

**686  
and 688  
Rotary  
Harvesting Units**

**John Deere Werke Zweibrücken  
TM4585 (08NOV01)**

**North American Version**

**LITHO IN U.S.A.  
ENGLISCH**

# Introduction

## FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.



This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

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*All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.*

TM4585-19-08NOV01

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# Section 05 Safety

## Contents

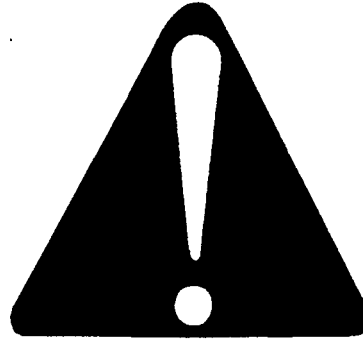
Page

Group 05—Safety Information . . . . . 05-05-1

## RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



DX,ALERT -19-29SEP98

T81389 -UN-07DEC88

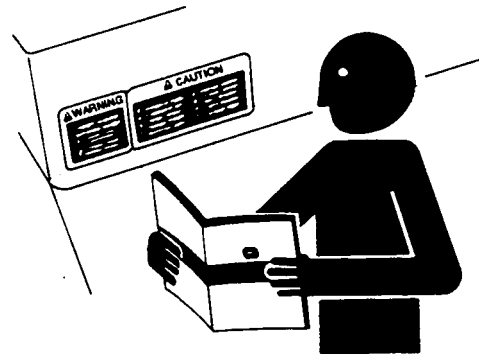
## FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.



DX,READ -19-03MAR93

TS201 -UN-23AUG88

## UNDERSTAND SIGNAL WORDS

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



DX,SIGNAL -19-03MAR93

TS187 -19-30SEP88

## OBSERVE ROAD TRAFFIC REGULATIONS

Always observe local road traffic regulations when using public roads.



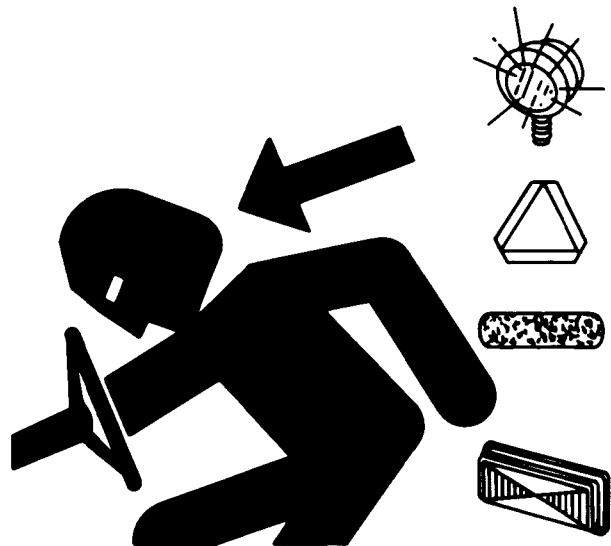
H28930 -JUN-30JUN89

FX,ROAD -19-01MAY91

## USE SAFETY LIGHTS AND DEVICES

Prevent collisions between other road users, slow moving tractors with attachments or towed equipment and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use turn signal lights.

Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost. An implement safety lighting kit is available from your John Deere dealer.



TS951 -JUN-12APR90

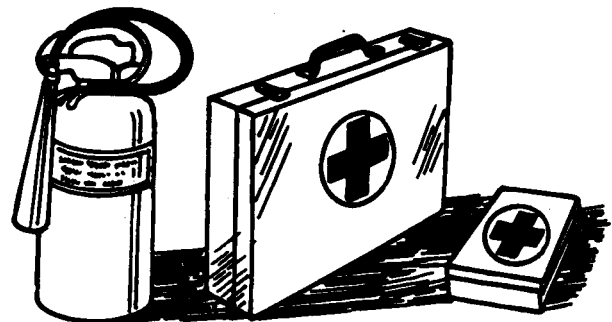
DX,FLASH -19-07JUL99

## PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -JUN-23AUG88

DX,FIRE2 -19-03MAR93

### STAY CLEAR OF HARVESTING UNIT

Due to their function, the cutting rotors as well as gathering, cross and feed drums cannot all be completely shielded. Stay clear of these moving elements during operation. Always disengage main clutch, shut off engine and remove key before servicing or unclogging harvesting unit.



ZX,CUT688 -19-10FEB98

ES118704 -JUN-21MAR95

### KEEP HANDS AWAY FROM KNIVES

Never attempt to clear obstructions in front of or on harvesting unit unless main clutch is disengaged, engine shut off and key removed.

Everyone must be clear of the forage harvester before starting the engine.



FX,KNIFE -19-21DEC90

TS254 -JUN-23AUG88

### STORE ATTACHMENTS SAFELY

Stored attachments such as dual wheels, cage wheels, and loaders can fall and cause serious injury or death.

Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.



DX,STORE -19-03MAR93

TS219 -JUN-23AUG88

### REPLACE SAFETY SIGNS

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



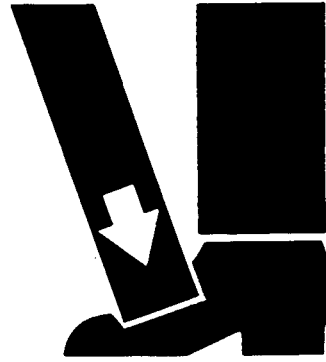
DX,SIGNS1 -19-04JUN90

TS201 -JUN-23AUG88

## USE PROPER LIFTING EQUIPMENT

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



DX,LIFT -19-04JUN90

TS226 -JUN-23AUG88

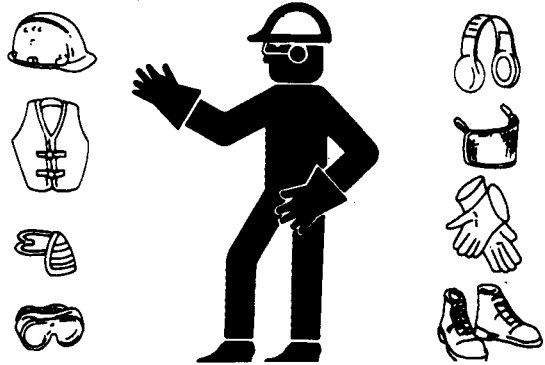
## WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



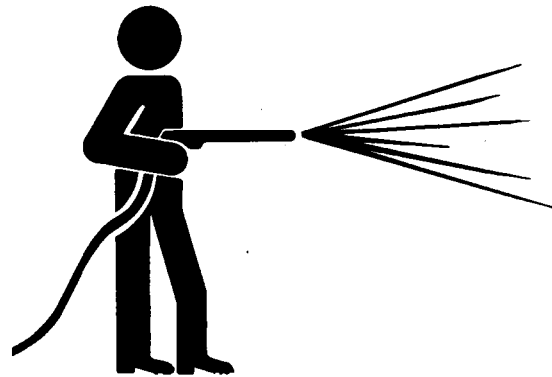
DX,WEAR -19-10SEP90

TS206 -JUN-23AUG88

## WORK IN CLEAN AREA

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



DX,CLEAN -19-04JUN90

T6642EJ -JUN-18OCT88

## AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.



DX,TORCH -19-03MAR93

TS953 -JUN-15MAY90

## PRACTICE SAFE MAINTENANCE

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.



DX,SERV -19-04FEB99

TS218 -JUN-23AUG88

## USE PROPER TOOLS

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.



-JUN-08NOV89  
TS779

DX,REPAIR -19-04JUN90

## STAY CLEAR OF ROTATING DRIVELINES

Entanglement in rotating driveline can cause serious injury or death.

Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.

Wear close fitting clothing. Stop the engine and be sure PTO driveline is stopped before making adjustments, connections, or cleaning out PTO driven equipment.



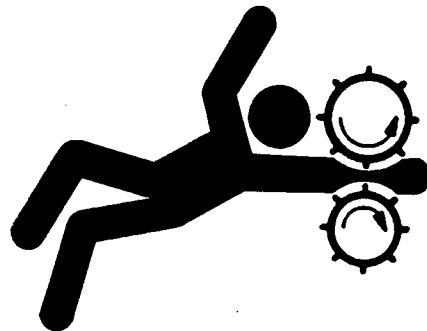
-JUN-22AUG95  
TS1644

DX,PTO -19-12SEP95

## SERVICE MACHINES SAFELY

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



-JUN-23AUG88  
TS228

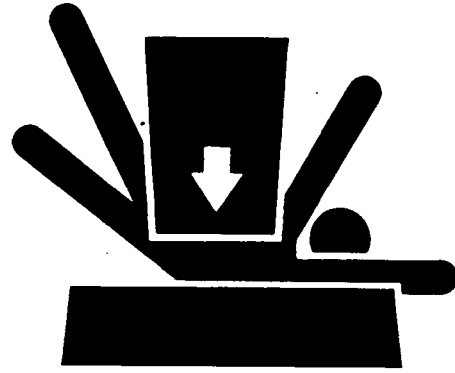
DX,LOOSE -19-04JUN90

## SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment. If left in a raised position, hydraulically supported devices can settle or leak down.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

When implements or attachments are used with a tractor, always follow safety precautions listed in the implement operator's manual.



-JUN-23AUG88  
TS229

DX,LOWER -19-04FEB99

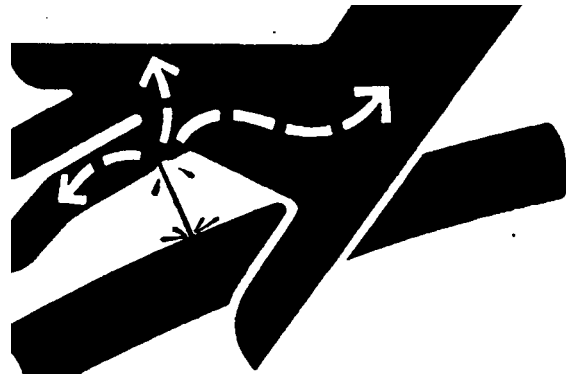
## AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

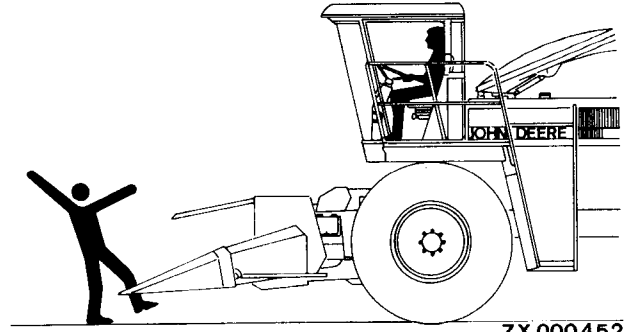


-JUN-23AUG88  
X9811

DX,FLUID -19-03MAR93

## TRANSPORT WITH HARVESTING UNIT INSTALLED

Before driving forage harvester on public roads, harvesting unit must be raised and secured in this position. It must not, however, obstruct operator's view of the road. Remove crop dividers (if equipped) and install protective cover.



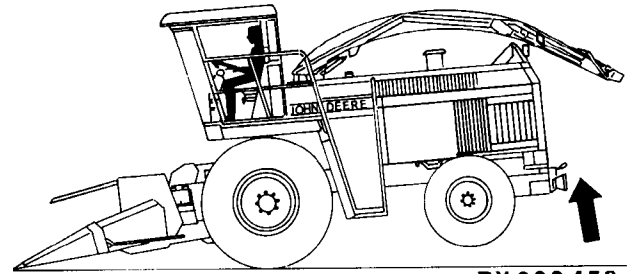
ZX 000 452

ZX,HEADER -19-04DEC90

-UN-03APR95  
ZX000452

## BALLASTING FOR SAFE GROUND CONTACT

Operating, steering and braking performance of forage harvester can be considerably affected by attachments which alter the center of gravity of the machine. To maintain safe ground contact, ballast the harvester at the rear end as necessary. Observe the maximum permissible axle loads and total weights.



ZX 000 453

ZX,WEIGHT -19-02OCT91

-UN-03APR95  
ZX000453

## REMOVE PAINT BEFORE WELDING OR HEATING

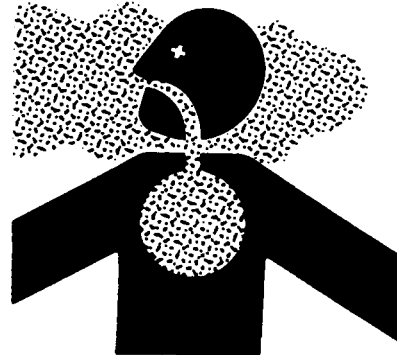
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



DX,PAINT -19-03MAR93

-UN-23AUG88  
TS220

## DISPOSE OF WASTE PROPERLY

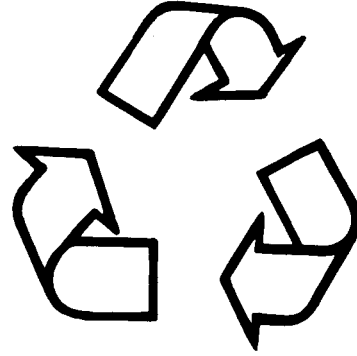
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



TS1133 -JUN-26NOV90

DX,DRAIN -19-03MAR93

## LIVE WITH SAFETY

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.



TS231 -19-07OCT88

DX,LIVE -19-15APR98

# Section 10 General

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686 AND 688 HARVESTING UNITS



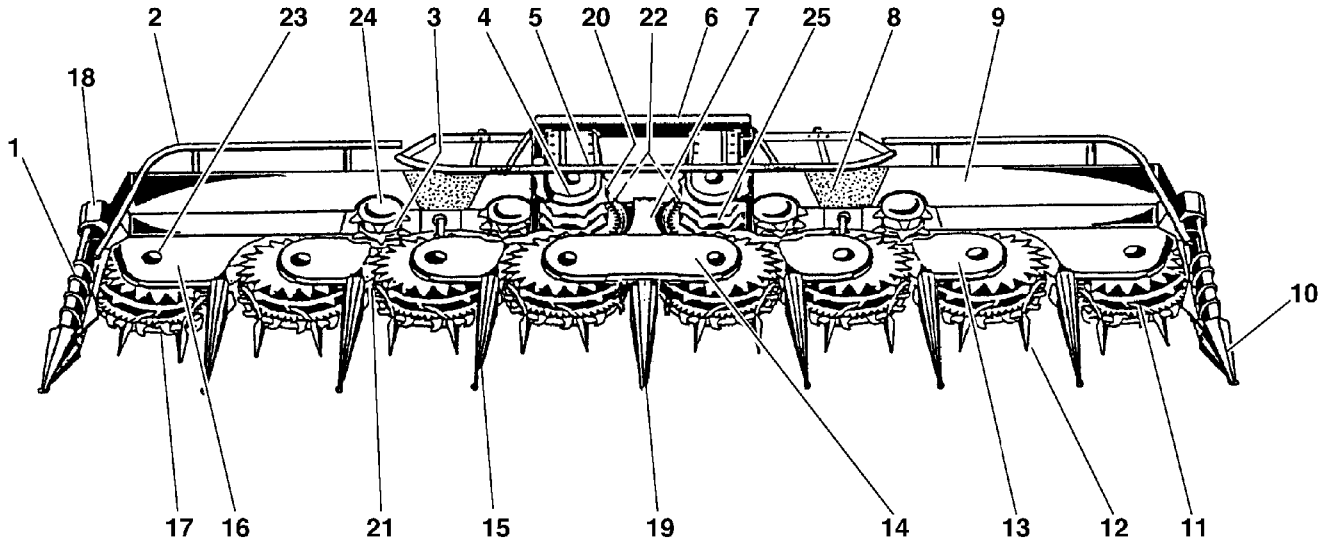
686 harvesting unit



688 harvesting unit

ZX.TM686R013520-19-01MAR99

### COMPONENT LOCATION (PART 1)



ZX014361

688 harvesting unit shown

ZX.TM688R011261-19-01MAR99

ZX014361 -JUN-02MAY98

**Rotary Harvesting Unit**

- 1-Rotating divider
- 2-Feed bar
- 3-Cross feed drums
- 4-Feed drums
- 5-Feed bar (central)
- 6-Mounting frame
- 7-Guide plate between feed drums
- 8-Rubber flap
- 9-Feed plate
- 10-Outer stalk lifters
- 11-Gathering drums (left-or right turning)
- 12-Small dividers (outside)
- 13-Inner covering plate
- 14-Central covering plate
- 15-Large dividers
- 16-Outer covering plate
- 17-Cutting rotor (rotary cutting blade)
- 18-Rotating divider drive
- 19-Center divider
- 20-Scrapers of feed drums
- 21-Scrapers of gathering drums

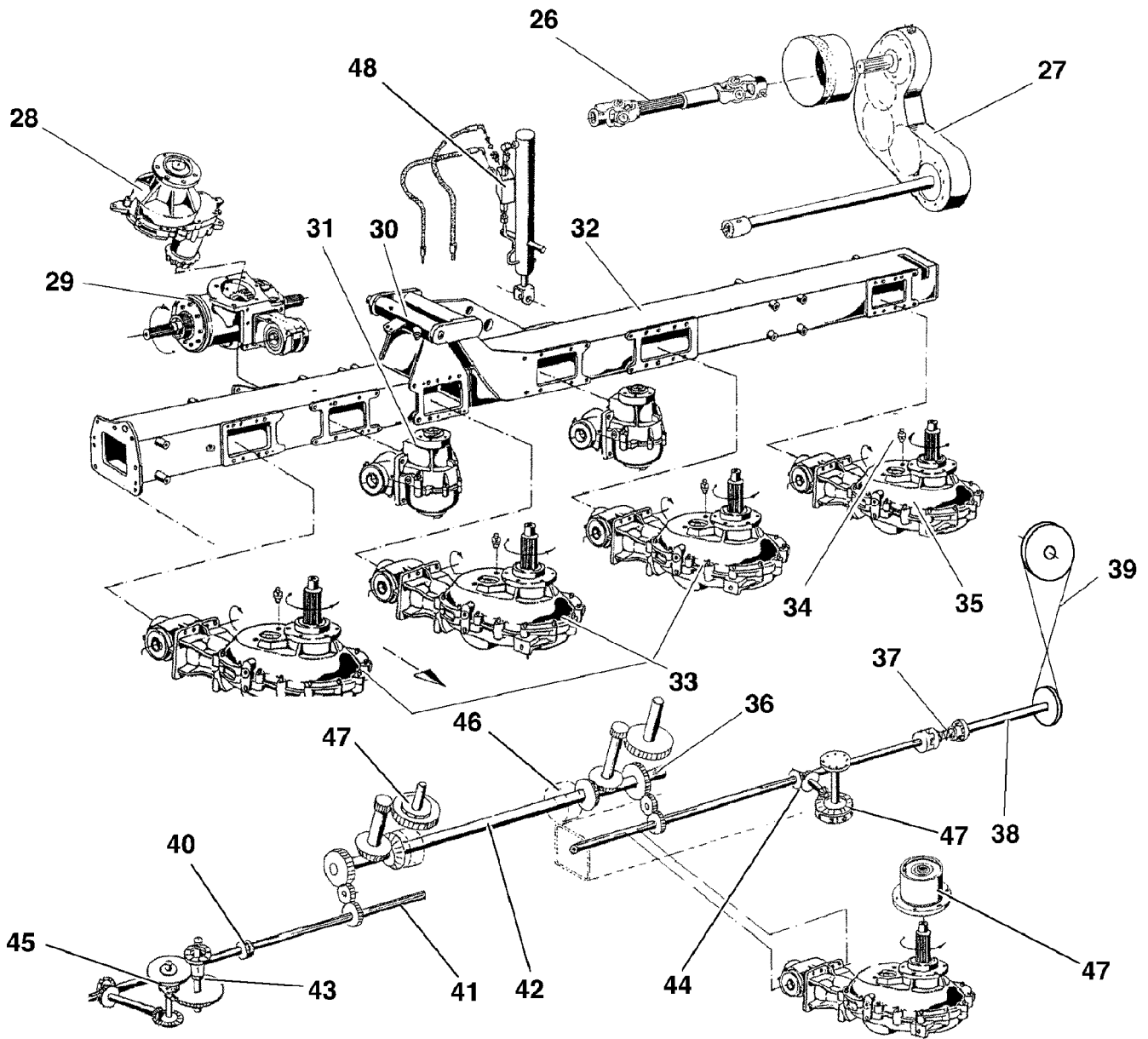
**Clutches**

- 22-Friction clutches of main drive
- 23-Radial-pin clutch of gathering drums
- 24-Radial-pin clutch of cross feed drums
- 25-Radial-pin clutch of feed drums

*Continued overleaf*

ZX, TM686R013521-19-01MAR99

### COMPONENT LOCATION (PART 2)



ZX014362

688 harvesting unit shown

ZX\_TM688R011263-19-01MAR99

ZX014362 -JUN-02MAY98

**Main Transmission (U-Joint Shaft)**

26-Main transmission (U-joint shaft)

**Frame/Gear Case**

- 27-L-gear case
- 28-Feed drum gear case
- 29-Feed drum transmission (left-right)
- 30-Hinge
- 31-Cross feed drum gear case
  - (4 on 688, 2 on 686)
- 32-Foldable frame
- 33-Gathering drum gear case (left turning)
  - (4 on 688, 3 on 686)
- 34-Breather
- 35-Gathering drum gear case (right turning)
  - (4 on 688, 3 on 686)
- 36-Main drive shaft
- 37-Spring (hinges)
- 38-Hexagonal shaft outer side
- 39-V-belt for rotating crop divider (downed crops)
- 40-Claw-type clutch
- 41-Hexagonal shaft inner side
- 42-Connecting shaft for main drive
- 43-Spur gear angle drive
- 44-Bevel gear drive

**Friction Disk Brake Mechanisms**

45-Brake mechanism for gathering drum

**Clutches**

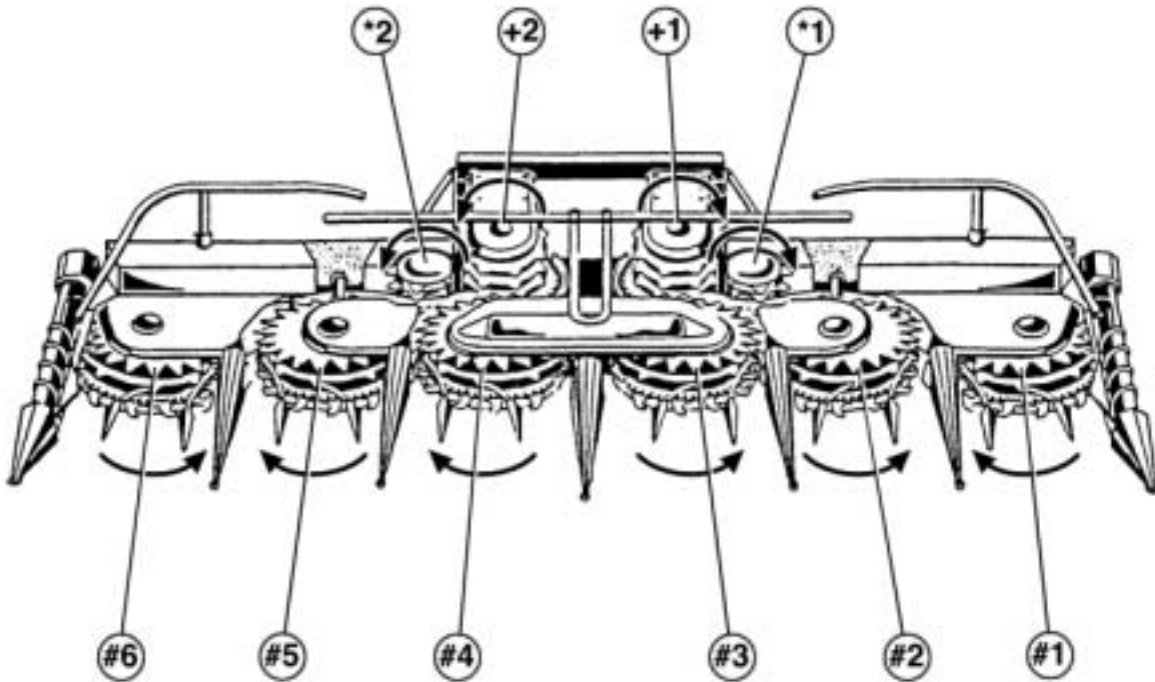
- 46-Friction clutch
- 47-Radial-pin clutch

**Hydraulics**

48-Hydraulic cylinder with safety valve

ZX.TM686R013522-19-01MAR99

## 686 HARVESTING UNIT DRUM NUMBERING



ZX017148

**IMPORTANT:** This harvesting unit drum numbering will be used as a reference throughout this Technical Manual.

### Gathering Drums (#):

- (#1)-Gathering drum No. 1-Right turning
- (#2)-Gathering drum No. 2-Left turning
- (#3)-Gathering drum No. 3-Left turning
- (#4)-Gathering drum No. 4-Right turning
- (#5)-Gathering drum No. 5-Right turning
- (#6)-Gathering drum No. 6-Left turning

Right turning means: Clockwise

Left turning means: Anti-clockwise

### Cross Feed Drums (\*):

- (\*1)-Cross feed drum No. 1-Right turning
- (\*2)-Cross feed drum No. 2-Left turning

### Feed Drums (+):

- (+1)-Feed drum No. 1-Right turning
- (+2)-Feed drum No. 2-Left turning

*NOTE: Numbers shown above must not be used when ordering drum replacement parts. Always refer to the relevant parts catalog.*

ZX.TM686R013524-19-01MAR99



**Suggest:**

**If the above button click is invalid.**

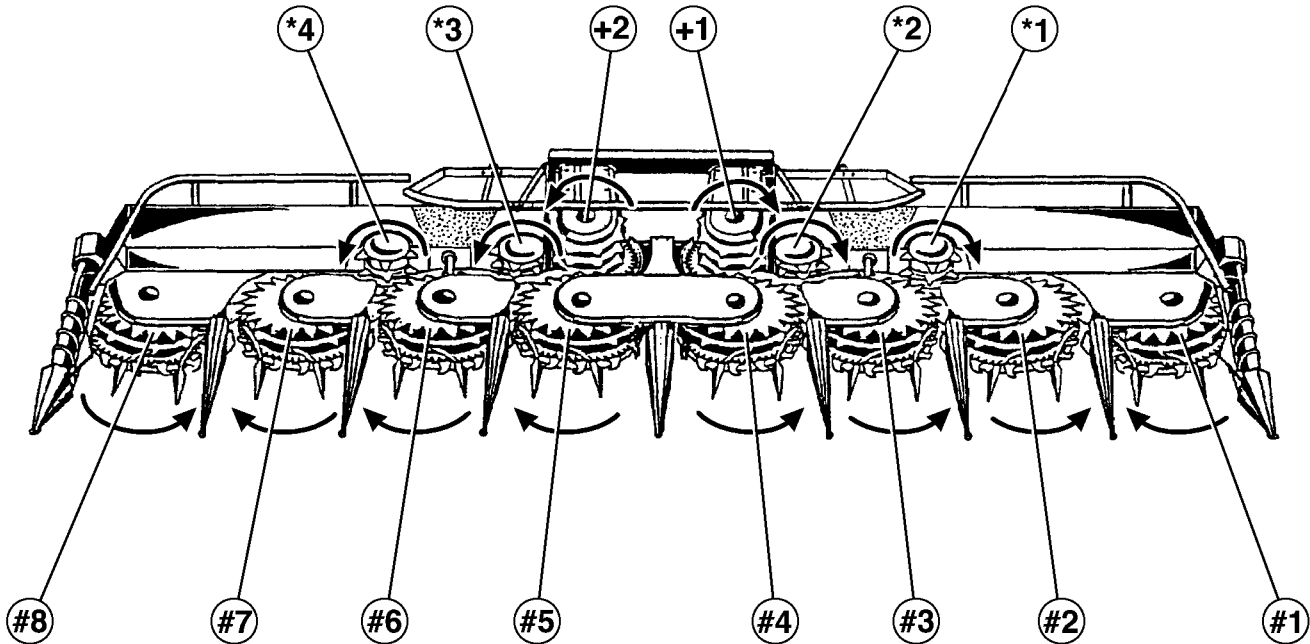
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## 688 HARVESTING UNIT DRUM NUMBERING



ZX014405

**IMPORTANT:** This harvesting unit drum numbering will be used as a reference throughout this Technical Manual.

### Gathering Drums (#):

- (#1)-Gathering drum No. 1-Right turning
- (#2)-Gathering drum No. 2-Left turning
- (#3)-Gathering drum No. 3-Left turning
- (#4)-Gathering drum No. 4-Left turning
- (#5)-Gathering drum No. 5-Right turning
- (#6)-Gathering drum No. 6-Right turning
- (#7)-Gathering drum No. 7-Right turning
- (#8)-Gathering drum No. 8-Left turning

Right turning means: Clockwise

Left turning means: Anti-clockwise

### Cross Feed Drums (\*):

- (\*1)-Cross feed drum No. 1-Right turning
- (\*2)-Cross feed drum No. 2-Right turning
- (\*3)-Cross feed drum No. 3-Left turning
- (\*4)-Cross feed drum No. 4-Left turning

### Feed Drums (+):

- (+1)-Feed drum No. 1-Right turning
- (+2)-Feed drum No. 2-Left turning

*NOTE: Numbers shown above must not be used when ordering drum replacement parts. Always refer to the relevant parts catalog.*

ZX014405 -JUN-19MAY98

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