

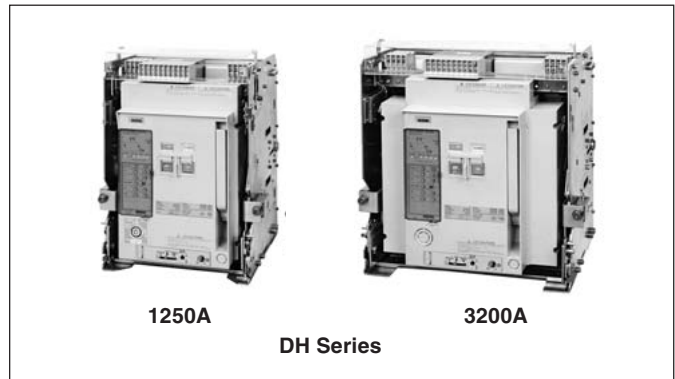
Air Circuit Breakers

DH series

Features

■ Air circuit breakers DH series

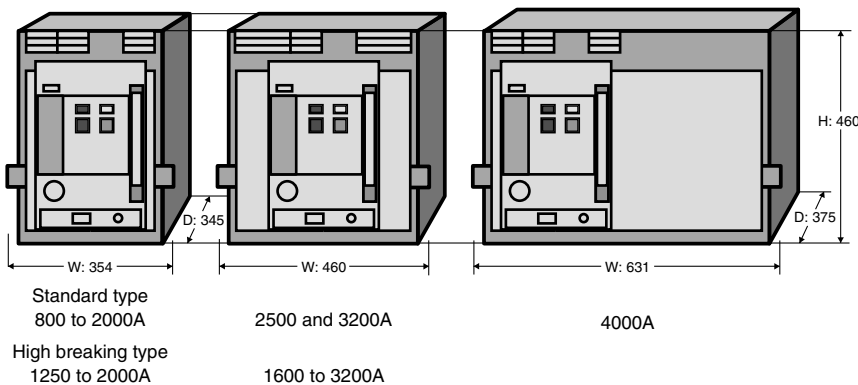
The new FUJI DH series of air circuit breakers (ACB) feature numerous improvements over the DB series, resulting in greater compactness, lighter weight, and easier operation. The new series offers a wide range of rated voltages, with seven types ranging from 800A to 4,000A. Standard, high, or super high breaking capacity can be selected to match the scale of the equipment being used. A large variety of accessories are also available, and all operation, wiring, and parts installation and replacement can be done from the front panel of the breaker. This ensures both safety and efficiency in control panel mounting, maintenance, and inspection.



■ Features

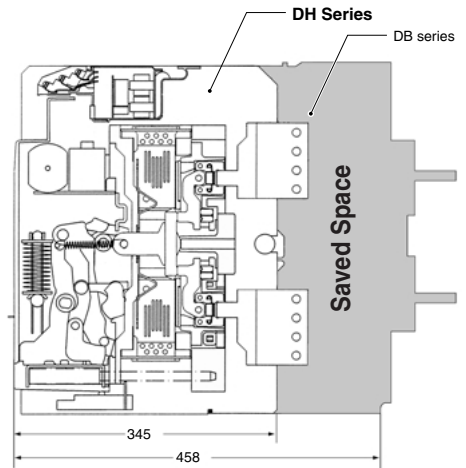
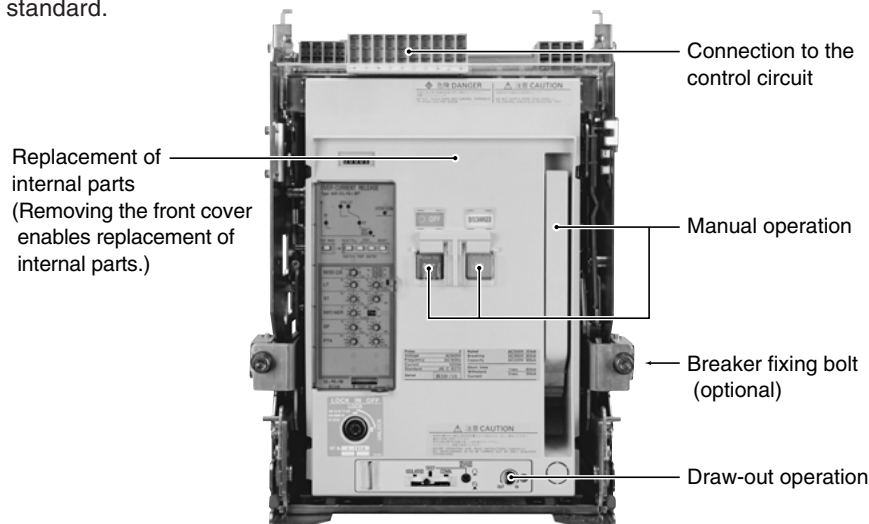
● Standardized basic dimensions

The height and depth dimensions are identical in all sizes to 3200A. There are two common widths or frame size, from 800-2000A and from 2500-3200A for the standard series. The panel cutout size is the same for all types of DH series ACB, which makes it easy to arrange the ACBs in switchboards. Maximum power from minimum volume was central to the design specification. With a depth of 290mm for the fixed type and 345mm for draw-out, it is one of the smallest ACBs in the world.



● Increased accessibility from the front

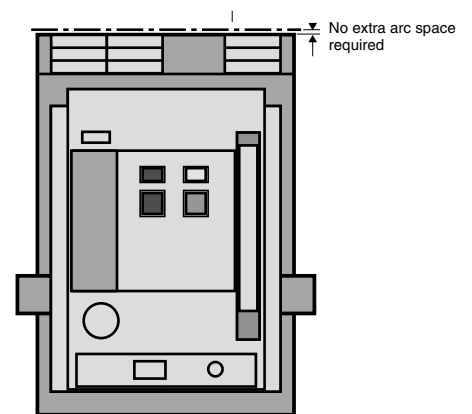
It enhances ease of installation, operation, and maintenance. The double insulated design ensures that most accessories can be safely and easily, installed by the user. Control, auxiliary and position switch terminals are mounted at the front on the ACB body for easy access. Due to the increased level of harmonics within the distribution network, the neutral phase is fully rated as standard.



● No extra arc space required, vertical stacking permitted

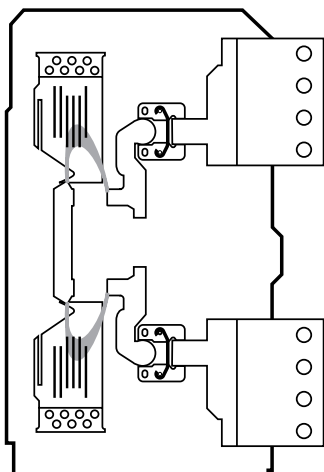
The DH series ACB dissipates all arc energy within its unique "Double Break" arc chamber.

The internal energy dissipation within the ACB allows the clearance distance of the ACB to nearby earthed metal to be zero. This will assist in minimizing switchboard height and costs.



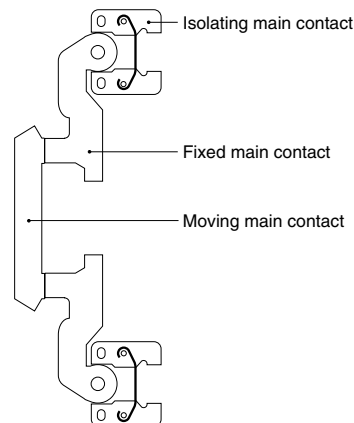
● **Very fast interruption by “Double Break” system**

The unique “Double Break” main contact system ensures extremely fast interruption of short-circuit currents and substantially reduces main contact wear. The internally symmetrical “Double Break” structure allows reverse power connection.



● **No clamp screws used for the main circuit contact units**

There are no clamp screws or flexible leads in the main circuit contact units. This substantially enhances the durability of the main circuit contact units and improves the reliability in ON-OFF operation.



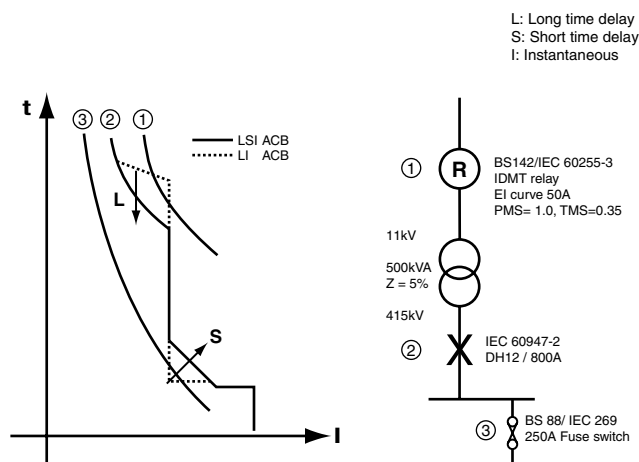
● **Enhanced selectivity**

At FUJI we are so concerned about selectivity that all our protection relays have ‘LSI’ characteristics as standard. This provides an adjustable time delay on overload (L) and also the I²t ramp characteristic (S).

As shown, these are essential to provide selectivity when grading with other protective devices such as downstream fuses and upstream relays.

The standard ‘LSI’ curve provides more than five million combinations of unique time current characteristics. Zone selective interlocking is available to provide zero time delay selectivity.

As the rated breaking capacity is identical to the rated short-time withstand current, full selectivity can be achieved.



Type and rated current		DH08	800A	DH12H	1250A	DH25	2500A	DH16P	1600A	DH40	4000A
Performance		DH12	1250A	DH16H	1600A	DH30	3200A	DH20P	2000A		
		DH16	1600A	DH20H	2000A			DH25P	2500A		
		DH20	2000A					DH30P	3200A		
Rated breaking current (at 440V AC)	With INST trip function										
	With ST delay trip function (Without INST trip/MCR functions)	65kA		80kA		85kA		100kA		100kA	
Rated short-time withstand current (for 1 sec.)											

Air Circuit Breakers

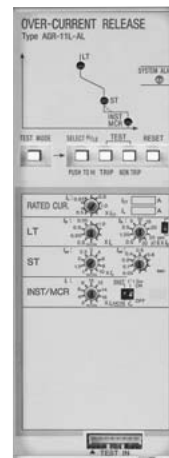
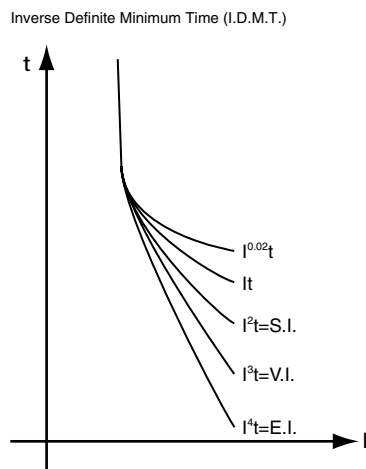
DH series

● **Optimum protective coordination**
The FUJI ACB DH series is equipped with an RMS sensing overcurrent trip device (OCR) having a wide range of protection functions and capabilities.

FUJI ACB is available with a choice of flexible protection curves to assist in selectivity applications.

S.I. Standard Inverse
V.I. Very Inverse
E.I. Extremely Inverse
All these curves are user definable and comply with IEC 60255-3. Standard transformer and generator protection characteristics are also available.

AGR-L Industrial & transformer protection
AGR-S Generator protection
AGR-R Characteristics to IEC 60255-3



Standard OCR with adjustment dial Type AGR-11



Enhanced OCR with adjustment dial Type AGR-21

● **Overload protection**
Adjustable from 40–100% of rated current. True r.m.s detection up to the 19th harmonic, a distant vision for the competition who rarely see past the 7th. Neutral protection for all those Triple-N harmonics, such as 3rd, 9th and 15th. Also in case we forgot to mention, a “thermal memory” as standard!

● **Two channel pre-trip alarm function (S-characteristic) *1**
This function can be used to monitor and switch on additional power backup to feed critical circuits. For example, the function can be set so that when a pre-trip alarm is activated, an emergency generator starts to ensure a constant supply. This feature is only available on some AGR21 OCR models with a generator S-characteristic.

● **N-phase protection function (optional)**
In 3-phase, 4-wire systems that contain harmonic distortion, the 3rd harmonic may cause large currents to flow through the neutral conductor. The N-phase protection function prevents the neutral conductor from sustaining damage or burnout due to these large currents. Available in all OCRs except for generator S-characteristic types.

● **Reverse power trip function (S-characteristic) *1**
(The first-ever feature for ACBs)
This feature provides additional protection when paralleling generators. The AGR21 OCR for generator protection with the reverse power trip function, negates the need for installation and wiring in an external reverse power relay. This feature is available using an AGR21 OCR with a generator S-type characteristic types only.

● **Earth leakage trip function (L/R-characteristic) *1**
Used in conjunction with an externally mounted zero-phase current transformer (ZCT), this function provides protection against leakage to earth of very small levels of current. Trip or alarm indication, and contact output is available to enhance the level of system protection. Available using general purpose L/R-characteristic AGR21 OCR.

● **Adjustable undervoltage trip function UVT *1**
Available as a fixed type, or with adjustable voltage pick up and an adjustable time delay. 3-phase phase-loss protection is also available. AGR21 OCR's.

● **Contact temperature monitoring function (optional) *2**
This function monitors the temperature of the ACBs main contacts. An alarm indicates when the temperature exceeds 155°C. Continuous monitoring of the contact temperature provides valuable input for preventative and predictive maintenance programs.

*1: Not available for standard OCRs, type AGR-11.

*2: Available for type AGR-21 OCR only.

■ Type number nomenclature

DH 08 3 X H - M 11LAL F □

① **Basic type**

② **Frame size**

08: 800A
12: 1250A
16: 1600A
20: 2000A
25: 2500A
30: 3200A
40: 4000A

③ **Number of poles**

3: 3-pole
4: 4-pole

④ **Installation**

P: Fixed
X: Draw-out with cradle
Q: Draw-out with cradle & shutter

⑤ **Breaking capacity class**

Blank: Standard
H: High
P: Super High

⑥ **Closing mechanism**

T: Manual-spring
M: Motor-spring
ex. M = 100V DC: for motor 100 to 100V DC

⑦ **Overcurrent release device**

11LAL: Standard (LT, ST, INST/MCA)
11LGL: Std. Plus GF
(For details, see page 08/63.)

⑧ **Tripping device**

F: Shunt trip ex. F = 100V DC
R1: Undervoltage trip/Inst.
R2: Undervoltage trip/Time delay

⑨ **Detailed specifications**

Specify any additional requirements, such as international standards compliance, special environmental usage, or accessories, when ordering. Also clearly indicate the applicable standards, main circuit voltage, and breaking current. See the tables below.
ex. IEC 440V AC 65kA

Applied standard	
	Ordering code
IEC	IEC
EN	EN
AS	AS
NEMA	NEMA
ANSI	ANSI

Special environment specification	
	Ordering code
Tropical uses	Tropical
Extremely cold use storage -40°C operating -25°C	Extremely cold
Anti-corrosion treatment	Anti-corrosion

Optional accessories

	Ordering code
Auxiliary switch (7c)	Auxiliary switch (7c)
Auxiliary switch (10c)	Auxiliary switch (10c)
Auxiliary switch (7c) for general 4c, for low level circuits 3c	Auxiliary switch 4c + 3c
Auxiliary switch (10c) for general 7c, for low level circuits 3c	Auxiliary switch 7c + 3c
Control circuit screw terminal	Control circuit screw terminal
Open (off) padlock	Open (off) padlock
Automatic closing spring release device	Automatic closing spring release device
Continuously – rated shunt trip device	AVR-1C
Capacitor trip device	AQR-1
Undervoltage (instantaneous) trip device	AUR-1BS
Undervoltage (500ms time delay) trip device	AUR-1BD
Control circuit safety shutter	Control circuit safety shutter
Position switches	ALR- □P
Test jumper	Test jumper
Mis – insertion protection device	Mis – insertion protection device
Breaker fixing bolts	Breaker fixing bolts
Door interlock	Door interlock
Key lock	Key lock
Key interlock	Key interlock
Mechanical interlock	Mechanical interlock
Manual reset device	Manual reset device
IP55 cover	IP55 cover
Control circuit terminal cover	Control circuit terminal cover
Earthing device	Earthing device
Arc barrier	Arc barrier
Door flange	Door flange

External accessories

	Ordering code
CT for neutral line 800 to 1600A frame	CW80-40LS
CT for neutral line 2000 to 4000A frame	EC160-40LS
Power transformer	TSE-40LS
Lifter	AWR-1 (DH08 to DH30), AWR-2 (DH08 to DH40)
OCR checker	ANU-1