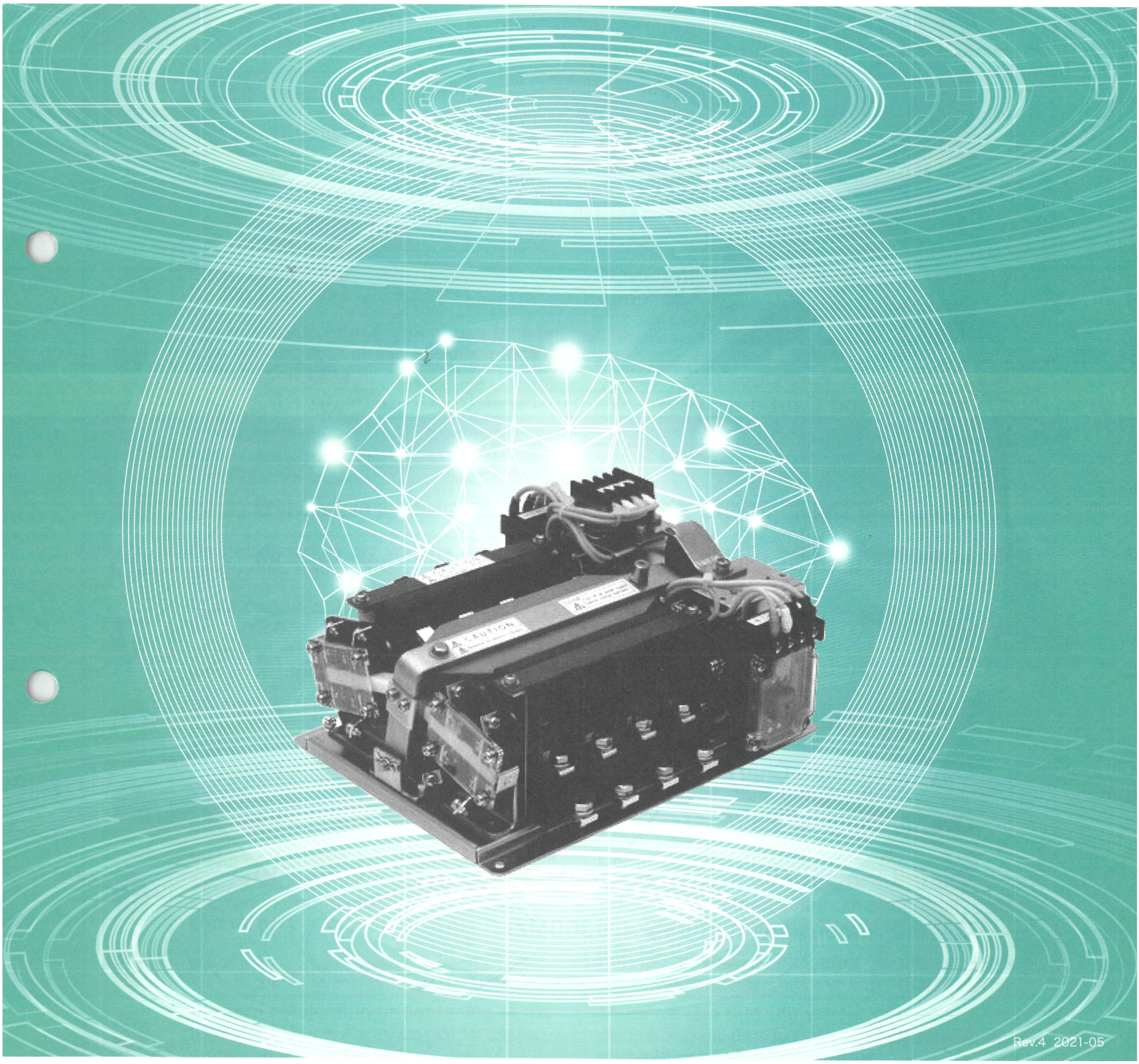
WashiON

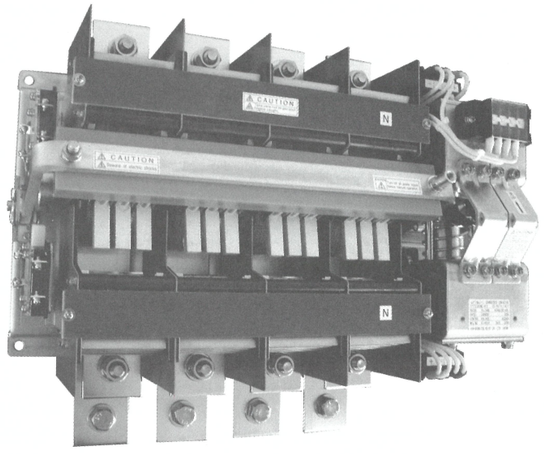
SSK-MZ TYPE
AUTOMATIC TRANSFER SWITCHES



Rev.4 2021-05

WashiON
KYORITSU KEIKI CO.,LTD.

https://www.washion.co.jp/



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1. Warnings and Cautions

Please read the user's manual and the safety labels on the transfer switch carefully so that you can use it correctly.

⚠ WARNING	The warning with this mark indicates possibility of death or a serious injury.
⚠ CAUTION	The caution with this mark indicates the possibility of injuries or property damage only.

⊘	This symbol indicates a prohibition.
!	This symbol indicates a demand or requirement.

⚠ WARNING		
⚠	Electrical hazard Do not touch the live part.	Never operate manually while the power is supplied.
!	The coil control circuit must use time lag fuse, whose capacity is about 40 to 50% of rated coil current.	

⚠ CAUTION		
!	Install as indicated by the UP marking.	Install the standard model with the control coil mechanism on the right.
⊘	Do not allow supply voltage drop below 80% of the rating.	Perform maintenance and checks on battery charge level.
!	Make certain that the voltage drop due to resistance in the control circuit is 4% or less of supply voltage at the control circuit coil terminal.	Select a proper wire from "Control Circuit Wire Size Table"
⊘	Do not use relay of 10A or less current capacity or micro switch relay as control coil excitation relay.	Never use such a relay even if the current capacity is 10A or less in the control coil excitation current table.
!	Make certain that the circuit structure is such that no simultaneous excitation command is given to the control coil.	Take special care that no double contact is made by the coil control switch.
!	Make certain that the circuit structure is such that no continuous alternate excitation command is given to the control coil.	Do not use the detection relay for transfer switch control in the range where detected value and resetting value are abnormally close. (5% or more difference recommended)
!	Provide enough arc space.	Provide space as indicated in the arc space dimensions table.
!	Perform connection or tightening at the terminal in such a way as not to place stress on it.	Make certain that the weight of busbar or wire does not bear on the terminal and that the tightening is done at proper torque.
!	Carry out daily and periodical maintenance and checks.	
⊘	Never disassemble, repair or remodel by yourself.	

2. Features

1. Sufficient contact open time to avoid possible arcing during transfer.
2. Transfer position is held by leaf spring and contact pressure is kept constant, therefore no change in contact conductivity due to voltage fluctuations.
3. No operating current required after the transfer because of the mechanical hold mechanism.
4. Contacts are made from silver alloy for high resistance to burn-off.
5. Contact is always reliable thanks to the sliding design that clears contact surfaces of dust and oxide.
6. The MZ series coming with an oilless bearing does not require lubrication of the bearing.

3. Types and Designations

○···Standard model
△···Semi standard model(Designed and manufactured according to your specific needs)

Model				No. of pole			Wiring		Throw		Aux. contact
Rated voltage	Rated current		Type	2P	3P	4P	Front	Back	Single throw	Double throw	
				2	3	4	F	B	S	D	
6	690VAC 140VDC	03 30A	MZ	○	○	○	○	△	○	○	2NO-2NC as Standard
		06 60A		○	○	○	○	△	○	○	
		10 100A		○	○	○	○	△	○	○	
		15 150A		○	○	○	○	△	○	○	
		30 300A		○	○	○	○	△	○	○	
		40 400A		○	○	○	○	△	○	○	
		50 500A		○	○	○	○	△	○	○	
		60 600A		○	○	○	○	△	○	○	
		80 800A		○	○	○	○	—	○	○	
	690VAC	90 900A		○	○	○	○	○	○	○	4NO-4NC as Optional
		100 1000A		○	○	○	○	○	○	○	
		120 1200A		○	○	○	○	○	○	○	
		140 1400A		○	○	○	○	○	○	○	
		160 1600A		○	○	○	○	○	○	○	
		180 1800A		○	○	○	○	○	○	○	
		200 2000A		○	○	○	—	○	○	○	
		300 3000A		○	○	○	—	○	○	○	

Example of designation: 6 | 40 | MZ | 4 | F | D | A220/A220 | 4NO-4NC

- 6 — Rated voltage (690VAC·140VDC)
- 40 — Rated current (400A)
- MZ — Type (SSK-MZ)
- 4 — No. of pole (4P)
- F — Wiring (Front wiring)
- D — Throw (Double throw)
- A220/A220 — Voltage of commercial Making coil
- 4NO-4NC — Aux. contact (4NO-4NC)

4. Instruction on Use

1. Installation

(1) Do not install the transfer switch in an environment of high temperature or high humidity or in an atmosphere containing dust or harmful gases.
(2) The environmental requirements are in compliance with JEM1038(1990),JEM1465,IEC60947-6-1 as follows.
- Altitude 2000m or below
- Ambient temperature -5°C~+40°C (average temperature over a day: 35°C or below)
- Relative humidity 45%~85% RH
- No abnormal vibration or shocks
- Atmosphere free excessive water vapor, oil, dust, corrosive material or harmful gas

(3) The approximate reduction rate of the rated operating current for use at high temperatures above 40°C is as follows.
- 50°C...90%
- 60°C...80%

(4) Install the transfer switch according to the UP marking.
(5) Attach the mounting base on a vertical surface, and install the transfer switch with the control circuit, main circuit and auxiliary circuit in this order from right to left.

2. Main Circuit

(1) When tightening, take care not to apply excessive stress to the terminals.
(2) When installing the transfer switch, be sure to provide arcing space.
Arc at the time of breaking, when it comes in contact with any other device or metal body, can lead to some accident.

3. Control Circuit

(1) Beware of electric shocks. Do not touch any live part while the power is on.
(Have a qualified electrical engineer perform operation or maintenance and checks of this transfer switch.)
(2) A time lag fuse can be built into for protection in the control circuit.
The protective fuse should be for the transfer switch only. (Not including control contactor or the like), and the fuse capacity should be 40 to 50% of the rated coil current. Too large fuse capacity will not serve the purpose of coil protection.
(3) The control coils of the transfer switch are an instantaneous excitation type and of short time rating.
The pickup voltage range is as follows.
- AC control ... 80 to 120% of rated voltage
- DC control ... 80 to 130% of rated voltage

Make sure that the control voltage does not drop below 80% of the rated voltage at the terminals of the control coils.
Where a control voltage (DC) dropper circuit is provided, connect the control power to the input side of the dropper circuit. (never connect it to the output side.)
(4) Do not allow a voltage drop of more than 4% between the power source and the control coil terminal of the transfer switch, including the wiring and the tightened contact terminals of exciting contactors.
(5) Washion is positive of the absolute safety of the operation of SSK-MZ.
Even if any improper control circuit or parts are used, the control coil of SSK-MZ, which is of short-time rating, contains a thermal protector within to prevent the burnout or melting of the coil thus assuring absolute safety.

5. Rated Specifications

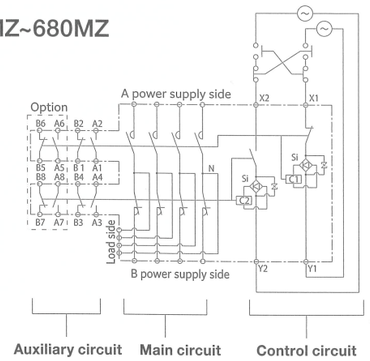
Type		603MZ	606MZ	610MZ	615MZ	630MZ	640MZ	650MZ	660MZ	680MZ
Class		PC								
Rated insulation voltage		690VAC								
Rated operational voltage		440VAC								
Utilization Category and rated operational current	AC31A	30A	60A	100A	150A	300A	400A	500A	600A	800A
	AC32A	20A	40A	70A	110A	220A	330A	450A	550A	750A
	AC33A	10A	30A	60A	100A	200A	300A	400A	500A	700A
Rated frequency		50/60Hz								
Rated impulse withstand voltage		8kV								
Rated short-circuit making capacity (Icm)		8kA			17kA	17kA			40kA	40kA
Rated short-time withstand current (Icn)		5kA			10kA	10kA			20kA	20kA
Mechanical life (60947-6-1)		6000 cycles					4000 cycles	1000 cycles		
Electrical life (60947-6-1)		6000 cycles					4000 cycles	2000 cycles		
Duration of operating cycle		1 min.								
Main circuit withstand voltage		2750VAC 1min (50/60Hz)								
Control circuit withstand voltage		2100VAC 1min (50/60Hz)								
Mechanical life (JEM1038)		Class 4 (250000 times)								
Electrical life (JEM1038)		Class4 (50000 times)								
Switching frequency		No.4 (150 times / hr.)								
Operational current	2P 3P 220VAC	2.9A			4.9A	4.7A		6.7A		6.7A
	2P 3P 240VAC	2.4A			4.1A	4.5A		5.5A		5.5A
	2P 3P 440VAC	1.6A			2.2A	2.3A		3.4A		3.4A
	4P 220VAC	4.5A			7.1A	6.9A		11.7A		11.7A
	4P 240VAC	3.3A			5.4A	5.7A		9.5A		9.5A
	4P 440VAC	2.4A			3.5A	3.5A		5.9A		5.9A
Coil insulation class		Class A								
Switching characteristics (at rated voltage)	Opening time	0.025 sec			0.03 sec	0.035 sec		0.035 sec		
	Switching time	0.06 sec			0.08 sec	0.09 sec		0.1 sec		
Aux. contact		2NO-2NC as standard (Switching capacity 250VAC 15A)								
Applicable standards		BS5424, IEC60947-6-1, JEM1038, JIS C8325, UL1008								
Weight (kg)	3P	5.5			10.0	17.5		26.5		35.0
	4P	6.0			11.0	20.0		30.5		42.0
Notes		(1) Phase N is designed for early make and late break. (2) Weight represents that of Double throw, Front wiring type. (3) Even with the back wiring type, front wiring is to be performed for the control circuit and auxiliary circuit. (4) Opening time is the time when the contact is not in either make or break position. Switching time is the time from control signal ON to contact making.								

Type		690MZ	6100MZ	6120MZ	6140MZ	6160MZ	6180MZ	6200MZ	6300MZ
Class		PC							
Rated insulation voltage		690VAC							
Rated operational voltage		440VAC							
Utilization Category and rated operational current	AC31A	900A	1000A	1200A	1400A	1600A	1800A	2200A	3300A
	AC32A	850A	850A	1100A	1300A	1500A	1700A	2000A	3000A
	AC33A	800A	800A	1000A	1200A	1400A	1600A	-	-
Rated frequency		50/60Hz							
Rated impulse withstand voltage		8kV							
Rated short-circuit making capacity (Icm)		40kA		51kA	60kA	68kA	76kA	95kA	110kA
Rated short-time withstand current (Icn)		20kA		24kA	28kA	32kA	36kA	45kA	50kA
Mechanical life (60947-6-1)		1500 cycles						2000 cycles	
Electrical life (60947-6-1)		1500 cycles						1000 cycles	
Duration of operating cycle		3min						6min	
Main circuit withstand voltage		2750VAC 1min (50/60Hz)							
Control circuit withstand voltage		2100VAC 1min (50/60Hz)							
Mechanical life (JEM1038)		Class 5 (50000 times)							
Electrical life (JEM1038)		Class 5 (10000 times)							
Switching frequency		No.4 (150 times/hr.)							
Operational current	2P 3P 220VAC	6.8A		10.9A					19.4A
	2P 3P 240VAC	5.6A		8.8A					15.3A
	2P 3P 440VAC	3.4A		5.8A					8.6A
	4P 220VAC	10.9A		13.8A					28.1A
	4P 240VAC	8.9A		11.8A					22.2A
	4P 440VAC	5.9A		7.2A					13.3A
Coil insulation class		Class A							
Switching characteristics (at rated voltage)	Opening time	0.035 sec							0.04 sec
	Switching time	0.12 sec							0.2 sec
Aux. contact		2NO-2NC as standard (Switching capacity 250VAC 15A)							
Applicable standards		BS5424, IEC60947-6-1, JEM1038, JIS C8325, UL1008							
Weight (kg)	3P	58		79	82		90	90	210
	4P	64		91	94		95	148	282
Notes		(1) Phase N is designed for early make and late break. (2) Weight represents that of Double throw, Front wiring type. (3) Even with the back wiring type, front wiring is to be performed for the control circuit and auxiliary circuit. (4) Opening time is the time when the contact is not in either make or break position. Switching time is the time from control signal ON to contact making.							

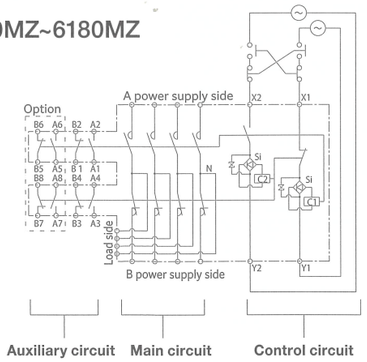
6. Control Circuit and Contact Arrangement

(The diagrams below represent the 4P, double-throw and 4NO-4NC type)

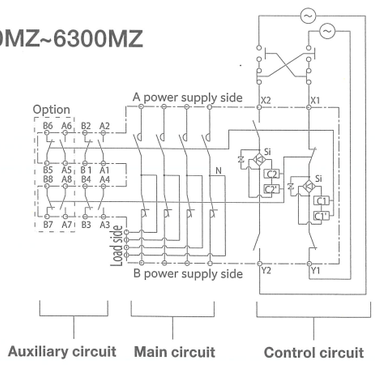
603MZ~680MZ



690MZ~6180MZ



6200MZ~6300MZ

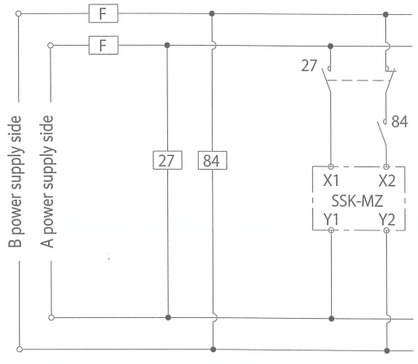


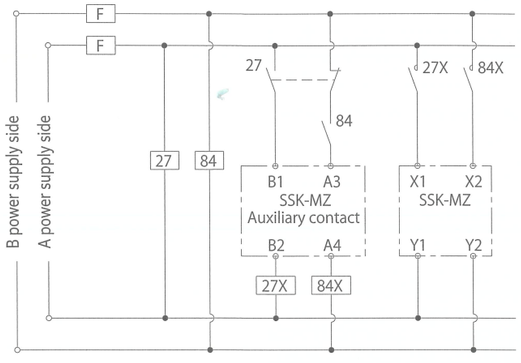
C1: Commercial making coil C2: Emergency making coil Si: Silicon rectifier

A1~A8: Normally open auxiliary contact (A1~A4 for 2NO-2NC)

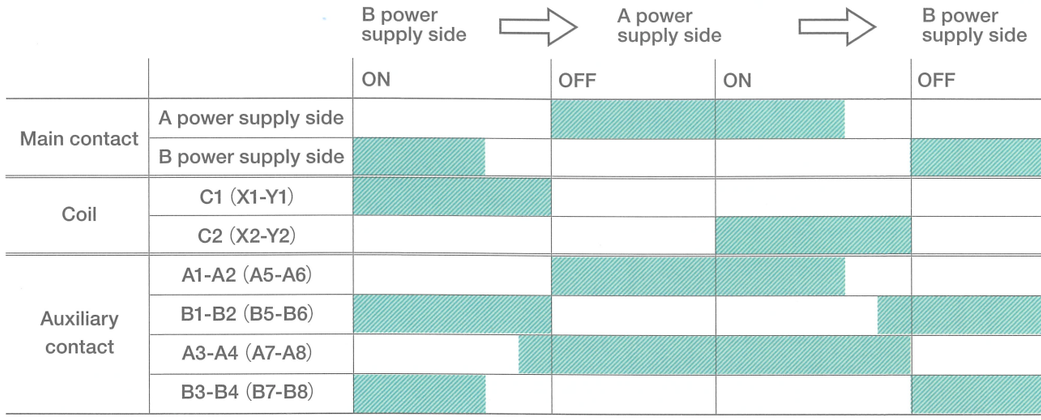
B1~B8: Normally close auxiliary contact (B1~B4 for 2NO-2NC)

7. A Representative Circuit Example



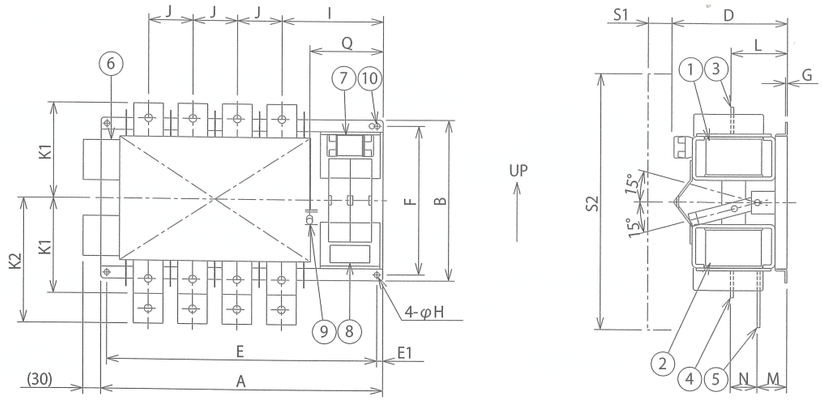


8. Operation Time Chart



9. Overall Dimensions

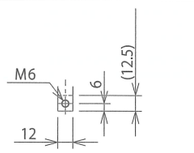
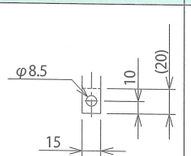
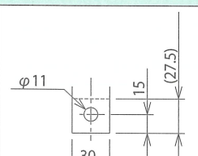
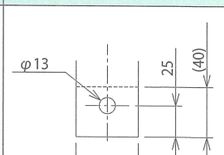
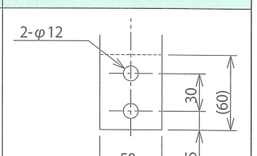
603MZ～680MZ Front wiring type



(30):when auxiliary contacts are 4a4b

	A			B	D	E			E1	F	G	H	I	J	K1	K2	L	M	N	Q	S1	S2
	2P	3P	4P			2P	3P	4P														
603MZ.606MZ. 610MZ	190	220	250	190	115	175	205	235	7.5	175	1.6	5.5	105	30	86	105	42	21	21	78	40	350
615MZ	215	250	285	220	145	195	230	265	10	200	2.3	7.0	115	35	120	150	65	35	30	86	40	380
630MZ.640MZ	255	310	365	260	180	235	290	345	10	240	3.2	9.0	135	55	145	175	95	50	45	95	40	420
650MZ.660MZ	325	400	475	270	195	305	380	455	10	250	3.2	9.0	170	75	160	210	95	50	45	123	40	430
680MZ	325	400	475	270	195	305	380	455	10	250	3.2	9.0	170	75	185	240	100	50	50	123	40	430

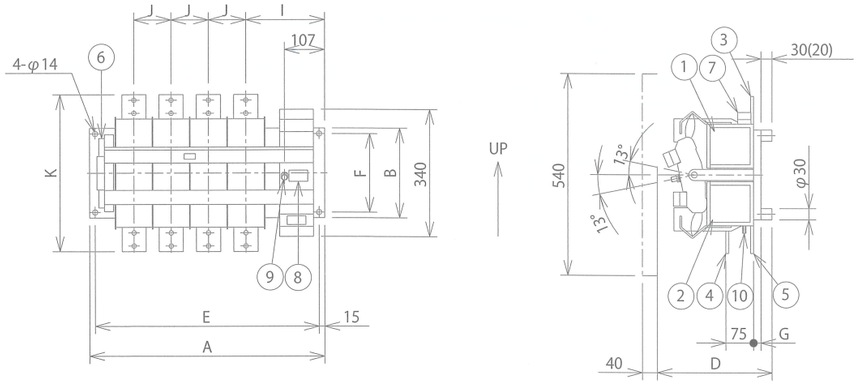
Detail of terminal

603MZ 606MZ 610MZ	615MZ	630MZ 640MZ	650MZ 660MZ	680MZ
 t=4	 t=4	 t=5	 t=5	 t=10

Parts name

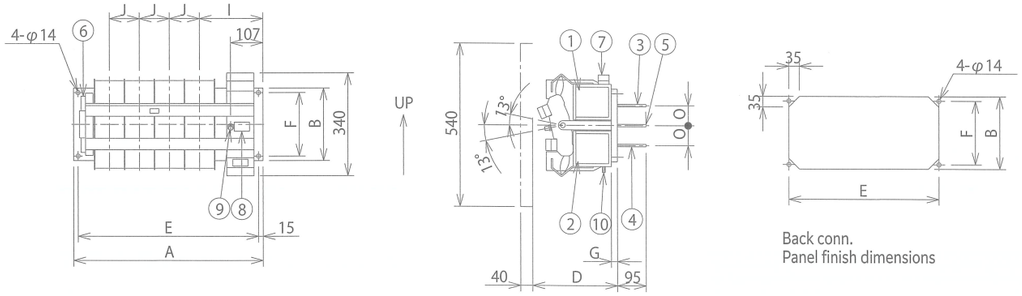
① A power supply turning coil	② B power supply turning coil	
③ A power supply main circuit terminal	④ B power supply main circuit terminal	
⑤ Load main circuit terminal	⑥ Auxiliary circuit terminal	⑦ Control circuit terminal block
⑧ Model nameplate	⑨ Manual closing handle inlet	⑩ Earth terminal

690MZ～6180MZ Front wiring type



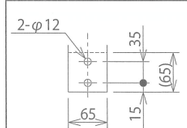
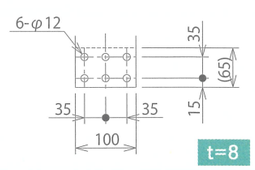
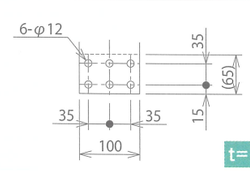
	A			B	D		E			F	G	I	J	K
	2P	3P	4P		2P3P	4P	2P	3P	4P					
690MZ.6100MZ	430	530	630	240	300	310	400	500	600	210	20	210	100	420
6120MZ.6140MZ.6160MZ	495	620	745	300	310		465	590	715	270	30	230	125	500
6180MZ	495	620	745	300	310		465	590	715	270	30	230	125	500

690MZ～6180MZ Back wiring type



	A			B	D		E			F	G	I	J	O
	2P	3P	4P		2P3P	4P	2P	3P	4P					
690MZ.6100MZ	430	530	630	240	270	280	400	500	600	210	20	210	100	66
6120MZ.6140MZ.6160MZ	495	620	745	300	290		465	590	715	270	30	230	125	66
6180MZ	495	620	745	300	290		465	590	715	270	30	230	125	65

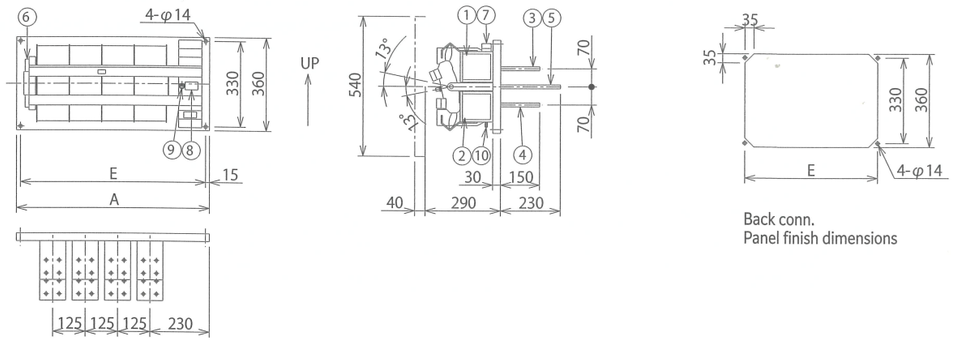
Detail of terminal

690MZ 6100MZ	6120MZ 6140MZ 6160MZ	6180MZ
 t=8	 t=8	 t=10

Parts name

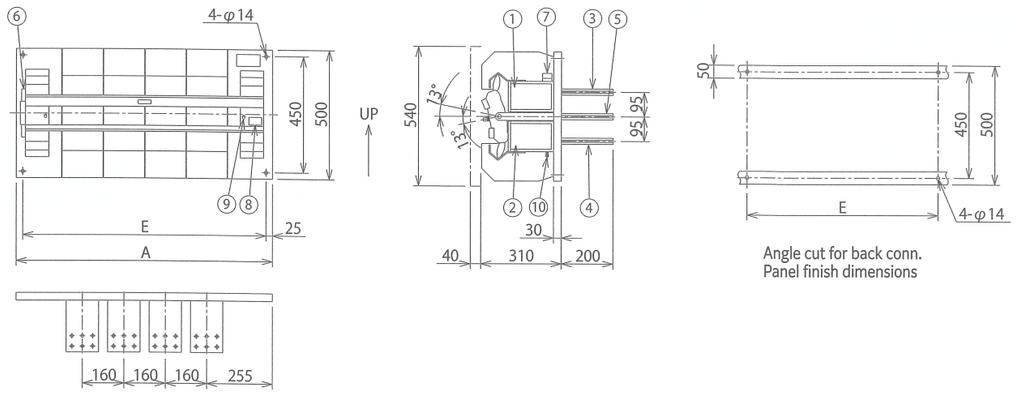
① A power supply turning coil	② B power supply turning coil	
③ A power supply main circuit terminal	④ B power supply main circuit terminal	
⑤ Load main circuit terminal	⑥ Auxiliary circuit terminal	⑦ Control circuit terminal block
⑧ Model nameplate	⑨ Manual closing handle inlet	⑩ Earth terminal

6200MZ　Back wiring type



Back conn.
Panel finish dimensions

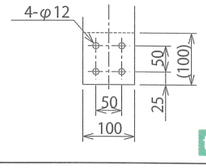
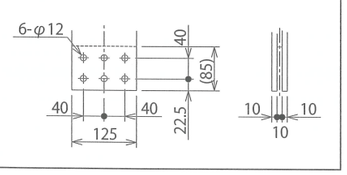
6300MZ　Back wiring type



Angle cut for back conn.
Panel finish dimensions

	A			E		
	2P	3P	4P	2P	3P	4P
6200MZ	495	620	745	465	590	715
6300MZ	670	830	990	620	780	940

Detail of terminal

6200MZ	6300MZ
	

( ):connectable dimension

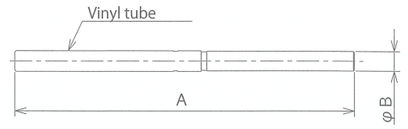
Parts name

① A power supply turning coil	② B power supply turning coil	
③ A power supply main circuit terminal	④ B power supply main circuit terminal	
⑤ Load main circuit terminal	⑥ Auxiliary circuit terminal	⑦ Control circuit terminal block
⑧ Model nameplate	⑨ Manual closing handle inlet	⑩ Earth terminal

10. Option

(1) Manual operation handle and Handle holder

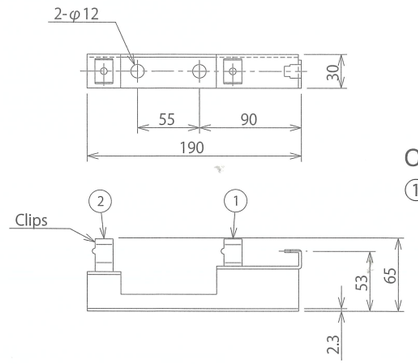
・Manual operation handle



No.	Model	A(mm)	B(mm)	Weight (g)
B1	603MZ~615MZ	150	13.8	450
B2	630MZ~680MZ	300	17.3	550
B3	690MZ~6300MZ	400		650

※The weight above is the total weight of the handle and handle holder.

・Handle holder



Clips are installed at ① or ② depending on the model.
①603MZ~615MZ　②630MZ~6300MZ

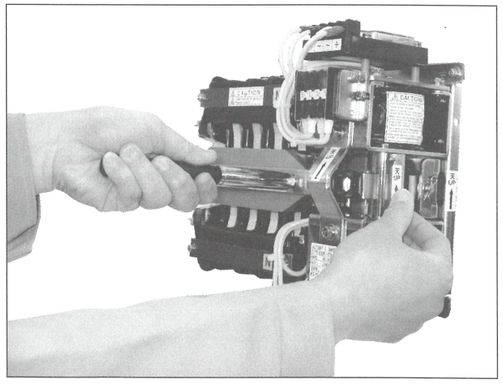
(2) Neutral locking

Instructions of neutral locking

① Turn the control power off
② Turn the main circuit power off
③ Move to neutral position by manual operation handle
④ Insert the Neutral-Lock tool to fix the movable arm in the neutral position.

Notes:

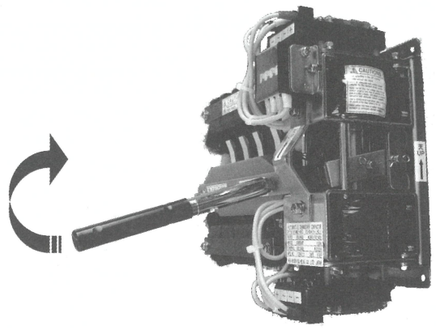
・On completing the check at neutral position, remove Neutral-Lock tool without fail.
・Do not apply voltage to coil while position is locked in Neutral-Lock tool.
(If voltage is applied, the operating coil will be burned out.)



11. Manual Operation

(1) Operating procedure with manual operation handle

① Turn the control power off
② Turn the main circuit power off
③ As illustrated, insert the handle into the handle holder provided in the movable section
④ Move the handle up or down, and a manual operation will be achieved.



(2) Precautions for manual operation

· Manual operation of the transfer switch is to be performed for checks. Never conduct this checking while power is being supplied.
· Be sure to turn off the main circuit and control circuit before manual operation.

12. Control Circuit Wire Size

· The wire sizes specified in the following table are for the operation of a single transfer switch. Be sure to use wires that satisfy the minimum specification given in the table below.
· The wire length is the total length (double line length).

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Operating voltage	220VAC						
Model	Coil current	Wire length(m)					
		10	20	30	40	50	60
603MZ~610MZ	4.5A	2.0	2.0	2.0	2.0	2.0	2.0
615MZ	7.1A	2.0	2.0	2.0	2.0	2.0	2.0
630MZ~640MZ	6.9A	2.0	2.0	2.0	2.0	2.0	2.0
650MZ~680MZ	11.7A	2.0	2.0	2.0	2.0	3.5	3.5
690MZ~6100MZ	10.9A	2.0	2.0	2.0	2.0	3.5	3.5
6120MZ~6200MZ	13.8A	2.0	2.0	2.0	3.5	3.5	3.5
6300MZ	28.1A	2.0	3.5	3.5	5.5	8.0	8.0

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Operating voltage	240VAC						
Model	Coil current	Wire length(m)					
		10	20	30	40	50	60
603MZ~610MZ	3.3A	2.0	2.0	2.0	2.0	2.0	2.0
615MZ	5.4A	2.0	2.0	2.0	2.0	2.0	2.0
630MZ~640MZ	5.7A	2.0	2.0	2.0	2.0	2.0	2.0
650MZ~680MZ	9.5A	2.0	2.0	2.0	2.0	2.0	3.5
690MZ~6100MZ	8.9A	2.0	2.0	2.0	2.0	2.0	3.5
6120MZ~6200MZ	11.8A	2.0	2.0	2.0	2.0	3.5	3.5
6300MZ	22.2A	2.0	2.0	3.5	3.5	5.5	5.5

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Operating voltage	440VAC						
Model	Coil current	Wire length(m)					
		10	20	30	40	50	60
603MZ~610MZ	2.4A	2.0	2.0	2.0	2.0	2.0	2.0
615MZ	3.5A	2.0	2.0	2.0	2.0	2.0	2.0
630MZ~640MZ	3.5A	2.0	2.0	2.0	2.0	2.0	2.0
650MZ~680MZ	5.9A	2.0	2.0	2.0	2.0	2.0	2.0
690MZ~6100MZ	5.9A	2.0	2.0	2.0	2.0	2.0	2.0
6120MZ~6200MZ	7.2A	2.0	2.0	2.0	2.0	2.0	2.0
6300MZ	13.3A	2.0	2.0	2.0	2.0	2.0	2.0

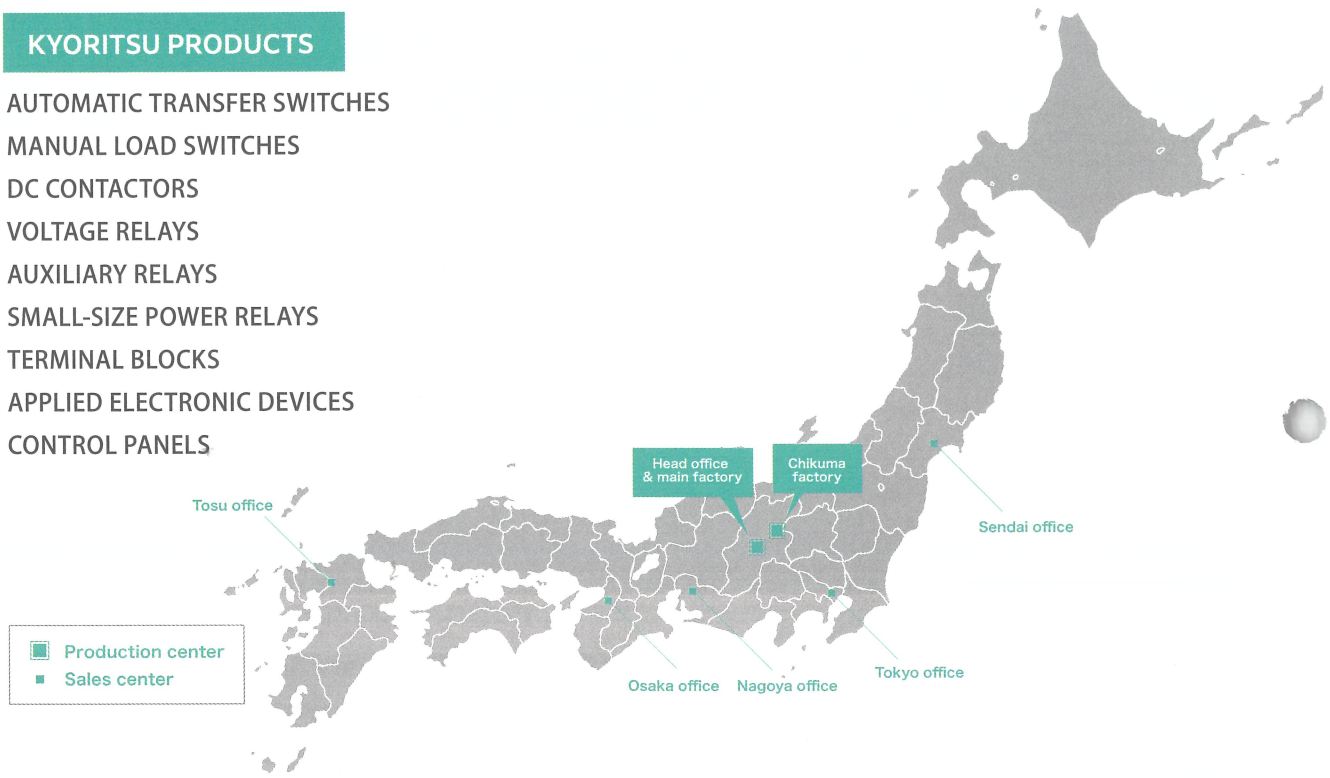
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Head office & Main factory	4684-1 Shimosuwa, Suwa-gun, Nagano prefecture, 393-0087 Phone: +81-266-27-8910 Fax: +81-266-27-7628
Chikuma factory	100 Oaza-Haneo, Chikuma city, Nagano prefecture, 389-0812 Phone: +81-26-276-5000 Fax: +81-26-276-5003
Tokyo office	1-12-10 Taito, Taito-ku, Tokyo, 110-0016 Phone: +81-3-3834-9722 Fax: +81-3-5817-0282
Osaka office	2F, Tenjinbashi Yorozu Apartment, 3-9-19, Tenjinbashi, Kita-ku, Osaka, 530-0041 Phone: +81-6-6353-0221 Fax: +81-6-6351-1288
Nagoya office	10-1-28, Higashino-cho, Kasugai City, Aichi Prefecture, 486-0817 Phone: +81-568-82-4271 Fax: +81-568-82-4276
Sendai office	2-22-23 Yamanotera, Izumi-ku, Sendai City, Miyagi Prefecture, 981-3103 Phone: +81-22-773-5861 Fax: +81-22-773-5862
Tosu office	Office Parea Tosu I #6, 3-105, Kuranoue, Tosu City, Saga Prefecture, 841-0056 Phone: +81-942-83-0564 Fax: +81-942-83-0264

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