D.B.R MECHANICAL

SANDVIK DD421 PRESSURES

MAIN RELIEF #211: 270Bar (FIZZ VALVE) M1

PUMP MAX: RD525 250Bar/RDX5 230Bar M1

PUMP STANDBY: 30Bar M1

BOOM REDUCING VALVE #210: 230 Bar M10

MAX PERCUSSION #7: 220Bar

MONITORING/MIN PERCUSSION #18: 120Bar

HALF PERCUSSION #6: 100Bar

FAST FEED MAX #30: 180Bar

PILOT REGULATING VALVE #43: 30Bar M8

STABILIZER REFERENCE #145: 30Bar R

STABILIZER MAX #141: 110Bar

STABILIZER MIN #142: 50Bar

FEED LEVER #20 PILOT PRESSURE: 19-21Bar

FEED DEVIATION #216: 120-130 MIDDLE POS

IMPULSE SWITCHS #125/123: 18Bar

ROTATION PUMP MAX: 200Bar M

ROTATION PUMP STANDBY: 22Bar M

ROTATION MAX #65: 180Bar

ROTATION SPEED 45mm Bit RD525-260rpm

ROTATION SPEED 45mm Bit RDX5-250rpm

ROTATION SPEED REAMING#317 RD525- 180rpm

ROTATION SPEED REAMING#317 RDX5- 160rpm

ANTI-JAMMING #34: 120Bar M3

DD421 Tune Up Guide

Step 1 setting #211 main system relief (fizz valve) and pump 1 main pressure/standby.

Install gauge to M1 on front right bottom corner of percussion block.

Undo locking nut on #211 valve and firstly back it out a few turns to allow valve to reseat, then wind valve all the way in till it bottoms.

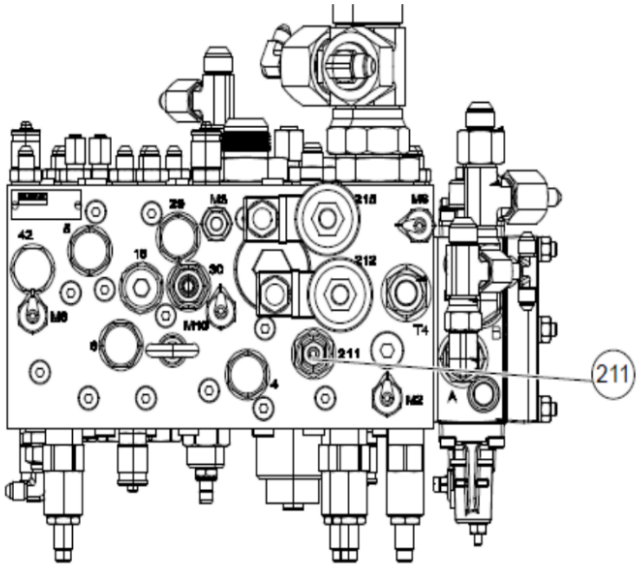
Go to pump 1 start power pack and wind outside adjuster A in till bottoms, then screw adjuster B in until gauge reads 270Bar.

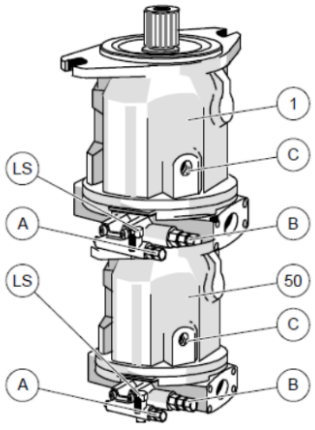
Go back to valve #211 and screw out until you hear a fizz (should drop pressure around 1-2bar) tighten locking nut.

Go back to pump and screw adjuster B out until gauge reads 250bar-RD525 or 230bar-RDX5 tighten locking nut.

Adjust A screw out until gauge shows 30bar standby tighten locking nut.

Top view of block





1	*Variable displacement pump, percussion pump*	*A*	*Flow controller*
50	*Variable displacement pump, rotation pump*	*B*	*Pressure controller*
LS	*LS line*	*C*	*Filler opening of the pump*

Step 2 setting #7 max percussion, #18 min percussion and #6 half percussion pressures

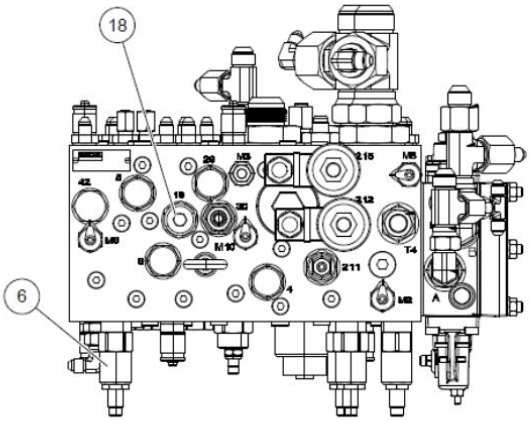
View pressures from gauge in the cabin.

Undo locking nuts on valves #7, #6 and 18.

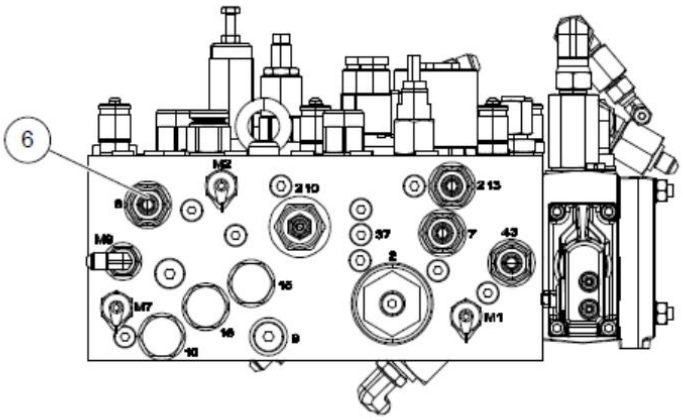
Screw #6 percussion half valve all the way in till it bottoms, then start powerpack and pull percussion lever to the back position, now adjust valve #18 min percussion so that the gauge reads 120 Bar then lock #18 locking nut, keep percussion on and wind out valve #6 until percussion gauge reads 100 Bar, tighten locking nut.

Push percussion lever to forward position and adjust valve #7 until gauge reads 210- 220 Bar RD525 or 200-210 RDX5 and tighten locking nut.

Top view of block



Front view of block



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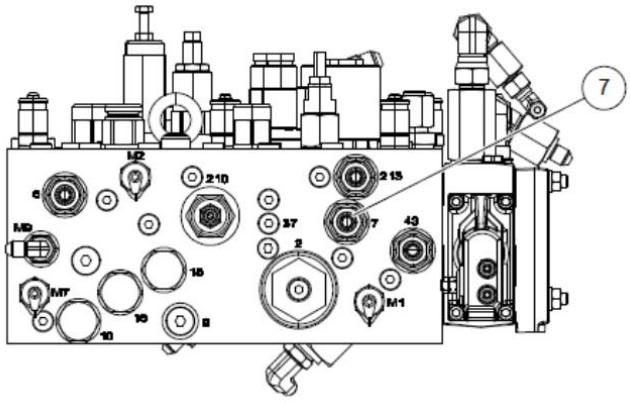
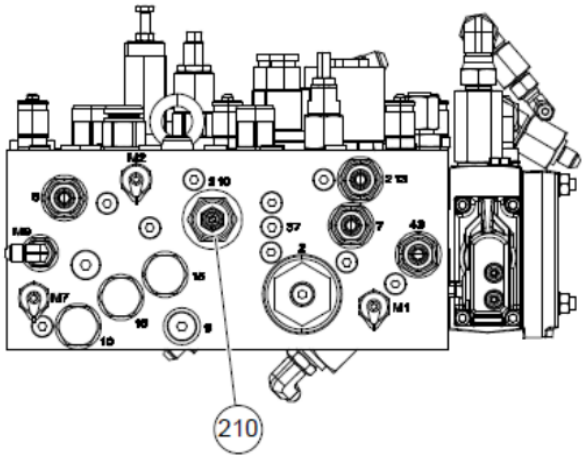


Step 3 setting #210 Boom pressure reducing valve

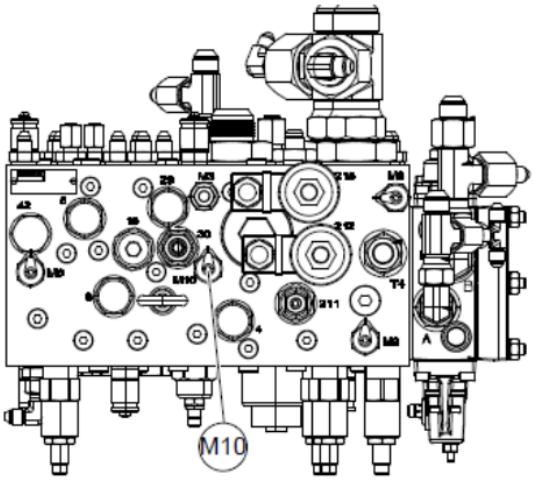
Install gauge to measuring port M10 on top of the percussion block.

Loosen locking nut on valve #210, start power pack and stall out zoom in function and adjust #210 until gauge reads 230 Bar, tighten locking nut.

Front view of block



Top view of block

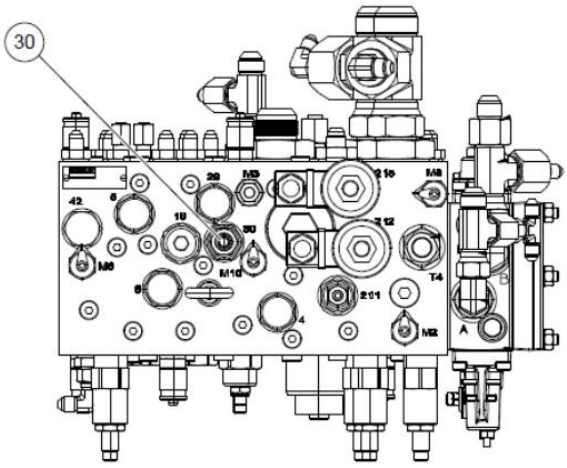


Step 4 setting #30 fast feed max relief

Read pressure from gauge in cabin.

Loosen locking nut on valve #30, start power pack, stall out fast feed and adjust #30 until gauge reads 180 Bar TFX split feed rails or 210 Bar TF fixed rail

Top view of block

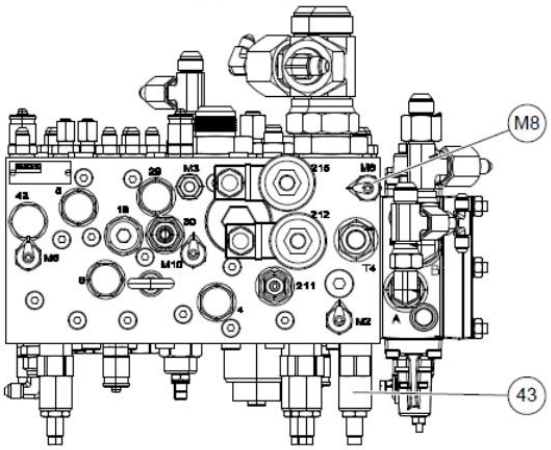


Step 5 setting #43 pilot pressure regulating valve

Install gauge to measuring port M8 on top of the percussion block.

Loosen locking nut on valve #43, Start power pack and push feed lever to front position, adjust #43 until gauge reads 30 Bar then tighten locking nut.

Top view of block

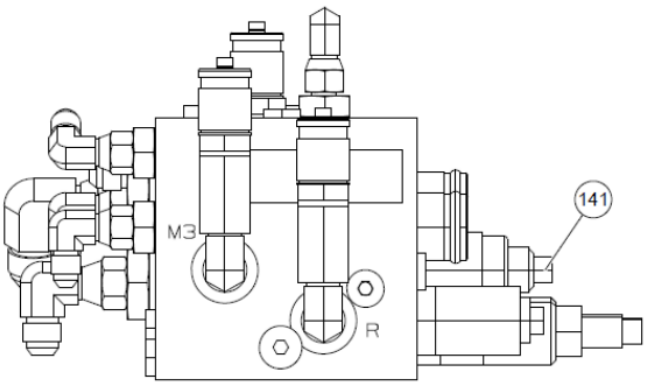


Step 6 setting #141 Stabiliser max pressure

Read pressure from gauge in cabin.

Loosen locking nut of valve #141, start power pack and Stall out feed forwards, now adjust #141 until gauge reads 110 Bar, tighten locking nut

Side view of Stabiliser block

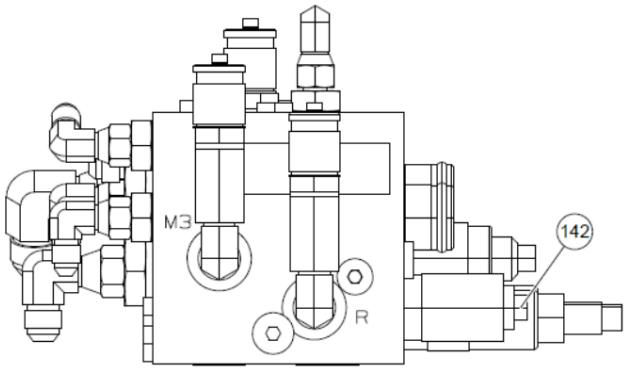


Step 7 setting #142 Stabiliser min pressure

Read pressure from gauge in cabin.

Loosen locking nut on valve #142, start power pack, stall out feed backwards, now adjust #142 until gauge reads 50 Bar then tighten locking nut.

Side view of stabiliser block

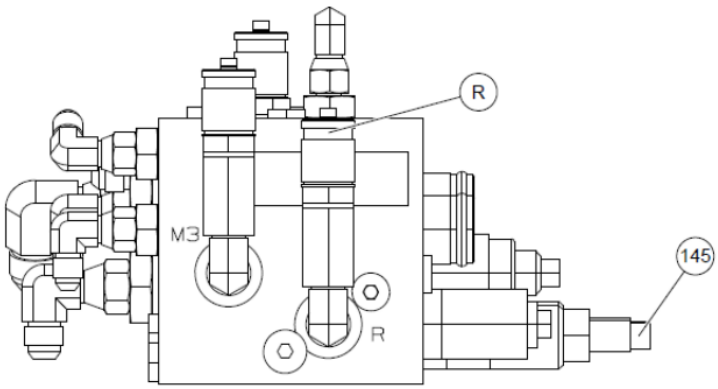


Step 8 setting #145 Stabiliser Reference pressure

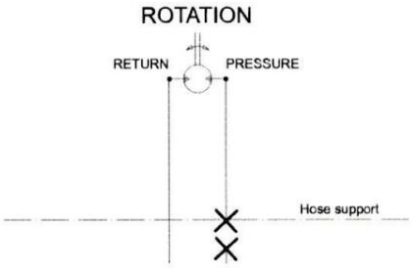
Install gauge to R port on side of Stabiliser block.

Loosen locking nut on valve #145, start power pack and stall our feed backwards, adjust #145 until gauge reads 30 Bar, tighten locking nut.

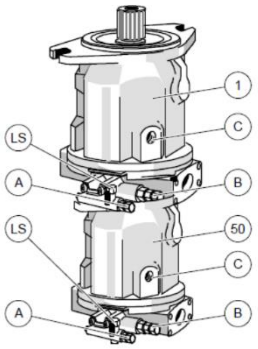
Side view of Stabiliser block



Adjusting rotation variable displacement pump (50)

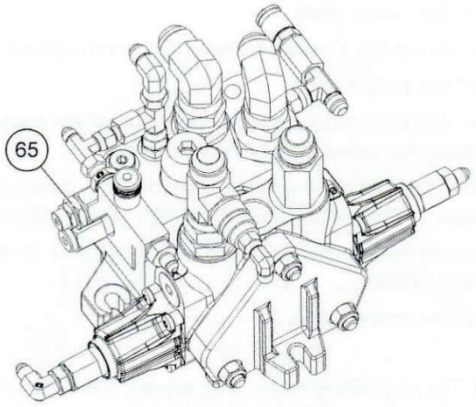
1. Prevent the drill rod from rotating by disconnecting the rotation hose from the hose support and plug the hose ends
2. 

3. Remove the protection caps of the flow controller (A) and the pressure controller (B) of the variable displacement pump (50) and undo the locking nuts of the adjusting screws



1	*Variable displacement pump, percussion pump*	*A*	*Flow controller*
50	*Variable displacement pump, rotation pump*	*B*	*Pressure controller*
LS	*LS line*	*C*	*Filler opening of the pump*

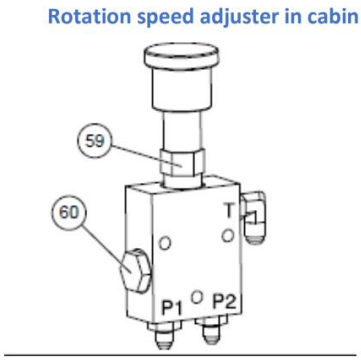
4. Remove the protection cap of the LS-pressure relief valve (65) of the rotation directional valve (53) and undo the locking nut of the LS-pressure relief valve (65).



5. Turn the adjusting screw of the LS-pressure relief valve (65) fully close (clockwise).

6. Connect the pressure gauge to the pressure measuring point (M) of the rotation control valve (53).

7. Turn the rotation speed regulating valve (59) fully closed (clockwise).



8. Start the power pack.

9. Turn the adjusting screw of the flow controller (A) fully closed (clockwise).
Note! The pump (50) is now operating at constant pressure.

10. Put the rock drill rotation on by pulling and locking the rotation control lever to the rear position (towards the operator).

11. Turn the adjusting screw of the pressure controller (B) clockwise until the pressure gauge shows 100 bar. Let the LS-line bleed into a separate container by loosening the hose connection of the flow controller (A). Let the connection stay loosened until all air has escaped. Then tighten the hose connection of the flow controller (A).

12. Turn the adjusting screw of the pressure controller (B) clockwise until the pressure gauge shows 200 bar. Read the pressure value from the pressure gauge connected to the measuring point M.

13. Lock the adjustment of the pressure controller (B) with the locking nut.

14. Turn the adjusting screw of the LS- pressure relief valve (65) counterclockwise until the pressure gauge shows 180 bar.

15. Lock the adjustment of the LS- pressure relief valve (65) with the locking nut.
16. Put the rock drill rotation off by releasing the rotation control lever to the middle position.

16. Turn the adjusting screw of the flow controller (A) almost fully open (counter clockwise).

17. Allow the pressure stabilise in the pressure gauge connected to the measuring point M.

18. Adjust the stand-by pressure to 20-23 bar from the flow controller (A) by turning the adjusting screw clockwise.

19. Lock the adjusting screw of the flow controller (A) with the locking nut.

20. Stop the power pack.

21. Allow the pressure come down (to zero) in the pressure gauge connected to the measuring point M.

22. Start the power pack.

23. Allow the pressure stabilise in the pressure gauge connected to the measuring point M.

24. If the stand-by pressure is in the recommended range in the pressure gauge connected to the measuring point M, install the protective caps back to the flow controller (A) and pressure controller (B).

25. If the stand-by pressure is not in the right range, please re-adjust the flow controller (A) according to the steps 15-24.

26. Turn the power pack off & reconnect the rotation hose to the hose support.

Adjusting the max pressure of the rotation circuit

1. Start the power pack & run the rock drill against the rear stopper.
2. Stop the power pack & loosen the locking nut of the pressure relief valve (65) on the rotation control block.
3. Turn the pressure relief valve (65) counterclockwise, adjusting the valve almost fully open.
4. Prevent the drill steel from rotating by disconnecting rotation pressure hose from hose tree (cap this hose).
5. Turn the rotation speed regulating valve (59) all the way in (clockwise).
6. Start the power pack & lock the control leaver of the pilot control valve (58) in the back position.
7. Adjust the rotation max pressure to 180 bar with pressure relief valve (65). This pressure will be seen in a rotation pressure gauge (51). Once the max pressure is achieved, tighten the locking nut of valve (65).
8. Release the control lever of the rotation pilot control valve (58) to the middle position and stop the power pack.
9. Reconnect the rotation hose at the hose tree
10. Start the power pack & lock rotation lever in the back position, & adjust the drill steel rotation speed to the desired value by turning the rotation speed regulating valve (59) counterclockwise.
11. Release the rotation lever to the middle position & stop the power pack.

Step 9 setting Drilling rotation speeds

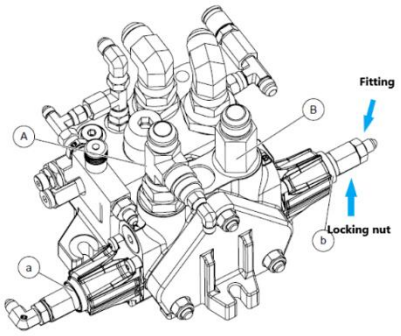
Fit reflective marker to shank to measure with tachometer.

Remove hose from port b on the rotation valve and install plug to hose end, now remove fitting and install Allen key inside locking nut, now screw valve #59 rotation speed in cabin all the way in, start power pack and pull rotation lever to back position.

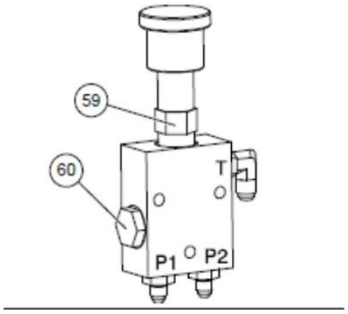
Now measure with tacho on the shank RPM, adjust with spool limiter inside locking nut by loosening lock nut and adjusting with Allen key to required rotation speed.

Tighten locking nut refit fitting and hose.

Front Top view of block



Rotation speed adjuster in cabin



Rotation speed reference chart

Drill bit size	Rotation speed ± 10 % (HLX5/RD520)	Rotation speed ± 10 % (RD525[/HFX5T])
Ø32	250 rpm	300 rpm
Ø38	250 rpm	300 rpm
Ø45	200 rpm	240 rpm
Ø51	200 rpm	240 rpm
Ø64	150 rpm	180 rpm
Ø76	150 rpm	180 rpm
Ø89	110 rpm	130 rpm
Ø102	110 rpm	130 rpm
Ø115	80 rpm	95 rpm
Ø127	80 rpm	95 rpm

Some information & pictures provided in this document are written by Sandvik