Farmall 60
Farmall 80
Farmall 95
Tractor

SERVICE MANUAL

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English
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CASE IH
AGRICULTURE

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Hydraulic control components - Troubleshooting

NOTE: *See the component references in* ***Power steering control valve - Exploded view (41.200)*** *and* ***Power steering control valve - Exploded view (41.200)****.*

Problem	Possible Cause	Correction
Oil leak from the hydrostatic steering unit: **a. Control side** **b. Cover side**	Faulty valve body O-ring sealant	Replace the sealant and sealing ring using special tool **380000836**
	Rear cover mounting bolts are not tight enough	Tighten the bolts to the recommended torque **24 - 36 N·m (17.7 - 26.6 lb ft)**.
	Faulty rotor seal washers or O-rings	Replace the washers and the O-rings
Steering heavy	Hydraulic pump ineffective	Repair the pump
	Check whether the valve is being kept open by any foreign material or by the absence of the ball	Eliminate foreign materials and clean the filter: install a ball in the seat (if missing)
	Pressure relief valve incorrectly adjusted	Adjust the valve. Consult the procedures in **Steering circuit relief valve - Pressure test (41.200)** .
	Pressure relief valve jammed or kept open by foreign materials	Eliminate foreign materials and replace the hydraulic filter
	The steering column is stiff at the bushings due to rusting, jamming, etc	Clean, remove rust and replace the bushings
Excessive steering play	Excessive play between the column and the coupling with the rotary valve	Replace worn parts
	Excessive play in the coupling between the rotor drive shaft and the lock pin	Replace worn parts
	Excessive play in the splined coupling between the rotor drive shaft and the rotor	Replace worn parts
	Combination of the excessive plays mentioned above	Replace most of the worn parts
	Blade springs broken or fatigued	Replace the springs
Steering wheel turns normally but the steering is: **a. slow** **b. no steering**	Control cylinder sealant damaged.	Replace the sealant
	Broken cylinder rod	Replace the damaged part
	Rotor camshaft or sleeve lock pin broken	Replace the damaged part
When the engine is off, the wheels do not move when turning the steering.	Excessive wear between the rotor and the fixed ring	Replace the damaged parts
	Retention valve damaged	Replace the control valve
The steering wheel jumps, steering is uncontrollable, the wheels turn in the opposite direction from that desired	Incorrect synchronisation of the hydrostatic steering	Synchronise correctly
	The cylinder connection hoses are inverted	Fix the connections
The wheels do not keep the desired alignment and constant correction with the steering wheel is needed	Worn hydraulic cylinder piston sealant	Replace the sealant
	Reflux valve damaged or stuck open by foreign material	Eliminate foreign materials, replace the filter or replace the control valve
	Mechanical wear to the control valve	Replace the control valve

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Table 01: Ratio between the system vacuum and the boiling temperature

Mercury system vacuum	Engine coolant
710 mm Hg	38 °C
734 mm Hg	27 °C
746 mm Hg	16 °C
754 mm Hg	5 °C
757 mm Hg	- 7 °C
759 mm Hg	- 18 °C

NOTE: *For every* ***305 m*** *above sea level,* ***25.4 mm Hg*** *must be added to the vacuum meter reading to compensate for the change in atmospheric pressure.*

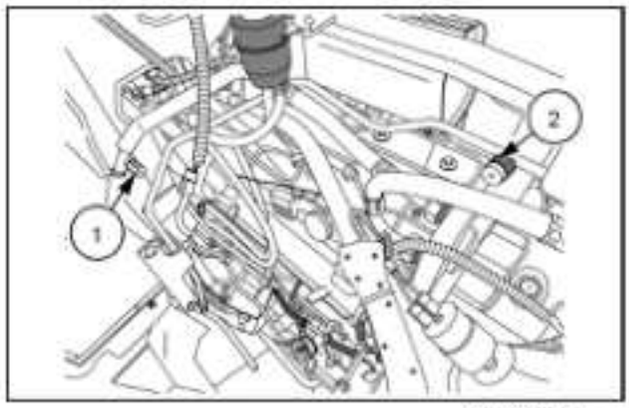
1. If using a pressure gauge set, connect the low pressure side **(1)** and the high pressure side **(2)** of the pressure gauges to the low and high sides of the machine's air-conditioning system.

NOTICE: *Make sure the system is completely discharged as the refrigerant will damage the vacuum pump.*

2. Connect the central tube of the pressure gauges to the vacuum pump's inlet port, according to the manufacturer's instructions.
3. Completely open the low and high pressure shut-off valves.
4. If a combined recovery/drainage unit is used, connect it to the air-conditioning system according to the manufacturer's instructions. Read carefully all the instructions before putting the unit in operation.
5. After starting the drainage cycle, check the low gauge to see if a vacuum is forming in the system.
6. Calculate the drainage time as at least **20 min** after reaching the lowest vacuum point.
7. When the gauge on the low pressure side reaches the lowest constant vacuum, stop the drainage process.

NOTE: *The vacuum pump reaches its maximum efficiency when the discharge valve is closed.*

8. Check the system by closing the valves, turning off the vacuum pump, and noting the low gauge readout. A loss of more than **5 cm** of vacuum in **5 min**, means a leak or the presence of humidity in the system.
9. If the gauge pointer remains stopped and the vacuum is maintained for **3 - 5 min**, close both the high and low valves, turn and disconnect the central tube of the pump. The system is ready for charging.
10. If a leak is detected, charge the system with around **400 g** of refrigerant and identify the leak using a detector. Consult the procedures in **Air conditioning - Leakage test (50.200)**.
11. When a leak is detected, discharge and recover the refrigerant, repair the leak and repeat the drainage process.



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Next operation:
Charging the air-conditioning system. Consult the procedures in **Air conditioning - Charging (50.200)**.

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CONNECTOR X-102 - X-102			
PIN NUMBER	WIRE NUMBER	CIRCUIT REFERENCE	ELECTRICAL SCHEMATIC FRAME
10	CB-1011K (YE)	X-102 SP-1011	Wire harnesses - Electrical schema – Main fuse compartment – Sheet 01 (55.100)

CONNECTOR X-105 - X-105

CONNECTOR X-105 - X-105			
PIN NUMBER	WIRE NUMBER	CIRCUIT REFERENCE	ELECTRICAL SCHEMATIC FRAME
1	TR-050F (GN)	SP-050 X-105	Wire harnesses - Electrical schema – Sheet 08 (55.100)

CONNECTOR X-106 - X-106

CONNECTOR X-106 - X-106			
PIN NUMBER	WIRE NUMBER	CIRCUIT REFERENCE	ELECTRICAL SCHEMATIC FRAME
1	TR-057AG (BK)	X-106 SP-057A	Wire harnesses - Electrical schema – Sheet 07 (55.100)

CONNECTOR X-107 - X-107

CONNECTOR X-107 - X-107			
PIN NUMBER	WIRE NUMBER	CIRCUIT REFERENCE	ELECTRICAL SCHEMATIC FRAME
1	TR-049G (GN)	SP-049 X-107	Wire harnesses - Electrical schema – Sheet 08 (55.100)

CONNECTOR X-108 - X-108

CONNECTOR X-108 - X-108			
PIN NUMBER	WIRE NUMBER	CIRCUIT REFERENCE	ELECTRICAL SCHEMATIC FRAME
1	TR-1013Q (RD)	SP-1013A X-108	Wire harnesses - Electrical schema – Sheet 08 (55.100)

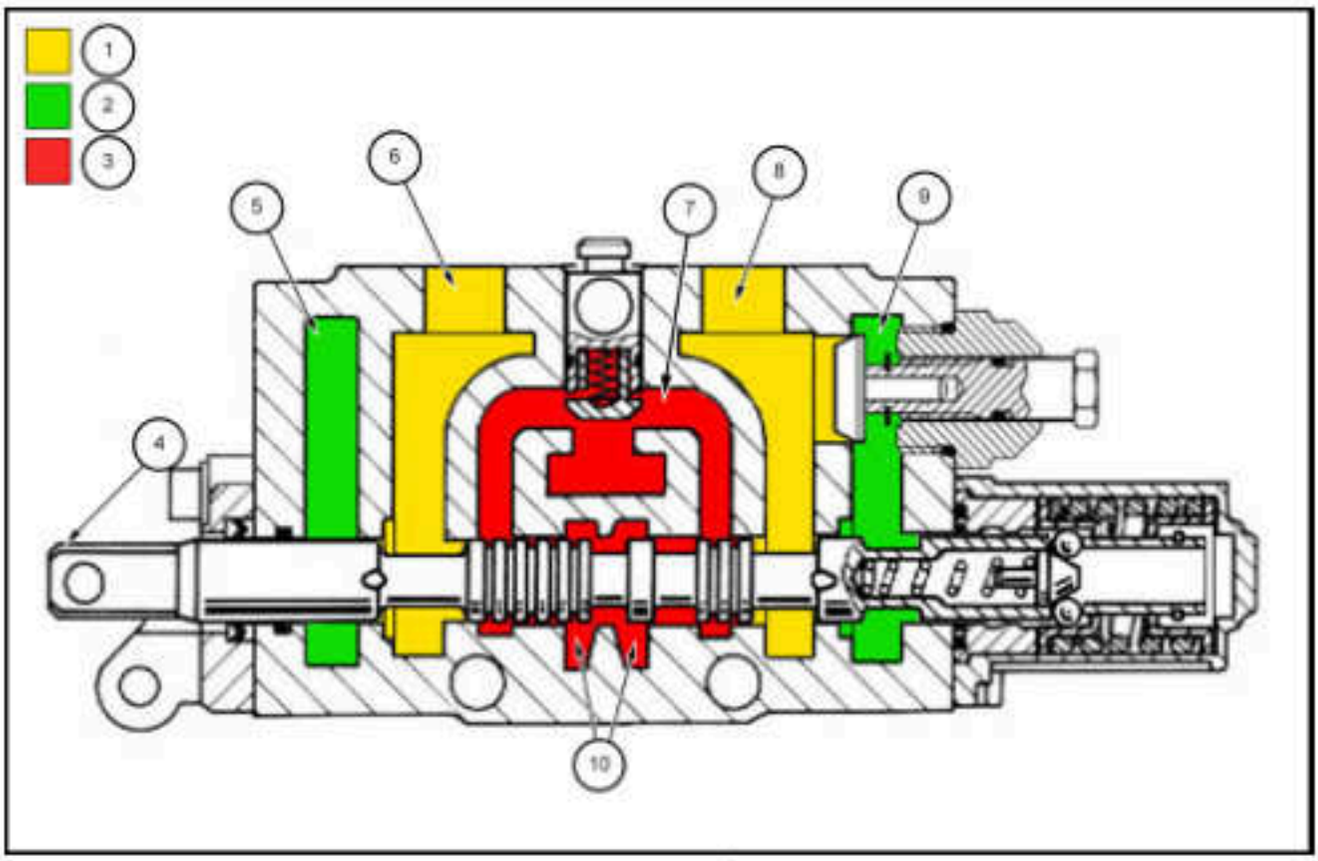
CONNECTOR X-109 - X-109

CONNECTOR X-109 - X-109			
PIN NUMBER	WIRE NUMBER	CIRCUIT REFERENCE	ELECTRICAL SCHEMATIC FRAME
1	TR-810E (GN)	SP-810 X-109	Wire harnesses - Electrical schema – Sheet 08 (55.100)

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Remote control valve - Dynamic description

Remote control valve operational phase to engage the dual action cylinder with rod detent and floating position



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Neutral

(1). Static oil

(2). Oil being discharged

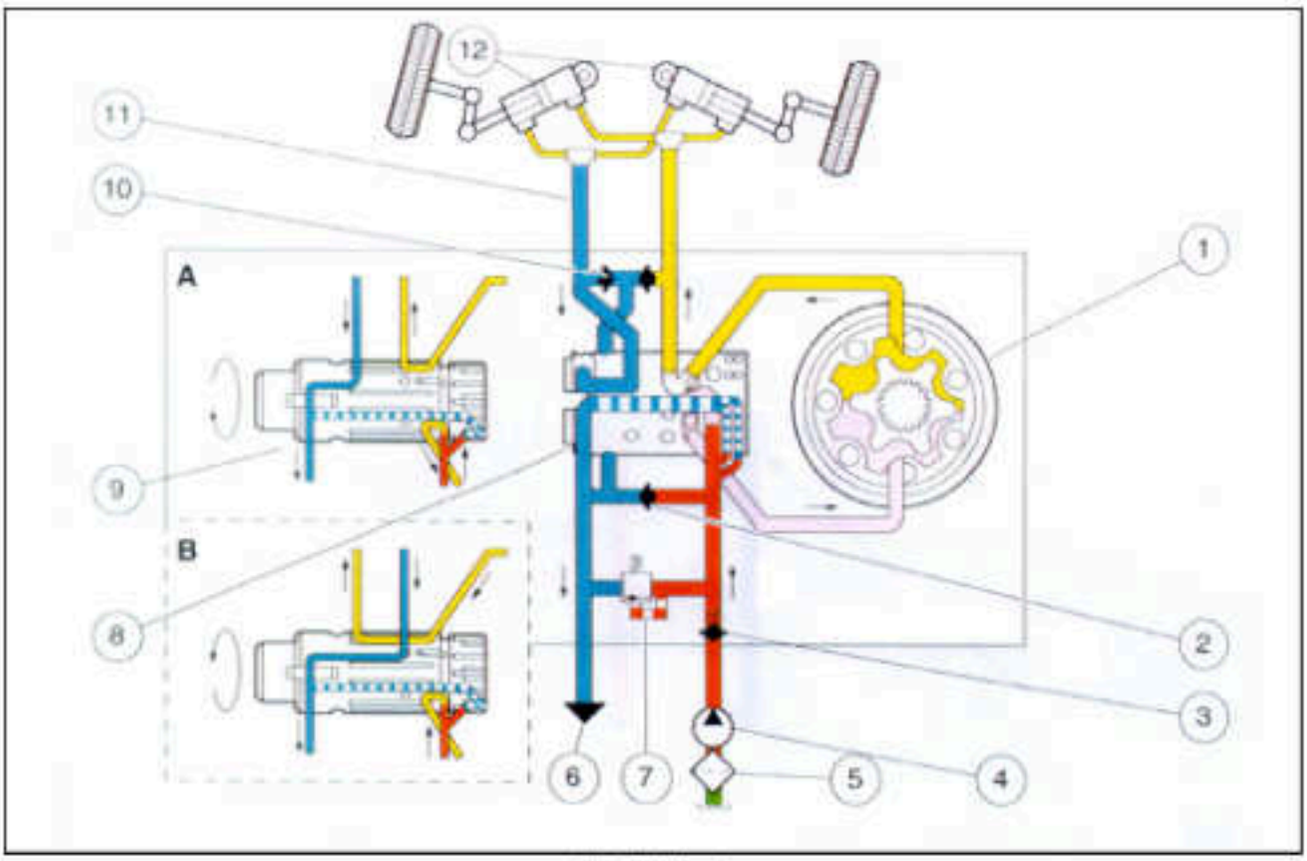
(3). Pressure Oil

When the control rod **(4)** is in the central position, the galleries **(6)** and **(8)** are not linked to the galleries **(5)**, **(7)** and **(9)**, such that the oil becomes static.

In this situation, the full flow of oil from the hydraulic pump runs through gallery M to the other parts of the remote control (open center system) and, where unused, follows on to feed the hydraulic lift control valve. **(10)**

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Schematic diagram of the steering operation - Steering activated:



LALHTL101280A 2

Suction oil
Supplying the steering motor
Return oil
Pressurised oil (up to **170 bar**)
Measured oil to the steering piston

Turning to the right

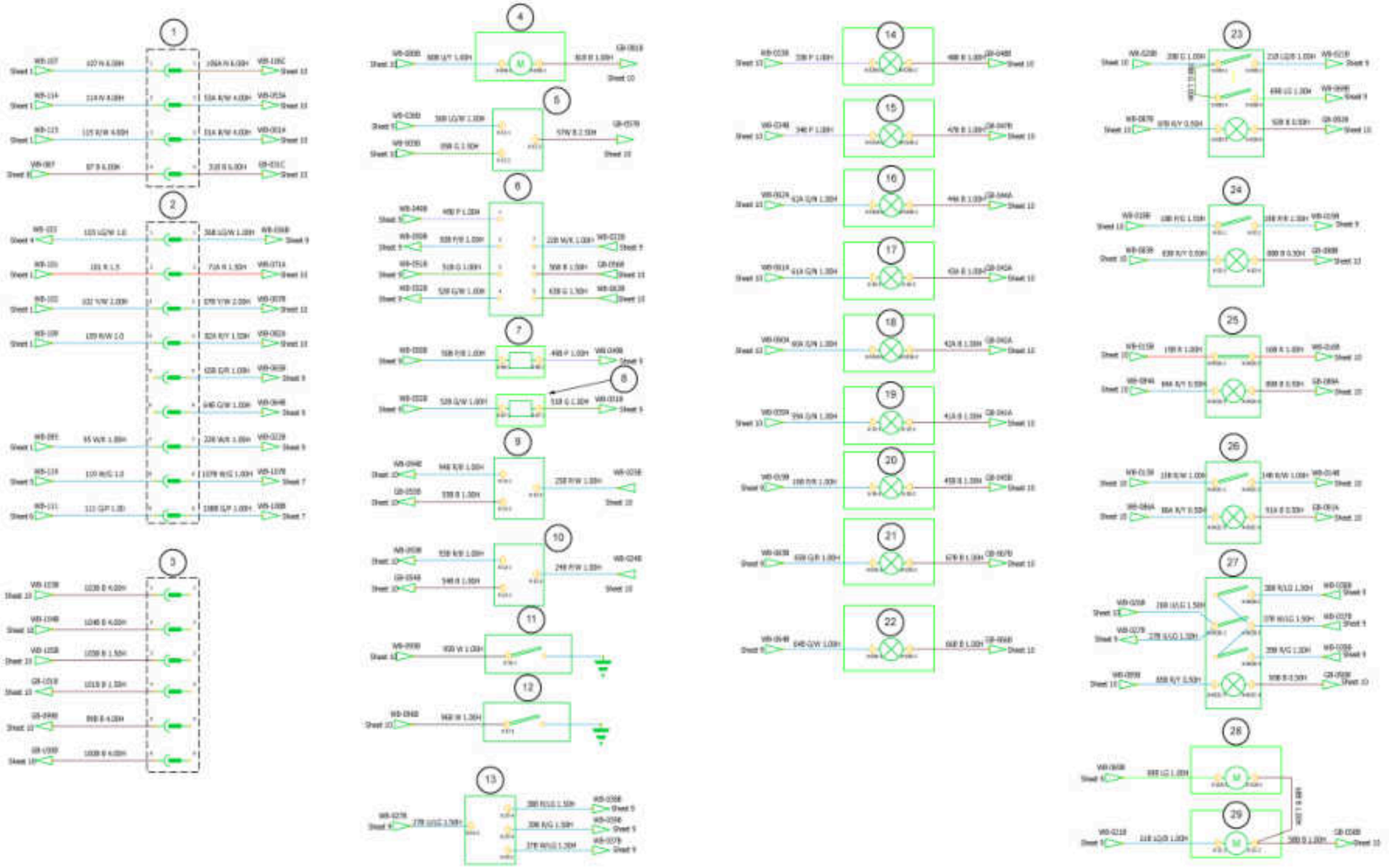
Reference	Component	Reference	Component
(1)	Metering valve	**(7)**	Pressure retention valve
(2)	Test valve	**(8)**	Control valve liner
(3)	Check valve	**(9)**	Control valve coil
(4)	Pump	**(10)**	Not available
(5)	Filter	**(11)**	Not available
(6)	Return via cooling and lubrication	**(12)**	Steering cylinders

By turning the wheel to the right, the movement of the control valve spool aligns a series of grooves in the sleeve. While turning to the right, the oil flows through the liner along a groove in the valve spool and into a passage in the steering motor housing and led to a measuring unit, as shown in the figure above.

The measuring unit is activated by the rotor drive shaft and sends the oil along another series of passages in the spool and the liner, and into the steering cylinder. The return oil from the other end of the cylinder is sent through the spool and the valve sleeve to a return passage in the housing.

When turning the steering wheel to the left, the oil flows along the sleeve in a manner similar to that described when turning to the right.

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