

# RCS L6C/M7C Settings

Grey Text indicates settings can vary depending on ground conditions or consumable size

*Rotation pump compensator max is set to 120 bar to prevent shank damage. OMS250 only*  
*Rotation pump compensator max is set to 150 bar when using OMS160 rot motors*  
Threading rotation pressure is set to 90 bar on the Y155 pressure reducer.

**MT indexing** - Cylinder, Pins and Collars are fitted for improved reliability  
Indexing is Set up as per MT index adjustment procedure.

**MT Slide holders** and Wear pieces are fitted to prevent drifter binding and wear peice failure.

**Rotation speed** varies from aprox 35 rpm in bit 5 setting to aprox 75 rpm in Bit 1.

**(4050/3060)Impact** is set at 120 bar collar and 160-180 bar full, (4050/3060)  
**(1838) Impact** is set at 140 bar collar and 180-200 bar full,

**BSH** clamping pressure can be raised to 100 bar if greater than 76mm tubes are used.

**Gripper** resolver sensor has an extra seal housing fitted to prevent water ingress.

Pn MT9772 0115 16

**Restrictors** should be fitted to the feed centre barrel to reduce cylinder damage P/N  
P.N. 3217 6512 03

**Compressor** drain line can be run to the tank manifold instead of the drain block under the cabin. If this manifold blocks it will no longer destroy the compressor cooler.

**Park cylinder** (RHS27V1 only)is replace with MT heavy duty unit and adjsuted to 415mm  
MT heavy extractor valves and reduction nipple are fitted to increase extractor life

Air flow pressure differential switch can be replaced by MT switch Kit RCS3 MT3217 9955 40

RCS4 MT9106 1856 034

MT Heavy Duty segments are used to prevent segment failure and rod fall.

350 bar transducer offset = 102 Coefficient = 0.428 (base settings before calibration)

50 bar transducer offset = 102 Coefficient = 0.060 (base settings before calibration)

Greater than 10% variation the sensor should be replaced and recalibrated

Engine idle (mechanical Duets) is set 200 rpm higher than standard to prevent shuddering when the diesel hydraulic pump is engaged. Excluding electronic Deutze







Operator Bit settings are adjusted so that bit 1 uses high feed speed and fast rotation, (ie competent ground). Bits 2 to 4 gradually become slower,  
Bit 5 settings use slowest feed speed and slow rotation, (ie Reamer or broken ground)

Machine : L6C - M7C

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<b>RCS parameters - DRILLING</b>		BIT 1	BIT 2	BIT 3	BIT 4	BIT 5
<b>Feed Speed</b> 	Max speed manual collaring	<b>380</b>				
	Max speed auto collaring	<b>395</b>	<b>390</b>	<b>356-370</b>	<b>354-365</b>	<b>350-365</b>
	Max speed drilling	<b>405</b>	<b>400</b>	<b>372-395</b>	<b>365-374</b>	<b>360-370</b>
	Max speed cavity drilling	<b>380</b>				
	Min speed lever	<b>320</b>				
	Min speed break	<b>390</b>				
	max speed lever	<b>520</b>				
<b>The lower the ma the more holdback during drilling soft ground or large bits</b>						
<b>Feed pressure</b> 	Feed pressure collaring	<b>70 bar</b>	<b>65</b>	<b>65</b>	<b>50</b>	<b>45</b>
	Feed pressure drilling	<b>93 bar</b>	← not used if RPCF is on.			
			Collaring feed pressure must be high enough to ensure the feed can lift the rods in up holes			
	Feed pressure Cavity drilling	<b>70 bar</b>				
	Min feed pressure drilling	<b>10 bar</b>				
	Max feed press. drilling Speed Rods	<b>100 bar</b>				
	Max feed pressure drilling Tubes	<b>110 bar</b>				
<b>Percussion</b> 	Percussion pressure collar	<b>120 bar</b>	<b>130 bar 1838</b>			
	Percussion pressure drilling <b>1838</b>	<b>180 bar</b>	<b>180</b>	<b>180</b>	<b>180</b>	<b>170</b>
	Percussion pressure drilling <b>4050</b>	<b>160 bar</b>	<b>160</b>	<b>160</b>	<b>150</b>	<b>145</b>
	Percussion pressure Cavity drilling	<b>145 bar</b>				
	Percussion pressure lose coupling	<b>180 bar</b>	<b>200 bar 1838</b>			
	Max current	<b>600 ma</b>	This value must be set 30 ma above the amount sent to Y100 during full drilling			
	Long stroke(4050 only)	<b>?</b>				
Max current ensures the percussion pressure drops when a Hp accumulator is blown						
<b>Rotation</b> 	Rotation speed drilling <b>Tubes</b>	<b>75rpm</b>	<b>65rpm</b>	<b>55rpm</b>	<b>45rpm</b>	<b>35rpm</b>
	Rotation speed drilling <b>Speed Rod</b>	<b>95rpm</b>	<b>85rpm</b>	<b>75rpm</b>	<b>60rpm</b>	<b>45rpm</b>
	RPCF pressure increase	<b>20 bar</b>	← Set by driller in options screen			
	Pressure increase jamming	<b>30 bar</b>	<b>35</b>	<b>35</b>	<b>40</b>	<b>45</b>
	Pressure decrease free	<b>10 bar</b>				
	Max rotation pressure	<b>110bar</b>	← Max Anti Jam setting			
<b>Dampening</b> 	Min dampening pressure	<b>40 bar</b>				
	Max dampening pressure 4050	<b>160 bar</b>	<b>1838 rockdrill = 180 bar</b>			
	Dampening pressure low percussion	<b>52 bar</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>48</b>
	Dampening pressure high percussio	<b>55 bar</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>50</b>
<b>Timers</b>	Min collaring time	<b>2.0 sec</b>				
	Max Drill time per rod	<b>8min</b>				
	Max feed reversing time jamming	<b>3.0 sec</b>				
	Min feed reversing time jamming	<b>0.1 sec</b>				
<b>Feed calibration</b>	157ma = 15 bar					
	187ma = 25 bar					
	244ma = 40 bar					
	323ma = 65 bar					
	412ma = 100bar					
<i>adjusted during auto calibration in feed pressure screen( set at operating temp)</i>						
<b>Comments,</b>						
Rotation speed ma's can vary depending on oil viscosity, valve condition or operator preference						
	Pressure and flow settings for drilling are divided into a number of menus. Several of these settings can be made specifically for different drill bits. Parameters that can have different values for different drill bits are marked with a drill bit symbol. These menus contain a list where you can select drill bit: Drill Bit 1, Drill bit 2.....Drill bit 5.					



<b>RCS parameters - Rod Handling</b>		<b>RHS 27</b>	<b>RHS 17</b>
<b>RHS - threading</b>	Rotation speed threading	100 RPM	110 RPM
	Feed pressure threading	65bar	65bar
	Feed pressure threading, low	45 bar	45 bar
	Feed speed threading	385 ma	385 ma
	<b>Detection</b> pressure threading	80 bar	80 bar
	Rotation speed unthreading	Max RPM	Max RPM
	Feed pressure unthreading	65 bar	65 bar
	Feed speed unthreading	453ma	453ma
must be lower than max rot pump pressure.	<b>Detection</b> pressure unthreading	100 bar	100 bar
	Time to feed (seconds)	-0.1	-0.1
		<b>RHS27 - D</b>	<b>RHS27 - E</b>
<b>Cylinders</b>	Gripper drill centre to carousel max	940 ma	1500
	Gripper drill centre to carousel min	650 ma	1030
	Gripper carousel to drill centre	890 ma	1500
	Locking pin release time with MT Index Cylinder	600 ms	
	Locking pin release time OEM	1000 ms	
<b>Carousel rotation</b>	Magazine rotation increaseing comp - Min Current		680
	Magazine rotation increaseing comp - Max Current		1000
	Magazine rotation decreaseing comp - Min Current		690
	Magazine rotation decreaseing comp - Max Current		750
<b>Pump settings</b>	Max rotation pressure is set to 120 bar at the pump compensator when higher torque OMS250 motors are fitted on the new 4050 Mux.		
	Set Rot Max to 140 bar for OMS160 rotation motors.		
	Threading pressure is adjusted to aprox 90 bar using Y155 relief.		
<b>Gripper positions</b>	Park	0	0
	Drill centre	0.91	0.91
	Outer position	1.87	2.07
	Middle position	2.11	2.25
	Inner position	2.35	
		<i>May vary slightly after arm adjustment or cyl change</i>	
<b>Cradle positions</b> (1.8 Meter Rods)	M1 Drilling up	2.19	1.88
	M1 Drilling down	2.17	1.87
	M2 Top threading pos.	1.91	1.71
	M3 Lead rod stop pos.	0.55	0.58
	M4 Gripper arm detection point	0.43	0.45
	M5 drilling up	0.36	0.36
	M5 drilling down	0.34	0.35
	M6 Carrousel height	0.18	0.202
	M7 Gripper guide pos.	0.17	0.16
	M8 At rear of feed	0.005	0.005
<b>Comments.</b>			
Threading Feed Speed milliamps can vary to set threading feed/rotation timing.			
Threading rotation speed is always set aprox 20 rpm slower than unthreading to prevent inertia causing overtension,			



## Auto Drilling / Removal Parameters

<b><u>One hole auto - drilling</u></b>	Initial fixed time Perc, rod add, up	1.3 sec
	Initial perc time rod add up, per rod	0.1 sec
	Retry perc time rod add up	1.5 sec
	Initial fixed time Perc, rod add, down	1.0 sec
	Initial perc time rod add down, per rod	0.1 sec
	Retry perc time rod add down	1.5 sec
	Max retries rod/adaptor stuck	3
	initial collar length	.5 mtrs
<b>Flushing</b>	Half rod flushing time	5.0 sec
	Half rod flushing cradle position	1.2 mtrs
	Extra flushing time	5.0 sec
	Final air blow time fixed	4.0 sec
	Final air blow time per rod	1.5 sec
	Flushing time before drilling fixed up	1.5 sec
	Flushing time before drilling per rod, up	0.2 sec
	Flushing time before drilling fixed down	1.5 sec
	Flushing time before drilling per rod, down	0.1 sec
	Initial collar flush start time up/down	0.0/0.0 sec
<b>Removal</b>	Max retries rod/adaptor stuck	3
	Max retries rod/rod stuck	3
	Max retries rod/adaptor stuck	3
<b>Percussion timers</b>	Initial fixed time rod removal, up	0.1 - 0.2
	Initial fixed time rod removal, up, per rod	0
	retry time rod/adaptor stuck up	1.5 sec
	Retry time rod/rod stuck up	2.0 sec
	Initial fixed time rod removal, down	0
	Initial fixed time removal, down, per rod	0
	retry time rod/adaptor stuck down	1.0 sec
	Retry time rod/rod stuck down	1.5 sec
	Final percussion time, fixed	4.0 sec
Final percussion time, per rod	0.2 sec	
<b>Others</b>	Rod length	1.83 mtrs
	Min drill speed	.10 mtr/min
	Hole Length Tolerance	0.2
	Cavity detected speed level	1.7 m/min
	Cavity ended speed level	1.3 m/min
	Min Water Pressure	1
	Min Air Pressure	2
	Emergency Flush after drill stop	ON
	Water Mist pump, min Speed	1500 ma
	Water Mist pump, min Speed	1500 ma

**Comments,**

settings can vary depending on ground conditions



# Rig Parameters

<b><u>Lubrication</u></b>	Lube frequency	4050/1838 - 40 p/min 3060 - 28p/min
	Min air pressure	3 bar
	Min oil pressure	4.0 bar
	Max oil pressure	14.0 bar
	Time before measure	30 sec
	Time before stop drilling	20 sec
<b><u>Rig parameters</u></b>	Min air pressure, compressor	4.0 bar
	Max air pressure, compressor	6.5 bar
	Hydraulic oil temp, cooling	55 deg C
	Hydraulic oil temp, warning	65 deg C
	Hydraulic oil temp, Shut down	75 deg C
<b><u>Breakthrough auto stop</u></b>	Bas cradle speed level collaring	1.5 m/min
	Bas cradle speed level drilling	2.5 m/min
	Bas detect time	1.0 sec
	Bas active length	5 mtrs
	Bas perc fixed time	2.2 sec
	Bas perc fixed time, per rod	0.1 sec
<b><u>Oil level sinking sensor</u></b>	Offset	-760
	Coefficient	0.174
<b><u>Levers</u></b>		
<b>Calibration Status</b>	Calibrated	Changes to 'not calibrated' when calibrating.
<b>Calibration Mode</b>	<input type="checkbox"/> Tick this box to begin calibration	
<b>Dead Zone X Y</b>		5%
<b>Dead Zone Z (button)</b>		50%
<b>Caution - When calibration mode is ticked, lever calibration is lost. The system now requires you to move the lever to every position and activate both buttons</b>		
<b><u>Pump compensators</u></b>	<b>Min</b>	<b>Max</b>
<b>Perc</b>	18 bar	180bar (4050) - 210bar (1838)
<b>Rotation</b>	25 bar	120bar (140bar if OMS160)
<b>Positioning</b>	18 bar	210 Bar
<b>Diesel Positioning</b>	18 bar	210 Bar



## MT RCS Trouble Shooting

<b>No percussion</b>	Drilling percussion can only be activated when the water or air flow switch is on.
<i>Valve Y100</i>	engage rod break and check the actuations screen, if there is no output to Y100
<i>Sensor B100</i>	the system has a guard active. ie lube. If the output is OK there is an electrical or Hyd problem
	Also ensure that 'rod add only' is not selected in the options screen.
<b>No high percussion</b>	Refer DPCI, high percussion is only available once a certain dampening pressure
<i>dampner flow reg valve</i>	is achieved (shown in dampening parameters screen). Check that static dampening
	is aprox 48bar.( * ) RPCF should be on and set to 18 bar +/- 6bar.
<b>No drifter feed</b>	The Drifter will not move if input from either the linear sensor or the gripper resolver
<i>Gripper sensor B243</i>	sensor is lost. The gripper arm sensor must read 0 deg (park) to allow the drifter to
<i>Linear sensor B307</i>	move past the arms. Activate gripper or cradle emergency mode to isolate which
<i>Valve Y104 flow</i>	sensor is at fault(!). Gripper resolver contamination may give a poor signal but not
<i>Valve Y103 pressure</i>	show a fault in the sensor screen.( * ) Check Actuations screens to view outputs
<b>No gripper arm</b>	Try gripper movement after activating 'gripper emergency mode' .(!)
<b>movement</b>	Move the drifter to the rear of the feed rail and check that the linear sensor reads
<i>Valve Y302 park</i>	0 (+/- 5). Activate cradle or gripper emergency mode to isolate which sensor is at
<i>Valve Y301 swing</i>	fault. Check D120(resolver module) status in modules screen.
<b>No indexing</b>	<b>1</b> - clutch pressurises, B135 high. <b>2</b> locking pin pulls, B113 high. <b>3</b> index cylinder
<i>B113 locking pin</i>	strokes. <b>4</b> locking pin release, B113 off. <b>5</b> clutch pressure release. The point at
<i>B135 caro clutch</i>	which the sequence stops will indicate the cause of the problem.
	*Indexing will not activate if the system believes the gripper arms are in the carousel
<b>No water flushing</b>	Check that water mist is not selected in the options screen. Ensure the auto Flushing
<i>Sensor B141</i>	button is illuminated on the right key panel. Check LED on Y110 pilot valve comes on
<i>Min water 2 bar</i>	comes on and pilot operates. Check water strainer at rear of machine
	Check that Pilot Air pressure from the compressor ( # ).
<b>No air flushing</b>	Check that water mist is selected in the options screen. Ensure the auto flushing
<i>Sensor B142</i>	button on the right key pad is illuminated. Check LED on Y115 and pilot operation.
	Check Y115 actuation by removing plug and using a pen to check the stroke.
<i>Min air 3 bar</i>	Check air strainer above 1000v cabinet. Check Compressor pilot air pressure( # )
<b>No Positioning</b>	Tick option box 'Deactivate sensor dependency' in the options screen.( ! )
<b>movement</b>	Check sensor inputs to ARI screen or D120 module status to isolate sensor at fault
<b>No pump start</b>	Check if any guards are active in RCS 'Guards' screen. Check power supply to 1000v cabinet,
	Check 1000v cabinet breakers and warning lamps.
	Check e-stops, if an e-stop is tripped the cabin tramming light will be on.
<b>No RCS start up</b>	Check battery power is over 23v, check fuses and breakers in A40 cab
	Check K110 (RCS start relay) and N109 voltage regulator.
	Check fuses on RCS power supply boxes, green LED indicates power and fuse ok.
<b>Poor penetration or</b>	Check RPCF is set correctly and rotation speed is appropriate for ground conditions
<b>excess consumable</b>	Check accumulator charge pressures, check shank alignment to BSH and gripper
<b>breakages</b>	arms. Test all pressure transducers for correct calibration ( * ).
<b>Auto rod handling</b>	Check Parameter settings in RHS 'threading' screen.
<b>problems</b>	note where the machine stops in the sequence to diagnose the component at fault
<b>Main loom over</b>	The rotary actuator will be stopped by the ARI at aprox 90deg on the right. If the
<b>rotation</b>	disable sensor dependancy' is used or the system gets confused it my over-rotate.
	To correct, unwind the loom and with the bit pionting exactly 90 deg up, Open ARI
	sensor calibration screen and enter box 'set to zero' on the rotation sensor only.
	Once reset check the ARI accuracy and rotation stop point.
<b>Lube Error</b>	Check compressor air suppy pressure, Check Lube oil pressure, check air and oil to Drifter
<b>Compressor Fault</b>	Check electric unloader solenoid, light and activation. Check speed and belt condition
	Check pressure and air supply to loading hose(1/4 hose to unloader) if no - Check min press vlv.
	Check unloader valve condition and operation
<b>Refer workshop manual for more diagnosis advice, schematics and seettings.</b>	
<b>( * ) Refer test / adjustment / replacement procedure in maintenance instructions.</b>	
<b>( # ) The compressor must supply at least 3 bar for flushing pilot valves and ECL to operate.</b>	
<b>( ! ) If movement is restored, an RCS guard is on, or a sensor input is faulty. If output is displayed</b>	
<b>in actuations screen (from the I/O module to the valve) the fault is likely mechanical or hydraulic</b>	
<b>Note : If a module or screen is replaced the parameters and software must be reloaded, carefully</b>	
<b>follow the procedure detailed in the maintenance instructions book (control system section).</b>	