

# The Charging Algorithms of the Program J214

## Status LED:

Whole main charging	=	orange
Ready/Trickle charge	=	green
Error	=	flashing red
Battery not connected	=	red
No Algorithm	=	red
Code switch test	=	flashing green

## Charging algorithms for 48V, 15A PAC 800 P:

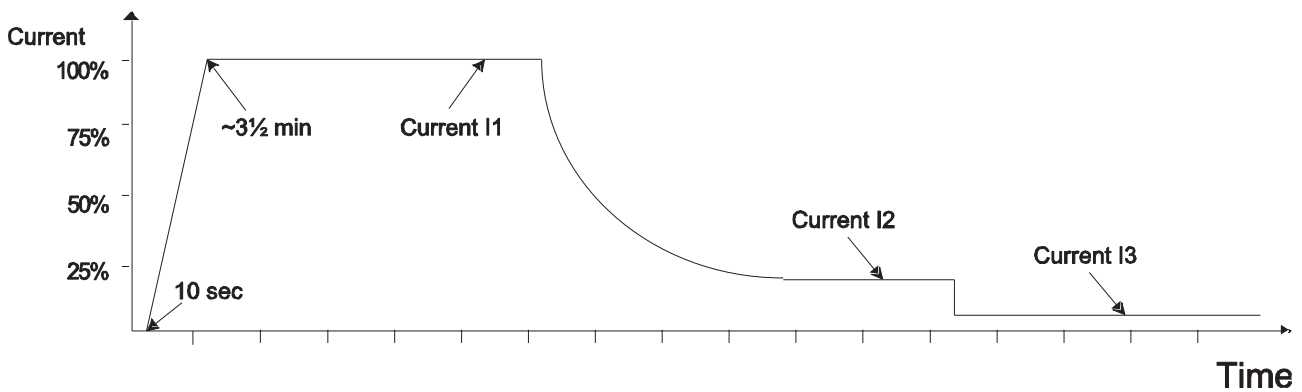
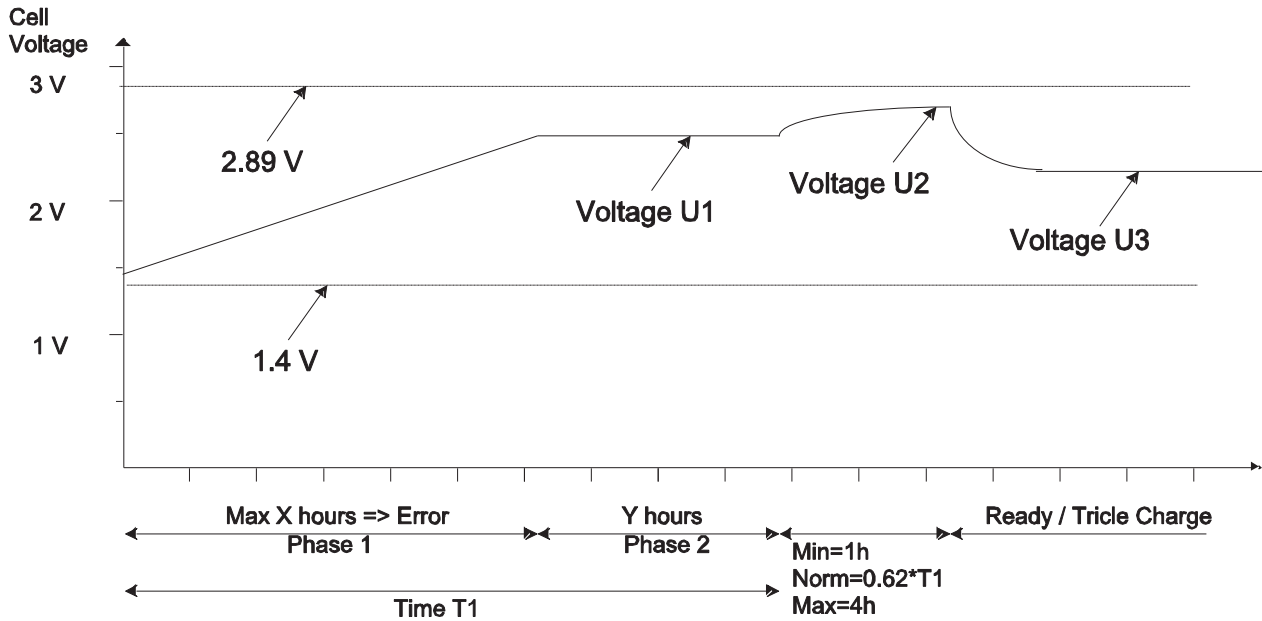
Switch position	Battery Voltage	Battery type	Charging Current	Battery capacity	Charging curve
0	48 V	Unsealed	10 A	30-50 Ah	A
1	48 V	Unsealed	15 A	50-80 Ah	A
2	48 V	Unsealed	15 A	80-110 Ah	A
3	48 V	Unsealed	15 A	110-150 Ah	A
4	48 V	Sealed	10 A	30-50 Ah	B
5	48 V	Sealed	15 A	50-80 Ah	B
6	48 V	Sealed	15 A	80-110 Ah	B
7	48 V	Sealed	15 A	110-150 Ah	B
8	48 V	DELCO	10 A	30-50 Ah	C
9	48 V	DELCO	15 A	50-80 Ah	C
10 = A	48 V	DELCO	15 A	80-110 Ah	C
11 = B	48 V	DELCO	15 A	110-150 Ah	C
12 = C				No algorithm(Service)	
13 = D				No algorithm(Service)	
14 = E				No algorithm(Service)	
15 = F				No algorithm(Service)	

Din forhandler



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# Unsealed Battery



## Charging Curve A for unsealed batteries:

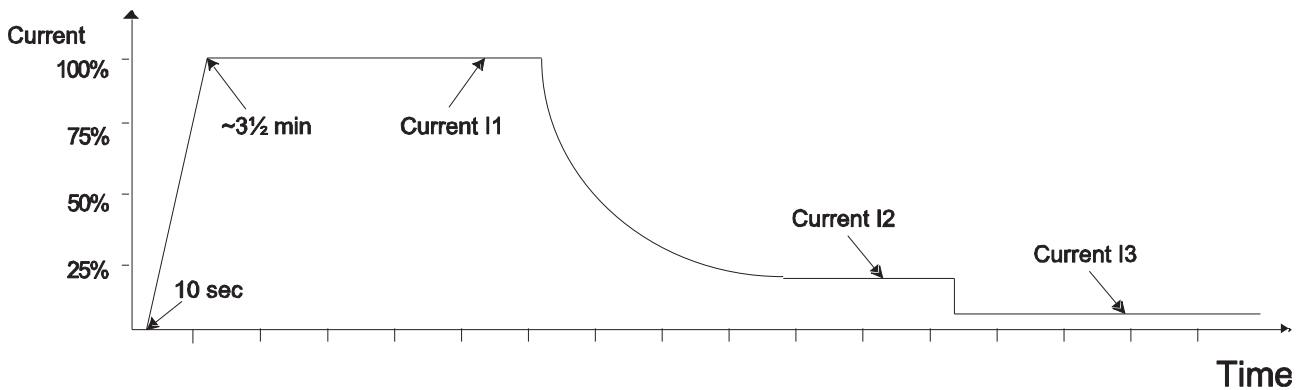
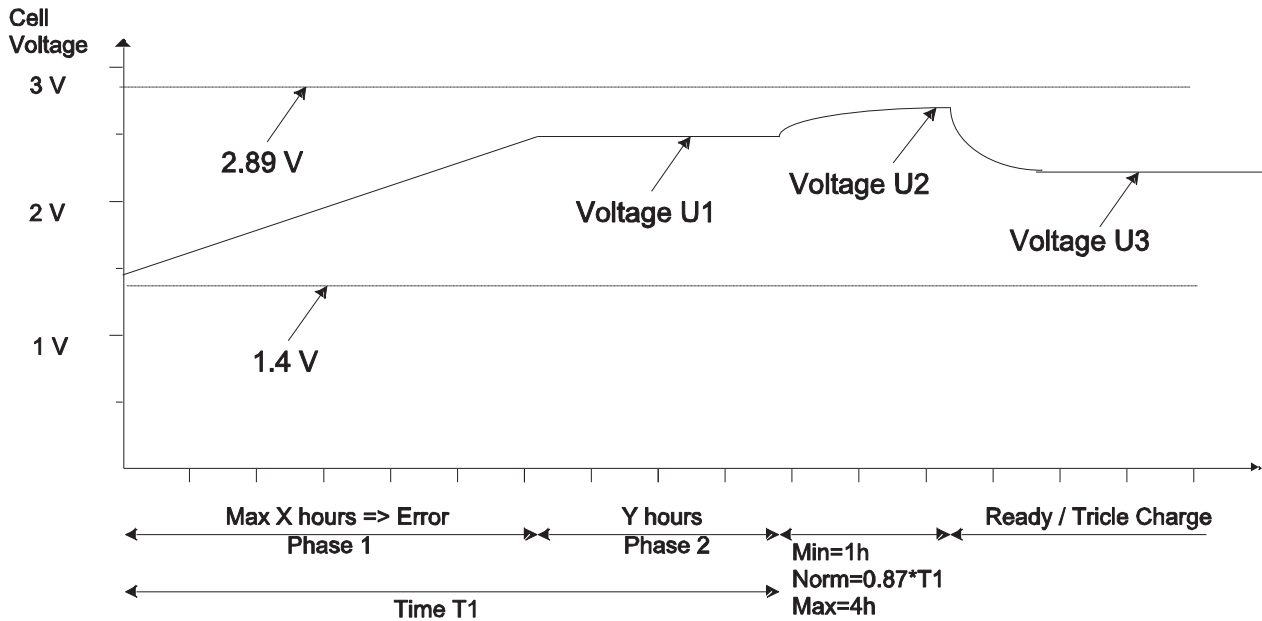
Switch position	Battery capacity	Voltage U1 V/Cell	Voltage U2 V/Cell	Voltage U3 V/Cell	Current I1	Current I2	Current I3	Max. Time X and Y
0	30-50 Ah	2.4	2.8	2.25	10 A	2 A	0.4 A	6
1	50-80 Ah	2.4	2.8	2.25	15 A	3.3 A	0.7 A	7
2	80-110 Ah	2.4	2.8	2.25	15 A	4.8 A	1.0 A	8
3	110-150 Ah	2.4	2.8	2.25	15 A	6.5 A	1.3 A	11

Din forhandler



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# Sealed Battery



## Charging Curve B for Sealed battery:

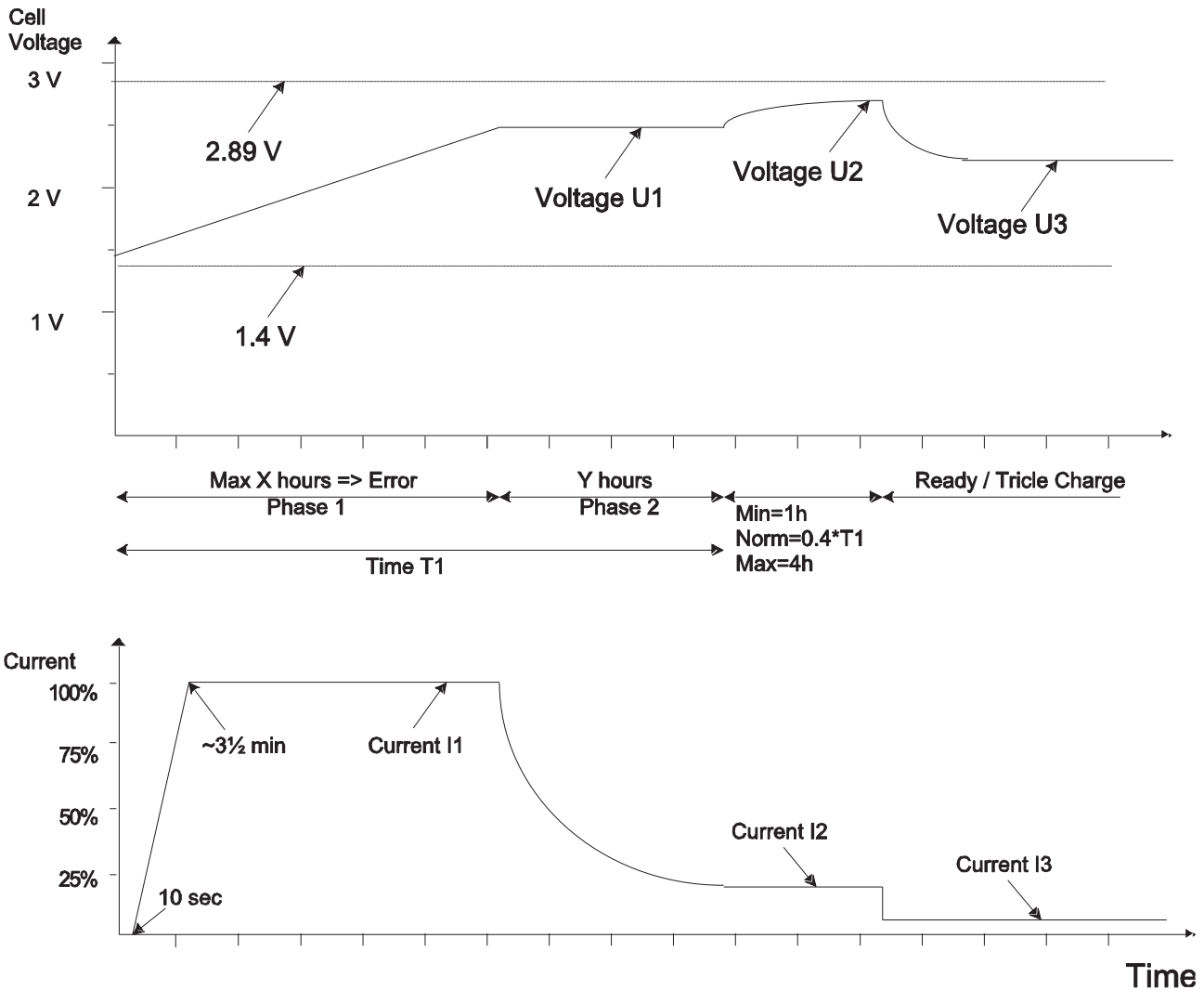
Switch position	Battery capacity	Voltage U1 V/Cell	Voltage U2 V/Cell	Voltage U3 V/Cell	Current I1	Current I2	Current I3	Max. Time X and Y
4	30-50 Ah	2.35	2.7	2.25	10 A	0.6 A	0.4 A	6
5	50-80 Ah	2.35	2.7	2.25	15 A	1 A	0.7 A	7
6	80-110 Ah	2.35	2.7	2.25	15 A	1.5 A	1.0 A	8
7	110-150 Ah	2.35	2.7	2.25	15 A	2 A	1.3 A	11

Din forhandler



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# DELCO Battery



## Charging Curve C for DELCO Free battery:

Switch position	Battery capacity	Voltage U1 V/Cell	Voltage U2 V/Cell	Voltage U3 V/Cell	Current I1	Current I2	Current I3	Max. Time X and Y
8	30-50 Ah	2.42	2.6	2.25	10 A	0.4 A	2 A	6
9	50-80 Ah	2.42	2.6	2.25	15 A	0.7 A	3.3 A	7
A	80-110 Ah	2.42	2.6	2.25	15 A	1 A	4.8 A	8
B	110-150 Ah	2.42	2.6	2.25	15 A	1.3 A	6.5 A	11

Din forhandler



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## Other rules:

- Charging voltage is compensated depending on battery's temperature.  
 $U = -0.0035 \text{ V} \cdot \text{C} \cdot (T - 25)$   
Where:  
U = Output voltage  
V = Voltage on the table  
C = Cell number  
T = Battery's temperature in Celsius
- If battery temperature is 45 C output current decreases to 50% of nominal value. When decreased to 40 C output current is 100%.
- If battery temperature is 50 C charging momentarily turns off. When decreased to 45 C the charger starts with 50% output current.
- If current doesn't decrease faster than 240 mA/hour at constant voltage mode then phase is changing.
- Charging voltage drop depending on current in long output wires is compensated if measuring cable is connected.

**Din forhandler**



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**The right battery**

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