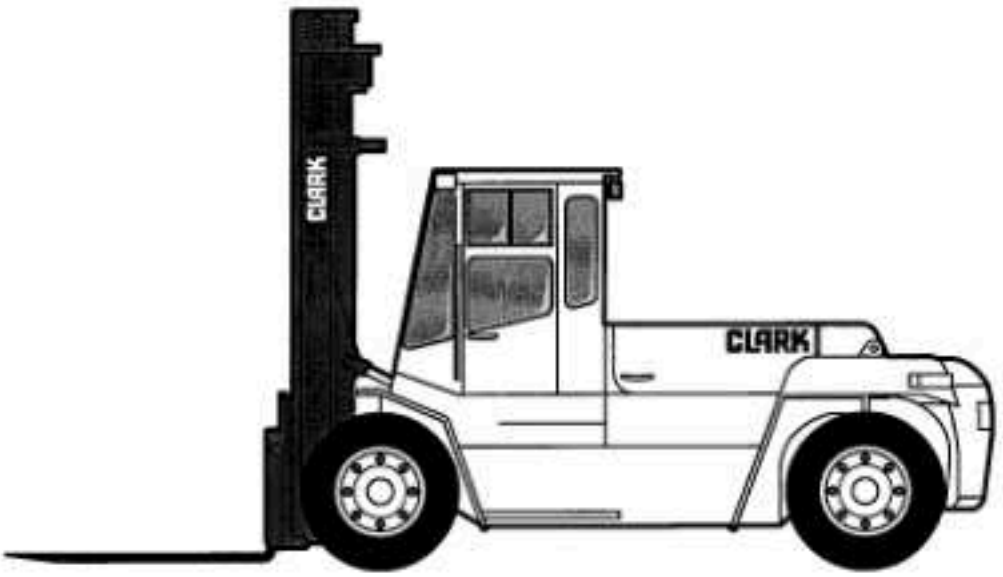
# SM 622
# CDP 100/164
# Service Manual




ISO 9001 CERTIFIED CLARK

CLARK Technical Publications Lexington, KY 40508

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# SECTION 1.

## TROUBLESHOOTING



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# SECTION 1

## SPECIFICATIONS & SERVICE DATA
## POWER SHIFT TRANSMISSION & TORQUE CONVERTER

### CONVERTER OUT PRESSURE
Converter outlet oil temperature 180° - 200°F (82.3 - 93.3°C)
Transmission in NEUTRAL.
Operating specifications:
25 PST (172,4 kPa) minimum pressure at 2000 RPM engine speed AND a maximum of 70 PSI (482,6 kPa) outlet pressure with engine operating at no-load governed speed.

### CONTROLS
Forward and Reverse - Manual Speed Selection - Automatic or Manual

### CLUTCH TYPE
Multiple discs, hydraulically actuated, spring released, automatic wear compensation and no adjustment. All clutches oil cooled and lubricated.

### CLUTCH INNER DISC
Friction

### CLUTCH OUTER DISC
Steel

### OIL FILTRATION
Full flow oil filter safety bypass, also strainer screen in sump at bottom of transmission case.

### CLUTCH PRESSURE
240 - 280 PSI (1654,8 - 1930.6 kPa) - With parking brake set (see note), oil temperature 180°-200°F (82.2-93.3°C) engine at idle 400 to 600 RPM), shift thru direction and speed clutches. All clutch pressure must be equal within 5 PSI (34,5 kPa). If clutch pressure varies in any one clutch more than 5 PSI (34,5 kPa) repair clutch.

NOTE: Never use service brakes while making clutch pressure checks. Units having brake actuated declutching in forward and/or reverse will not give a true reading.
**Always use parking brake when making clutch pressure checks.**

### LUBRICATION
Recommended Lubricants for Clark Powershift Transmission & Torque Converters

### TYPE OF LUBRICANT
Lubricant to be used in Clark 28000 Transmission on CDP 100/164 forklift.

| | Prevailing ambient temperature | |
|---|---|---|
| **Temperature Range** | 0°C and above | -25°C and above |
| **Lubricant** | C-3 Grade 30 | C-3 Grade 10 |

*Any deviation from this specification must have written approval from Clark Material Handling Company.*

### OIL CAPACITY
Consult Operator's Manual on applicable machine model for system capacity. Torque converter, transmission and allied hydraulic system must be considered as a whole to determine capacity.

### CHECK PERIOD
Check oil level DAILY with engine running at 500-600 RPM and oil at 180° to 200°F. (82.2 - 93.3°C). Maintain oil level to FULL mark.

### NORMAL DRAIN PERIOD
Every 500 hours, change oil filter element. Every 1000 hours, drain and refill system as follows: Drain with oil at 150° to 200°F. (65.6 - 93.3°C).

NOTE: It is recommended that filter elements be changed after 50 and 100 hours of operation on new and rebuilt or repaired units.

a. Drain transmission and remove sump screen. Clean screen thoroughly and replace, using new gaskets.
b. Drain oil filters, remove and discard filter elements.
c. Refill transmission to LOW mark.
d. Run engine at 500-600 RPM to prime converter and lines.
e. Recheck level with engine running at 500-600 RPM and add oil to bring level to LOW mark. When oil temperature is hot (180°-200°F) (82.3-93.3°C) make final oil level check. **Bring oil level to full mark.**

### POWERSHIFT TRANSMISSION FLUID AERATION CHECK

Loose hose fittings sucking air and a fluid level that is too high can cause the fluid to become aerated. Aerated fluid will cause low control pressure and the fluid may be forced out the breather.



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# GROUP 30

## HYDRAULICS

Hydraulic Schematic ..... Section 1

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Tandem Cooling Pump ..... Section 3



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# 21-SI GENERATOR SPECIFICATIONS

*Pull Out for Specifications*

| Generator Model | Rated Volts/Amps | GND | Rotation Viewed From DE | Spec. | Rotor Field Checks Ohms @ 80°F. | Rotor Field Checks Current Amps@Volts | | Cold Output @ 80°F Amps @ 1600 rpm | Cold Output @ 80°F Amps @ 5000 rpm |
|---|---|---|---|---|---|---|---|---|---|
| 1117880 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117881 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117882 | 12V/125A | N | Either | 8102 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 125 |
| 1117883 | 12V/125A | N | Either | 8102 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 125 |
| 1117884 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117885 | 12V/90A | N | Either | 8104 | 1.7-1.8 | 6.7-7.1 | 12 | 48 | 90 |
| 1117886 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117887 | 12V/100A | N | Either | 8138 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117888 | 12V/125A | N | Either | 8102 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 125 |
| 1117889 | 12V/90A | N | Either | 8139 | 1.7-1.8 | 6.7-7.1 | 12 | 48 | 90 |
| 1117890 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117891 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117892 | 12V/100A | N | Either | 8140 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117893 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117894 | 12V/100A | N | CW | 7299 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117895 | 12V/65A | N | CW | 8101 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117896 | 12V/130A | N | CW | 8116 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117897 | 24V/50A | N | Either | 8113 | 9.5-10.7 | 2.2-2.5 | 24 | 25 | 50 |
| 1117898 | 12V/125A | N | Either | 8102 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 125 |
| 1117899 | 12V/160A[1] | N | Either | 8125 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117900 | 24V/70A | N | Either | 8115 | 9.5-10.7 | 2.2-2.5 | 24 | 15 | 70 |
| 1117901 | 24V/60A | N | Either | 8114 | 9.5-10.7 | 2.2-2.5 | 24 | 20 | 60 |
| 1117902 | 12V/130A | N | Either | 8116 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117903 | 12V/100A | N | Either | 7299 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117904 | 12V/130A | N | Either | 8116 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117905 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117906 | 12V/115A | N | CW | 8128 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117907 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117908 | 12V/130A | N | Either | 8116 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117909 | 12V/130A | N | Either | 8127 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117910 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117911 | 12V/130A | N | CW | 8116 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117912 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117913 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117914 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117915 | 24V/70A | N | Either | 8141 | 9.5-10.7 | 2.2-2.5 | 24 | 15 | 70 |
| 1117916 | 12V/145A | N | CW | 8136 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 1117917 | 12V/160A[1] | N | Either | 8142 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117918 | 12V/130A | N | Either | 8127 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117919 | 12V/160A[1] | N | Either | 8133 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117920 | 12V/160A[1] | N | Either | 8143 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117921 | 12V/145A | N | Either | 8135 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 1117922 | 12V/160A[1] | N | Either | 8133 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117923 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117924 | 12V/160A[1] | N | CW | 8125 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117925 | 12V/65A | N | CW | 8101 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 65 |
| 1117926 | 12V/160A[1] | N | Either | 8125 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117927 | 12V/100A | N | Either | 7299 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117928 | 12V/130A | N | Either | 8116 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117929 | 12V/130A | N | Either | 8127 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117930 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117931 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117932 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117933 | 12V/145A | N | Either | 8135 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 1117934 | 12V/160A[1] | N | Either | 8145 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117935 | 12V/125A | N | Either | 8102 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 125 |
| 1117936 | 12V/145A | N | CW | 8136 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 1117937 | 12V/100A | N | Either | 8146 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117938 | 12V/160A[1] | N | Either | 8125 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 150 |
| 1117939 | 12V/100A | N | CW | 7299 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117940 | 12V/115A | N | CW | 8128 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117941 | 12V/115A | N | Either | 8152 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117942 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117943 | 12V/130A | N | Either | 8148 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117944 | 24V/70A | N | Either | 8150 | 9.5-10.7 | 2.2-2.5 | 24 | 15 | 70 |
| 1117945 | 12V/145A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 1117946 | 12V/130A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117947 | 12V/115A | N | CW | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117948 | 12V/145A | N | CW | 8135 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 1117949 | 12V/130A | N | CW | 8145 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 1117950 | 12V/100A | N | CW | 8102 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117951 | 12V/115A | N | CW | 8136 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 115 |
| 1117952 | 12V/145A | N | CW | 8146 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 1117953 | 12V/65A | N | CW | 8125 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 65 |
| 1117954 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117955 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117956 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 1117957 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117958 | 12V/115A | N | Either | 8135 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117959 | 12V/115A | N | Either | 8145 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 1117960 | 12V/65A | N | Either | 8102 | 1.7-1.8 | 6.7-7.1 | 12 | 45 | 65 |
| 10459013 | 12V/100A | N | Either | 8136 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459017 | 12V/100A | N | Either | 8146 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459023 | 12V/100A | N | Either | 8125 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459026 | 12V/90A | N | Either | 7299 | 1.7-1.8 | 6.7-7.1 | 12 | 48 | 90 |
| 10459027 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459028 | 12V/130A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 10459035 | 12V/100A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459036 | 12V/100A | N | Either | 8135 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459037 | 12V/130A | N | Either | 8145 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 10459038 | 12V/130A | N | Either | 8127 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 10459039 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459040 | 12V/130A | N | Either | 8127 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 10459041 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |
| 10459042 | 12V/90A | N | Either | 8104 | 1.7-1.8 | 6.7-7.1 | 12 | 48 | 90 |
| 10459043 | 12V/100A | N | Either | 8140 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459044 | 12V/100A | N | Either | 8140 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459045 | 12V/100A | N | Either | 7284 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459046 | 12V/100A | N | Either | 7299 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459047 | 12V/130A | N | Either | 8127 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 10459048 | 12V/130A | N | Either | 8127 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 10459049 | 12V/130A | N | Either | 8116 | 1.7-1.8 | 6.7-7.1 | 12 | 50 | 130 |
| 10459050 | 12V/145A | N | CW | 8136 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 10459051 | 12V/145A | N | CW | 8136 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 10459052 | 12V/145A | N | CW | 8136 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 10459053 | 12V/145A | N | Either | 8135 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 10459054 | 12V/145A | N | Either | 8135 | 1.7-1.8 | 6.7-7.1 | 12 | 40 | 145 |
| 10459055 | 12V/100A | N | Either | 8146 | 1.7-1.8 | 6.7-7.1 | 12 | 60 | 100 |
| 10459056 | 12V/115A | N | Either | 8107 | 1.7-1.8 | 6.7-7.1 | 12 | 55 | 115 |

[1] Rated 160 Amperes at 8300 rpm.

## NOTES

Specifications show models introduced through time of publication. For latest information on these and other Delco Remy products, contact:

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