CLARK Material Handling Europe

CGP / CDP 16-50 H
Hydrostatic Transmission
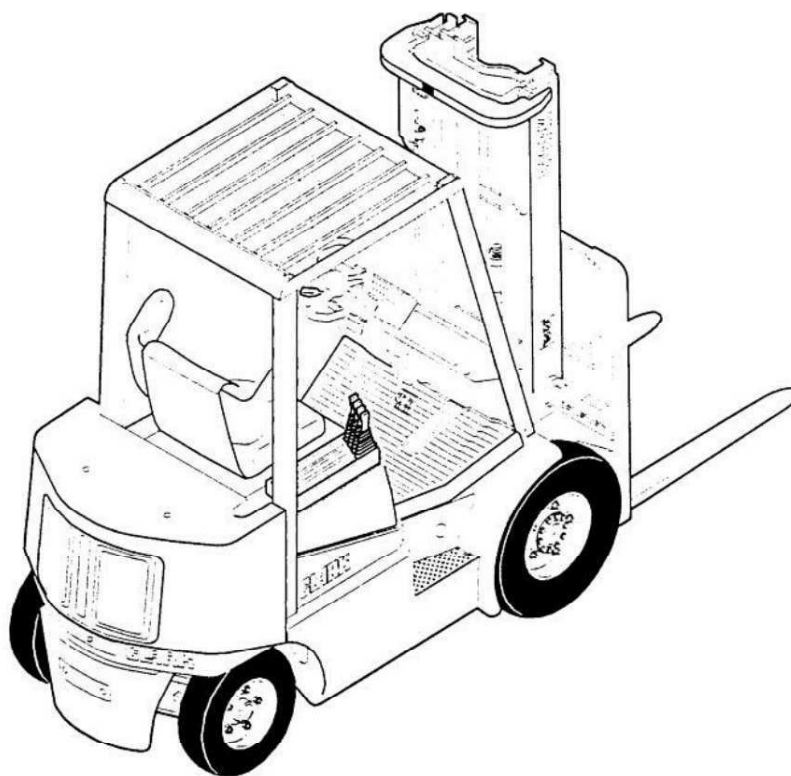
Service Manual
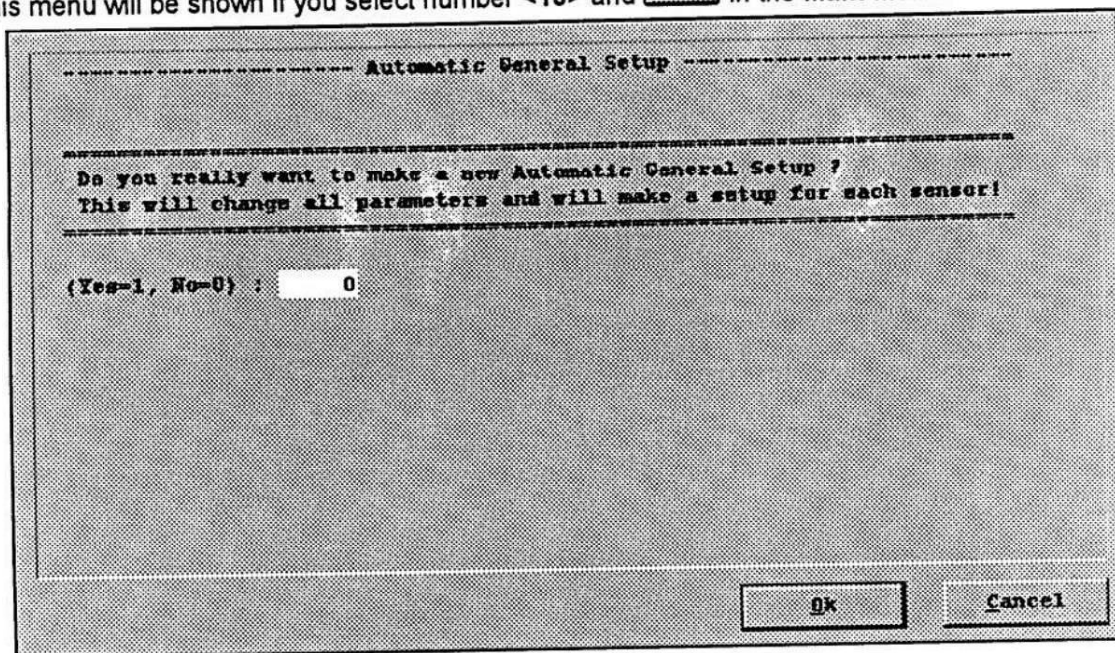
GROUP 06 (H)

Hydrostatic Transmission

8.13 Automatic General Setup

This menu will be shown if you select number <13> and [←⏎] in the **Main Menu**.

```
---------------------- Automatic General Setup -----------------------


=====================================================================
 Do you really want to make a new Automatic General Setup ?
 This will change all parameters and will make a setup for each sensor!
=====================================================================


 (Yes=1, No=0) :        0




                                              [  Ok  ]    [ Cancel ]
```
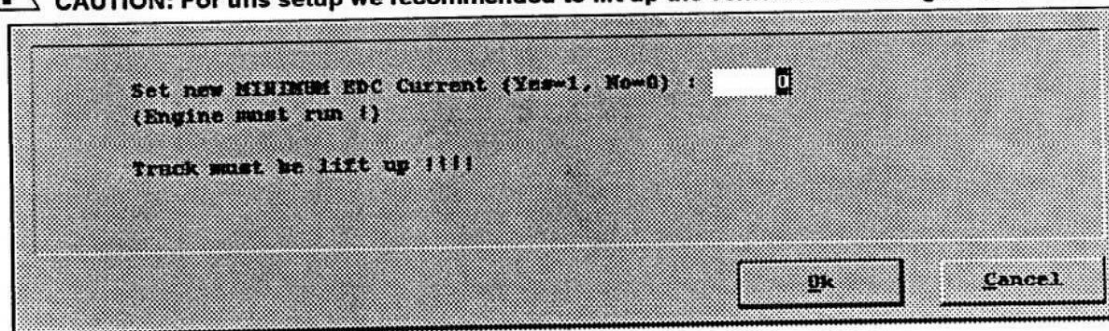
- By pushing [1] and [←⏎] you start the automatic general setup procedure.
- The automatic general setup starts sequentially the menus <2>, <3>, <4>, <5> and <11>.
- By pushing [0] and [←⏎] you go back to the **Main Menu**.

8.14 EDC min. Current Setup

This menu will be shown if you select number <14> and [←⏎] in the **Main Menu**.

⚠ CAUTION: For this setup we recommended to lift up the vehicle and the engine must run!

```
     Set new MINIMUM EDC Current (Yes=1, No=0) :     [0]
     (Engine must run !)

     Truck must be lift up !!!!




                                              [  Ok  ]    [ Cancel ]
```

- By pushing [0] and [←⏎] you go back to the **Main Menu**.
- By pushing [1] and [←⏎] you start the EDC min. current setup procedure.

8.14.1 EDC min. Current Setup Procedure

This menu will be shown if you select number ⬛**1** and ⬛⬅ in the **EDC min. Current Setup Menu**. You have to follow the status lines shown on the screen. The new parameters of the sensor will be shown behind each status line.

```
----------- Minimum EDC Current Setup ------------

    Output current forward  :     10    mA
    Output current reverse  :     10    mA

    Active direction  : [NEUTRAL]

    Use the following key to control the setup:
    <Q> - Quit the setup and save
    <+> = Increase current       <-> = Decrease current
    <F> = Forward direction      <R> = Reverse direction
    <N> = Neutral



                                          Ok          Cancel
```

- Block one wheel.
- Select forward direction <F>.
- Increase current <+> until the wheel starts to turn forward.
- Select reverse direction <R>.
- Increase current <+> until the wheel starts to turn reverse.
- Select <Q> to save the parameters and go back to the **Main Menu.**

If the setup detects an error during the learning phase, the system will display an error screen with a detailed error description.

```
-----------  Minimum EDC Current Setup ------------




<SETUP ERROR> : Minimum value too low.



Push <RETURN> please.      0


                                          Ok          Cancel
```

8.15   EDC max. Current Setup

This menu will be shown if you select number <15> and ⬅ in the **Main Menu**.

⚠ CAUTION: For this setup we recommended to lift up the vehicle and the engine must run!

```
Set new MAXIMUM EDC Current (Yes=1, No=0) :        0
Engine must run !

Truck must be lift up !!!!
```

                                                    Ok   Cancel

- By pushing 0 and ⬅ you go back to the **Main Menu**.
- By pushing 1 and ⬅ you start the EDC max. current setup procedure.

8.15.1 EDC max. Current Setup Procedure

This menu will be shown if you select number 1 and ⬅ in the **EDC max. Current Setup Menu**. You have to follow the status lines shown on the screen. The new parameters of the sensor will be shown behind each status line.

```
------------ Maximum EDC Current Setup ------------

   Output current forward :      35   mA
   Output current reverse :      35   mA

   Active direction : [NEUTRAL]

   Use the following key to control the setup:
   <Q> = Quit the setup and save
   <+> = Increase current      <-> = Decrease current
   <F> = Forward direction     <R> = Reverse direction
   <N> = Neutral
```

                                                    Ok   Cancel

- Block one wheel.
- Select forward direction <F>.
- Increase current <+> until the wheel reaches the maximum RPM speed.
- Select reverse direction <R>.
- Increase current <+> until the wheel reaches the maximum RPM speed.
- Select <Q> to save the parameters and go back to the **Main Menu**.

8.16 Disable Brake & Antistall

If this menu point is called, the system will disable the brake and antistall function. This function can be used to rub the brakes at the first time. Or to adjust the LP-Engine (driving again the brake to get a load on the engine). This function will be automatically disabled if the truck is switched off, or if the „**Run Screen**" (truck is running) is deactivated by a system reset ([⬆] [R]).

8.17 Ramp Setup

In this menu you can change the parameters of the acceleration and deceleration characteristic of the machine. You have to select number **<17>** and [⬅] in the **Main Menu**.

```
------------------- Ramp Parameter (all units are ms) -------------------

RPM for second acceleration :  1099

Linear acceleration:
         First (100..2500)    1000          Second (100..2500) :   1500

Linear deceleration: (100..2500)
Forward  --> Freewheeling :   1500   Neutral    1500   Reversal :   750
Reverse  --> Freewheeling :   1500   Neutral :  1500   Reversal :   750

Throttle request  : Ramp TAU up min.:    100    Ramp TAU down min.    100
                    Ramp TAU up max.:   1500    Ramp TAU down max. :  250

Vehicle speed for faster deceleration (1..1000) :    300
Ramp for faster deceleration           (min. 250) :  600

<ESC> - Abort   <TAB> - next Parameter   <RETURN> - OK

  Help                                         Ok          Cancel
```
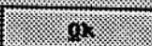
Figure 10: Characteristic of the acceleration

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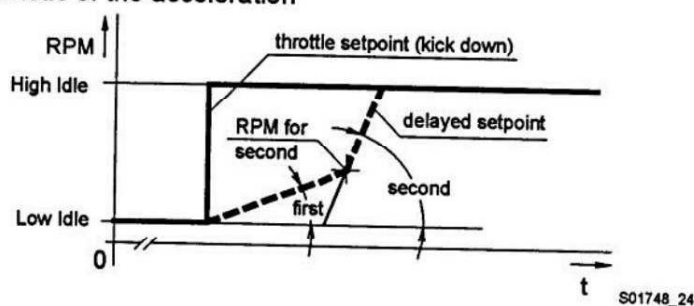
Figure 11: Direction switch switches from forward to neutral or from reverse to neutral.
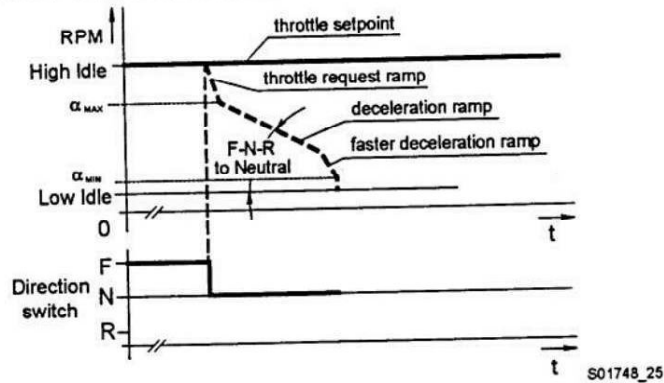
Figure 12: Direction switch switches from forward to reverse or from reverse to neutral.
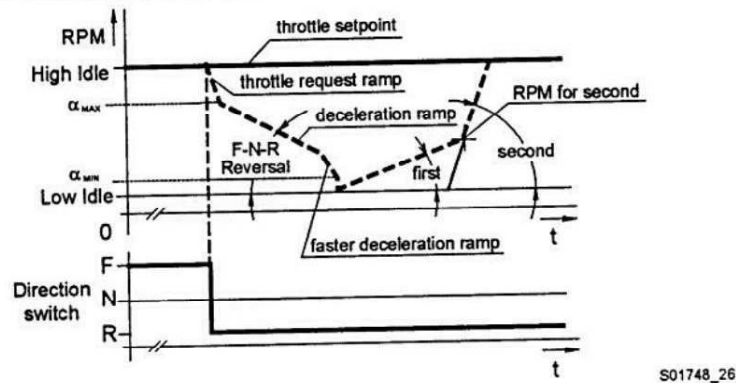
Figure 13: Characteristic of the deceleration
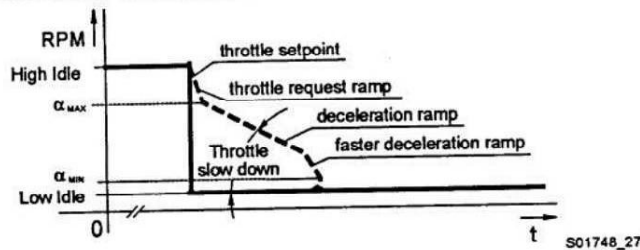
The deceleration ramp is based on the following characteristic. The ramp starts with a non linear part, followed by a linear part and ended also by a non linear part. This three parts are independent of each other. The non linear parts are the same in all different driving conditions. The linear part is adjustable dependent on direction and function.

Figure 14: Characteristic of the ramp system

dt=10; kp=1000; TR=1500; T2=500; T1=500

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8.18 Parameter Overview

In this menu you can see a parameter overview of the most important driving setups. The most of this parameters are also changeable by the SUSMIC-DIA 3. It is not possible to change any of this parameters in this menu. You have to select number <18> and [⬅] in the **Main Menu**.

```
------------ Parameter Overview Software Version : [  5093  ] ------------
Vehicle type            :   CD(G)P 25 - 35 X
Engine type             :     Diesel
Acceleration condition  :     Soft
Deceleration condition  :     Soft
Pedal system            :   1/2 Pedal

First acceleration      :    1000          Second acceleration  :    2000
Deceleration (Forward):
Freewheeling:  2000     FNR to Neutral :   1500      Reversal    :    750
Deceleration (Reverse):
Freewheeling:  2000     FNR to Neutral :   1500      Reversal    :    750

Tilt/Aux fixed max. engine RPM          :    1399
Lift      fixed max. engine RPM         :    2449
Min. current EDC (mA * 10)    Forward    :     200    Reverse  :    200
Max. current EDC (mA * 10)    Forward/Reverse              :    900
Current limitation            Forward    :      10    Reverse  :     10
       <<<<<<<<<<<<<<< Push any key >>>>>>>>>>>>>>>>>>>>

 Help                                        Ok        Cancel
```

8.19 Pump Parameter

In this menu you can change the parameters of the EDC and current output. You have to select number <19> and [⬅] in the **Main Menu**.

```
-------------------------- Pump  Parameter --------------------------

Min. current EDC (mA * 10)              Forward :    0    Reverse :    0

Max. current EDC (mA * 10) :    800

Current limitation (%/10)               Forward :   10    Reverse :   10



    <ESC> - Abort   <TAB> - next Parameter   <RETURN> - OK

 Help                                        Ok        Cancel
```

Min. current EDC Forward (mA*10) : min. current for the EDC (deadband) in forward direction.
Min. current EDC Reverse (mA*10) : min. current for the EDC (deadband) in reverse direction.
Max. current EDC (mA*10)   : max. current for the EDC.
Current limitation Forward (%/10) : limitation of the max. EDC current in forward direction.
Current limitation Reverse (%/10) : limitation of the max. EDC current in reverse direction.
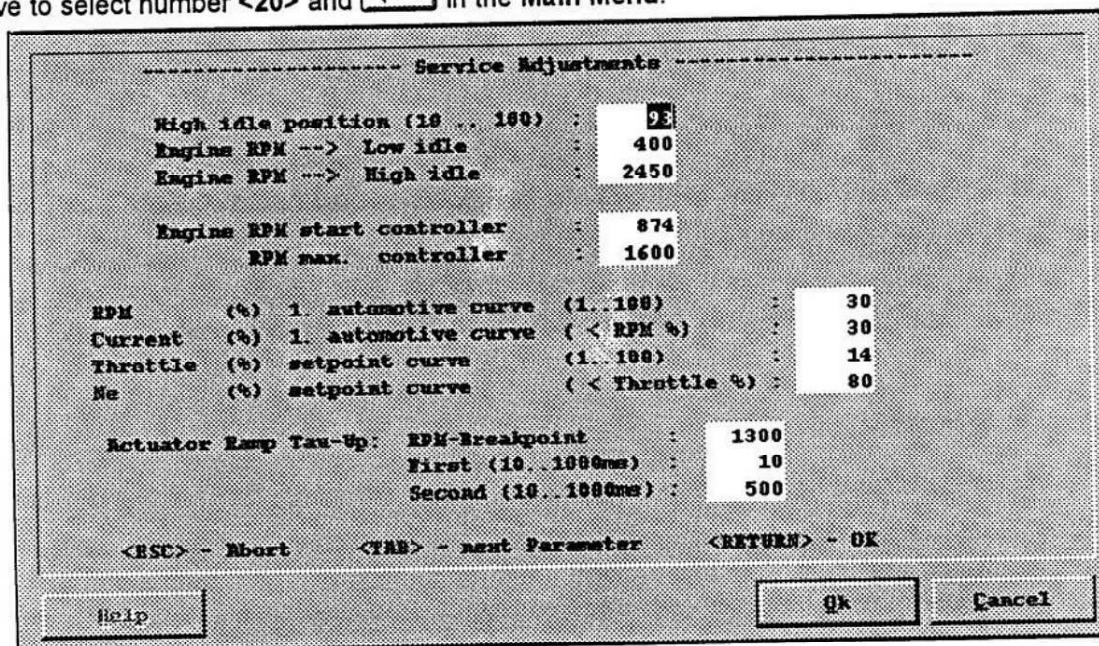
8.20 Service Adjustment

In this menu you will find the most important parameters to change the driving characteristics. You have to select number <20> and ⬅ in the **Main Menu**.

```
-------------------- Service Adjustments --------------------

        High idle position (10 .. 100)  :    93
        Engine RPM --> Low idle          :   400
        Engine RPM --> High idle         :  2450

        Engine RPM start controller      :   874
              RPM max. controller        :  1600

  RPM      (%)  1. automotive curve  (1..100)       :    30
  Current  (%)  1. automotive curve  ( < RPM %)      :    30
  Throttle (%)  setpoint curve       (1..100)        :    14
  Ne       (%)  setpoint curve       ( < Throttle %) :    80

  Actuator Ramp Tau-Up:  RPM-Breakpoint         :  1300
                         First (10..1000ms)   :    10
                         Second (10..1000ms)  :   500

  <ESC> - Abort      <TAB> - next Parameter    <RETURN> - OK

     Help                                 Ok        Cancel
```

|	
High idle position (10..100)	: This value limits the function of the position control loop (i.e. a value of 50 means, that if the engine speed setpoint is High Idle, the position of the lever is set to 50%. The rest of the speed difference is done by the governor control loop).
Engine RPM low idle	: Min. engine speed.
Engine RPM high idle	: Max. engine speed.
RPM start controller	: Start diesel RPM of the automotive curve.
RPM max. controller	: Max. diesel RPM of the automotive curve (RPM 17°).
RPM (%)	: Kink point of the setpoint (%) of the max. setpoint.
Current (%)	: Current value in the kink point of the output curve (%) (<RPM %) from the max. output current (1...10).
Throttle (%)	: Kink point of the throttle position (%) of the max. throttle position (1...10).
Ne (%)	: Ne setpoint value in the kink point of the output curve (%) from the max. Ne setpoint (1...10).
Ramp Tau up RPM-Breakpoint	: RPM setpoint between ramp up 1st and ramp up 2nd.
Ramp TAU up 1st (10..1000ms)	: Delay time for rising edge below RPM-breakpoint.
Ramp TAU up 2nd (10..1000ms)	: Delay time for rising edge above RPM-breakpoint.

9.   Run Mode Screens

You leave the **Setup Mode** and enter the **Run Mode** by entering a <0> followed by a [←] in the **Main Menu**. Once you have entered the **Run Mode** the first of the available run screens is displayed and the SUSMIC Digital System starts working. To return to the **Setup Mode** from the **Run Mode** enter [↑] [R].

There are several **Run Screens** available which can be activated by entering an appropriated key (for a list of these keys and their corresponding **Run Screens** see **Chapter later**). Find a list of all **Run Screens** and their description in the following.

9.1   Run Screen

This *Main Run Screen* will be shown if you select number <0> and [←] in the **Main Menu** or enter the key combination [↑] [V] in **Run Mode**. The data screen is displayed and the control system starts working.

```
****************************** Run Screen ******************************

Engine RPM                          :   2443
EPC current (mA * 10)               :      0      0   Droop      :      0
Brake A/D value / Brake Indc        :    154    450   Park brake : [ NO]
Vehicle speed (%)                   :      0

Throttle A/D value / No setpoint    :    763    699

Direction            : [NEUTRAL]
PIDT position output:    -183                         System mode: [STOP    ]
Actuator feeback     :      64   AbsSetpError:  -3023  PosRPMSet  :      0
E-Actuator setpoint  :     699   PWM CW       :      0  PWM CCW    :    183
Lift setpoint        :     699   Lift A/D     :     50
Tilt RPM active      : [ NO]                          Error      : [YES]

-- <Shift + R> Main Menu,       <Shift + E> Error Screen --
-- <Shift + S> Service Screen,        <?> Help Screen
-- <Shift + P> Setup Errors,     <Shift + O> Operation Errors --

                                             [  OK  ]     [ Cancel ]
```

- On the upper 2/3 of the screen the system data in alphanumeric format are shown.