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TABLE 1
SWITCHBOARD LENGTH

1	2	3
ITEM NUMBER	NUMBER OF CUBICLES	SWITCHBOARD LENGTH
1	1	700
2	2	1500
3	3	2300
4	4	3100
5	5	3900
6	6	4700
7	7	5500
8	8	6300

TABLE 2
(SEE INSTRUCTIONS FOR USE NOTES 1 AND 2)
MAIN SWITCHBOARD INCOMER CUBICLE REQUIREMENTS

1	2	3	4
ITEM NUMBER	SWITCHBOARD RATING (A)	STANDBY SUPPLY	NUMBER OF CUBICLES
1	100	NONE	1
2		MANUAL TRANSFER	1
3		AUTO TRANSFER	1
4	220	NONE	3
5		MANUAL TRANSFER	4
6		AUTO TRANSFER	4

1. THE MAIN SWITCHBOARD IS THE SWITCHBOARD HOUSING THE SPD AND MAIN SWITCH/SWITCHES

TABLE 3
(SEE INSTRUCTIONS FOR USE NOTES 1 AND 2)
PUMP STATION SWITCHBOARD INCOMER CUBICLE REQUIREMENTS

1	2	3	4
ITEM NUMBER	SWITCHBOARD RATING (A)	STANDBY SUPPLY	NUMBER OF CUBICLES
1	100	NONE	1
2		MANUAL TRANSFER	1
3		AUTO TRANSFER	1
4	220	NONE	1
5		MANUAL TRANSFER	2
6		AUTO TRANSFER	2

1. THE PUMP STATION SWITCHBOARD IS A DISTRIBUTION BOARD FED FROM THE MAIN SWITCHBOARD ON A MULTIPLE SWITCHBOARD SITE
2. A 220A PUMP STATION SWITCHBOARD WITH AN INVERTER ENERGY SYSTEM WITH REVERSE POWER PROTECTION WILL REQUIRE AN EXTRA CUBICLE

TABLE 4
(SEE INSTRUCTIONS FOR USE NOTE 1)
CUBICLE REQUIREMENTS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
			NUMBER OF CUBICLES REQUIRED																							
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	No. OF DOL STARTERS								No. OF ATr STARTERS								No. OF ESS							
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	45	WASTEWATER	1	1	1	2	2	2	3	3	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4
2		WATER	1	1	1	2	2	2	3	3	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4
3		BORE	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4
4	67	WASTEWATER	1	1	1	2	2	2	3	3	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4
5		WATER	1	1	1	2	2	2	3	3	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4
6		BORE	1	1	2	2	3	3	4	4	1	2	3	4	5	6	7	8	1	1	2	2	3	3	4	4
7	89	WASTEWATER	1	1	2	2	3	3	4	4	1	2	3	4	5	6	7	8	1	1	2	2	3	3	4	4
8		WATER	1	1	2	2	3	3	4	4	1	2	3	4	5	6	7	8	1	1	2	2	3	3	4	4
9		BORE	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	1	2	2	3	3	4	4
10	100	WASTEWATER	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	1	2	2	3	3	4	4
11		WATER	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	1	2	2	3	3	4	4
12		BORE	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	1	2	2	3	3	4	4
13	200	WASTEWATER	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
14		WATER	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
15		BORE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8

TABLE 5
DIRECT ON LINE STARTER PANEL HEIGHTS

1	2	3	4
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	STARTER PANEL HEIGHT
1	45	WASTEWATER	448
2		WATER	448
3		BORE	598
4	67	WASTEWATER	523
5		WATER	523
6		BORE	823
7	89	WASTEWATER	673
8		WATER	673
9		BORE	1198
10	100	WASTEWATER	1273
11		WATER	1273
12		BORE	1273

CAUTION

INPUT FROM THE PROJECT PRIMARY DESIGN IS REQUIRED TO CORRECTLY UTILISE THE INFORMATION ON THIS DRAWING REFER INSTRUCTIONS FOR USE

THE SWITCHBOARD RATING VALUES (COLUMN 2) DISPLAYED ON TABLES 2 AND 3 IS TOTALLY INDEPENDENT FROM THE MAXIMUM MOTOR FLC VALUES (COLUMN 2) DISPLAYED ON TABLE 4

TABLE 6
AUTOTRANSFORMER STARTER PANEL HEIGHTS

1	2	3	4	5	6	7
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	STARTER PANEL HEIGHT	AUTOTRANSFORMER PANEL HEIGHT	COMBINED ASSEMBLY PANEL HEIGHT	
					ONE STARTER	TWO STARTERS
1	45	WASTEWATER	448	298	746	1194
2		WATER	448	298	746	1194
3		BORE	598	298	896	1494
4	64	WASTEWATER	523	298	821	1344
5		WATER	523	298	821	1344
6		BORE	823	298	1121	N/A
7	67	WASTEWATER	523	373	896	1419
8		WATER	523	373	896	1419
9		BORE	823	373	1196	N/A
10	89	WASTEWATER	1123	373	1496	N/A
11		WATER	1123	373	1496	N/A
12		BORE	1198	373	1571	N/A
13	100	WASTEWATER	1273	448	1721	N/A
14		WATER	1273	448	1721	N/A
15		BORE	1273	448	1721	N/A
14	200	WASTEWATER	1348	373	1721	N/A
15		WATER	1348	373	1721	N/A
16		BORE	1348	373	1721	N/A

1. EACH MOTOR STARTER IS COMPRISED OF A STARTER PANEL AND AN AUTOTRANSFORMER. DEPENDING ON RATING AND APPLICATION, IT MAY BE POSSIBLE TO HOUSE A MAXIMUM OF TWO AUTOTRANSFORMERS WITHIN ONE AUTOTRANSFORMER PANEL
2. NO MORE THAN ONE AUTOTRANSFORMER PANEL CAN BE HOUSED IN A SINGLE CUBICLE

TABLE 7
ELECTRONIC SOFT STARTER PANEL HEIGHTS

1	2	3	4
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	STARTER PANEL HEIGHT
1	100	WASTEWATER	823
2		WATER	823
3		BORE	823
4	200	WASTEWATER	1048
5		WATER	1048
6		BORE	1048

TABLE 8
VSC FEEDER PANEL HEIGHTS

1	2	3	4
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	STARTER PANEL HEIGHT
1	1.1–90.1	WASTEWATER	823
2		WATER	823
3		BORE	823
4	90.2–150.5	WASTEWATER	1348
5		WATER	1348
6		BORE	1348

TABLE 9
(SEE INSTRUCTIONS FOR USE NOTE 3)
VARIABLE SPEED CONTROLLER FEEDER CUBICLE REQUIREMENTS

1	2	3	4	5	6	7	8	9	10	11
			NUMBER OF CUBICLES REQUIRED							
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	No. OF VSC FEEDER PANELS							
			1	2	3	4	5	6	7	8
1	1.1–13.6A	WASTEWATER	1	1	2	2	3	3	4	4
2		WATER	1	1	2	2	3	3	4	4
3		BORE	1	1	2	2	3	3	4	4
4	13.7–62.1A	WASTEWATER	1	1	2	2	3	3	4	4
5		WATER	1	1	2	2	3	3	4	4
6		BORE	1	1	2	2	3	3	4	4
7	62.2–90.1A	WASTEWATER	1	1	2	2	3	3	4	4
8		WATER	1	1	2	2	3	3	4	4
9		BORE	1	1	2	2	3	3	4	4
10	90.2–150.5A	WASTEWATER	1	2	3	4	5	6	7	8
11		WATER	1	2	3	4	5	6	7	8
12		BORE	1	2	3	4	5	6	7	8

TABLE 10
(SEE INSTRUCTIONS FOR USE NOTE 3)
VARIABLE SPEED CONTROLLER HARMONIC FILTER CUBICLE REQUIREMENTS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			NUMBER OF CUBICLES REQUIRED															
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	No. OF HARMONIC FILTERS (5% THDi)								No. OF HARMONIC FILTERS (10% THDi)							
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	1.1–12.8A	WASTEWATER	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4
2		WATER	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4
3		BORE	1	1	2	2	3	3	4	4	1	1	2	2	3	3	4	4
4	12.9–31.9A	WASTEWATER	–	–	–	–	–	–	–	–	1	1	2	2	3	3	4	4
5		WATER	–	–	–	–	–	–	–	–	1	1	2	2	3	3	4	4
6		BORE	–	–	–	–	–	–	–	–	1	1	2	2	3	3	4	4

TABLE 11
(SEE INSTRUCTIONS FOR USE NOTE 3)
VARIABLE SPEED CONTROLLER CUBICLE REQUIREMENTS

1	2	3	4	5	6	7	8	9	10	11
			NUMBER OF CUBICLES REQUIRED							
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	No. OF VSC's							
			1	2	3	4	5	6	7	8
1	1.1–76.5A	WASTEWATER	1	1	2	2	3	3	4	4
2		WATER	1	1	2	2	3	3	4	4
3		BORE	1	1	2	2	3	3	4	4
4	76.6–150.5A	WASTEWATER	1	2	3	4	5	6	7	8
5		WATER	1	2	3	4	5	6	7	8
6		BORE	1	2	3	4	5	6	7	8

TABLE 12
(SEE INSTRUCTIONS FOR USE NOTE 3)
VARIABLE SPEED CONTROLLER SINE–WAVE FILTER CUBICLE REQUIREMENTS

1	2	3	4	5	6	7	8	9	10	11
			NUMBER OF CUBICLES REQUIRED							
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	No. OF SINE–WAVE FILTERS							
			1	2	3	4	5	6	7	8
1	1.1–62.1A	WASTEWATER	1	1	2	2	3	3	4	4
2		WATER	1	1	2	2	3	3	4	4
3		BORE	1	1	2	2	3	3	4	4
4	62.2–150.5A	WASTEWATER	–	–	–	–	–	–	–	–
5		WATER	–	–	–	–	–	–	–	–
6		BORE	–	–	–	–	–	–	–	–

TABLE 13
(SEE INSTRUCTIONS FOR USE NOTE 3)
VARIABLE SPEED CONTROLLER dV/dT FILTER CUBICLE REQUIREMENTS

1	2	3	4	5	6	7	8	9	10	11
			NUMBER OF CUBICLES REQUIRED							
ITEM NUMBER	MAXIMUM MOTOR FLC (A)	APPLICATION	No. OF dV/dT FILTERS							
			1	2	3	4	5	6	7	8
1	1.1–150.5A	WASTEWATER	1	1	2	2	3	3	4	4
2		WATER	1	1	2	2	3	3	4	4
3		BORE	1	1	2	2	3	3	4	4

INSTRUCTIONS FOR USE

1. *THE PROJECT PRIMARY DESIGN SHALL BE COMPLETED PRIOR TO USING TABLES 2, 3 OR 4 TO ESTABLISH THE SIZE OF THE SWITCHBOARD*
2. *THE SWITCHBOARD INCOMER RATING (TABLES 2 OR 3, COLUMN 2) SHALL BE DETERMINED BY THE PRIMARY DESIGN*
3. *THE PROJECT PRIMARY DESIGN SHALL BE COMPLETED PRIOR TO USING TABLES 9 – 13 TO ESTABLISH THE NUMBER AND TYPE OF VARIABLE SPEED CONTROLLER CUBICLES REQUIRED*

GENERAL NOTES
1. UNLESS OTHERWISE SHOWN ALL DIMENSIONS ARE IN MILLIMETRES

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD
G	06/2023		TABLES 10, 11, 12 RENUMBERED AND MOTOR FLC REVISED. NEW TABLE 10 ADDED. INSTRUCTIONS FOR USE NOTE 3 REVISED	SAM		
F	08/2021		CAUTION AND INSTRUCTIONS FOR USE NOTES ADDED; VSC CUBICLE REQUIREMENTS TABLES 8–12 ADDED	PH	TL	EG
E	03/2021		TABLE 4 CUBICLE REQUIREMENTS AND TABLE 7 ELECTRONIC SOFT STARTER PANEL HEIGHTS REVISED	PH	TL	EG
D	10/2020		ELECTRONIC SOFT STARTER PANEL HEIGHTS REVISED	PH	EG	NJ

566
810

DESIGN SURVEY NONE
ASCON SURVEY NONE
VERTICAL DATUM NONE
COORDINATE SYS NONE
DES REF
DES CALC E FONG
DES CHD K O'GRADY
DRN P HARVEY
Q.C. CHD S MEMORY
NORTH POINT

SUBMITTED 24/07/2017 E FONG (SIGNED) SENIOR ENGINEER – ELECTRICAL
RECOMMENDED 24/07/2017 K O'GRADY (SIGNED) PRINCIPAL ENGINEER – ELECTRICAL
APPROVED 24/07/2017 N JOHNSON (SIGNED) SNR PRINCIPAL ENGINEER – ELECT

ENGINEERING

WATER CORPORATION

ELECTRICAL STANDARD SWITCHBOARD DESIGNS
SMALL PUMP STATIONS
SWITCHBOARD REFERENCE
MK8 OUTDOOR CUBICLE – SWITCHBOARD SIZING TABLES

FILE
PROJECT
PLAN MN01–21–1.3
CAD
ISSUE G
ORIGINAL SHEET SIZE A1
MF

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