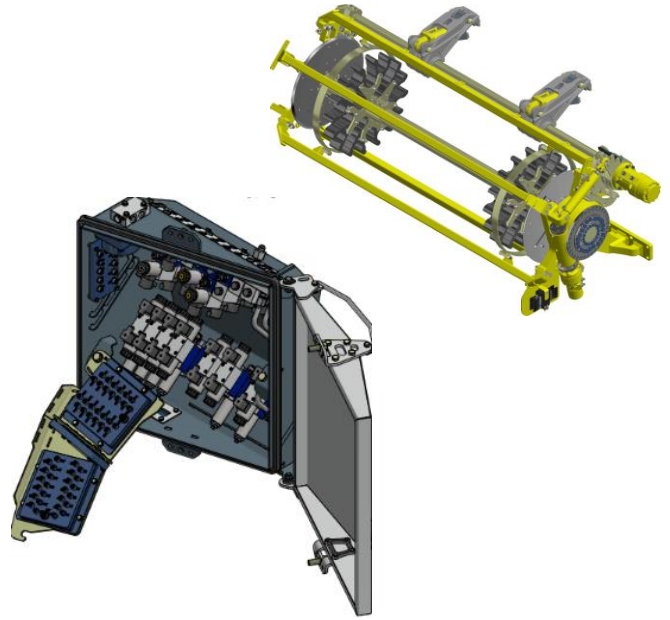


TECHNICAL INFORMATION

DOCUMENT	PRODUCTION DRILL SETTINGS RHS 27E / F
MACHINE/ GROUP	SIMBA L M E
DOCUMENT AUTHOR	GAVIN CUNNINGHAM 0407 389 689
DATE	27/02/2026
Document No.	MTU10093



Background

Correct Machine settings play a crucial role in determining the performance and efficiency of Production Drills. The subsequent pages provide Maintenance Techniques' baseline parameters for Production Drills utilizing the E or F series carousel.

Check for mechanical, electrical, or component damage prior to adjusting any settings. The settings rarely, if ever, need adjusted.

Below provides a background to how the settings are configured – Note that some modifications to parts or pressures are performed to suit ground conditions, consumable size or improve drilling efficiency

Bit settings order and adjustment

- Bit 1 is set with the highest practical Rot, Feed and Perc – suits hard, competent ground and smaller bits
- Bit 2 to 6 should vary gradually slower each setting. Suits mid to poor ground, small to larger bits
- Bit 7 should be set with the lowest practical Rot, Feed and Perc to suit the largest reamer bits or bad ground
- Bit 8 is often set as Max drilling rotation speed to facilitate back-reaming out of bogging events

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

Rotation pump compensator max can be set to 120 bar to prevent shank damage. OMS200 or 250 only

Rotation pump compensator max is set to 140 bar when using OMS160 rot motors

Threading rotation pressure is set to 90-95 bar on the pressure reducer connected to Y155.

Rotation speed varies from approx 30 rpm in bit 7 setting to approx 95 rpm in Bit 1 ground and cons dependant

MT indexing - MT Rotation actuator assembly fitted for improved reliability

Indexing is Set up as per MT index adjustment procedure “Magazine Adjustment”

MT Slide holders, Wear pieces and Clipon locks are fitted to prevent drifter binding and extend clipon life.

(3060) Impact is set at 130 bar collaring and 180-200 bar full.

(4050) Impact is set at 120 bar collar and 160-180 bar full.

(1838) Impact is set at 140 bar collar and 170-190 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.

Part Number- MT 9772 0115 16

Restrictors are fitted to the feed centre barrel to reduce cylinder damage due to flow disparity between stages Part Number- MT 3217 6512 03 - No restrictors to the feed cyl rod hoses.

E series carousel Y301 Arm swing DCV requires a low flow proportional valve Part Number- MT3177 3092 71

D and F series carousel can use DCV MT3177 3092 60 for improved gripper speed.

MT heavy duty extractor valves and reduction nipple are fitted to increase extractor life.

MT3214 7494 03 Reduction Nipple - MT3177 3092 88 Valve 2 Pos

Air flow pressure differential switch can be replaced by a simple and reliable MT digital switch Kit MT9106 1856 034

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

Transducer Settings – use an accurate digital gauge (0-400bar) to check transducer accuracy.

RCS 3/4 350 bar transducer offset = 102 Coefficient = 0.427 (base settings before calibration)

RCS 3/4 50 bar transducer offset = 102 Coefficient = 0.061 (base settings before calibration)

RCS 5 350 bar transducer offset = 408 Coefficient = 0.066 (base settings before calibration)

RCS 5 50 bar transducer offset = 408 Coefficient = 0.015 (base settings before calibration)

Greater than 10% variation in the settings indicates a sensor or cable fault.

Electric Motor currents 1000v +/-10%

E7C	P1	P2	E70 1838	P1	E70 3060	P1	S7C 1838	P1	L6C 4050	P1	P2	M7C	P1	P2
Standby	14	16	Standby	18	Standby	24	Standby		Standby			Standby	14	16
Loaded	20	26	Loaded	23	Loaded	28	Loaded		Loaded			Loaded		20
Rotation		26	Rotation	30	Rotation	32	Rotation		Rotation			Rotation		20
Drilling LP	24	37	Drilling LP	42	Drilling LP	60	Drilling LP		Drilling LP			Drilling LP	28	42
Drilling HP	28	36	Drilling HP	55	Drilling HP	64	Drilling HP		Drilling HP			Drilling HP	30	45

Max rockdrill flows @operating temp at max percussion – measure and refer to your rockdrill rebuilder.

1838	2550	3060	4050	525	Hlx5	
110Lpm	120Lpm	180Lpm	170Lpm	115Lpm	100Lpm	

RPCF PID 1838 – 30, 10, 02, 15

Positioning Parameters		Lowest Valve Current		Highest Valve Current	
Velocities	Boom Left	[> 434		[< 365	
	Boom Right	[> 427		[< 365	
	Boom Extension	[> 373		[< 377	
	Feed Tilt	[> 378		[< 397	
	Feed Rotation	[> 384		[< 371	
	Feed Extension	[> 568		[< 621	
Anchor	Max repetitions of anchor	4 s			
	Max tolerance tilt angle, after anchor	0.5 deg			
	Max tolerance rotation angle, after anchor	0.5 deg			
	Time anchor step 1	10 sec			
	Time anchor step 2	10 sec			
	Stinger press at anchor step 2	ON			

Drilling Parameters		BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7
Feed Speed	Max speed, manual collaring	385	A slow Auto collar speed is critical to control the speed of the bit to the ground when drilling commences					
	Max speed, auto collaring	395	390	356-370	354-365	350-365	350-365	350-366
	Max speed, drilling	405	400	372-395	365-375	360-370	360-370	360-371
	Max feed speed, rod add only	420	Lower milliamps for collaring and drilling feed speeds are key to hold back the feed speed when drilling large bits, soft or broken ground. BITS 3 to 8					
	Max speed, cavity drilling	385						
	Min speed lever	330						
	Min speed break	380						
	Max speed	520						
Feed pressure	Feed pressure, Collaring	70 bar	65 bar	65 bar	50 bar	45 bar	45 bar	45 bar
	Feed pressure, Initial collar	40 bar						
	Feed pressure, Drilling	93 bar	← not used if RPCF is on.					
			Feed Pressure Collaring must be above 45 to ensure the feed can lift the drifter/rod weight during up holes					
	Feed pressure, Cavity drilling	60 bar						
	Min feed pressure drilling	10 bar						
	Max feed pres drilling Speed Rods	100 bar						
	Max feed pressure drilling Tubes	110 bar						
	Max feed manual with Rot on	60 bar						
Percussion		BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7
	Percussion pressure, collaring	130-160 bar – AGNEW 160						
	Percussion pressure, drilling low (extended RPCF)	170 bar	170	170	170	170	160	150
	Percussion pressure, drilling high (190 bar	180	180	180	170	170	160
	Percussion pressure Cavity drilling	140 bar	This value should be set 30 ma above the amount sent to Y100 during full drilling, this will allow 'PERCUSSION CONTROL ERROR' to flag if an accumulator fails or a percussion flow issue occurs					
	Percussion pressure lose coupling	210 bar						
	Max current	620 ma ←						
	Short percussion stroke on	OFF						
Extended RPCF	Number of rods, ramp up start	4	Begins raming of Percussion power – Drilling Low					
Extended RPCF	Number of rods, ramp up end	10	Complete ramping of Percussion power – Drilling High					

NOTE – GREY TEXT VARY DEPENDING ON GROUND		BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7
Rotation	Rotation - Drilling tubes	60rpm	55rpm	52rpm	35rpm	30rpm	35rpm	30rpm
	Rotation - Drilling Speed Rods	80rpm	75rpm	72rpm	65rpm	50rpm	45rpm	40rpm
Rotation speeds based on 3060 set to 200bar. At this pressure rockdrill strikes at 44hertz	RPCF pressure increase	17 bar	← Set by driller in options screen (usually 16-22bar)					
	Pressure increase jamming	40 bar	45	45	50	60	60	65
	Pressure decrease free	10 bar						
	Max rotation pressure	110 bar	← Max Anti Jam setting					
Lubrication	Lube frequency	3060MUX - 18p/min			4050/1838 - 28 p/min			
	Min air pressure	2 bar						
	Min oil pressure	4 bar	Must be set above lube are pressure					
	Max oil pressure	14 bar	High pressure indicates a blocked Capillary line					
	Time before measurement	30 sec						
	Time before drilling stop	20 sec						
	Lubrication pulse time	0.7 sec						
Dampening	Min dampening pressure	30 bar	Static Set @45 – 50 BAR via flow control to when at temp and no weight on the shank – or as per oem reccomendation					
	Max dampening pressure	3060MUX -180 bar			4050/1838 -160 bar			
	Dampening pressure low percussion	50 bar	50 bar	50 bar	50 bar	48 bar	46 bar	44 bar
	Dampening pressure high percussion	52 bar	52 bar	52 bar	52 bar	50 bar	48 bar	46 bar
Timers	Min collaring time	2.0 sec						
	Max Drill time per rod	8min						
	Max feed reversing time jamming	3.0 sec						
	Min feed reversing time jamming	0.1 sec						
Feed Calibration	157ma = 15 bar		Adjusted via auto calibration in feed pressure screen (set at operating temp)					
Example only	187ma = 25 bar							
	244ma = 40 bar							
	323ma = 65 bar							
	412ma = 100bar							

Comments -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 differenet drill bits are marked with a drill bit symbol.

Rod Handling parameters

RHS 27/17

RHS - threading		
	Rotation speed, threading	100 RPM (aprox)
	Feed pressure, threading	65bar
	Feed pressure threading, low	45 bar
	Feed speed, threading up	360 ma
	Feed speed, threading down	360 ma
	Detection pressure, threading	80 bar (MAX set to 95 BAR at regulator)
	Use manual thread in stop	OFF
	Rotation speed, unthreading	150 RPM (aprox)
	Feed pressure, unthreading	65 bar
	Feed speed, unthreading up	380ma
	Feed speed, unthreading down	380ma
must be lower than max rotation pump pressure	Detection pressure, unthreading	100 bar
	Time to feed (seconds)	-0.1
	Use manual thread in stop	Ticked

Magazine Rotation	Mag rotation increasing compartment, min current	590 ma (RHS27)	750ma (RHS17)
	Mag rotation increasing compartment, max current	750 ma (RHS27)	1100ma (RHS17)
	Mag rotation decreasing compartment, min current	590 ma (RHS27)	750ma (RHS17)
	Mag rotation decreasing compartment, max current	750 ma (RHS27)	1100ma (RHS17)
		D and F series	E series or low flow DCV
Swing Cylinder	Gripper drill centre to carousel min	680 ma	800
Dependant on valve type- see cover page	Gripper drill centre to carousel max	940 ma	1200
	Gripper carousel to drill centre	890 ma	1200
Gripper positions	Park (mechanical adjustment)	0 RCS3/4	0.0 RCS5
	Drill centre (mechanical adjustment)	0.91	RHS17
	Outer position (RCS adjustment)	1.87	2.05
	Middle position (RCS adjustment)	2.11	2.25
	Inner position (RCS adjustment)	2.35	138.8
	<i>May vary slightly after arm adjustment or cyl change</i>		<i>1.83m rods 1.53m rods</i>
Cradle positions	M1 Drilling up	2.18	1.87
1.8 rods	M1 Drilling down	2.17	1.84
	M2 Top threading pos.	2.0	1.68
	M3 Lead rod stop pos.	0.55	.44
	M4 Gripper arm detection point	0.42	.46
	M5 drilling up	0.355	.33
	M5 drilling down	0.335	.30
	M6 Carousel height	0.15	0.155
	M7 Gripper guide pos.	0.11	0.13
	M8 At rear of feed	0.005	0.005
Comments- 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.			
Steering – E TRAM	Steer Current min	350ma	
	Steer Current max	480ma	
	Barke current min	350ma	
	Barke current max	480ma	
	Tramming flow current min	350ma	
	Tramming flow current max	480ma	
	Tramming flow current, repetition of connect	360ma	
	M6 Carousel height	0.18	
	M7 Gripper guide pos.	0.17	

Auto Drilling / Removal Parameters		
Auto Drilling Parameters	Collar punch mark time	2.0 sec
	Initial fixed time Perc, rod add, up	1.2 sec
	Initial perc time rod add up, per rod	0.1 sec
	Retry perc time, rod add, up	1.0 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	1.0 sec
	Max retries rod/adaptor stuck	3
	initial collar length	.5 mtrs
Drilling - One hole auto	Number of initial collar punch marks	3
	Locked collar on rod 2	Yes
	Emergency flushing after drill stop	Yes
	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	0.0/0.0 sec
	Initial collar flush start time down	0.0/0.0 sec
	Max retries rod/adaptor stuck	4
	Initial collar length	1.0 metre
	Use extended initial collar	OFF
Auto Removal Parameters	Initial fixed time, rod remove, up	0.8 sec
	Initial time, rod remove, per rod, up	0.1 sec
	Retry time, rod/adaptor stuck, up	1.0sec
	Retry time, rod/rod stuck, up	1.3 sec
	Initial fixed time, rod remove, down	0.0 sec
	Initial time, rod remove, per rod, down	0.0 sec
	Retry time, rod/adaptor stuck, down	1.0 sec
	Retry time, rod/rod stuck, down	1.5 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	0.0/0.0 sec
	Initial collar flush start time down	0.0/0.0 sec
	Initial collar length	1.0 metre
	Use extended initial collar	OFF
Percussion timers	Final percussion time, fixed	4.0 sec
	Final percussion time, per rod	0.2 sec
	Max retries rod/adaptor stuck	4
	Max retries rod/rod stuck	4
	Max retries rod/adaptor thread out	4
	First retry when adaptor/rod is unthread with perc	ON
	Anchor return	OFF
Comments- Grey cell indicate that settings can vary depending on ground conditions		

Rig Parameters				
Rig parameters	Min air pressure, compressor	5.0 bar		
	Max air pressure, compressor	7.0 bar		
	Hydraulic oil temp, cooling	55 deg C		
	Hydraulic oil temp, warning	65 deg C		
	Hydraulic oil temp, Shut down	75 deg C		
	When drilling	10.00 litres		
	When Positioning	40.00 litres		
	Hydraulic Oil Level	239.55 litres		
	High Pressure Washer run time	10 minutes		
	Positioning pump	Positioning pressure	220 bar	
Oil level sinking sensor	Offset	-760	Coefficient 0.174	
	Offset	-1448	Coefficient 0.060	
Levers				
Calibration Status	Calibrated			
Calibration Mode <input type="checkbox"/>	Tick this box to begin callibration	Changes to 'not calibrated' when calibrating.		
Dead Zone X Y	5%			
Dead Zone Z (button)	50%			
Caution - When callibration mode is ticked, lever calibration is lost. The system now requires you to move the lever to every position and activate all buttons				
Pump Compensators	Min	Max		
Percussion pump	18 bar	180bar (4050) - 210bar (1838) 220bar (3060)		
Rotation pump	25 bar	OMS160 - 140bar		
Rotation pump max, dependant on rockdrill rotation motor size		OMS200 - 130bar		
		OMS250 - 120bar		
		OMS315 - 120bar		
Positioning (inc perc on E70)	18 bar	230 Bar		
Diesel Positioning	18 bar	210 Bar		
Others				
Setting - Drilling - Parameters	Air Flow	450		
	Rod Length	1.83 or 1.53		
	Min allowed drill speed	0.1 m/min		
	Hole length tolerance	0.1m		
	Cavity detect speed level	1.6m/min		
	Cavity ended speed level	1.0m/min		
	Min water pressure	1 bar		
	Min air external pressure	2 bar		
	Emergency flush after drill stop	off		
	Bit cleaning perc time	2.0s		
	Other - Water mist	Water Mist pump, min Speed	600 ma	
		Water Mist pump, min Speed	1500 ma	
		WM pump start speed	60%	
BAS	BAS cradle speed level, collaring	1.0 sec		
	BAS cradle speed level	1.8 sec		
	BAS detect time	0.2 sec		
	BAS active length	5m		
Comments - settings can vary depending on ground conditions				

RCS Trouble Shooting	
No percussion <i>Valve Y100</i> <i>Sensor B100</i>	Drilling percussion can only be activated when the water or air flow switch is on. engage rod break and check the actuations screen, if there is no output to Y100 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. If the output is active check Y100 valve elec and hydraulic function
No high percussion <i>damper flow reg valve</i>	Refer DPCI, high percussion is only available once a certain dampening pressure is achieved (shown in dampening parameters screen). Check that static dampening is set correctly. (*) RPCF should be on and set to 18 bar +/- 6bar. If the machine will not reach full percussion flow test the pump and rockdrill
No drifter feed <i>Gripper sensor B243</i> <i>Linear sensor B307</i> <i>Valve Y104 flow</i> <i>Valve Y103 pressure</i>	The Drifter will not move if input from either the linear sensor or the gripper resolver sensor is lost. The gripper arm sensor must read 0 deg (park) to allow the drifter to move past the arms. Activate gripper or cradle emergency mode to isolate which sensor is at fault (!). Gripper resolver contamination may give a poor signal but not show a fault in the sensor screen.(*) Check Actuations screens to view outputs
No gripper arm movement <i>Valve Y302 park</i> <i>Valve Y301 swing</i>	Try gripper movement after activating 'gripper emergency mode' (!). Move the drifter to the rear of the feed rail and check that the linear sensor reads 0 (+/- 5). Activate cradle or gripper emergency mode to isolate which sensor is at fault. Check resolver module status in modules screen.
No water flushing <i>Sensor B141</i> <i>Min water 2 bar</i>	Check that water mist is not selected in the options screen. Ensure the auto Flushing button is illuminated on the right key panel. Check LED on Y110 pilot valve comes on comes on and pilot operates. Check water strainer at rear of machine Check that Pilot Air pressure from the compressor (#).
No air flushing <i>Sensor B142</i> <i>Min air 3 bar</i>	Check that water mist is selected in the options screen. Ensure the auto flushing button on the 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. Check air strainer above 1000v cabinet. Check Compressor pilot air pressure.
No Positioning movement	Tick option box 'Deactivate sensor dependency' in the options screen.(!) Check sensor inputs to ARI screen or D120 module status to isolate sensor at fault Check positioning pump pressure is above 200bar , check Y172 loading valve
No pump start	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 rear cabin tramming light will be on.
No RCS start up	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.
Poor penetration or excess consumable breakages	Check RPCF is set correctly and rotation speed is appropriate for ground conditions Check accumulator charge pressures, check shank alignment to BSH and gripper arms. Test all pressure transducers for correct calibration (*). Flow test the rockdrill
Auto rod handling problems	Check Mechanical alignments and arm position, Check Parameter settings in RHS 'threading' screen. Note where the machine stops in the sequence to diagnose the component at fault
Main loom over rotation	The rotary actuator will be stopped by the ARI at aprox 90deg. If the 'disable sensor dependancy' is used or the system gets confused it may over-rotate. To correct, unwind the loom and with the bit pointing 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.
Lube Error	Check compressor air supply pressure, Check Lube oil pressure, check air and oil to Drifter
Compressor Fault	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 – See MT compressor upgrade and fault finding doc
Refer workshop manual for more diagnosis advice, schematics and settings. (*) Refer test / adjustment / replacement procedure in maintenance instructions. (#) The compressor must supply at least 3 bar for flushing pilot valves and ECL to operate. (!) If movement is restored, an RCS guard is on, or a sensor input is faulty. If output is displayed in actuations screen (from the I/O module to the valve) the fault is likely mechanical or hydraulic Note : If a module or screen is replaced the parameters and software must be reloaded, carefully Follow the procedure detailed in the maintenance instructions book (control system section).	