

EXEDY・HYPER SINGLE CLUTCH

PATENT & TECHNOLOGY



EXEDY
株式会社イクセディ

EXEDY HYPER SINGLE CLUTCH

HYPER SINGLE CLUTCH CONCEPT & FUNCTION

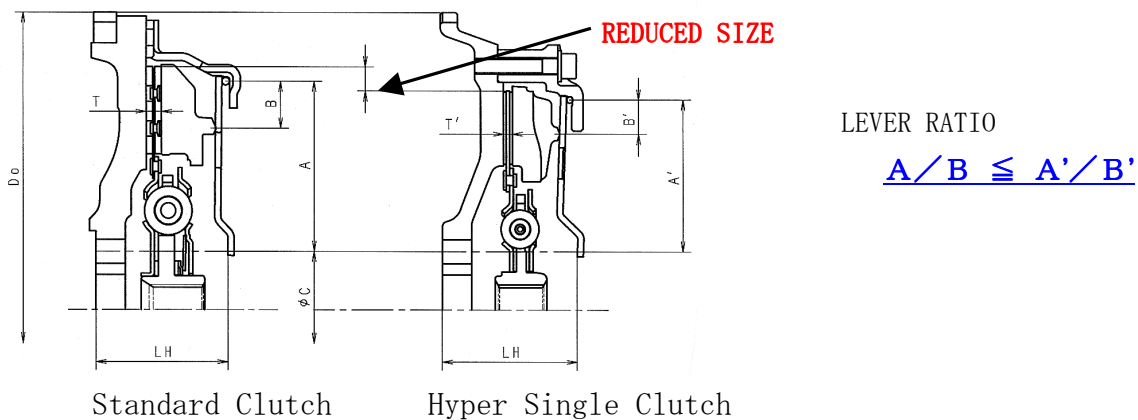
Hyper Single Clutch

The EXEDY HYPER SINGLE CLUTCH is a new generation clutch set for light to moderately tuned vehicles up to 400 HP. It is ideal for limited street driving and road circuit cars.

It has high torque capacity and a special lightweight design to reduce the clutch disc inertia.



Hyper single Function and Features



● ADVANTAGES

- I . By using a special metal disc, lever ratio can be increased so clamp load is increased without heavy pedal effort. (Accommodate higher torque)
- II . Due to high clamp load, clutch size can be reduced resulting in compact design. (Improved response)
- III . To prevent heat deformation and facing material wear, a special aluminum alloy cover has been developed specifically for these applications. (Improved life of facing and clutch operation)

● DISADVANTAGE

Disc, cover & flywheel as a kit must be changed together.

STRAP DRIVE TYPE PRESSURE PLATE FUNCTION



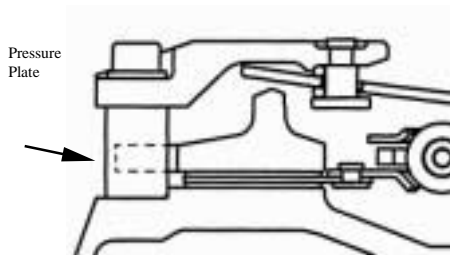
Pressure plate is coupled to clutch cover by strap plate.

ADVANTAGE»

- Improved Disengagement. (Pressure plate is forcibly separated from facing surface by strap plate)
- Prevent no-disengagement problem caused by the heat deformation of pressure plate.
- Prevent the peculiar rattle noise of lug drive type clutch.

【WORKING THEORY】

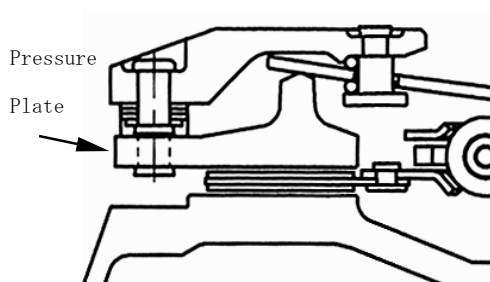
LUG DRIVE TYPE



The diaphragm spring clamp load is relieved and pressure plate is free. But, the pressure plate does not clearly separate from the disc due to friction at the lug.

This does not have a good disengagement.

STRAP DRIVE TYPE



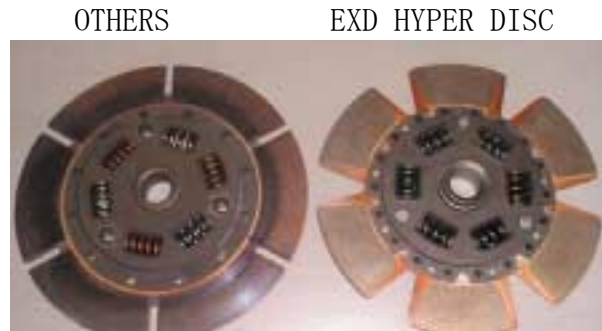
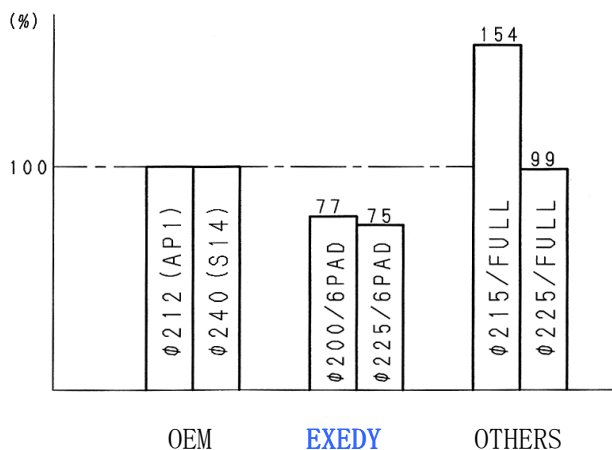
With a strap drive system, the pressure plate is lifted by the force of the straps.

This results in a clean dis-engagement.

LIGHT WEIGHT & LOW INERTIA DESIGN

- High friction coefficient, low wear, and a special heat resistant material (T5001) has been developed enabling clutch size to be reduced and have increased durability.
- Improved durability by strong small damper disc, especially re-designed for hyper single clutch.
- Disc inertia level is less than OEM for improved shift response for fast gear changes, especially in racing applications.

【DISC INERTIA COMPARISON】



WHAT IS INERTIA?

Inertia is the tendency of the clutch and flywheel to maintain rotation even when not connected to the engine torque. This affects the responsiveness of the engine and also the feel of low rpm torque and start up driveability.

In the case of the clutch disc, lower inertia is always better to improve shift efforts and reduce the wear on the transmission synchros.

Advantages and Disadvantages

	High Inertia	Low Inertia
Complete Clutch (including flywheel)	Slower engine response Easier start up engagement Better low RPM torque feel	Faster engine response More difficult to start up Poorer low RPM torque feel
Clutch Disc	Harder to shift	Easier, quicker shifting

IMPROVEMENT OF HEAT TRANSFER BY AIR-FLOW

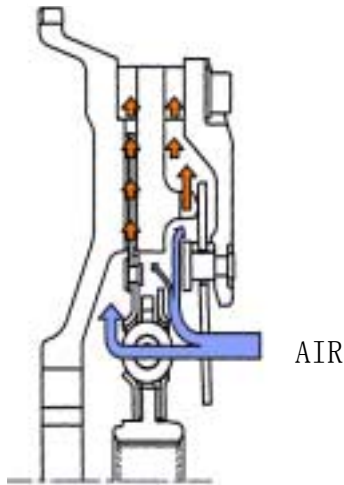
New Design

Due to a turbine-like shape, it will prevent heat related problems, as the inside of the clutch will cool down quickly as a result of improved flow.



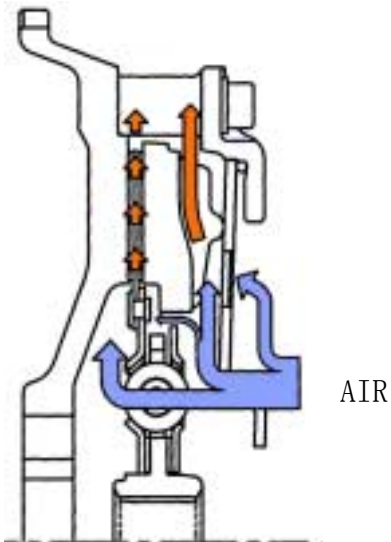
【AIR FLOW】

NORMAL TYPE



In a normal clutch, the pressure plate has less heat capacity than the flywheel, therefore tends to run hotter. This causes distortion of the disc facings.

TURBINE TYPE



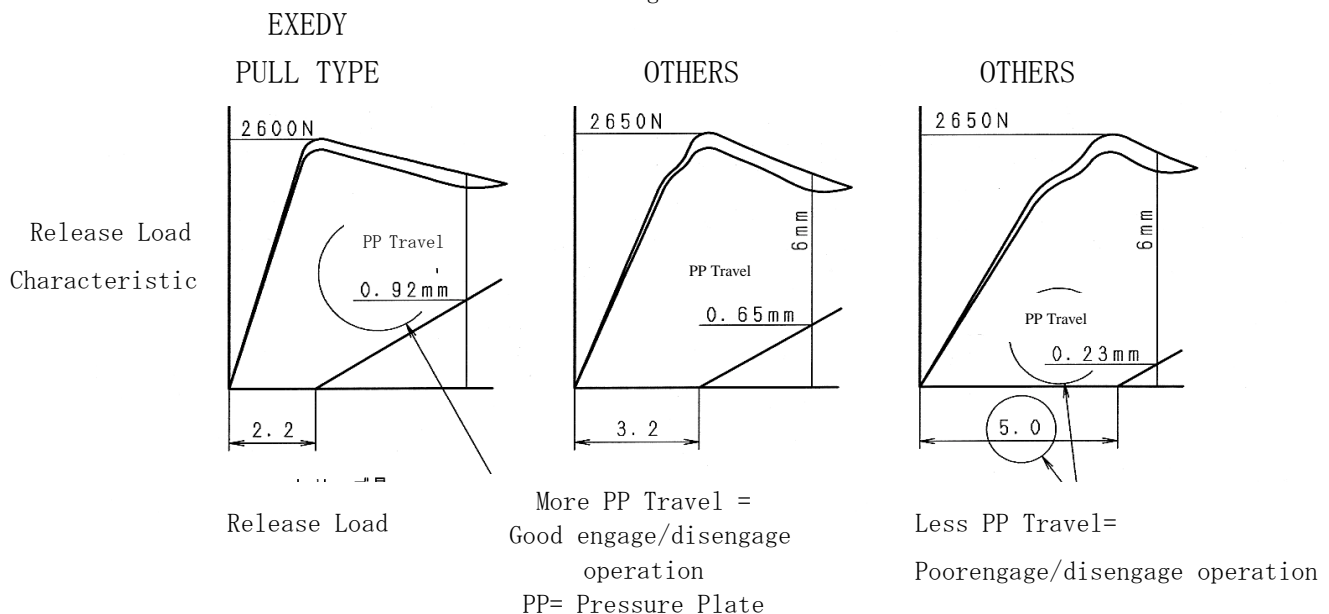
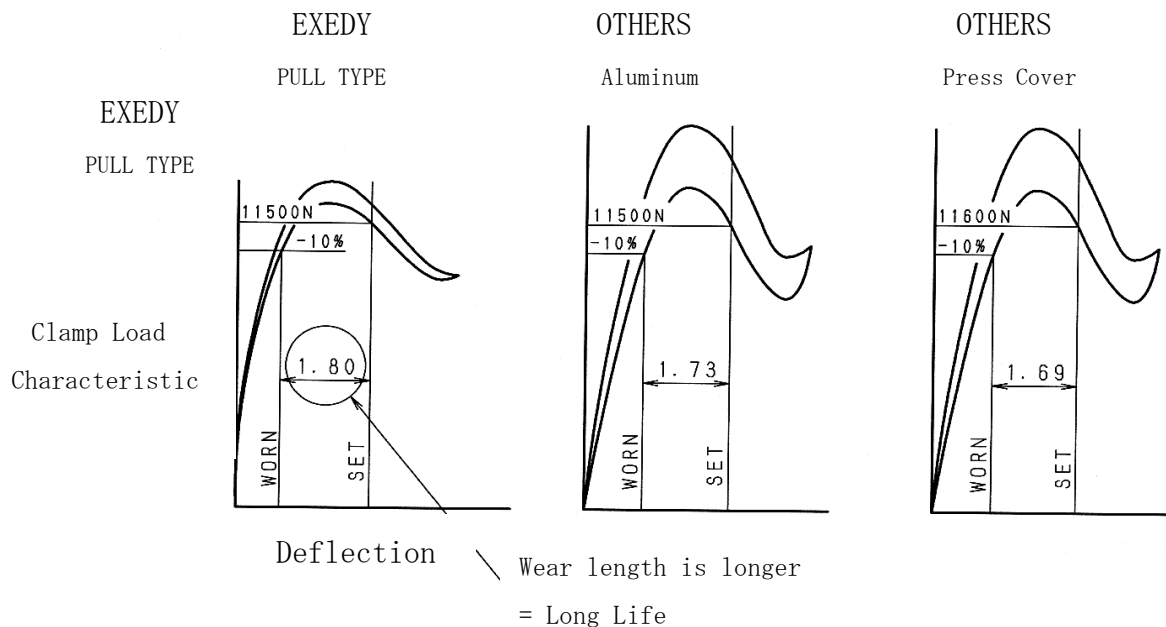
With the EXEDY turbine type pressure plate, the temperature is maintained equally on the pressure plate side and the flywheel side, reducing distortion and improving facing life.

DIAPHRAM SPRING TECHNOLOGY FOR LONG LIFE & HIGHT EFFIENCY

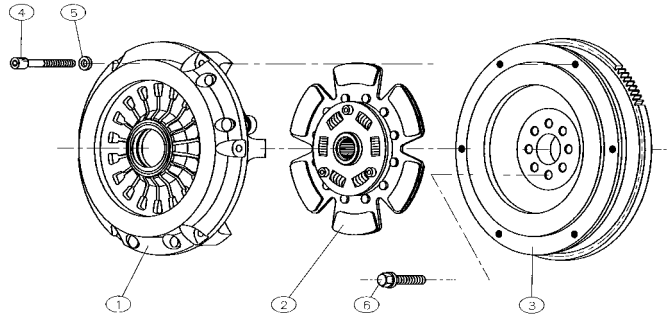
(1) EXEDY PRODUCES ITS OWN DIAPHRAM SPRINGS OF SUPERIOR QUALITY INCORPORATING:

- Leading technology of diaphragm spring and original design superior material using a special heat treatment process, which will result in a high durability level, and prevent heat deflection, loss of clamp load, and heavy pedal effort.
- Long life and improved clutch operation due to original design for hyper single clutch.

(2) Advantage verified from Clamp & Release Load DATA



● HYPER SINGLE CLUTCH STRUCTURE



COMPONENT PARTS LIST

No.	Parts Name	Abbreviation	Remark
①	Clutch Cover Assembly	C C A	Φ 200 & Φ 225 available
②	Clutch Disc Assembly	C D A	Φ 200 & Φ 225 available
③	Flywheel	F / W	
④	Bolt	B L T	
⑤	Washer	W / S	
⑥	Flywheel to Crank Bolt	B L T C	Same as OEM Parts

● HYPER SINGLE PARTS LIST (FIRST RELEASE)

MAKER	CAR NAME	MODEL	Engine	TYPE	SIZE	Clamp Load	Remark
NISSAN	SILVIA	S13/14	SR20DET	PUSH	φ 225	11800	
		S15	SR20DET	PUSH	φ 225	11800	w/ BLTC
	SKYLINE	R32/33	RB20/25	PUSH	φ 225	11800	Not GTR
		R34	RB25DET	PULL	φ 225	11800	Not GTR
MAZDA	RX-7	FC3S	13BT	PUSH	φ 225	11800	w/ BLTC
		FD3S	13B-REW	PULL	φ 225	11800	w/ BLTC
SUBARU	IMPREZA	GC8D	EJ20T	PULL	φ 225	11800	
		GDB	EJ20T	PULL	φ 225	11800	
MITSUBISHI	LANCER Evo4-7	CN/CP/CT 9	4G63T	PULL	φ 225	11800	
HONDA	S2000	AP-1	F20C	PULL	φ 200	9800	