LOADLINE Z3 AIR CIRCUIT BREAKER

Main Features

- IEC60947-2,EN60947-2, ASY=TA certified
- The ultimate in compactness and operational capability
- Increased accessibility from the front
- No extra arc space required permitting vertical stacking
- Main contacts can be easily replaced in the field
- Very fast interruption using "DoublebBreak" system.
- Enhanced selectivity with LSI characteristics as standard
- A substantial improvement in lifecycles and easy maintenance

This datasheet is to give a general overview only. For more detailed information on accessories and guidance with ordering codes please refer to full catalogue

Ratings & Technical Data

Standard Series

Frame size			Z3			
Ampere rating(A)			2500		3200	
Rated current (max.) [$I/_n$](A) IEC, EN, AS			2500		3200	
		JIS	2500		3200	
[1]		NEMA, ANSI	2500		3200	
		Marine	2500		3200	
Neutral pole Amperes frame (A)			2500		3200	
Number of poles [2]			3	4	3	4
Rated primary current of over-current Release [$I/_{CT}$](A) • for general feeder circuit use			2500		3200	
AC rated insulations voltage [U_i](V.50/60Hz) [3]			1000		1000	
Rated operational voltage [U_e](V.50/60Hz) [4]			690		690	
AC rated breaking cap [kA sym rms]/making cap [kA peak [$I_{cs}=I_{cu}$]		ac 690V 440V	65/143 85/187 [6]		65/143 85/187 [6]	
NEMA		ac 600V 480V 240V	50/115 65/149.5 85/195.5		50/115 65/149.5 85/195.5	
JIS		ac 550V 460V 220V	65/143 85/195.5 85/195.5		65/143 85/195.5 85/195.5	
[7]		dc 600V [8] 250V	40/40 40/40		40/40 40/40	
NK [9]		ac 690V 450V	65/153 85/201 [6]		65/153 85/201 [6]	
LR, AB [9] GL, BV		ac 690V 450V	65/153 85/201 [6]		65/153 85/201 [6]	
Rated impulse withstand voltage [U_{rno}](kV)			12		12	
Rated short time withstand current[I_{cw}][kA rms]		1s 3s	85 65		85 65	
Latching current (kA)			85		85	
Total breaking time (s)			0.03		0.03	
Closing operation time						
Spring charging time (s) max. 10			10		10	
Close time (s) max.			0.08		0.08	
No. of operating cycles						
Mechanical life with maintenance without maintenance			20000 10000		20000 10000	
Electrical life without maintenance AC460V AC690V			7000 5000		7000 5000	
Weight (Kg) draw-out type			105	125	105	125

[1] Values in open air at 40°C (45°C for marine applications).
[2] For double-pole ACBs use outside poles of three-pole ACB.
[3] Rated insulation voltage depends on applied standard: 1000V ac according to IEC 60947-2.
[4] Rated operational voltage depends on applied standard: 690V according to IEC 60947-2.
[5] Cannot apply IT earthing system, ie, insulated from earth.
[6] For 500V ac.
[7] Please contact Dorman Smith for dc application.
[8] Three-poles in series should be applied for 600V dc.
[9] Applicable to only three-pole ACBs.

High Fault Series (Available as Draw-out only)

Frame size			Z3					
Ampere rating(A)			1600	2000	2500	3200		
Rated current (max.) [$I/_n$](A) IEC, EN, AS			1600	2000	2500	3200		
[1] [2]		JIS	1600	2000	2500	3200		
		NEMA, ANSI	1600	2000	2500	3200		
		Marine	1600	2000	2500	3200		
Neutral pole Amperes frame (A)			1600	2000	2500	3200		
Number of poles [3] [4]			3	4	3	4	3	4	3	4
Rated primary current of over-current Release [$I/_{CT}$](A) • for general feeder circuit use			1600	2000	2500	3200		
AC rated insulations voltage [U_i](V.50/60Hz) [5]			1000	1000	1000	1000		
Rated operational voltage [U_e](V.50/60Hz) [6]			690	690	690	690		
AC rated breaking cap [kA sym rms]/making cap [kA peak [$I_{cs}=I_{cu}$]		ac 690V 440V	85/187 100/220	85/187 100/220	85/187 100/220	85/187 100/220		
NEMA		ac 600V 480V 240V	50/115 80/184 100/230	50/115 80/184 100/230	50/115 80/184 100/230	65/149.5 80/184 100/230		
JIS		ac 550V 460V 220V	85/196 100/230 100/230	85/196 100/230 100/230	85/196 100/230 100/230	85/196 100/230 100/230		
[8]		dc 600V [9] 250V	40/40 40/40	40/40 40/40	40/40 40/40	40/40 40/40		
NK [10] [11]		ac 690V 450V	85/201 100/233	85/201 100/233	85/201 100/233	85/201 100/233		
LR, AB [10] [11] GL, BV		ac 690V 450V	85/201 100/233	85/201 100/233	85/201 100/233	85/201 100/233		
Rated impulse withstand voltage [U_{rno}](kV)			12	12	12	12		
Rated short time withstand current[I_{cw}][kA rms]		1s 3s	100 75	100 75	100 75	100 75		
Latching current (kA)			85	85	85	85		
Total breaking time (s)			0.03	0.03	0.03	0.03		
Closing operation time								
Spring charging time (s) max. 10			10	10	10	10		
Close time (s) max.			0.08	0.08	0.08	0.08		
No. of operating cycles								
Mechanical life with maintenance without maintenance			25000 12000	20000 10000	20000 10000	20000 10000		
Electrical life without maintenance AC460V AC690V			10000 7000	7000 5000	7000 5000	7000 5000		
Weight (Kg) draw-out type			105	125	105	125	105	125	105	125

[1] Values in open air at 40°C (45°C for marine applications).
[2] Values for draw-out type with vertical terminals.
[3] For double-pole ACBs use outside poles of three-pole ACB.
[4] Four-pole ACBs without Neutral phase protection can not be applied to IT earthing systems.
[5] Rated insulation voltage depends on applied standard: 1000V according to IEC 60947-2.
[6] Rated operational voltage depends on applied standard: 690V according to IEC 60947-2.
[7] Contact Dorman Smith for details.
[8] Please contact Dorman Smith for dc application.
[9] Three-poles in series should be applied for 600V dc.
[10] Will apply soon.
[11] Applicable to only three-pole ACBs.

When the ACB is used without Instantaneous trip function MCR should be set to work
The rated breaking capacity will reduce to the level of the latching current without MCR function.

Tel: +44 (0) 844 225 1063
Email: sales@dormansmith.co.uk
www.dormansmithswitchgear.com

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Protection functions	Setting range
Adjustable long time-delay trip characteristics	
LT	
Pick up current [I_R] (A)	[I_n]X(0.8-0.85-0.9-0.95-1.0-NON); 6 graduations • Non tripping when load current _ ([IR]X1.05). • Tripping when ([IR]X1.05)< load current _ ([I_R]X1.2)
Time-delay [t_R] (s)	(0.5-1.25-2.5-5-10-15-20-25-30) at 600% of [I_R]; 9 graduations
Time-delay setting tolerance (%)	+/- 15% +150ms-0ms
Adjustable short time-delay trip characteristics	
ST	
Pick up current [I_{sd}] (A)	[I_n]X(1-1.5-2-2.5-3-4-6-8-10- NON); 10 graduations
Current setting tolerance (%)	+/- 15%
Time-delay [t_{sd}] (ms) Relay time	50 100 200 400 600 800; 6 graduations
Resettable time (ms)	25 75 175 375 575 775
Max. total clearing time (ms)	120 170 270 470 670 870
Adjustable instantaneous trip characteristics	
INST or MCR (For AGR-11B, INST only)	
Pick up current [I_i] (A)	[I_n]X(2-4-6-8-10-12-14-16- NON); 9 graduations
Current setting tolerance (%)	+/- 20%
Adjustable pretrip alarm characteristics	[I_n]X(0.75-0.8-0.85-0.9-0.95-1.0); 6 graduations
Pick up current [I_{P1}] (A)	+/- 7.5%
Current setting tolerance (%)	(5-10-15-20-40-60-80-120-160-200) at [I_{P1}] or more; 10 graduations
Time-delay [t_{P1}] (s)	+/- 15% +100ms - 0ms
Time-delay setting tolerance (%)	
Adjustable ground fault trip characteristics	
GF	Note: Set [Ig] to 1200A or less
Pick up current [I_g] (A)	[I_{CT}]X(0.1-0.2-0.3-0.4-0.6-0.8-1.0-NON); 8 graduations
Current setting tolerance (%)	+/- 20%
Time-delay [t_g] (ms) Relay time	100 200 300 500 1000 200 ; 6 graduations
Resettable time (ms)	75 175 275 475 975 1975
Max. total clearing time (ms)	170 270 370 570 1070 2070
Ground fault trip characteristics on line side	
REF (AGR-21B, 31B only)	
Pick up current [I_{REF}] (A)	[I_{CT}]X(0.1-0.2-0.3-0.4-0.6-0.8-1.0-NON); 8 graduations
Current setting tolerance (%)	+/- 20%
Time-delay (s)	Inst
N-phase protection characteristics	
NP	
Pick up current [I_N] (A) when load	[I_{CT}]X(0.4-0.5-0.63-0.8-1.0); Factory set to a user-specified value • Non tripping current _ ([I_N]X1.05) • Tripping when ([I_N]X1.05)< load current _ ([I_n]X1.2)
Time-delay [t_N] (s)	Tripping at 600% of [I_N] with LT time-delay [t_R]
Time-delay setting tolerance (%)	+/- 15% +150ms - 0ms
Reverse phase protection characteristics	
NS (AGR-21B, 31B only)	
Pick up current [I_{NS}] (A)	[I_n]X(0.2-0.3-0.4-0.5-0.6-0.7-0.8-0.9-1.0); 9 graduations
Current setting tolerance (%)	+/- 10%
Time-delay [t_{NS}] (s)	0.4-0.8-1.2-1.6-2-2.4-2.8-3.2-3.6-4; 10 graduations
Time-delay setting tolerance (%)	+/- 20% +150ms-0ms
Adjustable earth leakage trip characteristics	
ELT (AGR-31B only)	
Pick up current [I_{AR}] (A)	0.2-0.3-0.5-1 (Medium sensitivity) or 3-5 (Low sensitivity)
Current setting tolerance	Non operate below 50% of [I_R], Operate between 50% and 100% of [I_R]
Time-delay [t_{AR}] (ms) Relay time	100 200 300 500 1000 2000 ; 6 graduations
Resettable time (ms)	50 150 250 450 950 1950
Max. total clearing time (ms)	250 350 450 600 1150 2150
Under-voltage alarm characteristics	
UV (AGR-31B only)	
Recovery setting voltage (V)	[V_n]X(0.8-0.85-0.9-0.95); 4 graduations
Setting voltage (V)	[V_n]X(0.4-0.6-0.8); 3 graduations
Time-delay (s)	0.1-0.5-1-2-5-10-15-20-30-36; 10 graduations
Control power	AC100-120V, AC200-240V) Common DC100-125V, DC200-250V) Common
	DC48V, DC24V) Common
	Power consumption: 5 VA

DEFAULT SETTINGS ____

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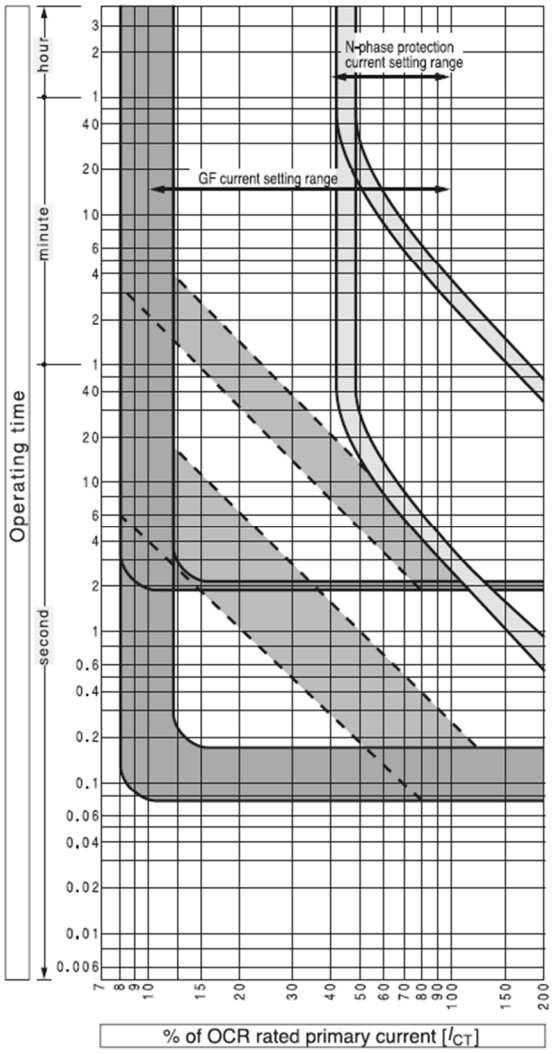
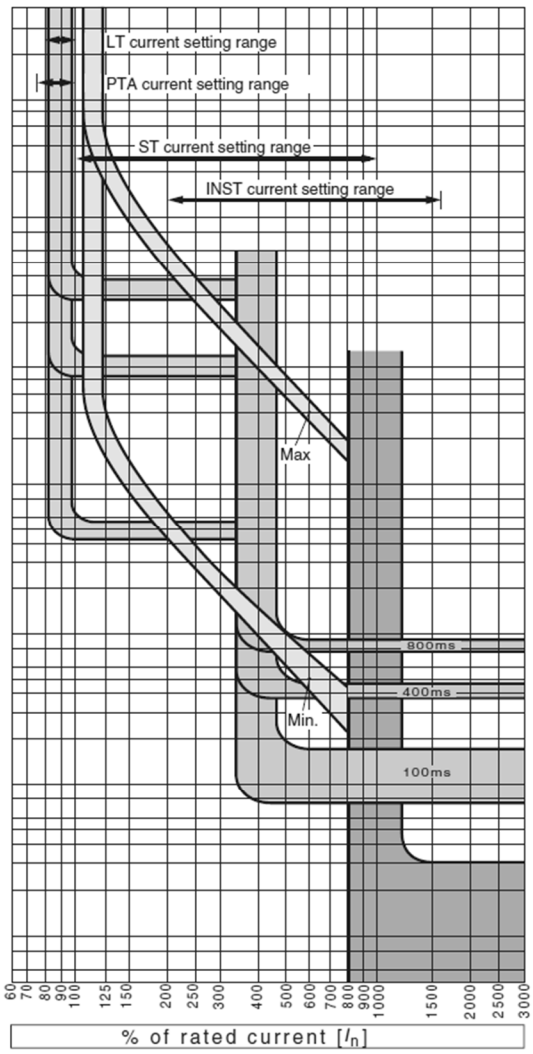
Values of [I_{CT}] and [I_n]

Type	Applicable [I_{CT}] (A)	Rated current [I_n](A) [I_{CT}] X0.5	[I_{CT}] X0.63	[I_{CT}] X0.8	[I_{CT}] X1.0
Z3 (STD)	**2500**	1250	1600	2000	2500
Z3 (STD)	**3200**	1600	2000	2500	3200

Type	Applicable [I_{CT}] (A)	Rated current [I_n](A) [I_{CT}] X0.5	[I_{CT}] X0.63	[I_{CT}] X0.8	[I_{CT}] X1.0
Z3 (HIGH)	**1600**	800	1000	1250	1600
Z3 (HIGH)	**2000**	1000	1250	1600	2000
Z3 (HIGH)	**2500**	1250	1600	2000	2500
Z3 (HIGH)	**3200**	1600	2000	2500	3200

Protection Characteristics





The ST trip characteristic shown in the figure applies when the ramp characteristic select switch is in the OFF position.

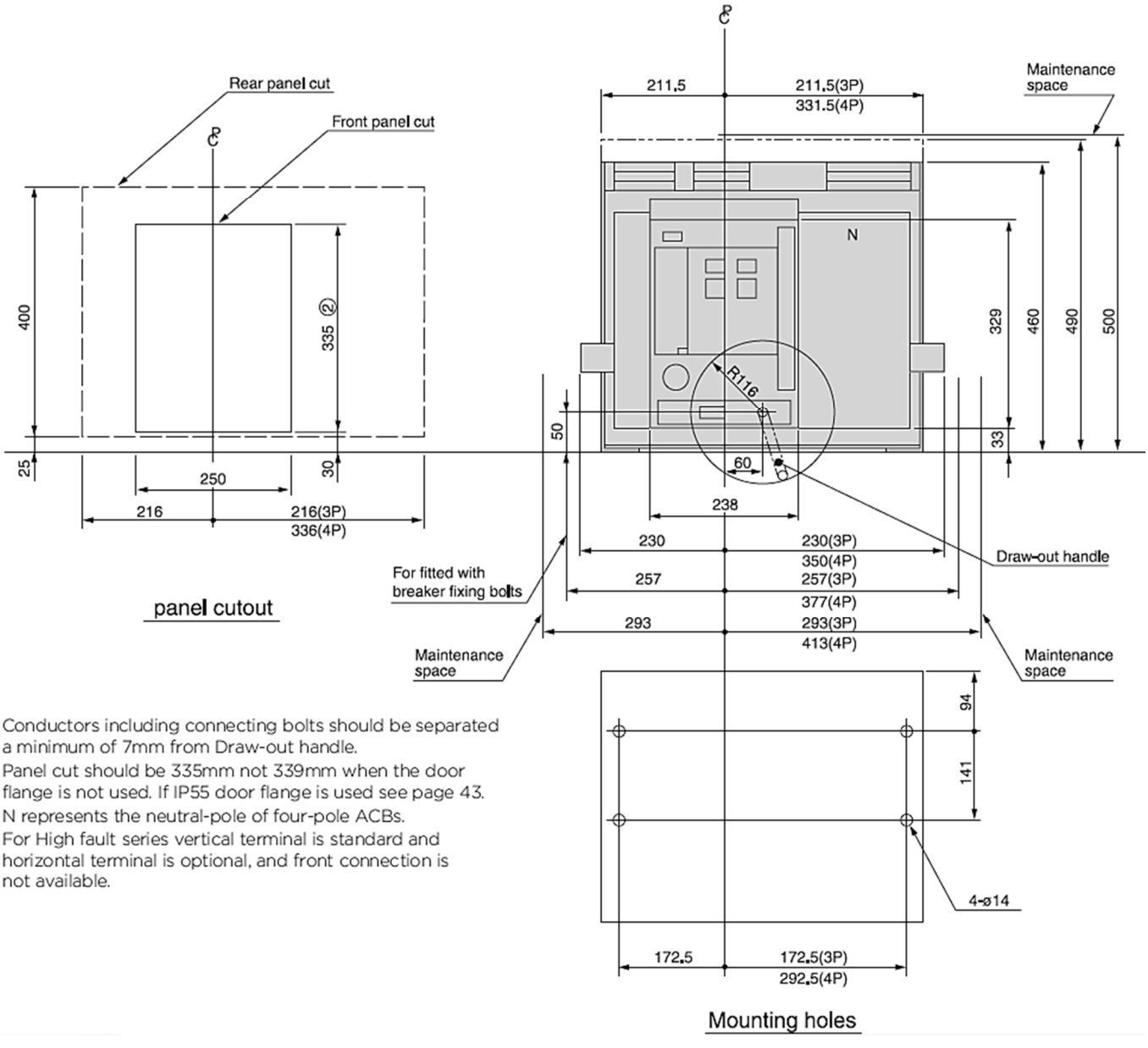
LOADLINE Z3 AIR CIRCUIT BREAKER

Outline Dimensions

Z3 Draw-out

2500A and 3200A standard series
1600A, 2000A, 2500A and 3200A high series

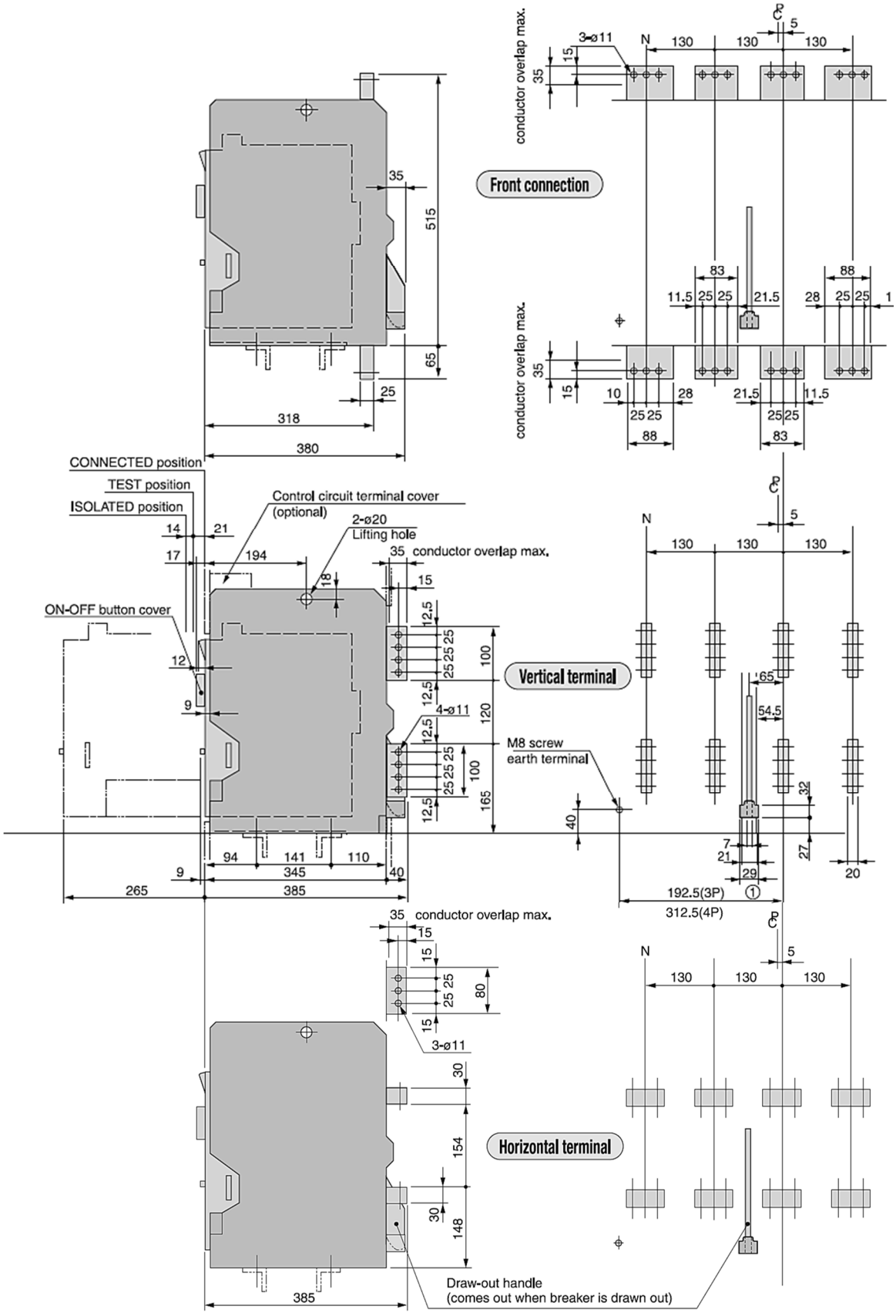
℄: ACB Front cover centre line



① Conductors including connecting bolts should be separated a minimum of 7mm from Draw-out handle.
② Panel cut should be 335mm not 339mm when the door flange is not used. If IP55 door flange is used see page 43.

- N represents the neutral-pole of four-pole ACBs.
- For High fault series vertical terminal is standard and horizontal terminal is optional, and front connection is not available.

LOADLINE Z3 AIR CIRCUIT BREAKER



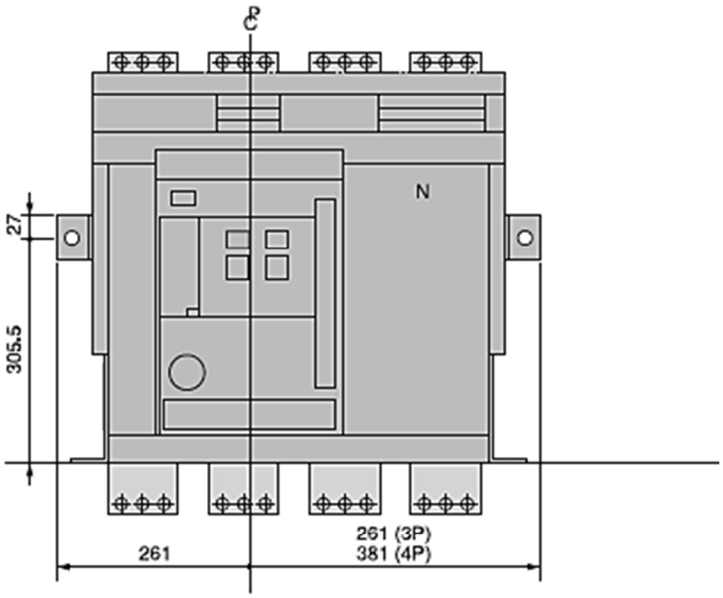
LOADLINE Z3 AIR CIRCUIT BREAKER

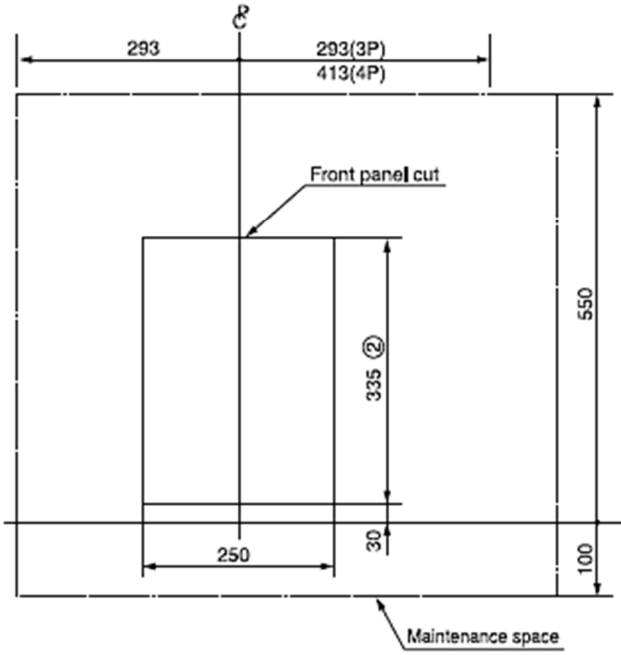
Outline Dimensions

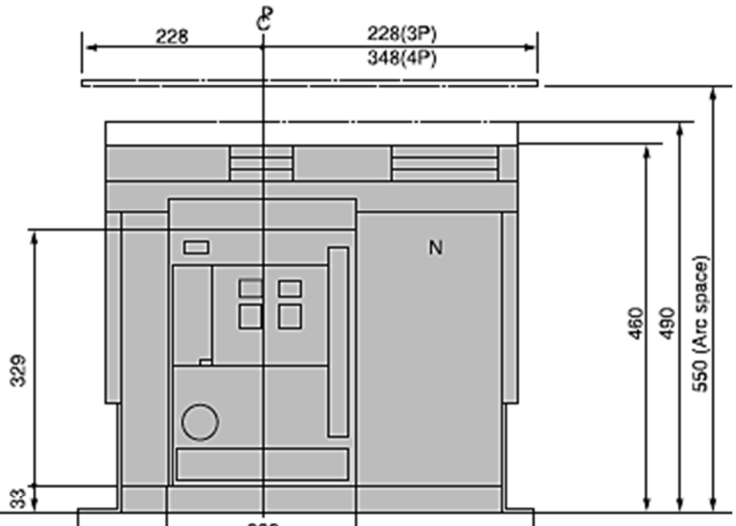
Z3 Fixed

2500A and 3200A standard series

℄P: ACB Front cover centre line







Panel cut-out

Mounting holes

② Panel cut should be 335mm not 339mm when the door flange is not used. If IP55 door flange is used see page 43.

• N represents the neutral-pole of four-pole ACBs.

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