

**TAMCO 22kV METALCLAD
WITHDRAWABLE SWITCHGEAR: SCHEDULE OF TECHNICAL DATA**

Item No.	Description Ratings & Electrical Requirements	Unit	Performance Data*
1	General Details		
	Manufacturer's Name		Tamco
	Typical layout drawing & sectional view of switchgear designed and supplied for Australia		Refer Drg No CC/22AIS/08/2008
	Switchgear model no.		VH2
	Type of Operation		Behind Closed Door
2	Applicable Standards		
	Circuit Breaker		IEC62271-100
	Vacuum Bottle		IEC62271-100
	Current Transformer		AS60044.1-2003
	Voltage Transformer		AS60044.1-2003
3	Equipment Rating		
	Rated frequency	Hz	50
	Rated voltage (Ur)	kV	24
	Interrupting medium		Vacuum
4	Rated voltage (Ur)		
	Rated insulation level, Lightning impulse (Up) – common value	kVp	125
	Rated insulation level, Lightning impulse (Up) – across the isolating distance	kVp	145
	Rated insulation level, Power Frequency Voltage (Ud) – common value	kV rms	50
	Rated insulation level, Power Frequency Voltage (Ud) – across the isolating distance	kV rms	60
5	Insulation Details		
	Insulation level: - 1.2/50 impulse withstand (Up)	kV rms	125
	Insulation level: - 50Hz 1 min. withstand (Ud)	kV rms	50
	Insulation level: - 15 min. DC withstand	kV rms	NA
6	Environmental Effects		
	Max noise level during CB operation at 1 metre	dB	80
	Degree of protection	IP rating	42
7	Switchgear Component Insulation Types		
	Breaker plug in bushings		Epoxy Cast
	Breaker plug in spouts		Copper Butt
	Busbars		PU Insulated Copper
	Busbar connections		Bolt type
	Current transformers primaries		Epoxy Resin
	Current transformer primary connections		Bolt/screw
	Cable box bushings		PU Insulated
	Voltage transformer type		Fixed
	Voltage transformer primary windings		Epoxy Resin
	Shutter Material		Non Magnetic
	Is earth shield of full fault rating provided between Primary & Secondary of current transformers?		Yes
8	Earthing & Interlocks		
	Type of earthing (Earth Truck, 'Earth Position', Integral Earth Switch, Portable Earthing)		Integral Earth Switch
	Rating	kA	25
	Earthing of bus and feeders available.		Yes
	Are all circuit breakers capable of being 'racked out' to provide physical isolation?		Yes
	Is it possible to prove that equipment to be earthed as 'not live'? If so, how?		Yes, via mechanical indication lever &

**TAMCO 22kV METALCLAD
WITHDRAWABLE SWITCHGEAR: SCHEDULE OF TECHNICAL DATA**

Item No.	Description Ratings & Electrical Requirements	Unit	Performance Data*
			viewing windows
	Is it possible to apply and lock the fault rated earthing device?		Yes
	Is there a method of inhibiting the return of equipment to the service position? If so, how?		Yes, padlocking
9	Shutters		
	Lockable shutters, to suit Integral lock.		Yes
	Shutters capable of being held open, without special tools, whilst other shutters are locked closed.		No
	When one orifice is being earthed, is it possible to lock closed the other orifice shutter?		Yes
	Is there a front door of the cubicle which can be closed and present a flush appearance?		Yes
10	Pressure Relief Design		
	Pressure relief fitted		Yes
	Internal Arc Fault Performance	kA	25
	Time	second	1
	Designation		AFLR
	Compliance with		IEC62271-200
11	Voltage Transformers		Fixed Type
	Mounting position		Internal
	Ratio		22kV/ $\sqrt{3}$:/110V/ $\sqrt{3}$
	Class	Typically	3P/0.5M
	Withdrawable type		No
	High Voltage fuse		Yes Drawout type
	Low voltage fuse		Yes
12	External Surface Finish		
	Type of finish		Type CED to BS 631
	Finished Colour		Light Grey
13	Recommended Maintenance Intervals		
	Recommended life expectancy	Years/Ops	25/10,000
	Operating Mechanism	Years/Ops	5/500
	Contacts & Interrupting System	Years/Ops	5/500
	Control & Other Ancillary items	Years/Ops	5/1000
14	Operational Facts		
	Do testing facilities include sufficient internal clearances to allow HV testing of cables?		Yes
	Is indication available to verify the potential of points to be earthed?		Yes
	Do locking devices accept shutter locks on all points of isolation and earthing?		Yes
	Are all mechanical operations interlocked?		Yes
	Is CB remote operation inhibited and lockable when in earthed position?		Yes
	Can remote control to open the earth point be locked or disabled to secure isolation?		Yes
	Is there suitable labelling on all points of isolation, earthing and control?		Yes
	Is there easy access to identify VT secondary links/fuses for isolation purposes?		Yes

**TAMCO 22kV METALCLAD
WITHDRAWABLE SWITCHGEAR: SCHEDULE OF TECHNICAL DATA**

Technical Data : Circuit Breakers with 2000A busbar

Item No.	Description Ratings & Electrical Requirements	Unit	Guaranteed Performance
15	Rated normal current		
	Rated normal current: (Ir)	A A A	630 (Feeder or Cap Bank) 1,250 (Feeder) 2000A (Incomer or Bus section)
16	Rated short time withstand:		
	Rated short time withstand: - Current (Ik)	kA	25
	Rated short time withstand: - Time (tk)	Seconds	3
	Rated peak withstand & making current (Ip)	kAp	63
17	Rated breaking current:		
	Rated breaking current: - with line to line faults	kA	25 (symmetrical)
	Rated breaking current: - with line to earth faults	kA	25
	Rated breaking current: - small inductive	A	20 (RMS)
	Open time: - with zero Current	Millisecond	25
	Open time: - at rated breaking Current	Millisecond	25
	Arc duration time at rated breaking current	Cycles	1
	Closing time	Millisecond	50
	First pole to clear factor		1.5
	Rated operating sequence		0-0.3sec-CO-3mins-CO
	Minimum operations with spring fully charged and circuit breaker fully de-energised	Operation	1 close and 1 trip
	Minimum permissible time between successive auto-reclose operations on faults	Seconds	180
18	Overall Dimensions		
	Cubicle overall width / height / depth	mm	900/2226/2494
	Cubicle weight excluding truck	kg	950
	Truck overall width / height / depth (VCB)	mm	730x1319x653
	Truck weight (VCB)	kg	240
	Minimum space top of gear to ceiling	mm	3000
	Minimum space rear of gear to wall	mm	800
	Minimum space front of gear	mm	1300
19	Other CB Construction Details		
	Vacuum bottle manufacturer		Eaton or Equiv.
	Vacuum bottle type		VW Series
	Service life - no. of operations at rated load current		10,000
	No. of short circuit breaking operations		30
	Mechanical service life- no. of operating cycles		10,000
	No. of cycles before maintenance required		500
	Number of breaks per pole		1
	Total length of break per pole	mm	10
	Type of main contact		Cu-Cr
	Type of arcing contact		Axial magnetic field
	Type of arc control device		Arc field in vacuum interrupter
	Mode of closing		Spring Charge
	Necessity for vent pipes to vent outside		No
	Number of trip coils		Up to 2
	Number of close coils		Up to 2
	Number of N/O aux. switches provided		4
	Number of N/C aux. switches provided		4
	Convertibility of Aux. switches be converted		No
	Can time of operation of aux. switches be set independently of CB movement?		No

**TAMCO 22kV METALCLAD
WITHDRAWABLE SWITCHGEAR: SCHEDULE OF TECHNICAL DATA**

Item No.	Description Ratings & Electrical Requirements	Unit	Guaranteed Performance
	Are CB truck auxiliaries capable of being connected with the circuit breaker withdrawn to check control and protection circuits? Is special equipment required to carry out this operation?		Yes No
	Is a separate CB transport truck required?		No
	Required finished floor tolerance > Spec.	mm	+1mm
	Are busbars of the phase segregated type		No
	Are Portable or Fixed ladders provided for access to Voltage Transformer?		No
	Number of CB racking position switches per racked position	Number	2 change-over limit switches
	Interchangeability of like VCB units		Yes
20	Cable boxes and power cables		
	Inside dimensions of box: - height	mm	715
	Inside dimensions of box: - width	mm	900
	Inside dimensions of box: - depth	mm	415
	Dim. bottom of bushing to top of gland plate	mm	850
	Phase centre of bushings	mm	866
	Type of material		Fabricated
	Type of split box (F = front, B = Back)		F&B
	Height of cable box gland plate above floor	mm	3
	Suitable for air insulated XLPE termination	Yes/No	Yes
	Unrestricted access to cable terminations	Yes/No	Yes
	Gland plate material		AL plate (1-core)
	Terminal palm type		Copper Plate