

**operating & maintenance
instructions
complete tipper**



Operating & Maintenance Instructions

Complete Tipper

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1

Introduction

This section gives an overview of the use of this manual.

It also gives some basic advice on safety and precautions to be taken before and during operation.

Intended for experienced operators that are new to Hyva Hydraulic equipment and also as a refresher for those already familiar with Hyva products.

The advice given in these pages is by no means complete and should not be used as an alternative to common sense.

- Scope of use
- General remarks
- Safety
- Explanation of guidance
- Precautions

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1. Introduction

Before you use your tipper you should familiarise yourself with the workings of this system. You should read this manual fully to ensure safe and effective use of the tipper. Unskilled use or poor maintenance of tippers often causes breakdowns and injuries.

In the event service is required, we recommend that Hyva or an approved service agent carries out the work. A list of major service points can be found at the end of this manual.

We regret that Hyva cannot accept any complaints or claims caused by and/or to the tipper due to unskilled use, poor maintenance and/or repairs.

We have continuous development programmes to improve our products and it is possible that some design modifications have occurred that are not mentioned in this manual.

If you follow the guidelines in this manual, we are certain that you will enjoy many years of safe and efficient use from your tipper

1.1. Scope of use

The Hyva tipper has been developed only for use in non- explosive, above ground, environments and for the transport and tipping of payloads with the exception of perishable food-stuffs.

This manual is intended to give you clear, accurate information for the operation and maintenance of your Hyva tipper. We recommend keeping this manual in the truck cab for future reference.

The Hyva cylinder range includes Front-end cylinders with Outer Cover (FC), with Eye (FE) and with Eye/Eye (FEE) and Under body cylinders for 3-way tipping (DCT/UCB) and rear-tipping only (OE/UCE).

1.2. General remarks

Specification sheets are available for all Hyva cylinders; these sheets contain all relevant dimensional and application information about your cylinder.

The Hyva cylinder has been developed for lifting purposes only and its use for any other purpose is prohibited. The cylinder is not to be used as a stabiliser and any kind of side-load must be avoided whenever possible.

Warning

Applying side-load to any cylinder is dangerous.

The cylinder should be mounted with a minimum pull out of 15 mm and a maximum pull out of 50 mm (the closed length of the cylinder on the Hyva specification sheet already includes 20 mm pull out).

If you have any questions concerning the application, installation, operation or repair of any Hyva product - please contact your nearest Hyva Service Point.

Hyva cylinders are also compatible with *biodegradable oils* such as the following synthetic ester based oils:

- BP - Biohyd SE-S
- Castrol - Carelube HES
- Texaco - Hydra
- Elf - Hydrelf Bio Safety

Biodegradable oils attract water, for this reason it is important to use a Hyva *air filter with dehumidifier* (part number: 14810590). Hyva also recommends the use of a return-line, oil filter in all systems.

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Safety

1.2.1. Explanation of guidance

Tip

Gives the reader advice in order to simplify certain tasks or warns of potential problems.

Warning

Warning of danger to the operator or product. The operator can be seriously hurt or the equipment severely damaged if the recommended procedure is not followed.

Danger

There is a serious threat to the life of the operator.

1.2.2. Precautions

Tipper operation can be a hazardous business and accidents can happen. So to help you minimise the risk to you and your vehicle, always work within the following basic guidelines.

Always report to a responsible person on arrival at the site and follow the site rules.

Deliver or collect loads only when and where the customer says it is safe to do so.

The safety of a truck when tipping is the responsibility of the driver. If agreement cannot be reached, then consult your employer. Never tip if there is any chance that the truck may topple over sideways.

Never tip if the working area is not properly illuminated.

Ensure that the load is evenly distributed across the width of the body and front to back.

This will help to prevent tip-over, and ensure correct axle loading. If the load is too far forward, the tipping gear may be overloaded.

Never stand in the body while the vehicle is loading or is parked in a loading area.

Never stand or walk within the immediate working area of the vehicle when the body is raised or during tipping.

Never leave a vehicle unattended while it is tipping.

Always make sure that the vehicle is on firm level ground both side ways and front to back.

Where possible, do not tip facing downhill. Make sure the vehicle remains level.

Articulated vehicles should always be tipped with the trailer in line the tractor unit.

Never engage the PTO while the vehicle is in gear and ensure the pump is out of gear after tipping.

Do not 'rev' the engine excessively while tipping, as over-speed of the tipping pump can create oil starvation and seizure.

Always ensure that the tailgate is released prior to tipping.

Lower the body before attempting to clear any obstructions. If the load is higher than the top of the tailgate, make sure that it cannot jam under the tailgate and the body could be forced over backwards by the weight of the load in the rear of the body.

Always fasten 'Rear doors' securely.

Never go under a raised body unless it is adequately propped.

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Be on the lookout for obstructions especially overhead. *Do not* expect to have obstacles pointed out by site staff.

In the event the body (or vehicle) comes into contact with overhead power cables:

- Leave the vehicle by jumping clear.
- CALL THE EMERGENCY SERVICES IMMEDIATELY.
- Do not make contact with the ground and the vehicle at the same time, this could complete the electrical circuit causing serious injury or death.
- Do not allow anyone to return to the vehicle before the electrical circuit is broken and the electricity discharged.

Beware of loads which are likely to freeze, the load could freeze on one side.

Beware of loads with varying densities. These loads may discharge unevenly and instability occurs causing the truck to tip over.

Beware of wind on one of the sides of the tipper. This wind on a great surface can cause the truck to tip over.

If the load is not discharging when the body is raised to about 25 degrees, (that is about halfway up) stop the tipper and investigate why the load is sticking. Keep well clear of the vehicle and load when walking to the rear.

If you think there is a danger of the vehicle falling over, stop the tipping operation and slowly lower the body and then investigate the cause.

Time taken preventing a topple-over is time well spent.

If the vehicle does begin to topple over:

- Stay in the truck, you are safer in the cab
- Brace yourself against the back of the driver's seat
- Hold firmly onto the steering wheel
- Never try to jump out of a truck which is falling over

Ensure that the body is completely empty after discharge. Do not drive further than is absolutely necessary before the body is lowered and the tailgate re-secured. Do not 'shunt' the vehicle to discharge a sticky load.

Take good care of your tipper, time spent on maintenance is an investment in safety!

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- Hyva International Terms of Warranty

Guarantee

This section contains an overview or guide to Hyva terms of warranty.

It is not complete or contractual, so in the event that you do have a problem with a Hyva product you should contact your nearest Hyva service point.

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2. Guarantee

Hyva International Terms of Warranty

Hyva International only issues warranty to products under agreed conditions.

The following products are covered by warranty:

1. Hydraulic Cylinder
2. PTO & Pump
3. Tipping valve & Air Control
4. Oil Tank
5. Body

The warranty is only valid under the following conditions:

- 01) All Hyva products must be **installed, operated, maintained and repaired** in accordance with the relevant Hyva guidelines.
- 02) For the parts listed above, the warranty period covering is valid 12 months from date of delivery or up to a maximum, whichever comes first, of:
 - 20.000 tipping cycles for the cylinder, tipping valve, control and body.
 - 300 running hours for the PTO and pump.
 - 100.000 km for the oil tank.
- 03) The warranty period does not cover:
 - Wear of parts during normal operation (e.g. sealing set), parts made of rubber or with limited lifetime.
 - Paint coatings.
 - Damage caused by forces beyond our control.
 - Damage caused by incomplete or erroneous installation.
 - Damage caused by abusive or inappropriate operation.
 - Damage as a result of service not carried out in accordance with the Hyva Operating & Maintenance Instructions.
- 04) This warranty is valid only in accordance with the Hyva General Terms unless otherwise specified (document FO-E00000130/930219/Rv -).
- 05) A completed Claim Report shall be delivered with every claim.
- 06) All broken parts shall be kept for inspection, these parts will be returned to Hyva International for inspection on request (transportation costs to be met by end user).
- 07) Where warranty is granted, Hyva International will meet the cost of the following:
 - All necessary spare parts.
 - A replacement part where the original cannot be repaired.
- 08) Hyva International does not accept any liability for transport costs or travel expenses.
- 09) During the warranty period the equipment must be serviced at the appropriate periods (costs to be met by the end user). Checks listed in the Hyva Operating & Maintenance instructions must be completed.
- 10) Drivers must be trained to operate the Hyva equipment with the appropriate operating instructions made available.
- 11) Drivers should include the Hyva equipment in their daily vehicle inspection and arrange service for the vehicle/equipment as described in the Maintenance Instructions.

Any variation from the conditions listed above must be agreed with Hyva prior to the operation of the equipment.

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Operating Instructions

This section makes up the main body of the operating instructions.

It is separated into sections to enable you to go directly to areas you are unsure about or work through in sequence as a 'tipping course'.

- Components of the tipping system
- Activating and controlling the hydraulic system
- PTO (Power Take Off)
- Tipper (Air) control
- Tail-door locks
- Tipping the body
- Rear tipping
- Side tipping (2- & 3-way tippers)
- Lowering the body

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3. Operating Instructions

3.1. Components of the tipping system

The truck mounted, tipping system usually consists of;

- sub frame (not used in all countries)
- tipper body (with hinge assembly)
- hydraulic system.

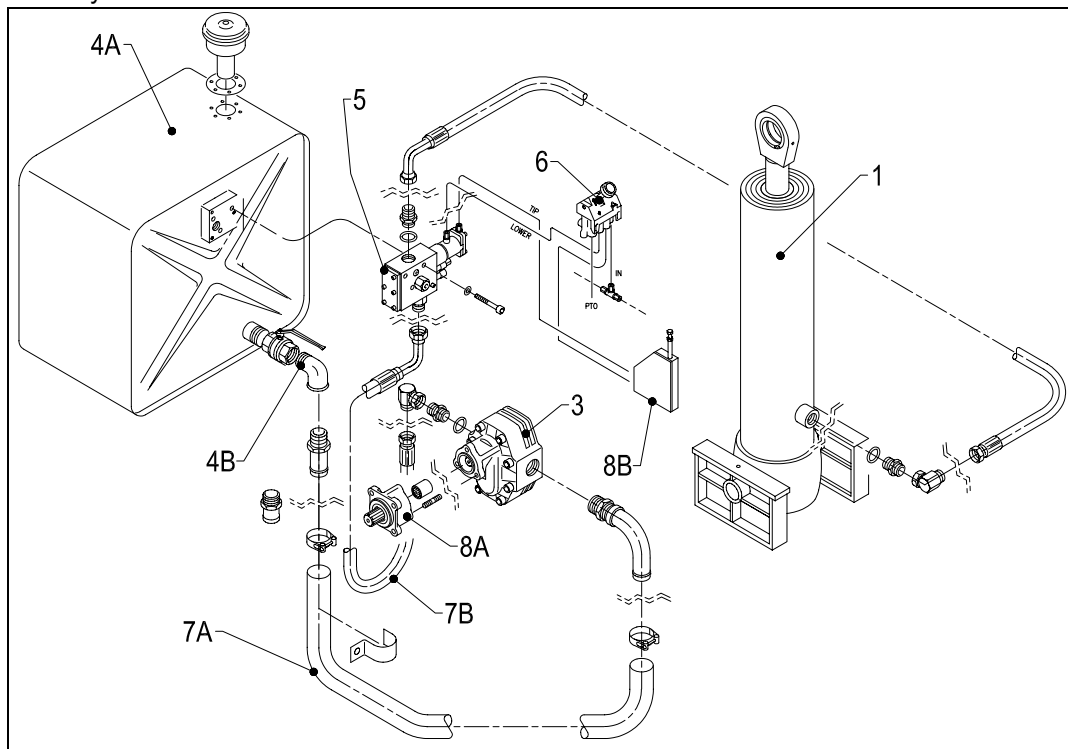


FIGURE 1 EXAMPLE OF A HYDRAULIC SYSTEM

The hydraulic system typically consists of;

- | | | |
|-----|--------------------------------------|-------------------------|
| 1. | Hydraulic cylinder | (FE type shown) |
| 2. | PTO | (not shown) |
| 3. | Pump | (side mount type shown) |
| 4A. | Oil tank without | |
| 4B. | Ball Valve | |
| 5. | Hydraulic tipping valve. | |
| 6. | Cab mounted air control valve | |
| 7A. | Low pressure hydraulic suction hose | |
| 7B. | High pressure hydraulic hose | |
| 8A. | PTO-adapter | optional |
| 8B. | Pneumatic knock off valve | optional |
| 8C. | Pneumatic / Hydraulic tail-door lock | (not shown) optional |
| 8D. | PTO-control | (not shown) optional |

3.2. Activating and controlling the hydraulic system

Control levers in the cab operate the tipper; the main controls are PTO and Air-(tipper) control, others may include tail doors control, multi-kap or sheeting system.

These controls are often combined, for example: Tipper- & PTO control or Tipper- & tail-door control (See Figure 2).

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3.2.1. PTO (Power Take Off)

Tip

If the truck manufacturer has mounted the PTO control, then consult the user manual of your truck.

The PTO 'takes power off' the engine (via the gearbox) to drive the pump and so the hydraulic system. Normally it is pneumatically (air-pressure) controlled and has two positions (see Figure 2 & Figure 3):

- 0 – "disengaged"
- 1 – "engaged"

In the "engaged" position the PTO and pump are activated. A lamp on the control indicates the PTO is engaged.

Warning

The PTO must be disengaged when the tipper is not in use.

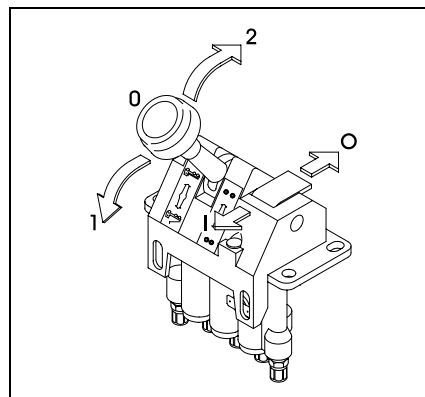


FIGURE 2

I To engage the PTO

Stop the vehicle and apply the hand (parking) brake.

Put the gearbox in neutral.

Put the tipper-control valve in "neutral" position (see Figure 2 position 0).

Press the clutch and wait about 5 seconds.

Engage the PTO by moving the selector to "engaged" (See Figure 3 & Figure 2. position 1)

Check the indicator lamp illuminates and slowly release the clutch pedal.

The PTO is now engaged.

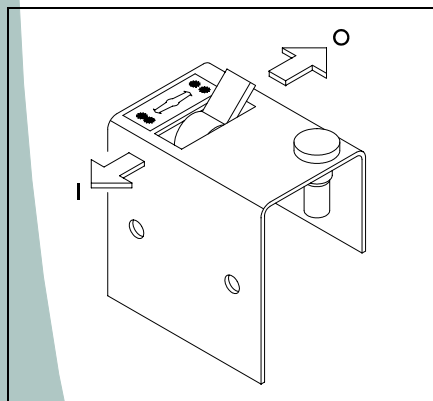


FIGURE 3

Warning

Do not drive with the P.T.O engaged.

II To disengage the PTO

With the tipper control in "neutral", press the clutch.

Disengage PTO by switching the lever to the position "disengaged" (Figure 3 position 0). Check the indicator lamp is off and slowly release the clutch. The PTO is now disengaged.

3.2.2. Tipper (Air) control

The air-control pneumatically activates the tipping valve, which then controls the flow of oil. The air-control has three positions (see Figure 2); 0 – "hold" or "neutral"; 1 – "tip"; 2 – "lower"

I "Tip"

Moving the selector to "tip", the hydraulic oil flows to the cylinder, extending the cylinder and raising the tipper body. Tipping can be interrupted at any time, by placing the air control in to "neutral".

II "Hold" or "Neutral"

In "neutral" the oil circulates (back to tank) and the cylinder is held in position.

III "Lower"

When the selector is in "lower", hydraulic oil returns from the cylinder to the oil tank, retracting the cylinder and lowering the tipper body.

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3.2.3. Tail-door locks

Your tipper may be fitted with a mechanically, pneumatically or hydraulically controlled tail-door lock. Mechanical locks automatically release when the body is tipped and engage when lowered. Pneumatically and hydraulically controlled doors operate in the same way as the PTO; 0 – locks secured; 1 – locks released

Warning

Locks must be secured when the tipper is not in use.

3.3. Tipping the body

3.3.1. Rear tipping

Danger

Before tipping check nobody is within the working area and it is properly illuminated.

Tipping with a locked or blocked tail-door is danger to life.

Unsecured hinge pins are danger to life.

I To tip:

Remove any sheeting.

It may foul the tail door, restricting the discharge of the payload. If your tipper is fitted with a Hyva *Multi-Kap* consult the user manual prior to tipping. Release the rear-door locks. Put the air-control valve into the “tip” position. Switch the air-control to “neutral” at the end of stroke (or as the ‘knock-off’ valve is reached).

Warning

High engine speeds may cause oil starvation, cylinder damage and pump damage.

DO NOT “shunt” the tipper body (drive with the body raised and brake) – this can cause severe damage to the truck, body and hydraulics

For 3-way tippers only: Check both hinge pins are in the rear hinge brackets. If not, then swap one of the front hinge pins to the rear hinges.

3.3.2. Side tipping (2- & 3-way tippers)

Here the tipper can discharge its load to one or both sides of the vehicle.

Warning

Unsecured hinge pins are danger to life.

When side tipping, the side panel overhang may not exceed 80 cm (2ft. 3in.). Too much ‘overhang’ may tip the vehicle over.

Check there is one hinge pin at the front and one at the rear on the side you wish to tip. Release the side panel locks and lower the side panels. The body can now be tipped in the same manner as a rear tipper.

3.4. Lowering the body

The proportional control, tipping valve and tipper-control make it possible to control the lowering speed of the tipper body. Disengage the PTO. Put the tipper control slowly into “lower”. Return the tipper control to neutral

Warning

When the body has lowered, allow about 1min before returning the tipper control to “neutral”.

Do not drive with the tipper control in “lower”, as this will allow all of the oil to drain from the cylinder.

Before driving, ensure that all locks and sheets are properly secured.

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Maintenance Instructions

This section makes up the main body of the maintenance instructions.

It is separated into sections to enable you to go directly to areas you are unsure about or work through in sequence.

There are two basic sections:

General that gives advice such as the oil types to use in your hydraulic system and what to do if your vehicle is involved in a collision.

Maintenance gives specific details of planned maintenance tasks, including recording space for service to 'signed-off', and an overview of greasing points for various tipper types.

- General
- Hydraulic oil
- After a collisionAfter a
- Maintenance
- Greasing points
- Maintenance schedule

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4. Maintenance Instructions

4.1. General

To avoid contamination, clean around the filler before filling the tank. Filling above the maximum level can lead to overflow. If the vehicle is expected to be out of use for a long period, grease all turning points to avoid seizure.

Caution

Maintenance near or on rotating parts is dangerous

If the tipping body is raised for maintenance purposes, it must be securely propped.

It is danger to life to work on or under an un-propped body.

4.1.1. Hydraulic oil

To avoid any damage to the hydraulic system we recommend hydraulic oil with a viscosity (at 40°C) of between 75 and 12 mm²/sec. The maximum temperature of the oil must not exceed 80°C.

Hyva maintains a list of recommended oils – please contact your nearest Hyva service point or visit our website (www.hyva.com). Equivalent oils from other suppliers can be used.

4.1.2. After a collision

Check the hydraulic system for damage (particularly suction hose, oil tank, and connections between pump & PTO). Check all pneumatic and hydraulic connections for damage and leaks.

If there is any doubt do not tip the vehicle until a Hyva agent or service station has checked it.

4.2. Maintenance

In addition to the maintenance schedule, Hyva recommends a daily, walk-round, visual inspection for safety purposes, this time can be used to catch maintenance early saving money and downtime.

Points to check are:

1. Wheels – check tyres are safe and legal, all nuts are tightened (tap with a spanner, loose nuts sound dull). Check double tyres for trapped objects that can become projectiles whilst driving.
2. Chassis & Superstructure – check for general condition, cracks & other signs of wear, the fit of closures & turning points and mounting points for equipment (i.e. cylinder).
3. Air Lines (brakes) & Hydraulics – check pressures & levels and listen for escaping air & watch for oil drops on and under the truck.

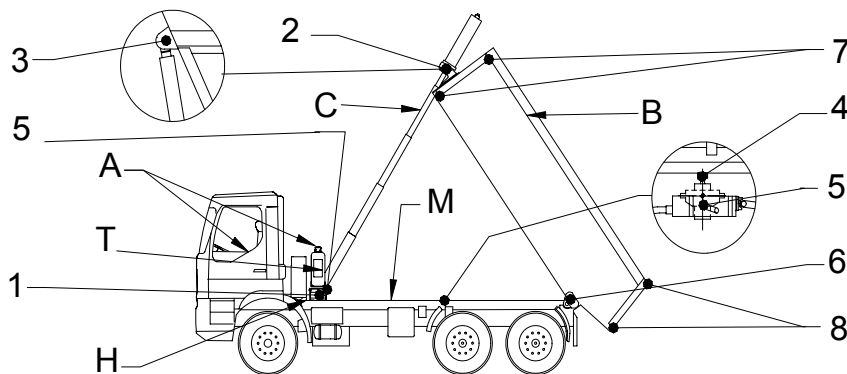
4.2.1. Greasing points

FIGURE 4 gives examples of greasing points on tippers. The greasing points of course vary depending on the type of tipper. The kind of cylinder and/or body will affect the position of items (i.e. Hyfix) and the number of items (i.e. side door locks/hinges).

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4.2.2. Maintenance schedule



Type	Description	Application	Frequency		
			Daily	Weekly	1/2 Year (& Year)
General Maintenance	(A) Air System	Air hoses Air control	Check for damage & leaks Check operation, damage & leaks	Check for damage & leaks	
	(H) Hydraulic System	All Pump Hydraulic hoses Hydraulic valve	Check cylinder (operation, damage & leaks) Check for damage & leaks Check for damage & leaks	Clean cylinder Check 'leak' hole for oil	
	(T) Tank	Oil level Oil filter Air filter All All Nuts and bolts	Check level and refill *	Check filter for dirt Check Air filter	Change oil filter Change air filter Change oil Clean inside tank
Greasing Points	(C) Cylinder	All FC types FE types DCT/UCB types DCT/UCB & FC/FE		(1) Grease chassis brackets (2) Grease lifting brackets (3) Grease piston eye on tipper body (4) Grease retainer for piston (5) Grease cradle	
	(B) Body	All types 3-way tippers only If fitted		(6) Grease rear hinges (6) Grease front hinges (7) Grease tail door mechanism	
	(M) Miscellaneous	Hyfix body clamp Scissor system		(8) Grease clamp body Grease stabiliser pivot points (3x)	

Notes: DO NOT use a steam cleaner when cleaning hydraulics (cylinder, valve & hoses).

*See oil recommendations in table below

Environmental Conditions	ISO VG Class	Expected Operational Temperatures (°C)			Viscosity index
		Min. start-up (1)	Min. Running (2)	Max. Running (3)	
Less than -40°C	10				
Siberian winter (to -10)	15	-18	5	38	80
European (N)	22	-10	16	48	100
European (S) (& N. with crane)	32	0	23	58	100
Middle East (40-50)	46	5	30	65*	100
Middle East (50+) [#]	68	10	28	65*	100

Max. Viscosities (mm²/sec): (1) = 400, (2) = 75, (3) = 12. *Above 65° C use an oil cooler to avoid overheating.

[#] Aircraft grade hydraulic oils may also be used - contact Hyva or your oil supplier before use.

Inspected:	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Y
Initials:										

FIGURE 4 MAINTENANCE SCHEDULE

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Trouble Shooting

Gives a guide to solving the more common faults experienced when first using a hydraulic system.

Where a problem persists contact your nearest Hyva agent or service station.

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5. Trouble Shooting

Fault	Causes	Action
Cylinder does not extend when the air control is in "tip".	PTO not engaged. No oil in tank. Stop cock below oil tank closed. Low air pressure. Knock off valve not functioning. Cylinder connected to wrong valve port. Quick detachable coupling is not good connected.	Engage PTO. Fill oil tank with hydraulic oil. Open stop cock. Increase pneumatic pressure. Contact your Service station or HYVA dealer. Tighten these couplings.
Tipping valve does not function (air pressure present).	Tipping valve fault.	Contact your service station or Hyva dealer.
Cylinder extends too slow.	Air pressure too low. Faulty pump. Faulty relief valve.	Check pneumatic pressure (min. 6 bar, 87 PSI). Contact your service station or Hyva dealer.
Cylinder does not extend smoothly (after 3 or 4 tips).	Oil level in tank too low. Air in the oil. Faulty pump.	Fill oil tank Contact your service station or Hyva dealer.
Cylinder does not fully extend.	Oil level in tank too low. Oil circulating via the relief valve, (excess or uneven load). Faulty relief valve.	Fill oil tank. Manually remove or redistribute the payload. Contact your service station or Hyva dealer.
Body lowers when the clutch is pressed.	The non return valve in tipper valve not functioning (or fitted).	Contact your service station or Hyva dealer.
The cylinder extends when the air control is in "lower".	Pneumatic hoses are reversed at the tipping valve or air control.	Contact your service station or Hyva dealer.
The cylinder does not lower properly (or too fast/slow).	Return filter (oil) is blocked. The lowering speed adjustment is too low or too high. 'Knock-off' valve not functioning. Air control not functioning. Oil is too heavy. Oil is too thick.	Change oil filter. Contact your service station or Hyva dealer.
Air control fails suddenly.	An air hose has broken. The air-control is blocked by dirt. The knock-off is not functioning.	Contact your service station or Hyva dealer.

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Service points

An overview of main (or national) service agents to contact in the event your Hyva equipment does not perform as you expect..

Even if you are considerable distance from the agents listed, you should still contact your nearest agent. Most agents maintain their own networks and can advise you of the most convenient for your work.

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6. Service points

Hyva International B.V.

Ondernemingsweg 1
2404 HM Alphen aan den Rijn
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Hyva Nederland B.V.

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Telefax +31 (0)172 - 41 38 97

Hyva France S.A.

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France
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Télécopieur +33 (0)3 44 41 72 00

Hyva Belgium N.V. - S.A.

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