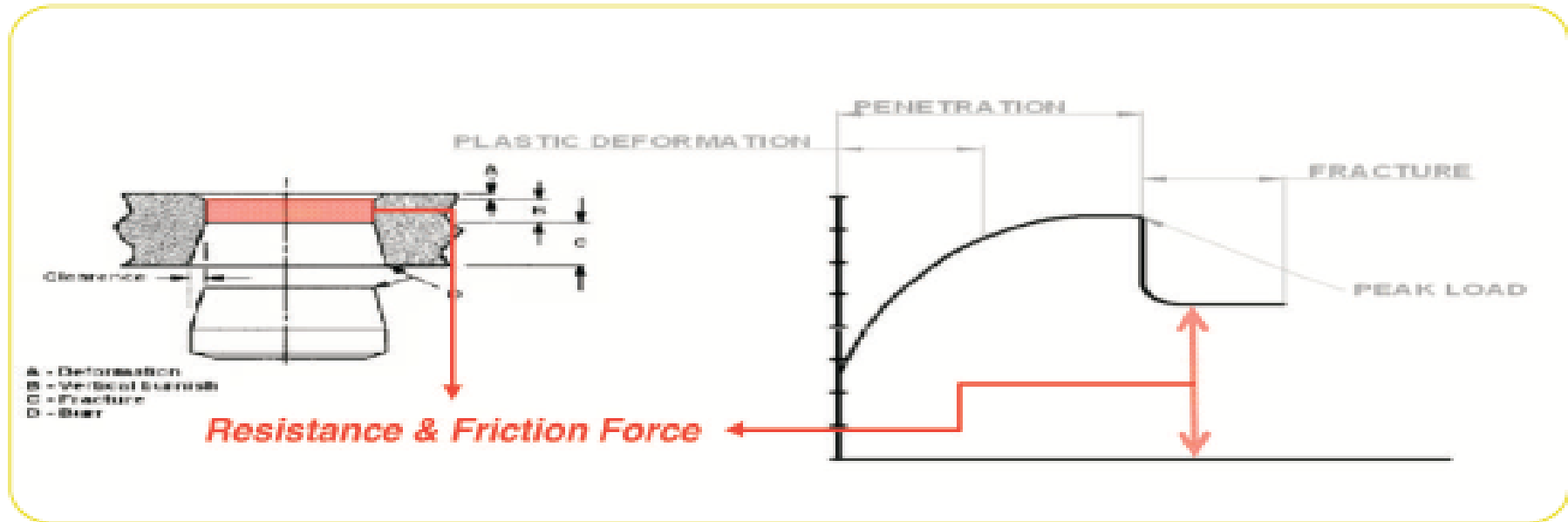
- No more oversized cams in piercing process !
- Resolve the limit of mold cost reduction by high speed stamping!
- Built-in gas spring ensures stable production performance !
- 5-degree unit of standard unit cam Overcome working angle limit!
- More effective for AHSS, Thick material, aluminum !
- Compliant with standard retainer specifications
- Resolve wear plate stretch problem by rolling mechanism

Disk Stripper for High Tensile Strength & Thick Material

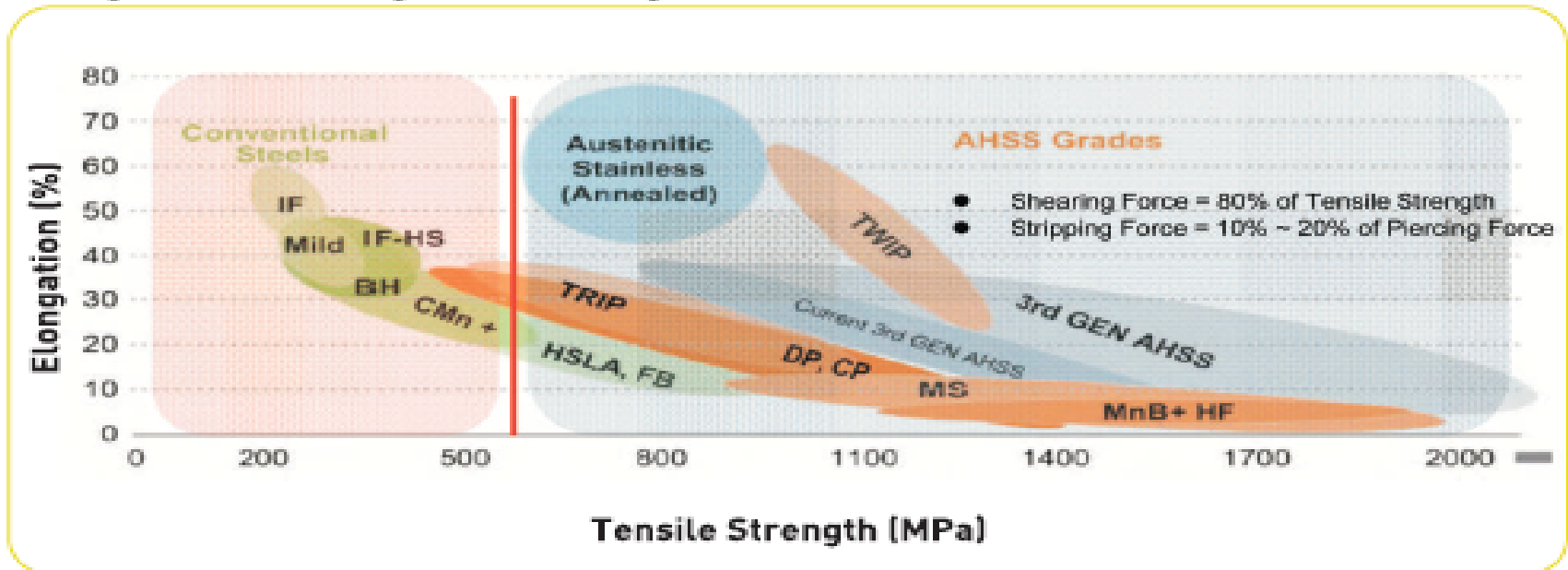


PTC. Patent Pending

Stripping force & piercing force & AHSS material



- The higher the Piercing Force, the higher the Return Force



Conventional Cam Piercing Process' wear amount issues with return force

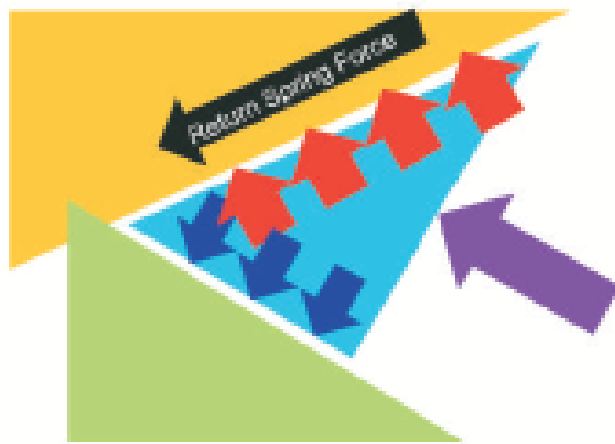


Fig.1 Aerial Cams' Internal Pressure Principle

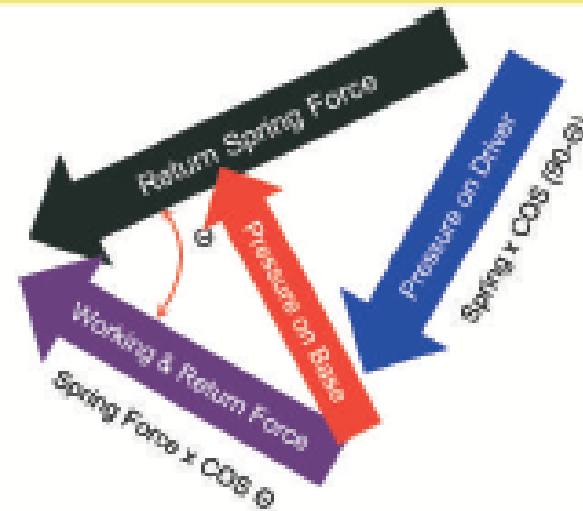
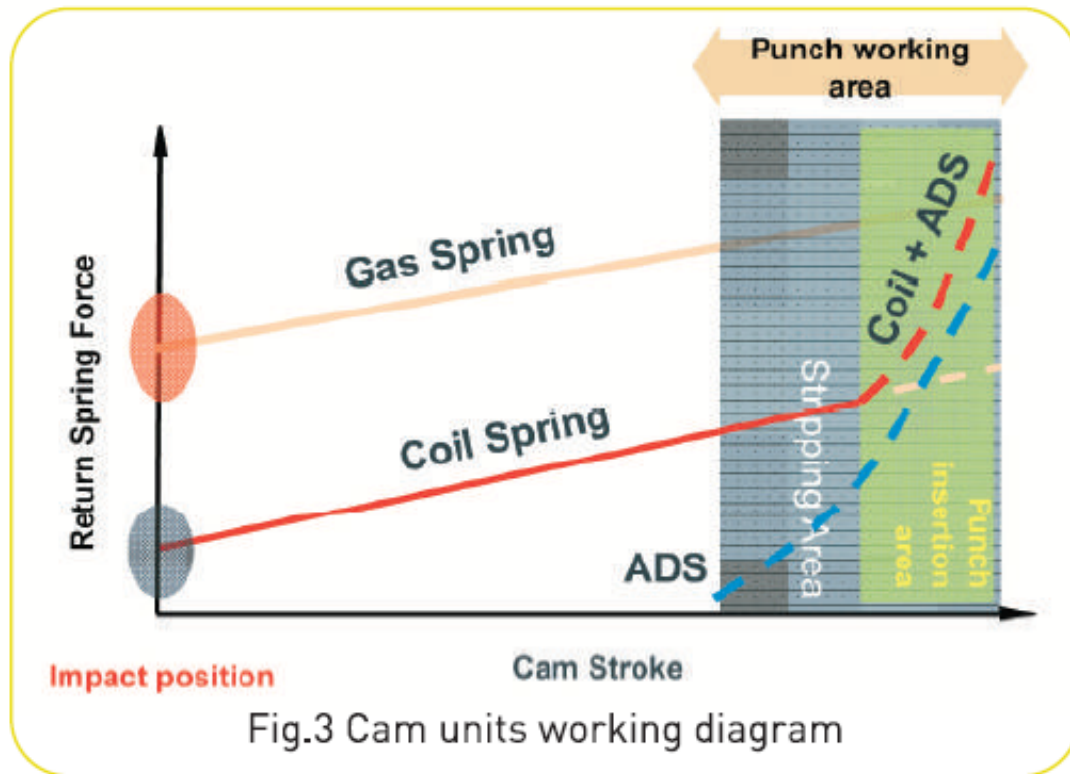


Fig.2 Relations of the force

The best solution for piercing higher grade steels is to provide a lower initial return force, and a higher final force during the penetration stage of the pierce (prior to the rupture point), this can be achieved utilizing the ADS stripper.

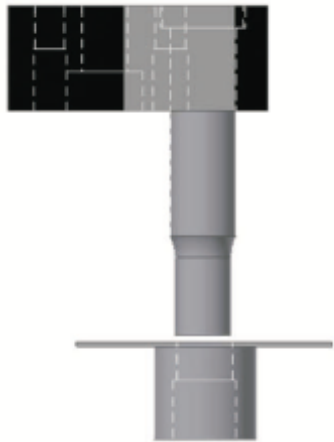


The return force of a conventional cam unit is dependent solely on the return spring force, placed at the cam base, however since the spring is not pushing in the same direction as the cam, the force is not fully transferred. This increases the surface

pressure between the cam driver and cam base, which highly contributes to the unit's wear, and the reduction of the unit's life cycle.

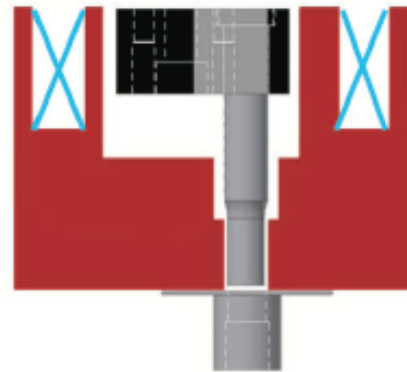
A proper return force is the most important factor contributing to the die quality (without increasing the surface pressure).

Piercing Process



- Material: Tensile Strength 650Mpa / 1t
- Shearing Strength: $650 \times 0.8 = 520\text{Mpa}$
- PI Dia.: 13mm
- W/Force = $1 \times 13 \times 3.14 \times 52 = 2,100\text{kg}$
- Stripping Force: $2,100 \times 0.10 \sim 0.2 = 210 \sim 318\text{kg}$

With PAD Structure



- Pad Assembly (Pad Block, Spring, Pad Guide, Spool Retainer..)
- With assembly structure M/C work

With ADS



- ATD TECH. ADS-16-P13
- Without additional M/C work
- Final Stripping Force = 500kg

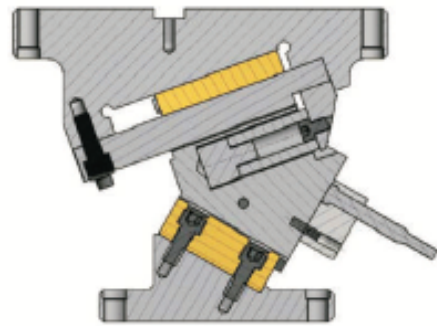
COST

• PAD Structure



• ATD TECH. ADS Stripper

Cam Piercing Process



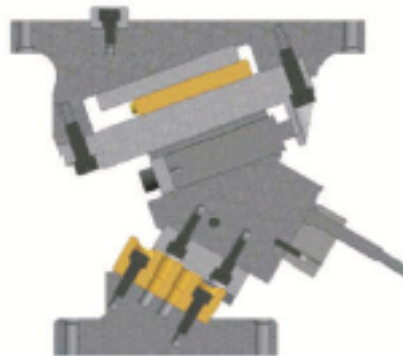
Sankyo UCMSC 50-30

- Material: Tensile Strength 650Mpa, 1t
- Cam Structure: Aerial, 30 degree
- Shearing Strength: $650 \times 0.8 = 520\text{Mpa}$
- Piercing Dia.: 13mm
- Working Force = $1 \times 13 \times 3.14 \times 52 = 2,100\text{kg}$
- Stripping Force: $2,100 \times 0.1 \sim 0.2 = 210\text{kg} \sim 420\text{kg}$

COST Compare

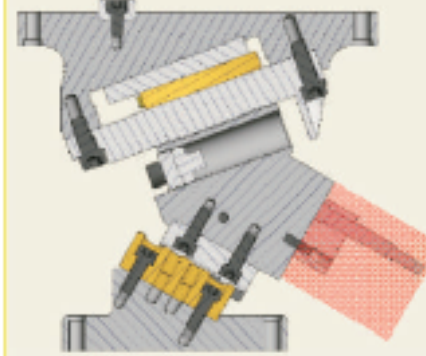
-
- ATD TECH. ADS Disk Stripper
 - Cam Pad
 - Cam Upgrade

Case-1 / Cam Upgrade



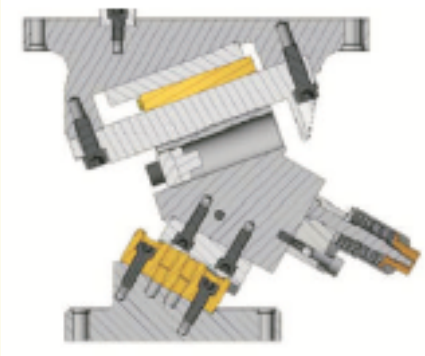
- UCMSC 50-30 → UCMSNR 70-30-GK
- COST: 250% more

Case-2 / Cam Pad



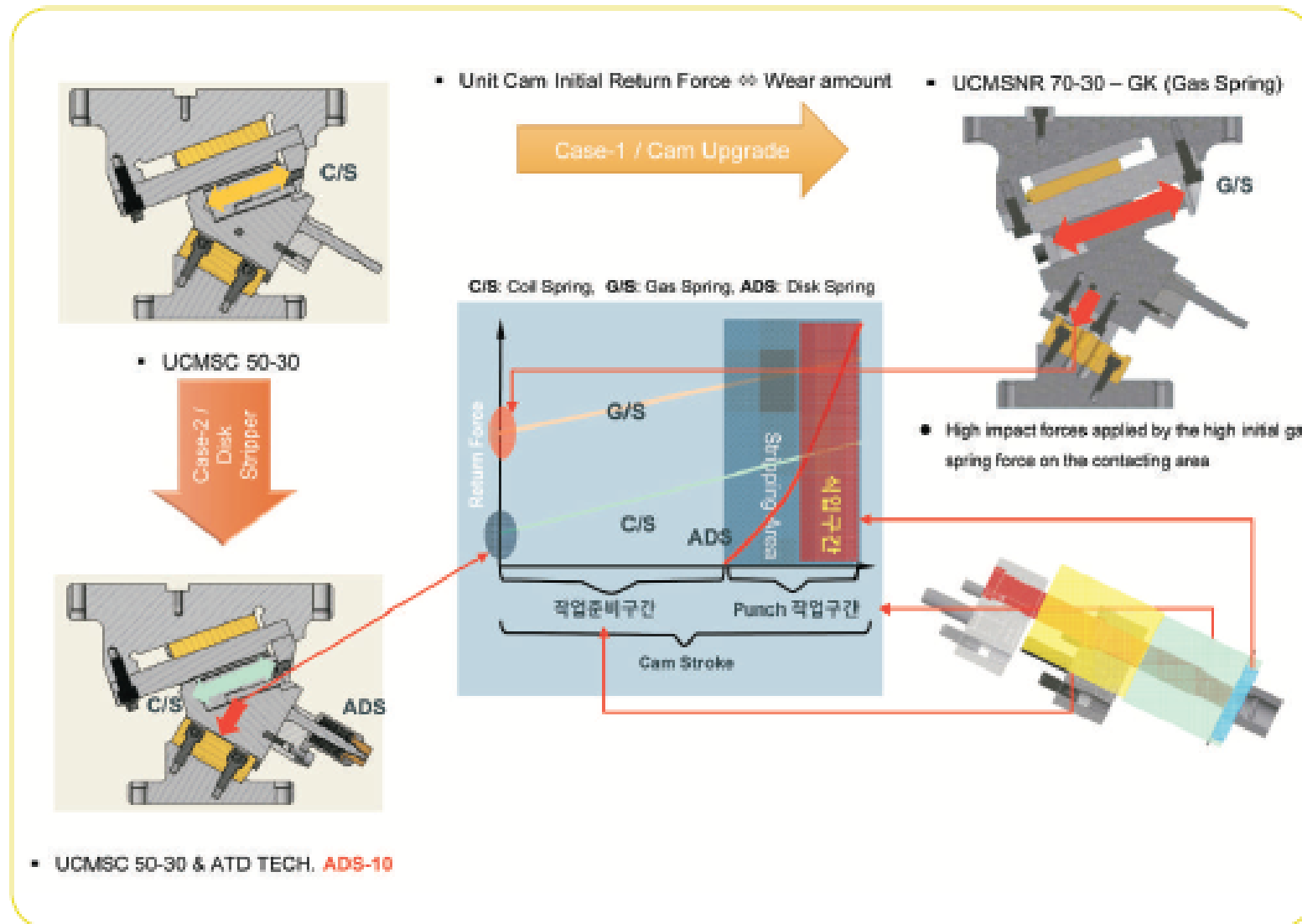
- Added Parts: Pad Ass'y (Pad Block, Spring, Pad Guide, Spool Retainer..)
- With additional M/C work

Case-3 / ADS

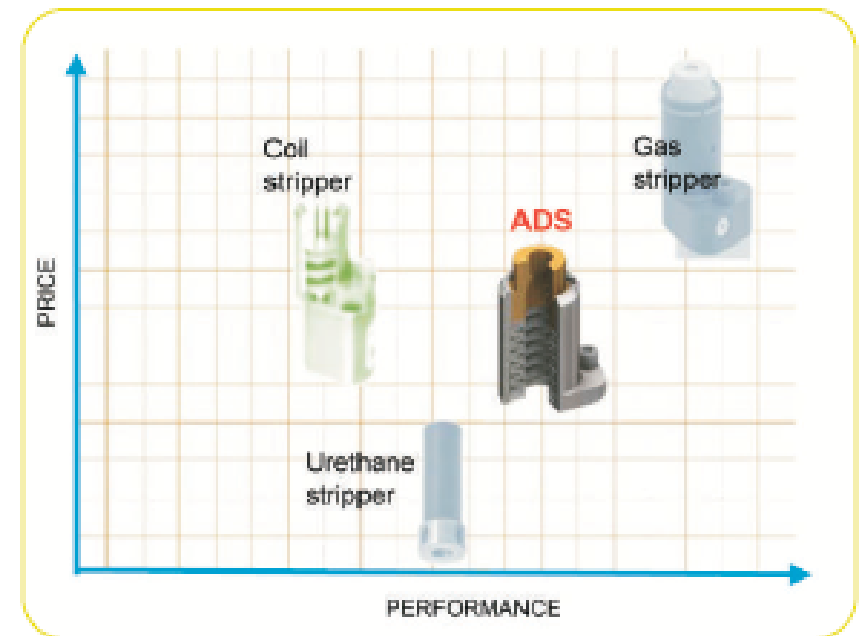
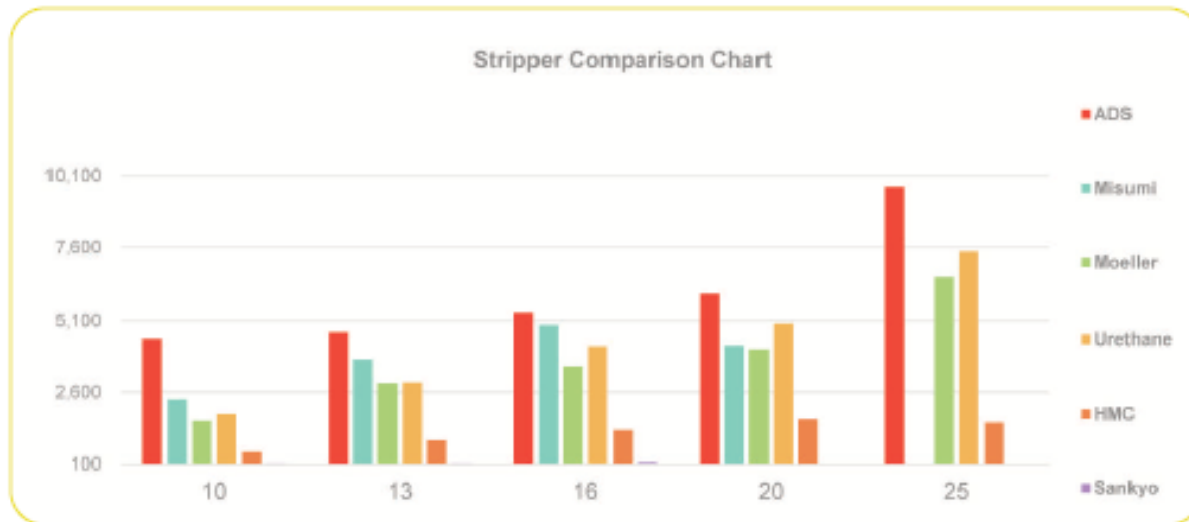


- ATD TECH. ADS-16-P13
- 추가가공 : 없음
- Stripping Force = 500kg

Cam Piercing Process



Comparison of Strippers' Forces



- The urethane stripper is the most cheap and weak
- The coil spring stripper is more longer stroke and limitational final force
- The disk stripper also has limitation final force but the most higher force as limitational area
- ATD TECH ADS stripper has developed with suitable multi lamination structure and stable structure

COST

Urethane Stripper

ADS

Coil stripper

Structure & Features

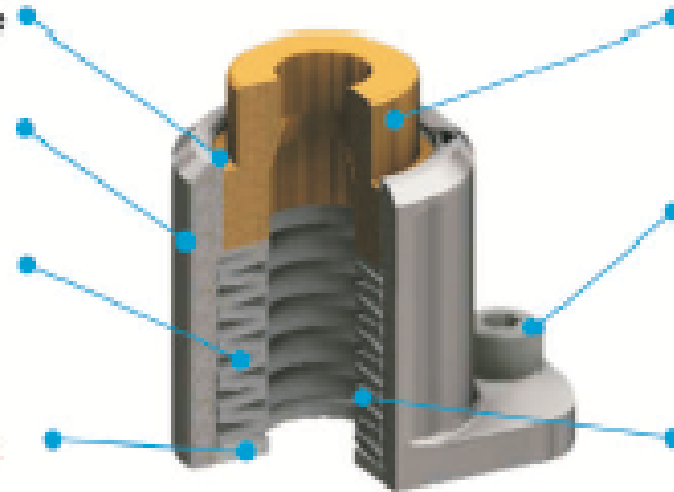
PTC Patent Pending

Retaining Ring : Easy assembly structure

Housing : Special alloy HRC30~

Disk Spring : Made in Germany
SCHNORR

Cover & Washer : Special alloy HRC30~

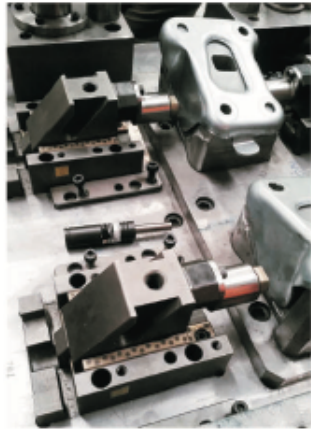


Stripper : Prevent panel defects, Special cooper alloy

Bolt & Disk Washer : Strength 12.9 Wrench Bolt with prevent washer

Mo2 Grease filling up : reduction of frictional resistance

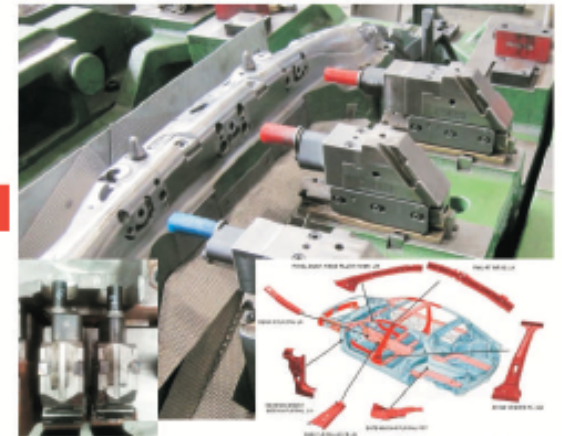
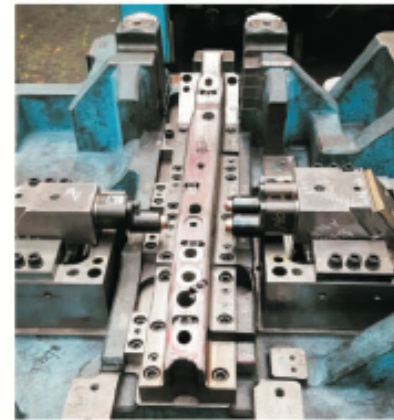
Applications



- Material Condition: 400Mpa / 3.8t
- Cam Unit: 65x40
- Pi. Dia.: 12.8mm
- Working Force = $3.8 \times 12.8 \times 3.14 \times 35 = 5.3$ ton
- Req. Stripping Force : $5,300 \times 0.15 = 795$ kg



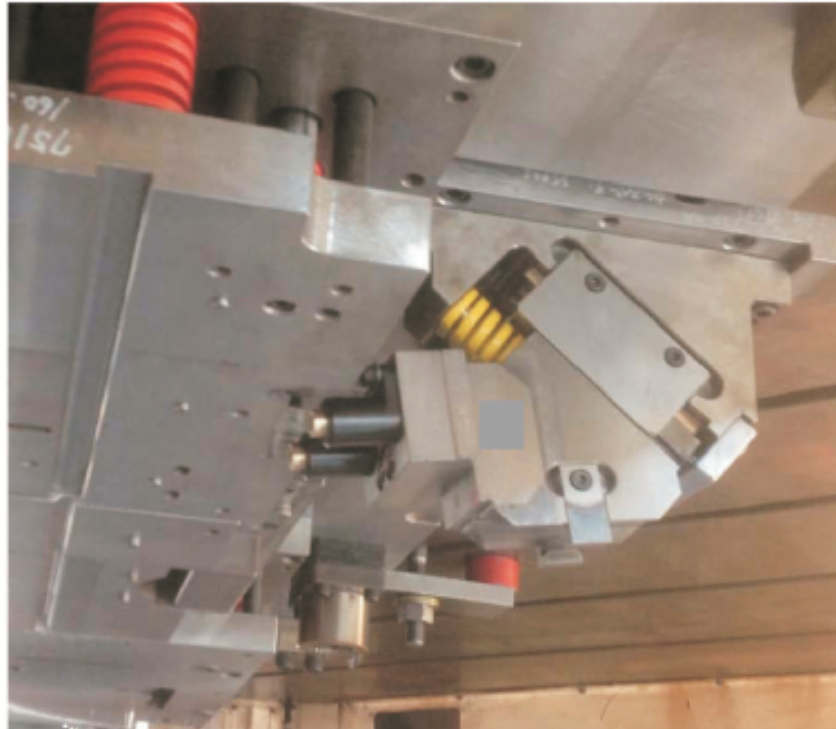
- Cam Return Force: Gas Spring 255kg
- Stripper: ADS-16-P12.8 (Proto Type)
- Final Stripping Force: 550 kg
- Total Stripping Force: $255 + 550 = 800$ kg



Material Condition:
 Cam Unit: Special
 Pi. Dia.: Dayton C85 W12.85
 Working Force =
 Req. Stripping Force =

- Cam Return Force:
- Stripper: ADS-16B-C85-W13.05
- Final Stripping Force: 550 kg
- Total Stripping Force:

Applications



- Material Condition: 440 Grade 1.6t
- Cam Unit: Aerial Cam
- Pi. Dia.: Misumi Retainer 30T, 2-P8.2
- Working Force =
- Req. Stripping Force =
- SPM: 40~45
- Cam Return Force:
- Stripper: ADS-13M-P8.2
- Final Stripping Force: 480 kg
- Total Stripping Force: $480 \times 2 = 960\text{kg}$

