PUMA 170 CVT, PUMA 170
PUMA 185 CVT, PUMA 185
PUMA 200 CVT, PUMA 200
PUMA 215 CVT, PUMA 215
PUMA 230 CV

Tractors

SERVICE MANUAL

84476208A

CASE IH AGRICULTURE

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CHARGING / POWER SUPPLY

Code	Description	Frame
G-001	12v Battery	Wiring harness - Electrical schematic frame 10 (A.30.A) Wiring harness - Electrical schematic frame 11 (A.30.A)
G-002	Alternator	Wiring harness - Electrical schematic frame 10 (A.30.A) Wiring harness - Electrical schematic frame 11 (A.30.A)

AUDIBLE DEVICE

Code	Description	Frame
H-002	Horn	Wiring harness - Electrical schematic frame 38 (A.30.A)
H-003	Radio Speaker Rear Right Hand	Wiring harness - Electrical schematic frame 44 (A.30.A)
H-006	Radio Speaker Rear Left Hand	Wiring harness - Electrical schematic frame 44 (A.30.A)
H-083	Reverse Alarm Buzzer	Wiring harness - Electrical schematic frame 18 (A.30.A)

POWER SOCKETS / CONNECTORS

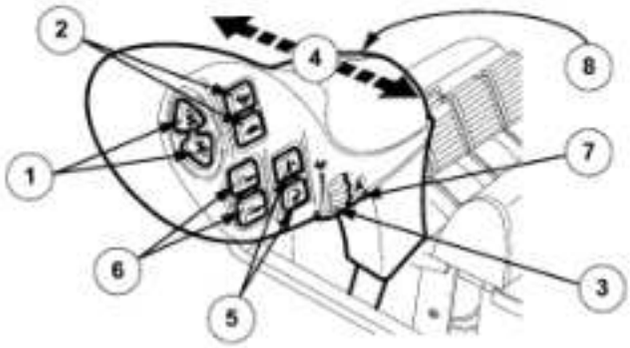
Code	Description	Frame
J-001	Rear Power Socket Implement	Wiring harness - Electrical schematic frame 34 (A.30.A)
J-002	30 Amp Power Socket	Wiring harness - Electrical schematic frame 34 (A.30.A)
J-003	**ISO-BUS** Implement Socket (Rear)	Wiring harness - Electrical schematic frame 49 (A.30.A) Wiring harness - Electrical schematic frame 55 (A.30.A)
J-004	**ISO-BUS** Implement Socket (Front)	Wiring harness - Electrical schematic frame 49 (A.30.A) Wiring harness - Electrical schematic frame 55 (A.30.A)
J-006	8 Amp Socket	Wiring harness - Electrical schematic frame 34 (A.30.A)
J-007	Cigar Lighter	Wiring harness - Electrical schematic frame 34 (A.30.A)
J-008	Power Studs	Wiring harness - Electrical schematic frame 34 (A.30.A)
J-009	DIA Engine Inline	Wiring harness - Electrical schematic frame 34 (A.30.A)
X-005	**GPS** Receiver	Wiring harness - Electrical schematic frame 52 (A.30.A)
X-028	Diagnostics Plug - **EHR CAN**	Wiring harness - Electrical schematic frame 50 (A.30.A) Wiring harness - Electrical schematic frame 52 (A.30.A)
X-030	Diagnostics Plug - **CAN BUS 1**	Wiring harness - Electrical schematic frame 50 (A.30.A) Wiring harness - Electrical schematic frame 51 (A.30.A) Wiring harness - Electrical schematic frame 55 (A.30.A)
X-031	ADIC Diagnostic	Wiring harness - Electrical schematic frame 50 (A.30.A)
X-436	ISO 11786 Signal Socket	Wiring harness - Electrical schematic frame 23 (A.30.A)
X-488	Connector (**USB**)	Wiring harness - Electrical schematic frame 45 (A.30.A)

RELAYS

Code	Description	Frame
K-001 K-002	Wiper Module Front/Rear	Wiring harness - Electrical schematic frame 33 (A.30.A)
K-003	Ignition Relay	Wiring harness - Electrical schematic frame 02 (A.30.A)
K-004	Lights Relay	Wiring harness - Electrical schematic frame 35 (A.30.A)
K-005	Starter Motor On	Wiring harness - Electrical schematic frame 10 (A.30.A)
K-006	Blower Motor	Wiring harness - Electrical schematic frame 29 (A.30.A)
K-007	Dipped Beam Headlamps	Wiring harness - Electrical schematic frame 38 (A.30.A)
K-008	Stop Lamps Relay	Wiring harness - Electrical schematic frame 37 (A.30.A)
K-009	Main Beam Headlamps	Wiring harness - Electrical schematic frame 38 (A.30.A)
K-010	Hydraulic Trailer Brake	Wiring harness - Electrical schematic frame 47 (A.30.A)
K-011	Electronic Park Brake (EPL) Relay	Wiring harness - Electrical schematic frame 46 (A.30.A)
K-012	Pneumatic Trailer Brake	Wiring harness - Electrical schematic frame 47 (A.30.A)
K-014	**Follow Me Home** Relay	Wiring harness - Electrical schematic frame 40 (A.30.A)
K-015	Front Worklamps Hood	Wiring harness - Electrical schematic frame 38 (A.30.A)
K-016	Rear Worklamps C Pillar Relay	Wiring harness - Electrical schematic frame 37 (A.30.A)
K-017	Power Supply ECU, UCM, PTO rear, ICU 3	Wiring harness - Electrical schematic frame 06 (A.30.A)
K-018	EL.Battery Isolator	Wiring harness - Electrical schematic frame 10 (A.30.A)

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In addition it provides the possibility of working in only one sub-range of an entire working range. The knob has a pushbutton for changing the direction of travel and for actuating the electronic hitch control, an electrical auxiliary implement and the headland management control system.



1	"Forwards / Reverse" pushbutton	2	"Travelling speed ranges" pushbutton
3	Rotating wheel for adjusting the "Travelling speed ranges" (nominal value)	4	Propulsion control lever
5	Pushbutton for rapid Raise/Lower of the rear hitch	6	Pushbutton for actuating an electro-hydraulic auxiliary control valve
7	Pushbutton for controlling the headland management control "HMC"	8	2. Function button (at rear of propulsion control lever)

"FORWARDS / REVERSE" PUSHBUTTON **(1)**
To change the direction of travel the pushbutton with the opposite direction of travel must be actuated. It is not possible to drive off using these buttons. This can only be carried out using the "shuttle lever" on the steering column. The pushbuttons are also used for other control functions for driving operation.

"TRAVELLING SPEED RANGES" PUSHBUTTON **(2)**
The driver can use two pushbuttons to select one of three travelling speed ranges. The confirmation about the range selected and its set nominal value takes place via the transmission display.

ADJUSTING THE TRAVELLING SPEED RANGES (NOMINAL VALUE)
The rotary switch **(3)** is used to set the nominal value speed of any speed range. The ranges can be adjusted to any required speeds and can also be the same if so desired. There is however a logic to ensure that each higher range is allocated at least the same or a higher speed than the previous one. (e.g. F2 ≥ F1) This means that if F1 is set higher than the nominal value of F2, F2 is automatically also increased. If the nominal value of F3 has been attained and the driver further increases the value for F1, all three speeds are simultaneously increased.

Useable speed ranges in km/h:
From 0.03 to 0.10 in steps of 0.01 km/h
From 0.10 to 0.22 in steps of 0.02 km/h
From 0.25 to 1.00 in steps of 0.05 km/h
From 1.00 to 10.0 in steps of 0.10 km/h
From 10.0 to 12.0 in steps of 0.20 km/h
From 12.0 to 15.0 in steps of 0.50 km/h
From 15.0 to 50.0* in steps of 1.00 km/h

An additional speed set with similar steps in mph is available, if non-metric specifications have been selected for the displays:
From 0.02 to 0.10 in steps of 0.01 mph
From 0.10 to 0.22 in steps of 0.02 mph
From 0.25 to 1.00 in steps of 0.05 mph
From 1.00 to 8.00 in steps of 0.10 mph
From 8.00 to 12.0 in steps of 0.20 mph
From 12.0 to 15.0 in steps of 0.50 mph
From 15.0 to 31.0* in steps of 1.00 mph

* or the maximum permitted highest speed of each respective sales market.

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ENVIRONMENT CONTROL Heating, ventilation and air-conditioning - Troubleshooting

Problem	Possible Cause	Correction
Evaporator air not cold Gauge reading :- Low Pressure - Low High Pressure - Low (Refer to example ENVIRONMENT CONTROL Heating, ventilation and air-conditioning - Dynamic description (E.40.D)).	Low refrigerant charge.	Perform leak tests and repair Evacuate system Charge system, re-test system
Evaporator air not cold Gauge reading :- Low Pressure - High High Pressure - High (Refer to example ENVIRONMENT CONTROL Heating, ventilation and air-conditioning - Dynamic description (E.40.D)).	Expansion valve allowing too much refrigerant to flow through the evaporator	Check expansion valve as follows: Set for Maximum cooling. Low pressure gauge should drop slowly If expansion valve is defective: Discharge System Replace Expansion Valve Evacuate System Charge System Re-test
Evaporator air not cold Gauge reading :- Low Pressure - High High Pressure - Low (Refer to example ENVIRONMENT CONTROL Heating, ventilation and air-conditioning - Dynamic description (E.40.D)).	Internal leak in compressor. (reed valves, gasket, worn or scored piston rings or cylinder)	Discharge the system Replace the compressor Evacuate the system Charge the system Re-test
Evaporator air warm Gauge reading :- Low Pressure - Low High Pressure - Low (Refer to example ENVIRONMENT CONTROL Heating, ventilation and air-conditioning - Dynamic description (E.40.D)).	Extremely low refrigerant charge.	Perform leak tests and repair Evacuate system Charge system, re-test system
Evaporator air warm Gauge reading :- Low Pressure - High High Pressure - High (Refer to example ENVIRONMENT CONTROL Heating, ventilation and air-conditioning - Dynamic description (E.40.D)).	Improper operation of condenser	Inspect for dirty condenser restricting air flow and cooling. Check operation of condenser cooling fans. Repair or replace as needed. Check for overcharge as follows: Stop the engine. Recover and recycle the charge using correct recovery equipment. Recharge the system with the correct quantity of refrigerant, replacing any lost lubricant. Recheck performance of air conditioning system.

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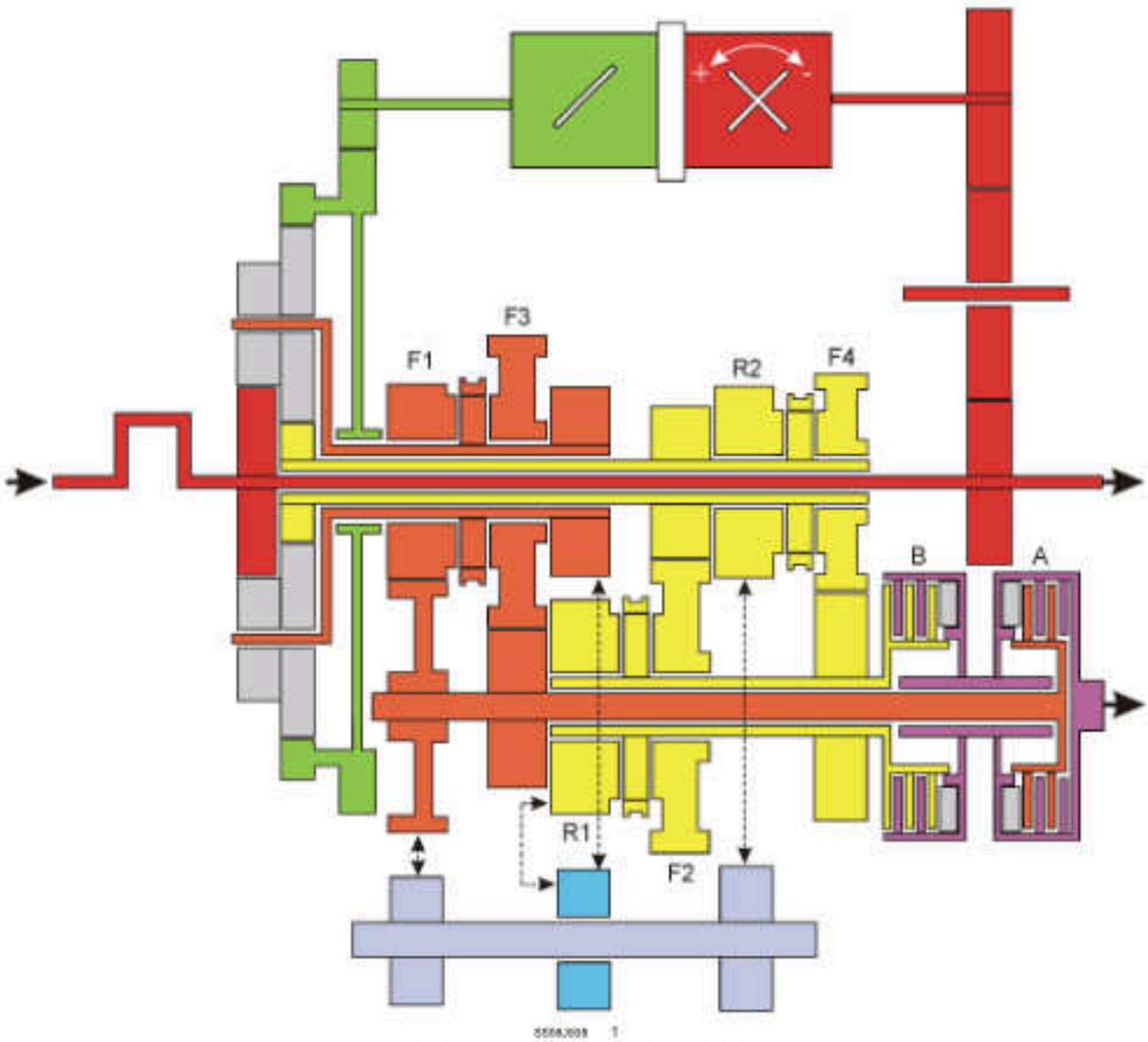
TRANSMISSION Continuously Variable Transmission (CVT) - Functional diagram

PUMA 170 CVT 50 km/h gearbox, PUMA 170 CVT 40 km/h ECO gearbox, PUMA 185 CVT 50 km/h gearbox, PUMA 185 CVT 40 km/h ECO gearbox, PUMA 200 CVT 50 km/h gearbox, PUMA 200 CVT 40 km/h ECO gearbox, PUMA 215 CVT 50 km/h gearbox, PUMA 215 CVT 40 km/h ECO gearbox, PUMA 230 CVT 50 km/h gearbox, PUMA 230 CVT 40 km/h ECO gearbox

The following diagrams show the power flow of the transmission in the individual mechanical gears and in the stationary control (powered zero) and neutral position / park position operating modes.

Colour coding

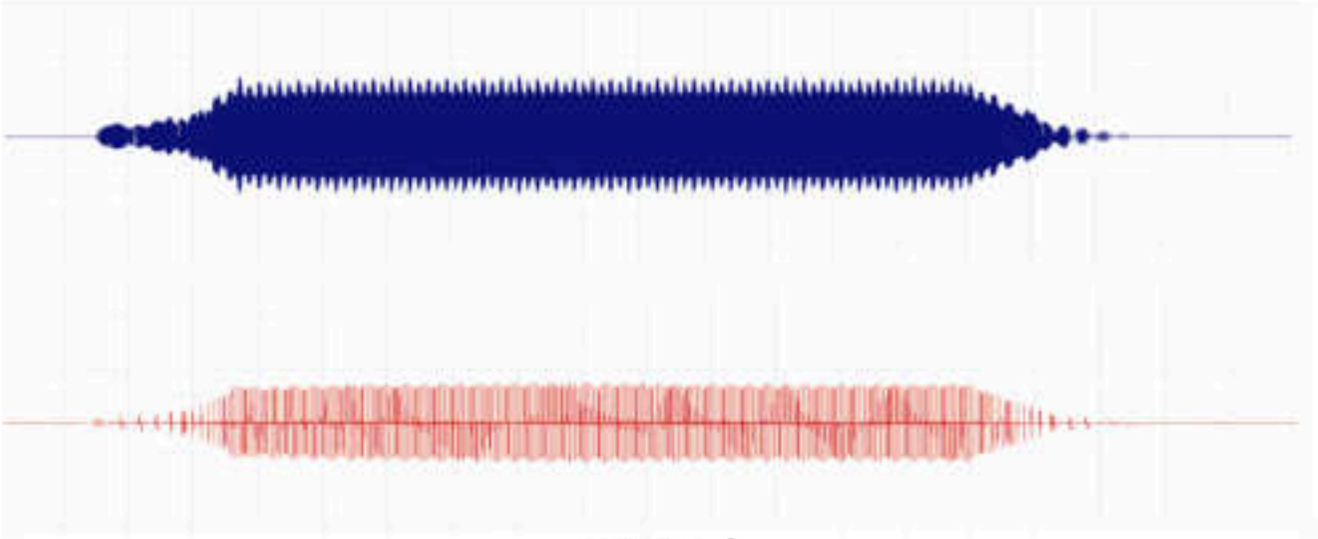
Transmission input and hydrostat drive	Hydrostat output - ring gear summing planetary gears
Power train summing planetary gear / planetary carrier - clutch A	Power train summing planetary gear / sun gear - clutch B
Power flow	



Neutral position / park position

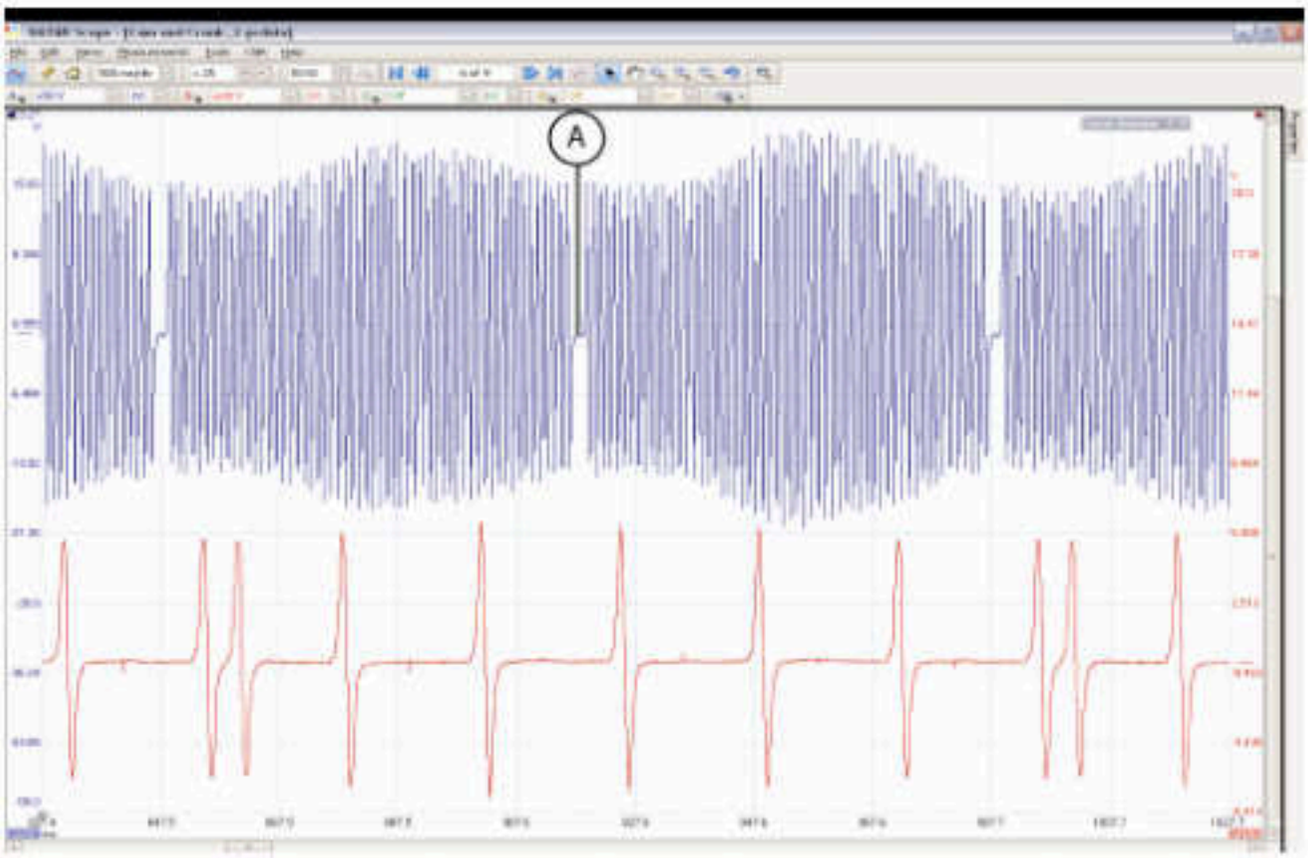
In the neutral position and the park position the transmission is not engaged. No mechanical gear is engaged and the clutches A / B are open. If the tractor rolls off inadvertently in the neutral position, the speed differences arising as a result are equalized by the hydrostat. This means that when shifting out of the neutral position the relevant gear can be engaged again at the synchronous speed.

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RAIL10CVT05HFNB 6

5. Figure **6** shows the ideal full signal of the crank and cam position from the point of when the engine is turned on , and until it is turned off.



RAIL10CVT05TPNA 7

(A) = Sync Trigger

6. Figure **7** shows the expected clean signal captured by the **DATAR** scope, each sync trigger in Channel A (Blue) is one crank rotation and each double fluctuation in the channel B (red), is one cam rotation . With two full crank rotations there is one full cam rotation. The amplitude will increase with the engine speed. This means the voltage can increase from ± **20 - 30 V**

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