



AXIAL-FLOW® COMBINE PRODUCTIVITY GUIDE

AXIAL-FLOW 5140 • AXIAL-FLOW 6140 • AXIAL-FLOW 7140
CASE IH MID-RANGE COMBINES



CASE IH
AGRICULTURE

GENERAL INFORMATION

INTRODUCTION

With over 38 years of rotary combine industry leadership, Case IH continues to provide superior combine performance and excellence. Case IH has developed the most efficient, reliable and productive harvesting machines throughout the world – combines with which all other combines are compared and none are equal.

Now, in 2015, the 140 Series Axial-Flow Combines continue bringing new innovation to the Axial-Flow lineup. Case IH adheres to the core principles that were established for the Axial-Flow combines 38 years ago, and have been the benchmarks in all subsequent combine design.

- Simplicity
- Grain Savings
- Matched Capacity
- Grain Quality
- Crop Adaptability
- Resale Value

Our goal is to meet or exceed our customer’s expectations and deliver unmatched productivity, reliability and performance. We will not abandon these principles, just as Case IH does not abandoned its commitment to keeping customers number one.

The AFX rotor delivers the most crop and harvesting flexibility of any threshing/separating system. Gentle grain-on-grain threshing, and the flexibility of multiple rotor, concave and separator grate configurations makes the Axial-Flow at home in the corn and beans of the Midwest, sunflowers, cereal and oil grains, rice and hard-threshing grass seed.

The 140 Series combines use the refined “re-timed” rotor, with enhanced throughput in green, tough operating conditions.

As the years have gone by, innovations like the AFX rotor, Cross-Flow cleaning fan, Cross-Flow cleaning system, AFS precision farming technology, “smart” controls for headers, operator environment, engines, and a host of other systems have been instrumental in Axial-Flow leadership. When Case IH has recognized the opportunity to improve, we have taken up the challenge, and continued to give our customers more with each new model.

Our 5140 and 6140 are our offering for Class 5 and Class 6 respectively. The 7140 offers Case IH customers a second choice in Class 7 power and productivity. This family of Axial-Flow combines brings more power and capacity to the field than their predecessors.

Case IH	Rated HP	Maximum HP	Power Rise HP	Engine Size	Grain Tank Capacity (Bu.)
5140	265	308	43	FPT 6.7L	250
6140	348	411	63	FPT 8.7L	300
7140	375	442	67	FPT 8.7L	300

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These combines have the horsepower and the muscle to operate grain heads up to 36 feet, draper headers to 40 feet, and 12 row corn heads in the best yielding crops and toughest conditions. High yields will not bog down your combine productivity with the tank capacity to unload up to 3.2 bushel per second of grain.

In addition to more power and capacity, we will introduce you to numerous productivity-enhancing features of the 140 Series. This all adds up to greater value for your combine dollar, and more profit for your farming operation.

AXIAL-FLOW 5140 COMBINE



AXIAL-FLOW 6140 AND 7140 COMBINE



ENHANCED PRODUCTIVITY FEATURES

FEEDER

The 140 Series feeder faceplate is increased in size to allow header compatibility with larger 240 Series Axial-Flow combines.

- The feeder width is 45.75 inches by 54.5 inches long, with three-strand/two-slat serrated feeder chain to ensure positive crop feeding (see figure 3.1)
- Feeder chain slat serrations are rolled, not stamped, for optimum material flow without sacrificing grain quality

A spring-loaded feeder chain tensioning system maximizes feeder chain tension accuracy (see figure 3.2).

- Greater convenience, ease of adjustment for the operator
- 5140 uses two 2.95-inch feeder lift cylinders and the 6140 and 7140 uses two 3.15-inch feeder lift cylinders
- 3.35-inch cylinders can be installed on 6140 and 7140 for larger header applications, such as draper headers over 35 feet



Figure 3.1



Figure 3.2

A simple, reliable and field proven belt drive system drives both the header and feeder.

The 140 Series feeder reverser system (see figure 3.3).

- High performance, electro-hydraulic reverser with positive gear-to-gear engagement
- Only engages when reversing is required
- Lift feeder clutch switch and pull to rear to engage reverser

Optional two-speed header drive.

- Provides improved header-to-ground speed matching
- Select speed with in-cab shift lever

Same single-lever header latching system as used on the 7240, 8140, 9240 combines (see figure 3.4).

- Case IH hydraulic multi-coupler enables fast and easy header hydraulic hook-ups
- Single lever header latching system
- Single point electrical connector



Figure 3.3

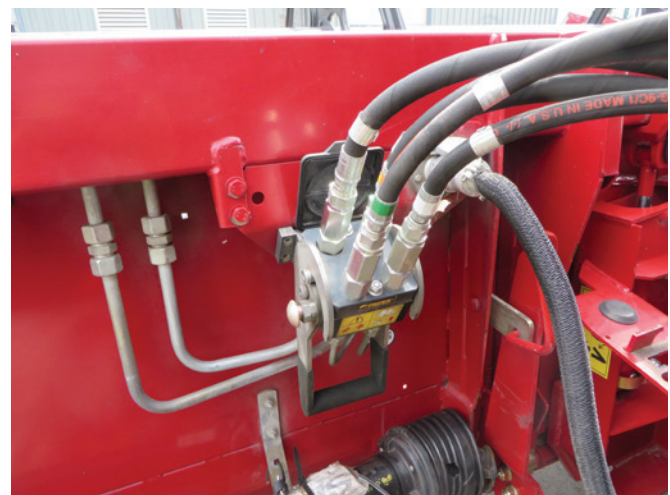


Figure 3.4

ENHANCED PRODUCTIVITY FEATURES

THRESHING/SEPARATING ENHANCEMENTS

CONCAVES

Seemingly sometime during the harvest, concave section had to be changed out which can create a challenge on the prior combines, mainly because one concave section weighed 78 pounds. For model year 2016, the single concave section of prior (see figure 4.1) will become two individual concaves, which equates to a total of six concaves (three sections on the prior combine) with an individual weight of 38 pounds each (see figure 4.2). That is a big improvement and does make moving and interchange of the concave section much easier when fine tuning for the best threshing performance.

The second change in the concave area is the in-feed ramp has become a bolt on individual component (see figure 4.3) and is not welded to a specific front concave. Once more, making it easier to move and interchange the concave section (see figure 4.4) within the rotor cage area to fine tune for the best threshing performance.

NOTE: Narrow concaves will retrofit [with minor rework] to all 30 in. rotor Axial-Flow combines back to the 1680.

NOTE: The split concaves can be inter-changed to help with the fine tuning to reduce grain loss and grain damage.

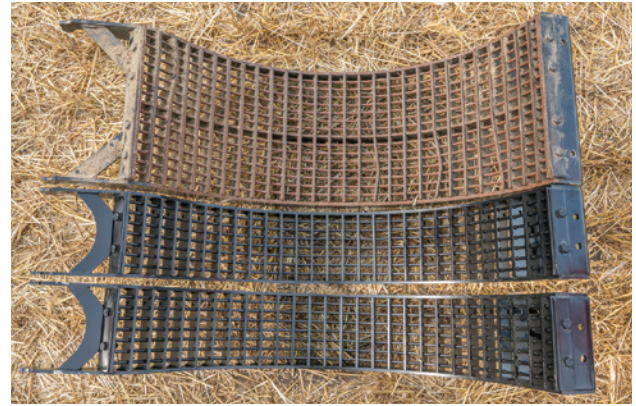


Figure 4.1

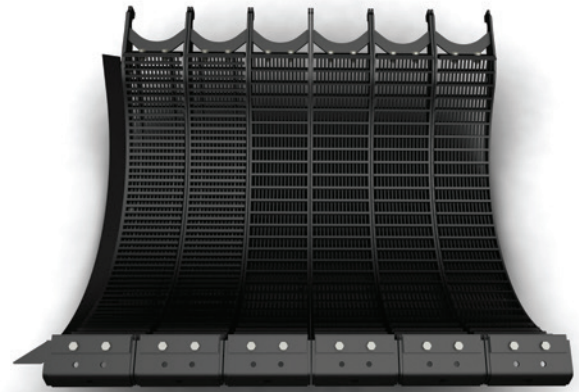


Figure 4.2

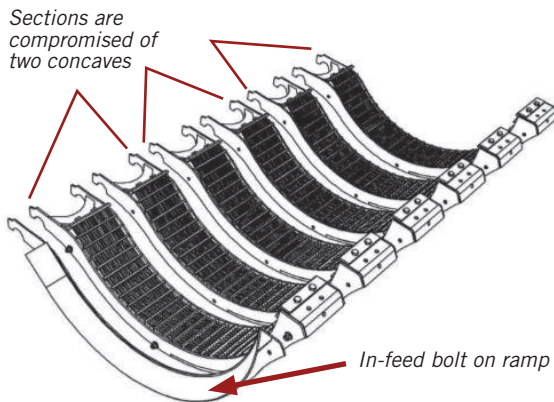


Figure 4.3



Figure 4.4

ENHANCED PRODUCTIVITY FEATURES

CLEANING ENHANCEMENTS

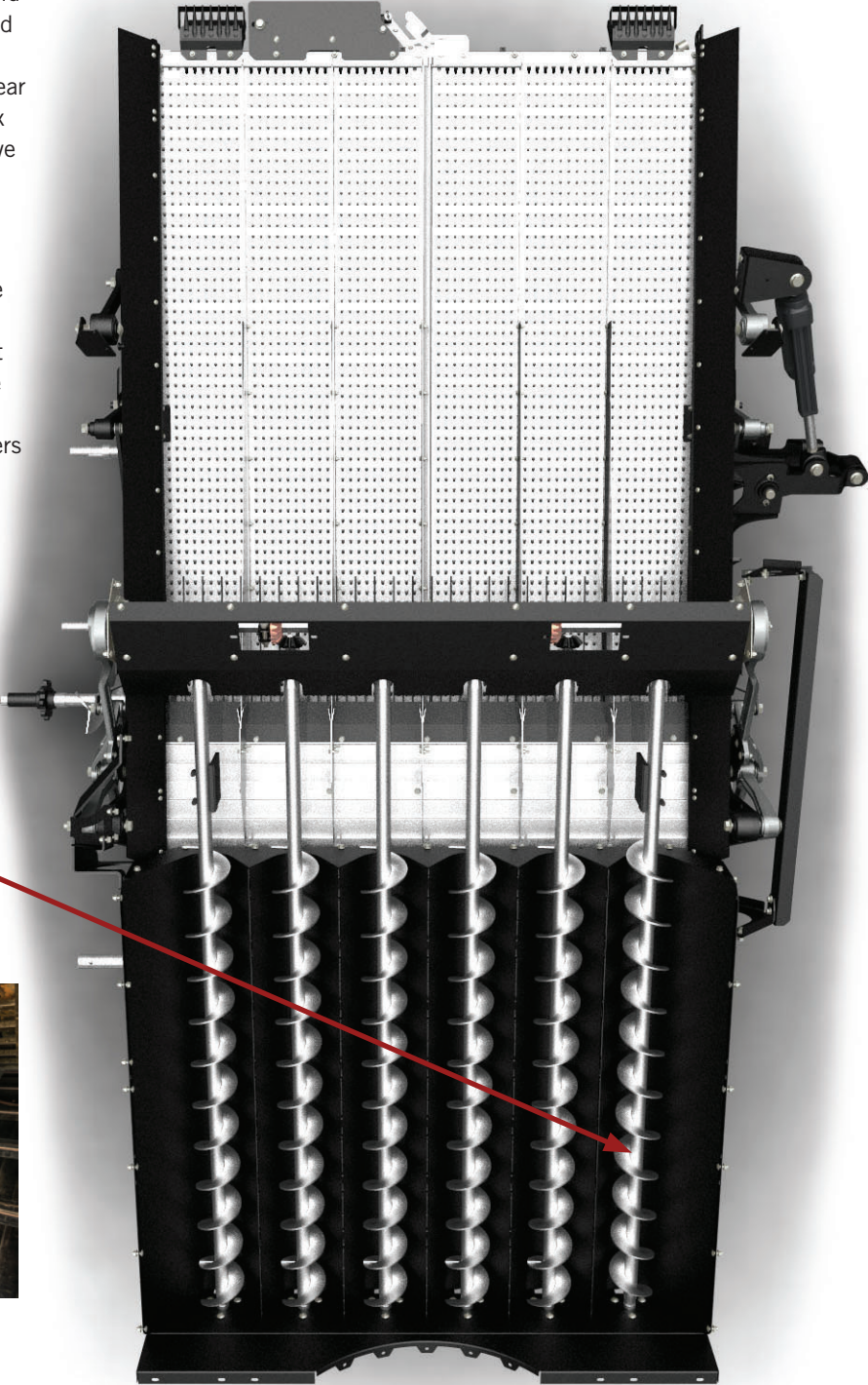
AUGER BED

With the yield of many crops on the rise and customers wanting to get the crop off the field quicker, which means traveling at higher field speeds, the combine cleaning system has to be able to handle the capacity. The model year 2016 production machines will acquire a six auger bed system. The prior system was a five auger bed system. The six auger system will rotate at 320 rpm compared to the prior five auger system which rotated at 270 rpm.

The six auger's are the same diameter as the prior five auger's, but the six auger system has a different trough profile. This will result in a higher capacity system with more active conveying. The left-hand auger operates in the opposite direction of the rest of the augers providing a constant filling of the cleaning area. The narrower beds will be able to convey a higher capacity of crop easily.

Model Year 2016 – six auger bed system

Left-hand auger – operators in the opposite direction of the rest of the augers within the bed



Front of combine

ENHANCED PRODUCTIVITY FEATURES

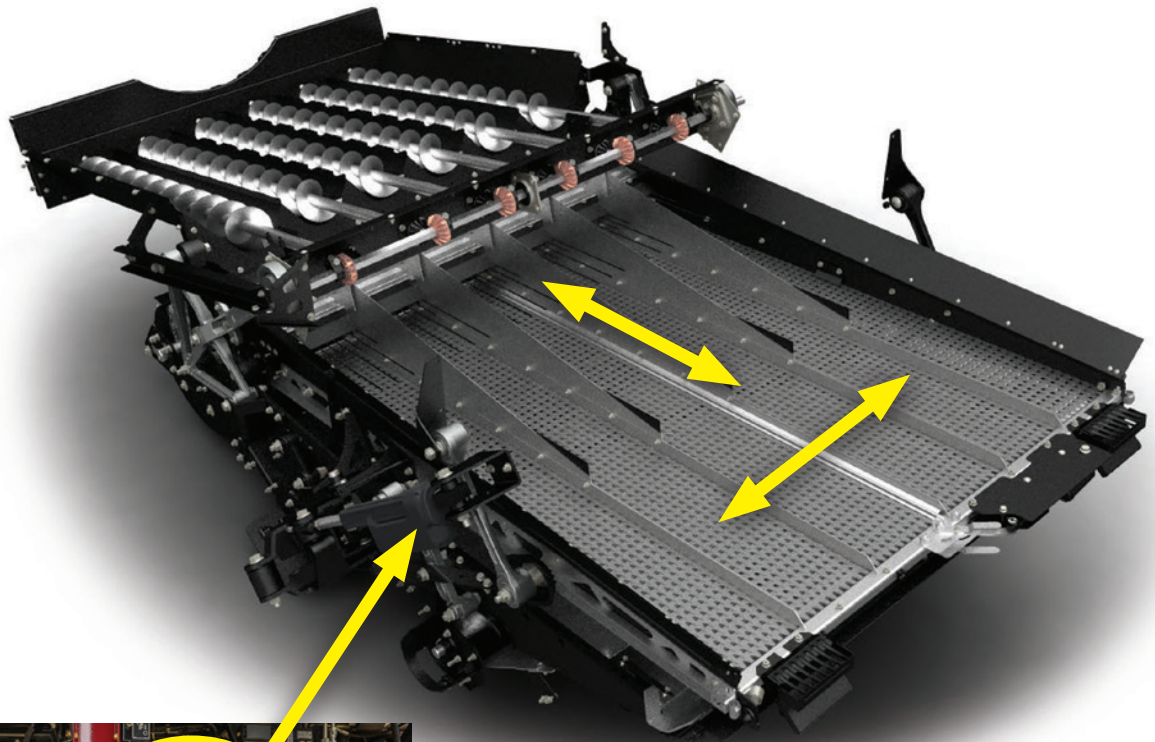
CLEANING ENHANCEMENTS

CROSS FLOW™ CLEANING SYSTEM

When combining on side-hills, the crop will flow to the downhill side due to gravity. This will cause an overload of the cleaning system and increased grain loss. In model year 2016, the 5140, 6140 and 7140 combines will have as standard equipment a **Cross Flow cleaning system**. This system will provide the necessary compensation when combining on side-hills. The Cross Flow system will help to prevent the one-sided sieve overload by side strokes on the upper sieve moving the crop onward to the clean grain auger and then to the tank.

The Cross Flow system detects the side-hill angle by a sensor located in the cab. The steeper the side-hill, the more the upper sieve strokes towards the uphill side. The Cross Flow system is controlled by an electric actuator and the system compensates for side-hill slope. This system can increase the customers productivity by approximately 20% depending on the variance in the crop conditions or yield of the crop based on the degree of slope of the land or side-hill.

NOTE: Fixed cleaning systems are available on all 140 series combines as a deduct code.



ENHANCED PRODUCTIVITY FEATURES

GRAIN HANDLING ENHANCEMENTS

CLEAN GRAIN CROSS AUGER HAS A TOP COVER

For model year 2016 production combines, the clean grain cross auger has a top cover. This cover will only be on the combines equipped with the Cross-Flow Cleaning System only.

- The top cover will provide a more evenly spread of grain across the length of the auger and prevent one side overload of the auger.
- A second benefit of the cover is it will allow a much higher capacity of grain to be transferred by the auger especially in side-hill conditions.
- A third benefit is the cover will help prevent grain from falling directly on the auger flighting and grain being forced or moving forward toward the Cross-Flow fan.

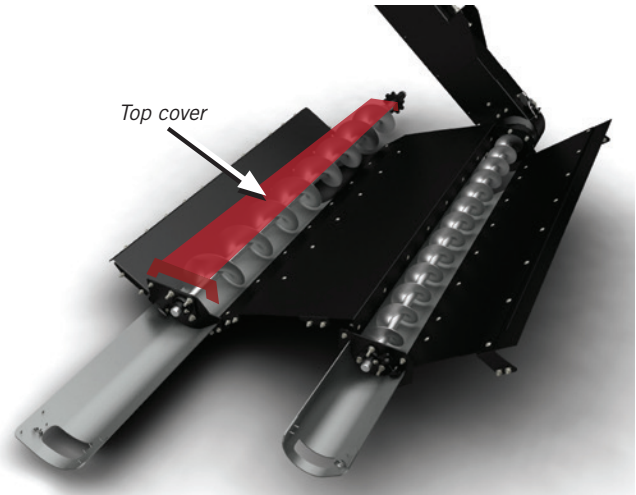


Figure 7.1

CLEAN OUT TROUGHS

Clean out troughs provides the ability to clean out the bottom of the clean grain and tailings augers by simply sliding out the cleaning troughs located on the left hand side of the combine (see figure 7.2). On the prior models to clean out the troughs, a person had to crawl under the combine to clean them out. The clean out troughs will be standard on model year 2016 production.



Figure 7.2

ENHANCED PRODUCTIVITY FEATURES

CLEANING SYSTEM

Expansive Axial-Flow 140 Series cleaning system assures maximum capacity in each class size (see figure 8.1).

- 5140 – 7,947 sq. in. (5.1 m²)
- 6140 – 7,947 sq. in. (5.1 m²)
- 7140 – 7,947 sq. in. (5.1 m²)

An optional in-cab sieve adjust feature is available on all models

- Compatible with Automatic Crop Settings feature
- Also includes ground level adjustment switch bank
- New lower sieve viewing doors

CLEAN GRAIN SYSTEM AND GRAIN TANK

Clean Grain elevator system redesigned in several key areas for increased elevator capacity:

- Clean grain cross auger diameter increased 1/2 inch
- Redesigned clean grain elevator inlet and inclined delivery auger to handle up to 20% more grain depending on crop conditions
- Clean grain elevator capacity rated at 5,000 bu./hr. (a 20% increase over 2014 and prior models)
- Unloading auger tube lengths (up to 24 feet) with added component material thickness provide greater reach for larger headers. Also available as an option is the pivoting spout
- Ground level chain adjustment
- All 140 Series have quick-foldable (no tools required!) grain tank extensions for transporting and storage
- Single lever bubble up auger folding design
- Optional electric folding grain tank extensions or covers controlled by in-cab switch in cab headliner. Closes completely to keep grain tank clean (see figure 8.2).

RESIDUE MANAGEMENT

All new residue management system with the spreaders being hydraulically driven from with in-cab adjustable on the go spreader control (see figure 8.3). The spreading available as:

- Dual Disc spreader
- Dual Disc with windrow
- Active Dual disc with windrow

The spreaders have a single point quick latch and lock out position placing the spreaders in a servicing position (see figure 8.4). Easy, no-tools required.



Figure 8.1



Figure 8.2



Figure 8.3



Figure 8.4

ENHANCED PRODUCTIVITY FEATURES

COOLING SYSTEM AIR SCREEN

Stationary air screen uses a hydraulically-powered revolving evacuation wand (see figure 9.1).

- Wand rotates at 35 rpm
- Material is positively pulled away from the stationary screen and deposited down and to the back of the combine
- Optional internal brush and an engine air screen guard

ROTOR DRIVE

Several improvements to the rotor drive assure reliable performance under high-power, demanding conditions (see figure 9.2).

- 5140 uses the same torque sensing belt width and 24° ramp angle as the 2588
- 6140 and 7140 use a wider 3-inch belt and enhanced 30° sheave ramp angle
- Improves horsepower transfer to the rotor gearbox

Heavy-duty three-speed rotor drive gear case

6140 and 7140 torque sensing units have additional features:

- Shaft size increased
- Bushing width increase
- Cam followers now have “captured” slides instead of rollers (5140 rotor drive system is same as 2588)

SERVICE ACCESS

Rear ladder has been re-designed for easier operation, strength and safer access to rear service deck (see figure 9.3).

- Access to engine service and check points such as fuel fill, air cleaner and fluid levels is easier
- Large swing-up side panels assist in easy maintenance and service of the combine
- Easy access to all sides of the machine
- Side panels have quick-release latch design and gas strut or truss rod to hold panels open
- Transport locking mechanism to keep side panels secured during road transportation
- Optional under panel service lights
- Radiator access door swings open wide for easy access to radiator and coolers



Figure 9.1

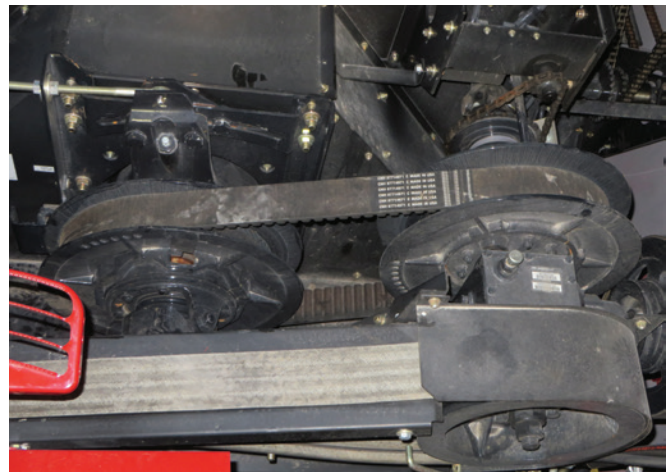


Figure 9.2



Figure 9.3

SAFETY

SAFETY

Harvest is the culmination of a full year of hard work and great investment. We know harvest “windows of opportunity” are not always as wide as you would like, with weather and crop conditions having the final say on when the crop gets into the bin. Make sure you spend every available day harvesting, not sidelined because poor judgment resulted in an accident. Observe all Safety Instructions in the combine Operator’s Manual, and these specific safety rules, for a safe and profitable harvest season.

- Be sure you re-read the Operator’s Manual to review all safety instructions.
- Be sure you read and understand the safety messages on all decals on your combine.
- Set the parking break, turn off the engine and remove the key before leaving the cab for cleaning, adjusting or lubricating.
- Solidly block the header up, or lower the feeder cylinder safety stand before working on or under the header (see figure 10.1).
- Never start or move the combine until you are sure everyone is out of the way.
- Never start the combine until the operator is familiar with all controls. This rule applies even if an experienced operator/trainer is present. Waiting until a quick decision is required to prevent an accident is not a good learning experience.
- Always place the transmission in neutral before attempting to start the engine.
- **DO NOT** allow riders (except during training).
- Never enter the grain tank or engine compartment when the engine is running.
- Many of the combine systems are electronically actuated. Unlike mechanical linkages that have a distinct and visible outcome when shifted or adjusted, activity such as unplugging an actuator may result in unexpected component movement. This accents the need to stop the combine engine before performing any service operation.
- Always stop the combine engine when refueling. **DO NOT** smoke while refilling the fuel tank.
- Keep ladders, steps and platforms free of trash and mud accumulations.



Figure 10.1

- Always keep all guards and shields in place.
- Drive at moderate speeds in the field and on the road. Keep the combine in gear when going down hill.
- Use extreme caution when removing the radiator cap to avoid contact with hot pressurized coolant. Allow the engine to cool before opening the system. If the cap must be removed while the system is hot, protect hands with a thick layer of rags to absorb spilled coolant. **DO NOT** wear gloves that can become soaked with hot fluid and will burn skin before gloves can be removed.
- Be sure everyone is clear of the area before unloading grain. Grain entering a truck, trailer or grain cart at over 3 bushels per second can trap an adult in seconds.
- Dress appropriately when performing service work. **DO NOT** wear loose clothing that can become entangled with the machine.
- When transporting on the highway, double-check bridge and overhead power line clearances. Remove and transport wide headers lengthwise to promote the safest possible conditions.
- Engage the “Road Mode” switch to prevent accidental engagement of combine functions while in transport
- Take frequent breaks to maintain maximum attention.
- Be alert. If you’re constantly alert, you’ll be in a better position to handle emergencies.

FIRE PREVENTION

Few things could ruin an otherwise rewarding harvest more than a devastating combine fire. Spending some time each day keeping the combine clean and well-maintained is the best way to preserve harvest as a good memory, instead of something you would rather forget.

By nature, mature crops are dry and dirty, and are sources of considerable debris that can accumulate on harvesting equipment. During busy harvest-time, operators may not like taking the time to clean the combine daily. **The most appropriate cleaning time is at the end of the day. Any debris that may be near a hot surface, or is possibly already a smoldering pile, is removed before it becomes a problem.**

- Attempts to perform only major, time-consuming cleanings on a less-frequent basis will likely require **MORE TIME** in the course of the harvest season, than to make a proactive commitment to devote a few minutes to cleaning on a daily basis. Cleaning time is also a good time to perform a basic visual machine inspection.

Modern, high-productivity combines are powerful machines, and along with power comes heat. Fire cannot start without heat, and fuel. You cannot remove the heat from the engine, hydraulics and other hard-working systems, but you can remove the fuel source by keeping your combine clean.

Specific areas where high operating temperatures suggest extra cleaning effort are:

- The engine, specifically the exhaust manifold, turbocharger, muffler and exhaust pipe
- Hydrostatic pump, motor and hydraulic lines and tubes
- Brakes
- Electrical components
- Engine drives and all moving parts
- Batteries and battery cables

Equip your combine with at least two fire extinguishers – one near the cab and another where it can be reached from the ground.

- It's a good idea to have at least one water-charged extinguisher on your combine. However, use a water extinguisher only on crop debris. Water applied to an oil fire may tend to spread the flames.
- Watch for fuel or hydraulic fluid leaks. Correct any fuel or hydraulic fluid leak immediately. Clean the machine thoroughly after any hydraulic fluid or fuel leaks or spills. Residual hydraulic fluid or fuel mixed with trash creates a very combustible mixture. This can make an accidental machine fire much harder to control.



**THINK SAFE.
WORK SAFE.
BE SAFE.**

CONTROLS AND OPERATION

CONTROLS AND OPERATION

The Case IH 140 Series Axial-Flow combines use an AFS Pro 700 interactive touchscreen display to select and monitor combine functions, make certain adjustments, save and use Automatic Crop Settings, and to manage Advanced Farming Systems functions (see figure 12.1).

The 140 Series Combine controls are located in the Multi-Function Hydro control handle, right hand console and the touchscreen display. Cab environment and lighting controls are located in the overhead cab console.

Refer to the “Controls, Instruments and Operation” section of the Operator’s Manual for complete details.

Multi-Function Handle (MFH) include (see figure 12.2a):

- Ground speed
- Reel position
- Header lift and tilt
- Unloader swing and engage
- Automatic header position resume
- Emergency “all-stop”

Shift button on the backside of the MFH provides additional functions (see figure 12.2b):

- “Shift” plus header tilt right-left adjusts the edge offset of AccuGuide® assisted steering when enabled. “Nudges” a set distance each time button is pushed to adjust all guidance lines.
- “Shift” plus reel fore-and-aft controls Draper header fore-and-tilt
- “Shift” plus header Resume applies headland mode by raising the header, disabling the acre counter, self-centering Terrain Tracker® and turning on the side “rowfinder” lights.
- Auto Guidance Engagement - A quick double click of the shift key will engage auto guidance, once it had been activated on the RH counsel. For the 130 and 140 series, the Auto Guidance engage is on the MultiFunction handle.

Example Headland Mode and Header Height Set Point in Corn Head Application

- Set Point 1 at normal header height for standing corn
 - Set Point 2 for down corn at one end of field
 - Header set points are saved using the 1-2 rocker switch. Set the header to the desired position, and press the desired “set” number. Use the “+”/“-” rocker to fine tune height while in each position.
1. Enter row, press “Resume” to activate Set Point 2 for down corn.



Figure 12.1



Figure 12.2a



Figure 12.2b

2. Press “Resume” when leaving down corn area, entering standing corn, operate at Set Point 1.

NOTE: While in the automatic mode, repeatedly touching the RESUME button will toggle between set points 1 and 2.
3. Press “Shift + Resume” to enter Headland Mode at end of field. Header raises, acre counter stops, tilt centers, etc.
4. Press “Resume” when re-entering row, header goes back to last active Set Point 1.
5. Press “Resume” when entering down corn at opposite end, header lowers to Set Point 2.
6. Press “Shift+Resume” to enter Headland Mode at end of field. Header raises, acre counter stops, tilt centers, etc.
7. Press “Resume” when re-entering row, header goes back to last active Set Point 2.

Continue operation in same way at each headland to automatically raise, then return header to last-used height setting when re-entering field.

CONTROLS AND OPERATION

CONTROLS AND OPERATION *continued*

Right hand console controls include (see figure 13.1):

- Engine speed
- Parking brake
- Header/feeder and separator on/off
- Sieve opening
- Concave clearance
- Rotor speed
- Fan speed
- Auto guidance engage switch
- Reel speed and automatic speed control offset
- Powered rear axle
- Header speed and automatic speed control offset
- Road mode
- Auto header set height



Figure 13.1

Productivity-enhancing features are adjusted using right hand console controls.

- Automatic header height set point control
- Automatic reel and feeder/header speed control
 - Considerable flexibility such as manual speed adjustment, or automatic speed adjustment offset relative to ground speed allow the operator to operate the combine at maximum efficiency when crop conditions require a wide range of ground speeds
- Review the Operator's Manual detailed instructions, or consult your Case IH dealer to make the most of these features
- Use the convenient Quick Start card included with the combine Operator's Manual (see figure 13.2)

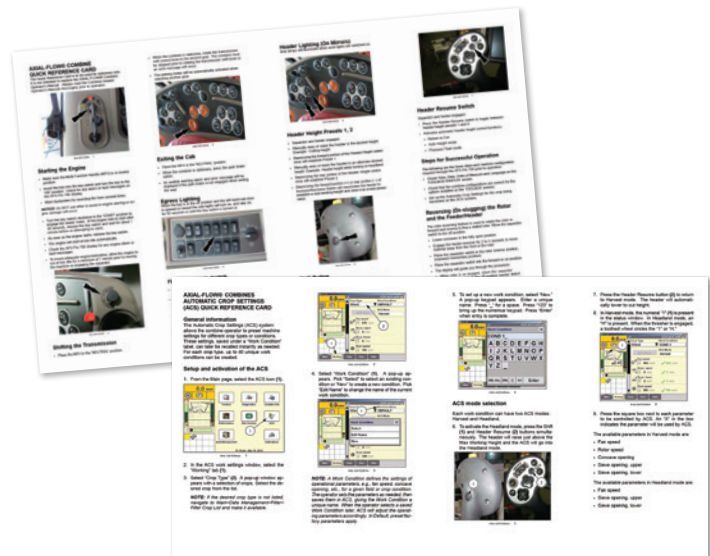


Figure 13.2

AFS PRO 700 DISPLAY

The enhanced color display of the AFS Pro 700 is divided into three functional areas, and provides more information with easy selection and navigation (see figure 13.3).

- Intuitive design allows new operators to quickly master the system
- Quick Start card included with the combine supplements the Operator's Manual, with most frequently used setup and operation information (see figure 13.2)



Figure 13.3

CONTROLS AND OPERATION

The status area is located on the left side of the display.

- The upper portion of the status area shows machine operating conditions
- The center portion of the status area shows engine coolant temperature bar graph on the left and fuel level on the right
- Center icons showing conditions of the reel, unloading auger, grain bin, head height, feeder, work lights, direction/caution lights, and beacon
- Current time and date displayed at bottom

The alarm status area is located at the bottom left side of the display.

- Danger alarms are shown in red and flash continuously as long as the alarm condition is present
- Caution alarms are shown in yellow

The right side of the display is used for vehicle and Precision Farming applications.

- The Run 1 screen is the default startup screen
- Press Main (Home) button to access the areas to customize the display and set the machine for the desired machine and field conditions and crops

A wide selection of information can be displayed in the AFS Pro 700 Display Area. Refer to the Operator's Manual or Quick Start Card to determine information that is needed for the specific operation. The following chart is a part of the Quick Start Card, and illustrates which display buttons are used to access setup, calibration, diagnostic and operation functions (see figure 14.1).

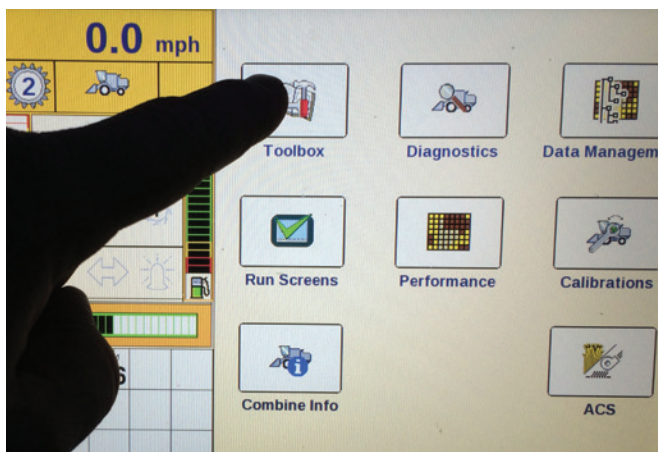


Figure 14.1

Toolbox

The following tabs are available:

- Display Setup
- Operator Setup
- Run screen layout
- Combine Setup
- Engine Setup
- Electrical Setup
- Hydraulic Setup
- Driveline Setup
- Header Setup 1 and 2
- Feeder Setup
- Threshing Setup
- Cleaning Setup
- Grain Setup
- Residue Setup
- Residue Distribution Control
- Service Setup
- GPS Setup (if installed)
- Precision Farming Setup
- Field Mark Setup
- Yield Setup (if installed)
- Navigation
- Row Guide
- Printer Settings
- Feature Activation
- Unload Setup

Performance

The following tabs are available:

- Profile Setup
- Summary Data 1
- Summary Data 2

Diagnostic

The following tabs are available:

- Version
- CAN Status
- Fault Archive
- Settings
- Graph
- Resource Status
- GPS Status
- Constellation Map (GPS2)
- GPS Receiver (RDI)
- Yield
- RowG
- Safety

Data Management

The following tabs are available:

- Import
- Filter List
- Delete
- Map Management
- Apply Calibration

Run Screens

The following tabs are available:

- Run 1 through Run 6

Combine Info

The following tabs are available:

- Combine Totals
- Engine Info
- Electrical Info
- Hydraulics Info
- Driveline Info
- Header Info
- Feeder Info
- Threshing Info
- Cleaning Info
- Grain Info
- Residue Info
- RPM Info
- Loss Info
- HVAC Info
- Unload Info

ACS (Automatic Crop Settings)

The following tabs are available:

- ACS work settings
- ACS crop settings
- ACS work summary
- ACS saved data

Calibrations

The following tabs are available:

- Calibration
- Header
- Tire Radius
- Multifunction Handle
- Concave Opening
- Upper Sieve
- Lower Sieve
- Self-leveling Sieve
- Groundspeed Hydrostat
- MFH Neutral Switch
- CVT Rotor
- CVT Feeder
- Rear Wheel Position
- Unload Spout
- Folding Unload Tube
- Chopper Counter Knives
- Distance Calibration
- Area Calibration
- Crop Setup
- Moisture Calibration
- Yield Calibration
- NAV Calibration

CONTROLS AND OPERATION

AUTOMATIC CLIMATE CONTROL

The Automatic Temperature Control system can be used in several ways to provide the operator with optimal cab environmental control (see figure 15.1).

- The climate control switch is pressed to turn on the automatic climate control function. A letter **(A)** is shown in the display when automatic climate control is enabled. If the switch is pressed a second time, the function is turned off.
- De-fog Mode Button – Pressing the de-fog mode button will:
 - If the LED is illuminated:
 - The HVAC compressor will be turned on regardless of temperature setting
 - The ATC system will control cab air temperature by use of the heater valve
 - If the LED is off:
 - The HVAC compressor will be controlled by the ATC system
- The temperature control knob is turned clockwise to increase temperature, and counter-clockwise to decrease temperature. Automatic temperature control is achieved when the dial is placed in the solid blue or red bands. The display indicates the desired cab temperature based on the adjustment of the temperature control.
- If the knob is turned completely in either direction, the system will operate in either maximum heat (red) or maximum cool (blue) mode, with no automatic control.
- The blower control is infinitely adjustable, and is turned clockwise to increase blower speed. When the automatic mode is enabled, the blower speed will increase and decrease as necessary to maintain consistent temperature. If the blower control is adjusted while in automatic mode, the blower speed will be constant, and the system will attempt to maintain constant temperature. However, the limited blower speed may prevent even temperature control.
- Cycling the climate control switch will return the blower to automatic control.
- A “Service Manual” symbol in the display indicates a system problem requiring attention.

Figure 15.1



CONTROLS AND OPERATION

AUTOMATIC CROP SETTINGS (ACS)

The Automatic Crop Settings feature, or ACS, is standard on all 140 Series Axial-Flow combines. With ACS, working condition settings for various crops can be stored and recalled for later use. ACS provides automatic adjustment of:

- Cleaning fan speed
- Rotor speed
- Concave position
- Upper sieve opening
- Lower sieve opening

To start ACS, press the “ACS” tab in the display Main page

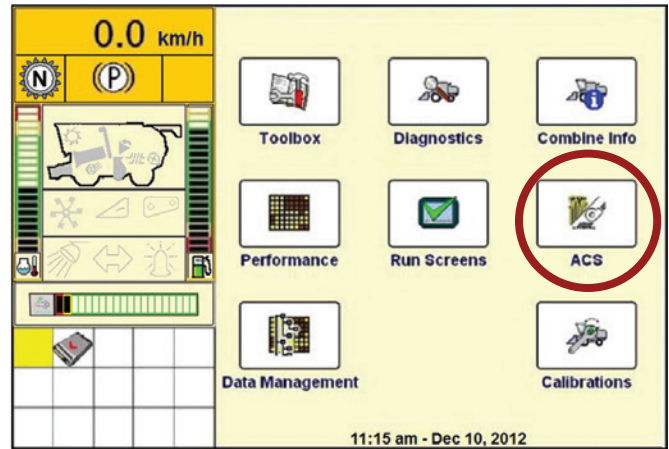


Figure 16.1

- ACS work settings page will be displayed, press “Working” (see figure 16.1)
- Go to the “Crop Type” window and select the desired crop which allows the operator to select an existing Work Condition, edit the name of an existing condition, or create a new Work Condition (see figure 16.2)
- Touch the “Work Condition” window, and a pop-up appears
- If re-naming or creating a Work Condition, a keypad appears on which text changes can be performed

Refer to the 140 Series Operator’s Manual for specific screen navigation procedures.

Each Work Condition can have two ACS modes, determined by the “ACS Mode” selection.

- Harvest
- Headlands

Allows operator to automatically make momentary machine adjustment to **fan speed** and **sieve clearance** during headland turns to prevent cleaning system grain loss.

Mode is indicated by an icon in the status window (see figure 16.3)

- indicates Harvest mode (shown)
- H indicates Headland mode

A toothed wheel around the icon indicates the separator is engaged.

When the desired mode is selected, the operator can touch the individual parameter windows and activate an “X” for parameters to be used by ACS.

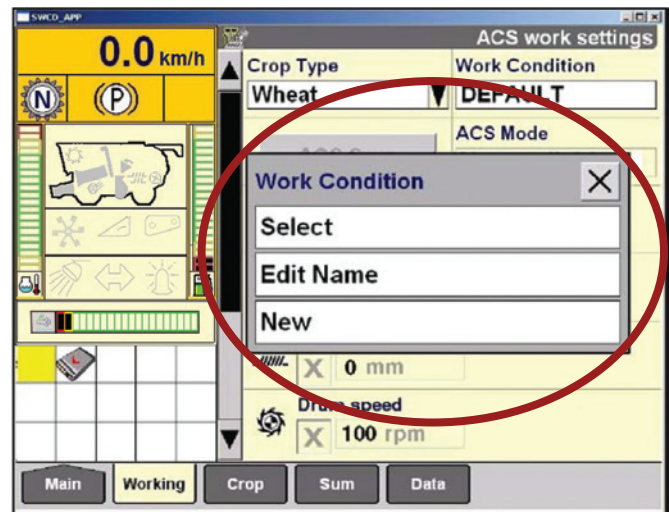


Figure 16.2

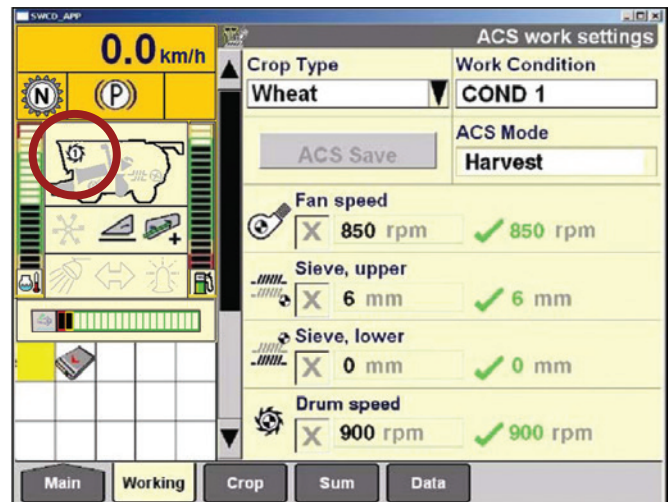


Figure 16.3

CONTROLS AND OPERATION

AUTOMATIC CROP SETTINGS (ACS) *continued*

Adjustments are made using switches on the right hand console. As adjustments are made, pop-up windows are displayed to indicate current settings to the operator (see figure 17.1).

- When in Headland mode, values represent the difference between Harvest settings and the desired Headlands setting. (In figure 17.1, “-210” indicates a reduction off an speed of 210 rpm when in Headlands mode.)

ACS stored value cells are displayed to the right of the parameter adjustment cells (see figure 17.2).

- Green check marks indicate stored values are the same as current parameter values
- Red “!” marks indicate stored values differ from current parameter values
- ① (shown) or H icon in status window will blink, indicating parameters have been changed, but not saved. If new values are satisfactory for the currently selected Work Condition, press “ACS Save.”
- If it is desirable to keep the current Work Condition unchanged, but keep new parameters for later use, press “Work Condition” and create a New condition, then “ACS Save”

To check ACS stored values against parameters that may have been changed while operating in other screens, press Main>ACS>Working. Saved and current settings will be displayed along with applicable check marks or “!” marks. “ACS Save” can then be performed as described above if desired.

ACS controls may be placed on a Run screen. Follow normal procedures for screen setup in Main>Toolbox>Layout to include desired items on the display (see figure 17.3).

USING ACS

Up to 40 different Work Conditions for each Crop Type can be stored by the ACS system. Operators are encouraged to create new Work Conditions as necessary when harvest conditions that are likely to repeat are encountered, and saving machine settings for later use will be convenient and efficient.

Examples of harvest conditions in which new Work Conditions may be created are:

- Changing moisture conditions for crop maturity or time of day
- Changing settings due spot conditions such as weed infestations or wet areas
- Crop varieties with significantly different threshing or separating characteristics

Starting a new crop with default settings is a common method of machine set up. As the machine settings are fine-tuned, the operator should compare current settings to the default condition.

- If settings vary greatly from default, consider creating a new condition that may be treated as the starting condition or “default” for future use. Remember, factory default settings cannot be overwritten.

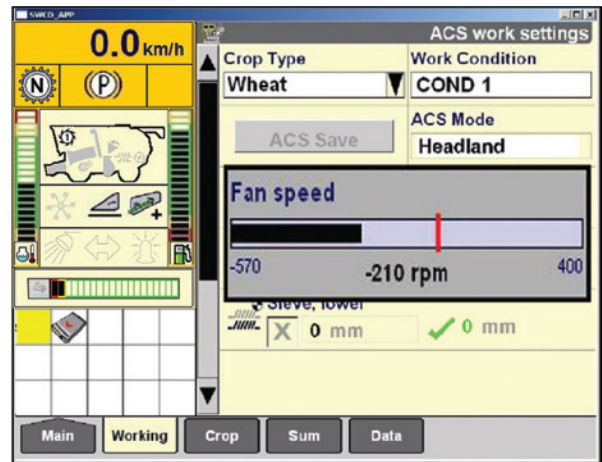


Figure 17.1

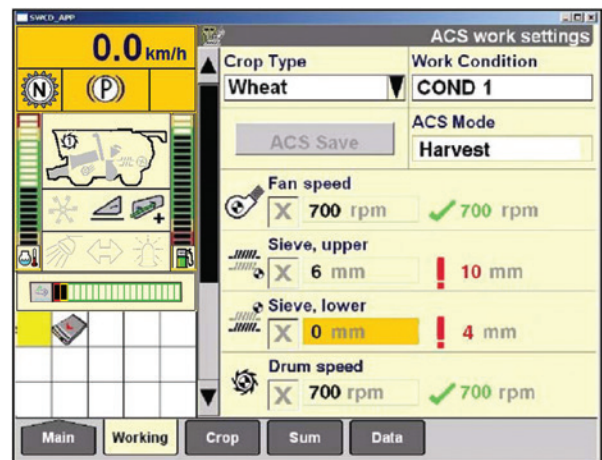


Figure 17.2

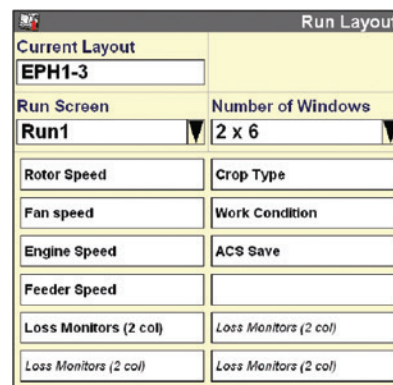


Figure 17.3

CONTROLS AND OPERATION

AFX ROTOR—INITIAL CROP SETTINGS

The threshing, separating and cleaning settings in the table below (table 28.1) are furnished only as a guide, and all settings shown are for average crop conditions. Different crop and field conditions may require deviations from shown settings. Use good threshing procedure and past experience to produce desired separation and cleaning results.

Crop	Rotor		Concave		Chaffer Setting (inch) ⁷			Shoe Setting		Fan Speed	Grate Type	
	Speed	Gear Range	Indicator	Type ⁴	Type (in.)	Front	Middle	Rear	Type (in.)			Setting (in.)
Alfaifa	650	2	5	SW	1-1/8	1/4	3/8	3/8	1-1/8	Round Hole	500	Slot
Barley	700	3	10	SW	1-1/8	1/2	1/2	5/8	1-1/8	3/8	1000	Slot
Lentil Beans	700	3	10	SW	1-1/8	1/2	1/2	5/8	1-1/8	1/8	800	Slot
Pinto Beans	300	1	15	LW	1-1/8	1/2	1/2	1/2	1-1/8	3/8	850	Slot
Sunflower	300	1	25	LW	1-1/8	3/8	1/2	5/8	1-1/8	5/16	770	Bar
Grass ⁵	550	2	10-20	SW	1-1/8	1/4	3/8	3/8	1-1/8	1/4	450	Slot/Solid
Bent Grass ⁵	900	3	0	SW	1-1/8	1/4	3/8	3/8	1-1/8	1/16	450	Slot
Bluegrass ⁵	400	1	7-8	SW	1-1/8	3/8	1/2	1/2	1-1/8	1/16	500	Slot
Brome ⁵	500	2	15	SW	1-1/8	5/8	3/4	3/4	1-1/8	5/16	650	Slot
Rye ⁵	650	2	20-25	SW	1-1/8	3/8	1/2	1/2	1-1/8	1/4	450	Slot
White Clover ⁵	900	3	0	SW	1-1/8	3/8	1/2	1/2	1-1/8	1/16	500	Slot
Corn	400	2	15-25	LW	1-5/8 Cloz	1/2	1/2	5/8	1-5/8 cloz	3/8	1100	Bar
	500	2	15-25	LW	1-5/8 Corn	1/4	1/2	1/2	1-5/8 cloz	5/16	1200	Bar
Corn w/straight separator bars ^{1 2}	300	1 or 2	15-25	LW	1-5/8 Cloz	1/2	1/2	5/8	1-5/8 cloz	9/16	1000	Bar
	450	1 or 2	15-25	LW	1-5/8 Corn	1/4	1/2	1/2	1-5/8 cloz	1/2	1200	Bar
Edible Beans (Navy, Pinto)	350	1	15-25	LW/SL	1-1/8	1/2	1/2	1/2	1-1/8	3/8	900	Bar
	400	1	15-25	LW/SL	1-5/8 Cloz	1/8	3/8	3/8	1-5/8 Cloz	5/16	1100	Bar
Flax	850	3	5	SW	1-1/8	1/4	1/4	1/2	1-1/8	1/8	500	Slot
Maize/Milo	450	2	15	LW	1-1/8	3/8	1/2	1/2	1-1/8	5/16	1100	Bar
	450	2	15	LW	1-5/8 Cloz	3/8	1/2	1/2	1-5/8 cloz	5/16	1100	Bar
Mustard	300	1	20	SW	1-1/8	1/2	1/2	1/2	1-1/8	1/16	800	Slot
Oats	600	2	15	LW	1-1/8	1/2	1/2	5/8	1-1/8	3/8	780	Slot
Popcorn	400	1	5-15	LW	3/8	3/8	1/2	1/4	1-1/8	3/8	700	Bar
Peas (Black Eye)	300	1	10	LW	1-1/8	1/2	1/2	1/2	1-1/8	3/8	700	Bar
Rape	400	1	20	SW	1-1/8	1/4	3/8	1/2	1-1/8	1/16	600	Slot
Canola	400	1	20	SW	1-1/8	1/4	3/8	1/2	1-1/8	1/16	600	Slot
Rice ^{2 3}	850	3	10	LW	1-1/8	3/8	3/8	1/2	1-1/8	5/16	880	Bar
Wild Rice	600	2	5	LW	1-1/8	1/2	1/2	1/2	1-1/8	9/16	850	Bar
Sunflower	300	1	25	LW	1-1/8	3/8	1/2	5/8	1-1/8	5/16	770	Slot
Safflower	300	1	20	LW	1-1/8	3/8	1/2	5/8	1-1/8	5/16	800	Bar
Soybean ⁶	350	1 or 2	15-20	LW	1-1/8	1/2	5/8	5/8	1 1/8	3/8	1050	Bar
	650	1 or 2	15-20	LW	1-1/8	1/2	5/8	5/8	1 1/8	3/8	1050	Bar
Wheat ¹	1050	3	10	SW	1-1/8	1/4	1/2	1/2	1-1/8	1/4	1050	Slot

¹ Straight separator bars may be needed for harvesting corn yielding more than 150 bushels per acre (9400 kg/ha) and in other crops during dry conditions. Increase fan speed to 1250 rpm in wet corn

² Once installed, straight separator bars need to be removed only for harvesting rice and harvesting rice and edible beans and similar viney crops.

³ Tough rice requires the use of spiked rasp bars over the concave area and the grate area. Set concave indicators at number 20 when spiked raps bars are used in the concave area.

IMPORTANT: Concave zero must be re-calibrated after installation of the spiked rasp bars could make contact with the concave.

⁴ W - Large Wire (1/4-inch diameter), SW - Small Wire (3/16-inch diameter), SL - Smooth Slotted.

⁵ Use of non-spiked rasp bars in all positions is recommended for most grass seed harvest conditions. Spiked bars may be helpful in extremely damp crops. Rotate fan cutoff rearward to the vertical position to reduce air volume.

⁶ Some soybeans may require rotor speeds up to 700 rpm or more.

⁷ The front portion of the chaffer sieve is, by design, to be set slightly more closed than the rest of the sieve.

ADVANCED FARMING SYSTEMS (AFS)

AFS

The power of information that you gather with the AFS Pro 700 Display operating Case IH AFS Precision Farming systems can have a greater impact on your operation's profitability than many other factors that often get far greater attention. If not used correctly, a tool's full potential is seldom realized. With that thought in mind, some simple guidelines may help you make AFS operation simple and second nature, and ready to work for you (see figure 19.1).

Five basic components work together to capture harvest information as the combine moves through the field.

- The flow sensor measures grain volume
- The moisture sensor measures the grain moisture and temperature
- A ground speed sensor and programmed header width determine coverage area
- The yield monitor combines all crop and area data to populate the touch screen display
- Information is stored on a memory card that transfers data to desktop software

Add a DGPS receiver and record a data point every 1, 2 or 3 seconds as you travel through the field, to fully realize the power of information.

To record harvest data, four criteria must be met. Refer to the appropriate Operator's Manual for the software version running in your AFS system.

- A memory card must be inserted in the top slot of the display before turning the power ON
- The clean grain elevator must be running between 250 and 599 rpm
- Ground speed must be registered
- The header must be lowered below the header cut "stop height" position

When data is being recorded, the "Recording to Data Card" icon will be displayed in the Status/Warning area.

GRAIN MOISTURE AND WEIGHT SENSORS

The grain moisture sensor operates on the principle of an electrical current flowing from the sensor fin, through the grain, and to ground (see figure 19.2).

- The grain moisture sensor fin must be clean for proper function. A buildup of crop sap can reduce sensor accuracy.
- Remove any crop residue by scraping or using soap and water or solvent to clean the moisture fin and temperature sensors



Figure 19.1



Figure 19.2

ADVANCED FARMING SYSTEMS (AFS)

GRAIN MOISTURE AND WEIGHT SENSORS *continued*

The bypass auger is controlled by a proximity switch that cycles the auger as required, to assure the sensor fin is always in contact with grain.

- The bypass auger should be removed and cleaned. Ensure that the auger has not seized to the plastic block that supports the non-drive end.

Note: Operators should monitor instantaneous moisture values while harvesting to confirm the sensor is functioning. If moisture values do not show some fluctuation, a problem may exist with the moisture sensor that requires attention to assure accurate harvest data.

- If moisture readings are consistently very low, the auger may be operating constantly, preventing grain contact with the fin. (Likely to occur only in lower yield crop where the bypass auger removes grain from the bypass as quickly as it enters.)
- If moisture readings never change, and remain at a value likely to be representative of actual grain moisture, the auger may not be operating (the sensor is merely providing a moisture reading of a static sample that is in the bypass housing).
- The auger should operate for 30 seconds after the separator is disengaged, to clean grain from the bypass. Check by watching the end of the auger shaft during this 30-second period, to see if the shaft is turning.
- If not, check to assure the moisture sensor bypass auger fuse is not blown. If problems persist, contact your Case IH dealer for assistance.

Prior to harvesting, inspect the flow sensor impact plate (see *figure 20.1*). Clean the plate if necessary to assure crop flows smoothly across the surface. If any holes are worn through the plate it should be replaced.



Figure 20.1

COMPONENT CALIBRATION

To understand the need for system calibration, consider that AFS operates using electronic components that translate ground speed, header position, grain moisture and grain volume data into electrical signals.

- Many variables make “set-at-the-factory” accuracy impossible
- The operator manually enters the actual moisture values and weight from calibration samples
- Calibration values can be selectively applied to past or future harvest data, allowing the system to accurately reflect the moisture and weight of the grain being harvested

System inputs that require calibration:

- Header stop height (turns counting on and off)
- Distance (used to calculate ground speed)
- Grain Moisture
- Grain Weight

Operators must also remember that adjustment or replacement of any component that affects calibration requires re-calibration.

- Refer to the Operator’s Manual after re-calibration to use the correct Utility menu to apply calibration to harvest data collected after the component is replaced

In understanding the calibration process, the operator will realize the importance of maintaining an accurate record of load identification, calibration load weights and moisture test results.

- Make sure scale tickets are identified with the AFS farm, field, crop and task names to assure correct “actual” values are entered. **See the calibration record table included in the AFS Operator’s Manual (see sample below).**

Crop Type				Date		
Combine				Operator		
Field	Load	Flow Bu/Hr	Estimated Weight	Actual Weight	Percent Error	Include? (Yes/No)
1	Cal 1 Hi					
2	Cal 2 Hi					
3	Cal 1 Med					
4	Cal 2 Med					
5	Cal 1 Low					
6	Cal 2 Low					

ADVANCED FARMING SYSTEMS (AFS)

OTHER IMPORTANT STEPS TO ASSURE ACCURATE CALIBRATION

- Do not attempt to make the first load harvested a calibration load. Frequent stops and starts as harvest begins and the machine is adjusted will result in inaccurate calibration.
- Do not harvest calibration loads until headlands are harvested.
- Prior to harvesting the calibration load, make sure the grain tank and truck, cart or trailer used to transport the calibration load is completely empty.
- Attempt to harvest calibration loads of nearly the same size for best accuracy. Loads of 3,000-10,000 lbs. are suggested.
- Empty the load into the truck or trailer
- Do not unload-on-the-go when harvesting calibration loads
- Use a range of speeds and throughputs that are expected in normal operation. The objective is to “teach” the flow sensor how different flow rates “feel” to the sensor.
- The highest output flow rate should be near that which the operator would prefer to operate the machine
- Medium and low flow rates are also suggested since variations in yield throughout the field, or conditions that result in reduced ground speed, can periodically lower throughput during normal harvest. A medium flow rate is 30% less than the high flow rate. A low flow rate is 30% less than the medium flow rate. Reduced flow rates are achieved by driving slower or taking a reduced swath.
- The operator should attempt to maintain a consistent flow rate when harvesting each of the loads. Use the “Instantaneous Flow-Dry” display to monitor throughput.
- Use at least one load from each flow rate
- Take 4-5 moisture tests in each load, from different areas of the grain tank. Average readings for actual values.
- Apply calibration values according to procedures for the calibration method being used



ADVANCED FARMING SYSTEMS (AFS)

Calibration Wizards

New Case IH 140 Series Combines are equipped with the AFS Pro 700 display with software version 28 or greater (see figure 22.1).

- The AFS Yield Monitor is viewed in the Display Area of the AFS Pro 700 monitor
- Calibration Wizards greatly aid operators in performing successful calibrations with ease
- Once the operator is familiar with the basic navigation, the Wizards provide the necessary instructions to complete calibration
- Operator's Manual used to acquaint users with basic Wizard navigation

Three different crop calibration methods can be selected (see figure 22.2 & 22.3).

- Fast Calibration
- Moisture and weight calibration using the Wizard
- Advanced Calibration

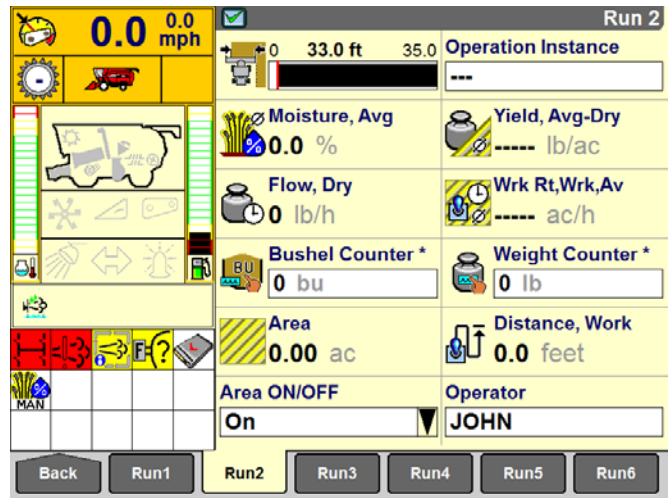


Figure 22.1

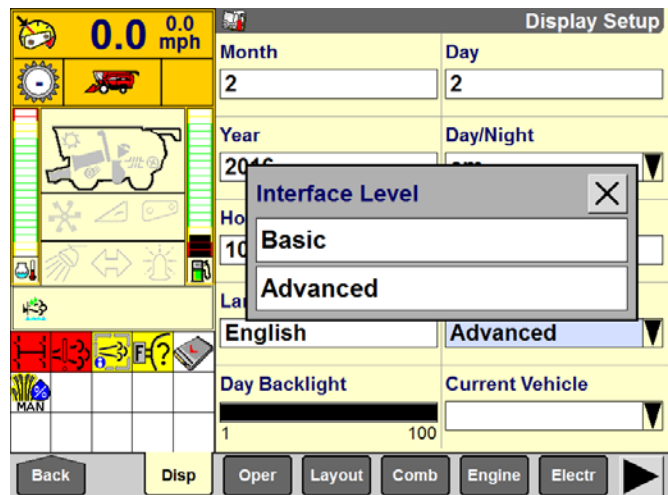


Figure 22.2

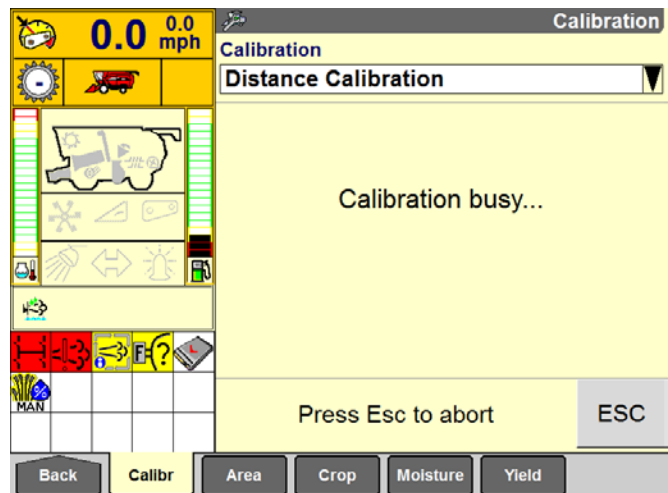


Figure 22.3

ADVANCED FARMING SYSTEMS (AFS)

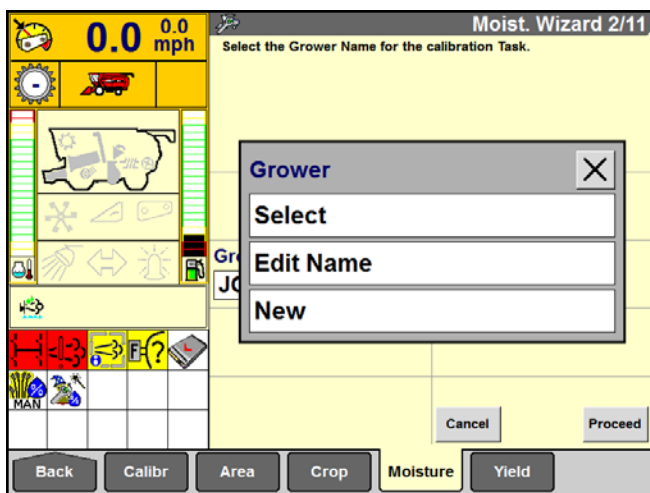


Figure 23.1a



Figure 23.1b

Wizards automatically progress step-to-step through the process.

- First display calibration load identification input screens in order (Grower, Farm, Field, Crop, Task; see figure 23.1a & 23.1b)
- Task is equivalent to “Load” in prior systems. New task is assigned by system when “Stop” is pressed after harvesting previous load.
- On-screen instructions for harvesting, handling and measuring the necessary calibration loads (see figure 23.2)
- Intuitive screens allow operators to input actual crop moisture and weight values (see figure 23.3)
- Clearly displays options for saving and applying new calibration data

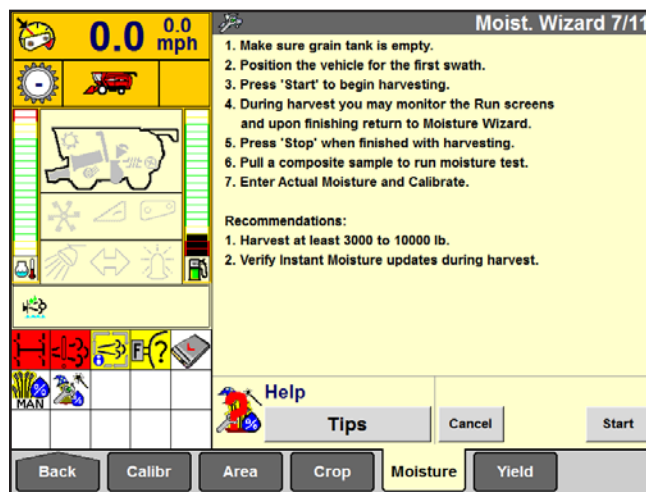


Figure 23.2

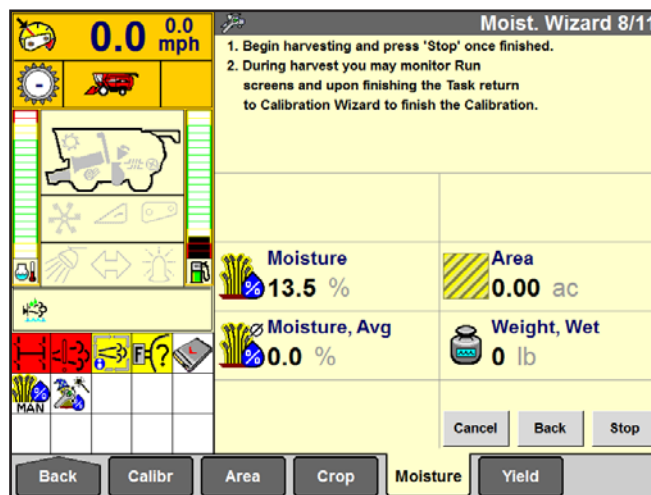


Figure 23.3

ADVANCED FARMING SYSTEMS (AFS)

Wizards automatically progress step-to-step through tThree separate factors critical to Yield Monitor accuracy are the Distance, Crop Moisture and Crop Weight values. Calibration of these factors must be performed in this order to assure correct monitor software function.

Distance calibration is critical for speed and area calculations.

- Synchronizes the Yield Monitor with the actual distance the machine travels over a set course
- Wizard explains how to set up and drive the course, including Stop/Start commands
- Displays screens for the actual distance value input and updating the calibration (see figure 24.1)

Moisture and weight calibration

- Fast Calibration uses averaged moisture value and scale weight (yield) for one load
- Wizard and Advanced calibration use multiple loads to update moisture and weight (yield) values

Moisture calibration fine-tunes the accuracy of the AFS moisture sensor by updating sensed values with moisture values of the same grain, measured in a known accurate moisture tester.

- Actual moisture values entered, percent error relative to sensed moisture calculated for each load (see figure 24.2)
- Operator can select up to 10 tasks (loads) to apply to calibration (see figure 24.3)
- Moisture calibration must be performed before Weight calibration

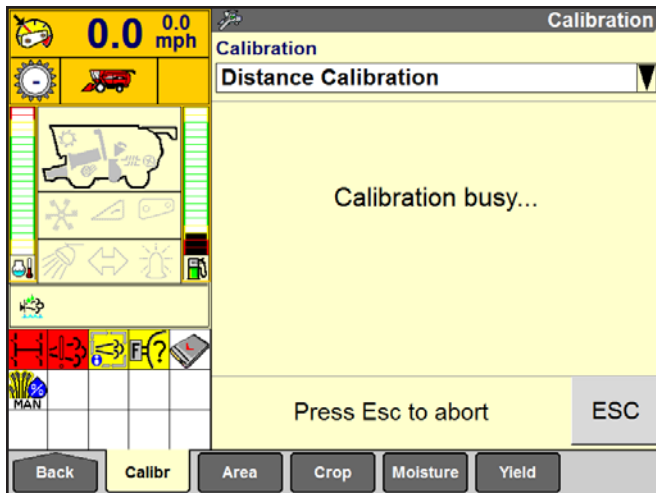


Figure 24.1

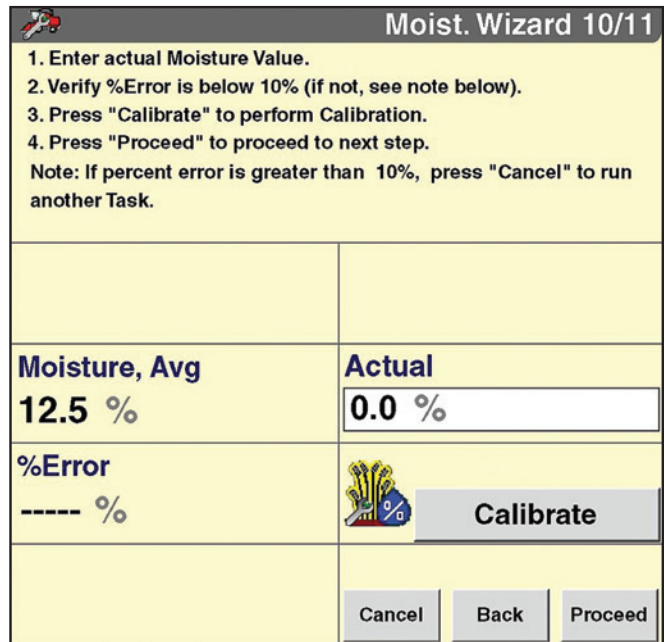


Figure 24.2

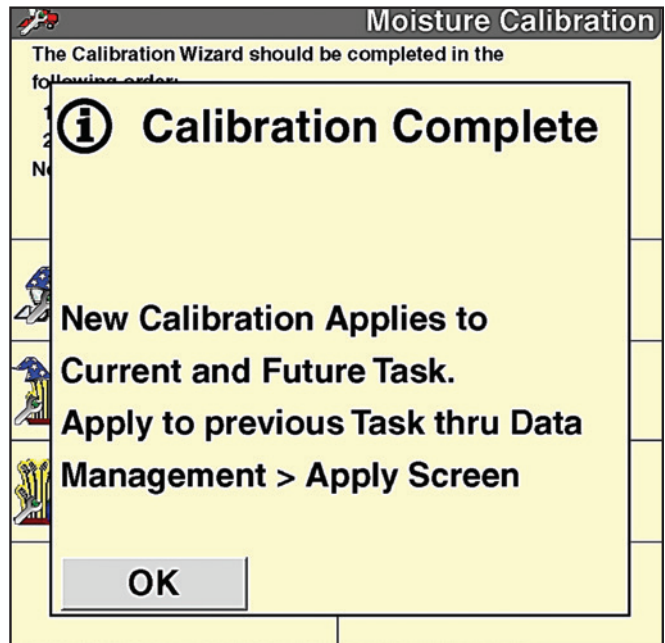


Figure 24.3

ADVANCED FARMING SYSTEMS (AFS)

Weight calibration fine-tunes the accuracy of the AFS flow sensor by updating sensed values with weight values of the same grain, measured in a known accurate scale.

- Harvest separate loads at high, medium and low target throughput flow rates (see figure 25.1)
- Press “Start” and follow on-screen instructions (see figure 25.2)
- Actual weight entered, percent error relative to sensed weight calculated for each load (see figure 24.2*)
- Operator can choose to apply Actual values immediately, or at a later time (see figure 25.3)
- Operator can select up to 10 tasks (loads) to apply to calibration (see figure 24.3*)

An understanding of these basics is essential in achieving accurate AFS data records. The AFS Pro 700 Yield Monitor Operator’s Manual provides detailed step-by-step instructions for performing AFS operations, calibrations and managing the display information and harvest data.

* Yield Wizard screens closely resemble Moisture Wizard screens in figures 24.2 and 24.3.

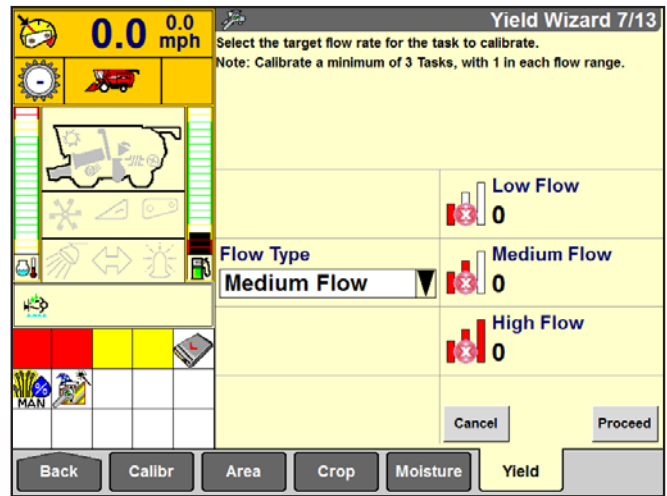


Figure 25.1

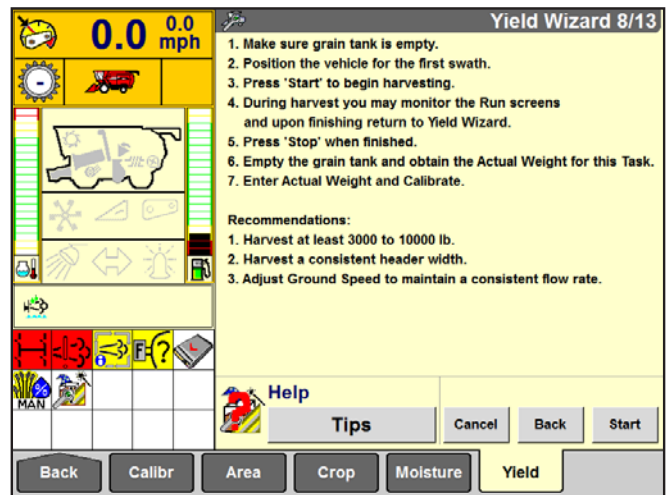


Figure 25.2

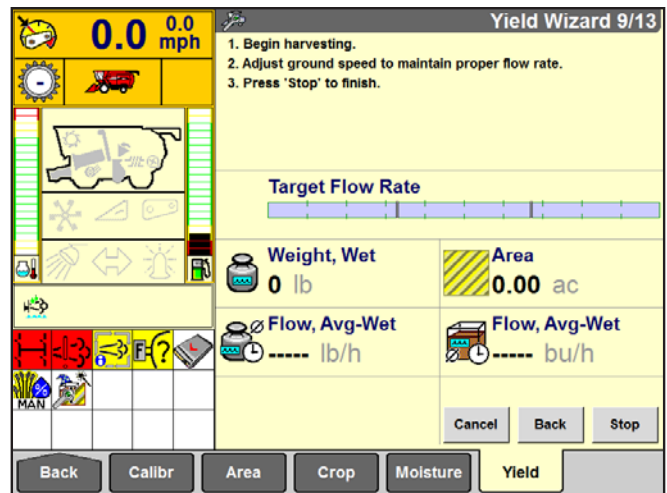


Figure 25.3

SERVICE INSPECTIONS

TAKE FULL ADVANTAGE OF ITS CAPABILITIES

Have you, or did someone you know, purchase a new combine in the last few years and continue to use it in much the same way as the machine it replaced? Many times operators do not fully realize and take advantage of modern features. As a result of not fully utilizing new features, the owner may not be receiving all the value from the money spent.

Many of the items suggested in this booklet can be completed by the owner when preparing for the season or the operator when starting a new field. Other adjustments, service procedures or repairs might be more effectively completed by your dealer's trained service technicians.



Ask your Case IH dealer about **Customized Maintenance Inspections**. It is a proactive way to be sure your combine and header will operate with the best possible performance when you need it.

Customized Maintenance Inspections include a visual and functional inspection of your combine. They can be used as a pre-season or as a post-season tune-up.

Benefits include:

- Increased productivity
- Less downtime during the season
- Lower operating costs
- Improved fuel economy
- Documented maintenance
- Service by Case IH trained technicians
- Service with Genuine Case IH lubricants, filters and parts

The combined advantages of Customized Maintenance Inspection services should result in a lower cost of ownership and higher resale values.

DOCUMENTED SERVICE PROMOTES HIGH RESALE VALUE



When you schedule your equipment for annual maintenance inspection services, your Case IH dealership places an annual Certified Maintenance decal on your equipment after each inspection, distinguishing your commitment to keep your machines running in top condition. Not only does annual maintenance support your productivity in the field, each decal symbolizes completed service—which may increase the resale value of your equipment.

Because Case IH technicians use Customized Maintenance Inspection checklists for each inspection, you can rest assured the service is thorough and nothing is overlooked.

SERVICE INSPECTIONS

ROCK TRAP

The mechanical rock trap on current 140 Series and prior model Axial-Flow combines is mounted at the top of the feeder housing, directly in front of the rotor. The rock trap uses a 3-blade beater to direct stones from the crop flow from the feeder to the rotor downward into the rock trap (see figure 25.1). The rock trap will fill with grain and crop material during normal use, however the force of rocks expelled from the beater will push rocks into the trap.

The rock trap must be emptied daily, more often if harvesting in rocky conditions (see figure 25.2).

The balance between optimum rock protection performance and feeder capacity is determined by the beater speed and beater blade extension adjustments.

- Rock trap performance is greatest with faster beater speed, and beater extensions adjusted to the fully extended position (see figure 25.3).

Excessive beater speed and blade extension may restrict crop flow. The beater blades passing rapidly past the feeder form a “wall” that inhibits the flow of material past the beater, and on to the rotor.

- Beater blade extensions are mounted with slotted holes. Retracting extensions will allow the greatest material flow, however rock protection will be reduced.
- Sprockets on the left side of the feeder are used to adjust beater speed (see figure 25.4). A 23-tooth driven sprocket is standard equipment on 88 through 140 series combines, and drives the beater at 612 rpm at full throttle. This speed provides a good balance of rock protection while preventing wrapping of green, weedy crop material.
- A 35/18 tooth set is available from your Case IH dealer for a beater speed of 913 rpm. The higher speed provides enhanced rock protection and feeding.

Depending on feeding conditions and the number of rocks that could potentially be picked up while harvesting, operators need to make adjustments to speed and blade extension to protect the combine with minimal impact on feeding performance.

- In tough feeding conditions or material wrapping, such as a high degree of green stems, serrated blade extensions can be ordered from your Case IH dealer and installed on the beater to improve feeding aggressiveness.
- Lower beater speeds will also reduce the incidence of wrapping.

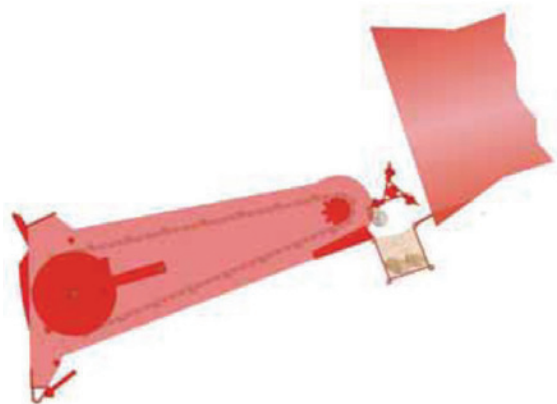


Figure 25.1

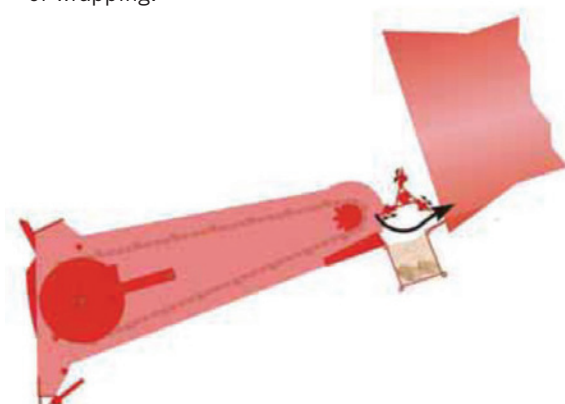


Figure 25.3



Figure 25.2

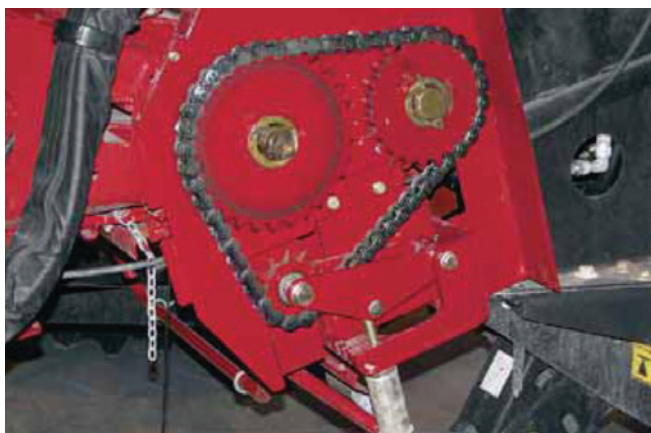


Figure 25.4

SERVICE INSPECTIONS

AFX ROTOR IMPELLER BLADE WEAR

The AFX rotor impeller can wear significantly before adverse feeding performance is observed. As the impeller wears, the distance between the impeller and transition cone does not vary greatly, and has little effect on crop flow.

- Wear may be somewhat uneven, especially in small grains. This is normal, and should not be cause for replacement (see figure 26.1).
- Wear that develops a noticeable “hook” may lead to hair pinning of material, and impaired flow. Impeller replacement is necessary in this case (see figure 26.2).
- Replacement is indicated when wear progresses into mounting bolt holes, or feeding is noticeably affected. Your Case IH dealer can refer to Service Bulletin NHE SB 029 05 for the correct method to measure impeller wear to determine if replacement is suggested (see figure 26.3).

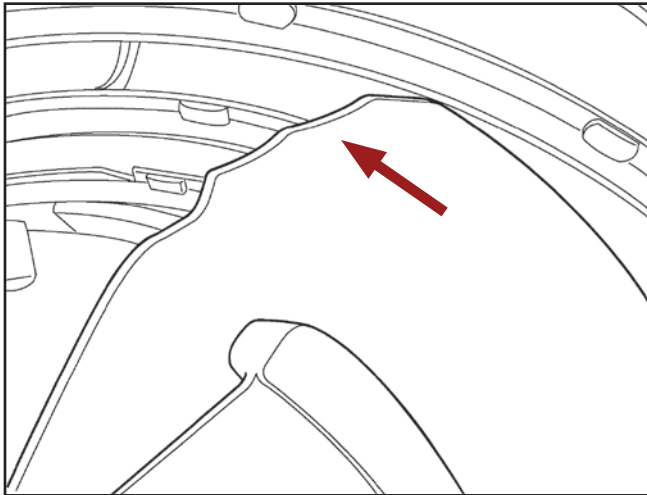


Figure 26.1

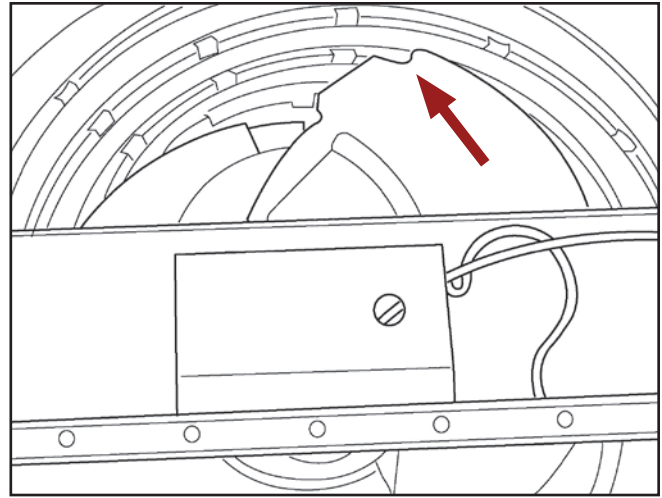


Figure 26.2

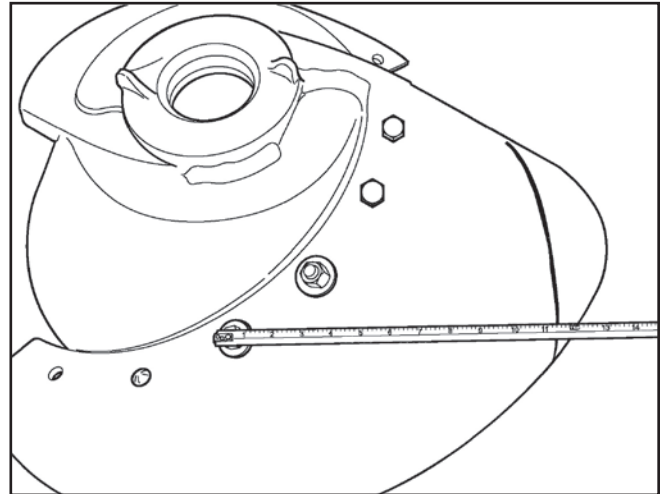


Figure 26.3

SERVICE INSPECTIONS

WHEEL BOLT TORQUE

Wheel bolt torque must be checked when new and periodically thereafter. Refer to the Operator's Manual for correct torque for your combine. An accurate torque wrench is necessary to confirm correct tightening values.

WELDING ON COMBINES

Microcomputers and solid-state electrical components have become a way of life, and today's combines are no exception. This makes it essential that special precautions be taken prior to welding **ANYWHERE** on the combine. Solid-state components have little tolerance for errant voltage. The high current flow during the welding process can damage sensitive controllers and components on the combine, with disastrous consequences.

- Disconnect **ALL** battery cables prior to welding. This includes positive **AND** negative cables. (The electrical system uses two 12-volt batteries connected in parallel. This means that both positive cables connect to the electrical system, and both negative cables connect to ground.)
- Follow Operator's Manual safety instructions for cable removal, disconnecting negative cables first, and re-connecting negative cables last.



MAINTENANCE

MAINTENANCE CHART

MAINTENANCE ACTION	Grease	Level	Check	Adjust	Drain Fluid	Lubricate	Cleaning	Replace	Change Fluid	Page No.
EVERY 10 HOURS OR DAILY										
Grease fittings	•									7-28
Engine oil level		•								7-32
Engine cooling system			•							7-33
Hydraulic reservoir fluid level			•							7-34
Clean grain elevator conveyor chain drive				•						7-35
Tailings elevator conveyor drive chain				•						7-36
Additional fuel prefilter with water separator – drain sediment bowl					•					7-37
Drive chains						•				7-38
EVERY 50 HOURS										
Cab recirculation air filter							•			7-47
Cab fresh air filter							•			7-49
EVERY 100 HOURS										
Grease fittings	•									7-50
Hydraulic reservoir breather							•			7-56
Transmission oil level			•							7-57
Power Take Off (PTO) oil level			•							7-58
Feeder and cleaning fan gear case oil level			•							7-59
Rotor gearbox oil level			•							7-60
Final drive oil level			•							7-61
Straw chopper drive system – if equipped		•								7-62
EVERY 300 HOURS										
Grease fittings	•									7-63
Two speed feeder gear case – if equipped		•								7-66
Incline auger oil level			•							7-67
Unloading tube gearbox oil level			•							7-68
EVERY 600 HOURS										
Grease fittings	•									7-69
Diesel Exhaust Fluid (DEF)/AdBlue® in-line filter								•		7-73
Diesel Exhaust Fluid (DEF)/AdBlue® tank vent filter								•		7-74
Fuel prefilter/water separator								•		7-75
Fuel filter								•		7-76
Additional fuel prefilter with water separator								•		7-78
Engine oil									•	7-80
Engine oil filter								•		7-81
Transmission oil									•	7-81
Final drive oil									•	7-82
PTO gearbox									•	7-83
Feeder and cleaning fan gear case									•	7-84
Two speed feeder gear case – if equipped									•	7-85
Rotor gearbox oil									•	7-86
Incline auger									•	7-87
Unloading tube gearbox oil									•	7-88

MAINTENANCE

MAINTENANCE CHART

MAINTENANCE ACTION	Grease Level Make Up	Check	Adjust	Drain Fluid	Lubricate	Cleaning	Replace	Change Fluid	Page No.
EVERY 600 HOURS									
Unloading elbow oil level		•							7-89
Straw chopper drive system – if equipped								•	7-90
Crankcase ventilation filter – NEF 6.7							•		7-91
Crankcase ventilation filter – Cursor 9							•		7-94
EVERY 1200 HOURS									
Hydraulic oil reservoir								•	7-97
Hydraulic filter(s)							•		7-98
EVERY 3600 HOURS									
Diesel Exhaust Fluid (DEF)/AdBlue® supply module filter							•		7-99
EVERY 4000 HOURS									
Engine cooling system								•	7-101
Hydraulic system hoses							•		7-103

ENGINE OIL – Recommended Operating Temperature Range

For machines using Tier 4B engines

(H)	0W-40 CJ-4 UNITEK to CNH MAT3521								
(H)	API CJ-4 0W-40								
(H)	5W-30 ACEA E6								
(H)	10W-40 CJ-4 UNITEK to CNH MAT3521								
(H)	API CJ-4 10W-40*								
(H)	15W-40 CJ-4 to CNH MAT3522*								
(H)	API CJ-4 15W-40*								
-40° C -40° F	-30° C -22° F	-20° C -4° F	-10° C 14° F	0° C 32° F	10° C 50° F	20° C 68° F	30° C 88° F	40° C 104° F	50° C 122° F
(H) Engine oil pan or coolant block heater recommended in this range									
* Requires a 50% reduction in oil change interval									

MAINTENANCE

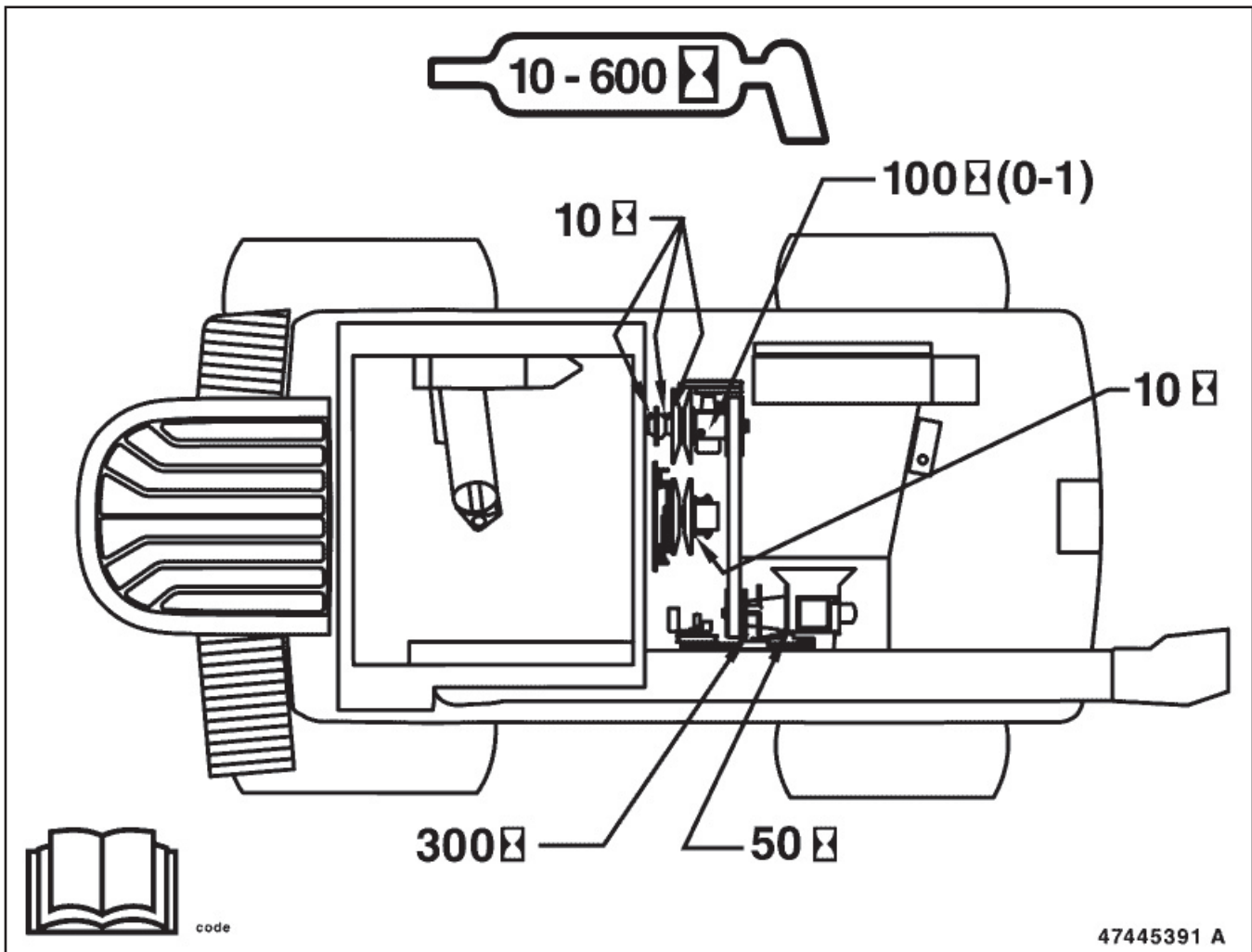
CAPACITIES

UNIT	CAPACITY
ENGINE LUBRICATION	
Oil capacity – 6.7 L engine, without filter change	14.9 L (15.7 U.S. qt.)
Oil capacity – 6.7 L engine, with filter change	15.5 L (16 U.S. qt.)
Oil capacity – 9 L engine, without filter change	25.3 L (26.7 U.S. qt.)
Oil capacity – 9 L engine, with filter change	26.4 L (27.9 U.S. qt.)
Oil type	Refer to 7-27
Fuel tank capacity	946 L (250 U.S. gal.)
Fuel type	No. 2 Diesel
DEF/AdBlue® tank capacity	160 L (42 U.S. gal.)
COOLING SYSTEM	
Coolant capacity	32 L (33.8 U.S. qt.)
Thermostat	83-95°C (181-203°F)
Deaeration tank cap	100 kPa (15 psi)
TRANSMISSION	
Oil capacity	20 L (5.3 U.S. gal.)
Oil type	CASE IH AKCELA HY-TRAN® ULTRACTION
FINAL DRIVE	
Fluid capacity (each)	9 L (9.5 U.S. qt.)
Fluid type	CASE IH AKCELA GEAR 135 H EP 85W-140
HYDRAULIC OIL RESERVOIR AND FILTERS	
Reservoir capacity	57 L (15 U.S. gal.)
Hydraulic oil type	CASE IH AKCELA HY-TRAN® ULTRACTION
PTO HOUSING	
Oil capacity	19 L (20 U.S. qt.)
Oil type	CASE IH AKCELA HY-TRAN® ULTRACTION
FEEDER AND CLEANING FAN GEAR CASE	
Oil capacity – Standard gear case	6.4 L (6.8 U.S. qt.)
Oil capacity – Heavy-duty gear case (if equipped)	8.2 L (8.7 U.S. qt.)
Oil type	CASE IH AKCELA GEAR LUBE SSL 75W90
LOWER UNLOADER GEAR CASE	
Oil capacity	0.6 L (1.3 U.S. pt.)
Oil type	CASE IH AKCELA GEAR 135 H EP 80W-90 or CASE IH AKCELA GEAR 135 H EP 85W-140
UPPER UNLOADER GEAR CASE	
Oil capacity	0.43 L (0.9 U.S. pt.)
Oil type	CASE IH AKCELA GEAR 135 H EP 80W-90 or CASE IH AKCELA GEAR 135 H EP 85W-140
ROTOR GEAR CASE	
Fluid capacity (each)	7.5 L (7.9 U.S. qt.)
Fluid type	CASE IH AKCELA GEAR 135 H EP 85W-140
STRAW CHOPPER GEAR CASE (If equipped)	
Oil capacity	3.1 L (3.3 U.S. qt.)
Oil type	CASE IH AKCELA HY-TRAN® ULTRACTION

MAINTENANCE

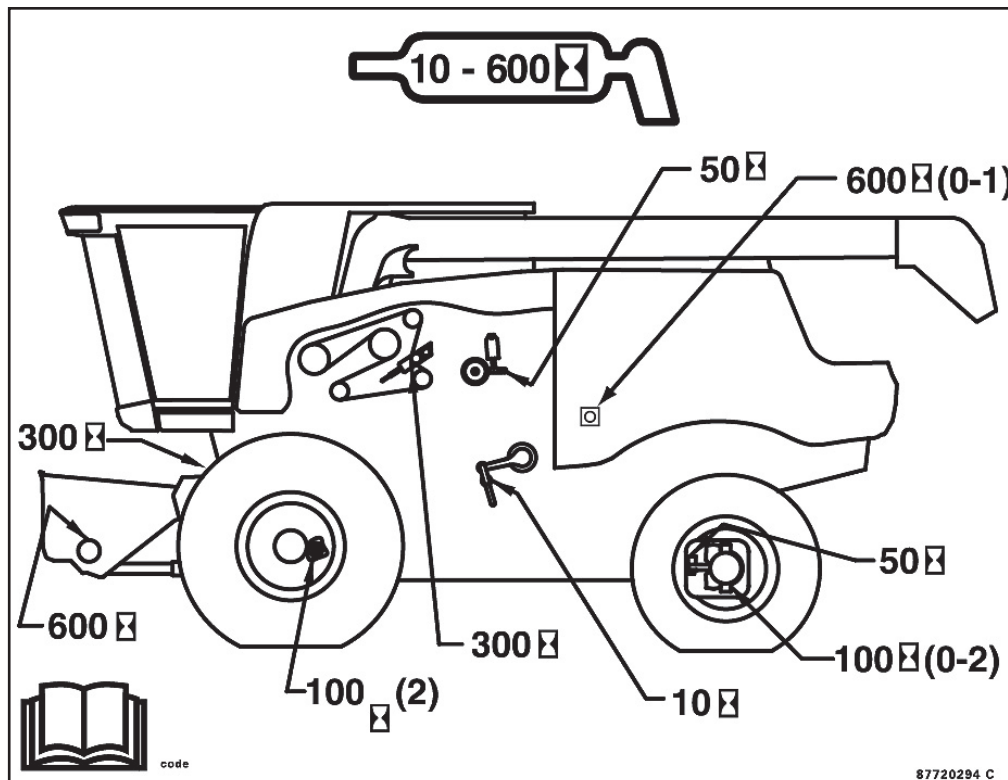
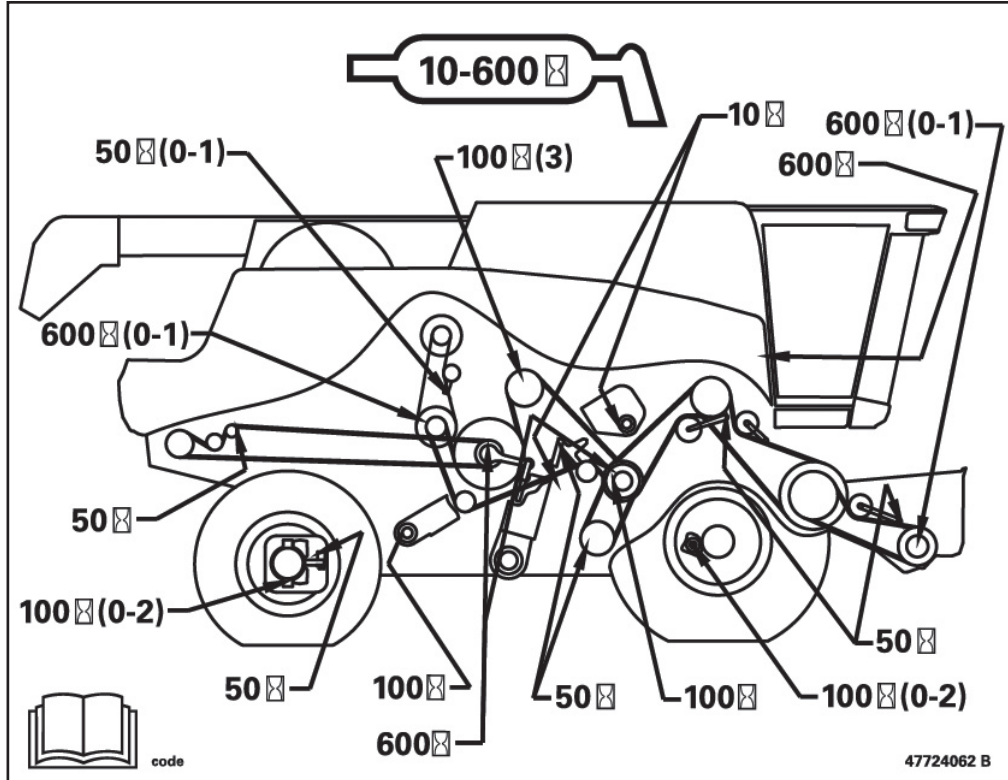
CAPACITIES

UNIT	CAPACITY
TWO SPEED FEEDER GEAR CASE (If equipped)	
Fluid capacity	4.3 L (4.5 U.S. pt.)
Fluid type	CASE IH AKCELA HY-TRAN® ULTRACTION
INCLINED AUGER GEAR CASE	
Fluid capacity	148 ml (5 U.S. fl. oz.)
Fluid type	CASE IH AKCELA GEAR 135 H EP 80W-90 or CASE IH AKCELA GEAR 135 H EP 85W-140



MAINTENANCE

CAPACITIES



TROUBLESHOOTING

Problem	Correction
Damaged grain or corn in sample	1. Decrease rotor speed
	2. Open shoe sieve
	3. Inspect concaves for plugging (unplug and set concave closer)
	4. Open concave
	5. Remove fillers from right of first concave (if installed)
	6. Remove some wires from concaves
Kernels left of cob	1. Increase rotor speed
	2. Close concave
Excess cob breakage	1. Decrease rotor speed
	2. Open concave
	3. Remove channels from inside of rear grates
Unthreshed heads or pods – white caps in sample	1. Increase rotor speed
	2. Close concave
	3. Close Shoe Sieve
	4. Add remaining fillers to first concave
	5. Add filler to right of first concave
Loss of kernels out of rotor	1. Inspect concaves for plugging (unplug and set concave closer)
	2. Decrease rotor speed
	3. Position grate vanes to rear or slow position
	4. Remove fillers from right of first concave (if installed)
	5. Remove some wires from the concave
	6. Move concave vanes to rear position
Grain loss over chaffer	1. Increase air blast
	2. Open Chaffer sieve
	3. Decrease rotor speed
	4. Cover slots in rear portion of cage
	5. Decrease forward travel speed
Grain blowing over chaffer	1. Reduce air blast
	2. Open Chaffer sieve
	3. Inspect concaves for plugging (unplug and set concave closer)
Shoe sieve overloading	1. Close chaffer sieve
	2. Open shoe sieve
	3. Increase air blast
	4. Decrease rotor speed
	5. Decrease forward travel speed

TROUBLESHOOTING

Problem	Correction
Heavy stems in sample	1. Close shoe sieve
	2. Close chaffer sieve
	3. Increase air blast
	4. Decrease rotor speed
	5. Open concave
Fines in sample	1. Increase air blast
	2. Close shoe sieve
	3. Close chaffer sieve
	4. Decrease rotor speed
	5. Open concave
Small bits of cob in sample	1. Close chaffer sieve
	2. Decrease rotor speed
	3. Close shoe sieve
	4. Increase air blast
	5. Open concave
Excessive power consumption	1. Increase rotor speed
	2. Open concave
	3. Decrease forward travel speed
	4. Remove channels from inside of rear grates
Distribution heavy on right side	1. Add filler to right of first concave
	2. Add, remove or adjust auger bed paddle
	3. Decrease rotor speed
	4. Close concave
	5. Decrease forward travel speed
Distribution heavy on left side	1. Remove fillers from right of first concave (if installed)
	2. Open concave
	3. Decrease rotor speed
	4. Increase rotor speed
	5. Add, remove or adjust auger bed paddle
	6. Remove some wires from concaves
	7. Decrease forward travel speed
	8. Inspect concave for “zero” at 12th bar of the concave

COMBINE ADJUSTMENTS

ROTOR SETUP

Every experienced operator knows crop and harvesting conditions vary from season-to-season and field-to-field. Fine-tuning as harvest progresses will allow you and your combine to maximize performance. Several optional rotor elements are available to customize the rotor to best fit specific threshing and separating needs. The Operator's Manual provides complete mounting and setup details, and common startup configuration for most crops.

Non-spiked rasp bars are the primary threshing element (see figure 35.1). In addition to providing threshing action, they also provide positive crop movement through the rotor cage.

Spiked rasp bars are primary material movers (see figure 35.2). The aggressive nature of the spiked bar tears the crop mat apart, allowing grain to effectively separate from the straw.

- In conditions where crop material is tough and may tend to wrap, spiked bars chop the material sufficiently to prevent roping
- Spiked rasp bars must always be installed in pairs 180° apart to maintain rotor balance
- Generally used on the rear half of the rotor

Standard rotor has non-spiked rasp bars in the front, and eight spiked rasp bars in the rear separator area (see figure 35.3).

Straight separator bars are used as a primary separating element. Tend to thin out the crop mat to allow improved separation (see figure 35.4).

- Separator bars are installed across two rasp bar mounting pads, and must always be installed in pairs 180° apart to maintain rotor balance
- Used often in high-yielding corn
- Not recommended for green crops
- May be removed if rotor is consuming excess power

Helical kicker bars are used as a primary crop moving element (see figure 35.5)

- Used at the rear of the rotor, conforms to helical pattern of rasp bars
- Helical kickers are installed across two rasp bar mounting pads, and must always be installed in pairs 180° apart to maintain rotor balance
- Two kickers at the rear of the rotor should **NOT** be removed

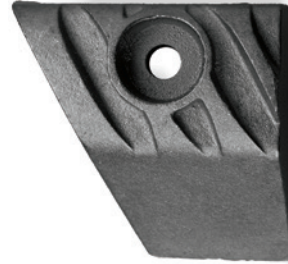


Figure 35.1



Figure 35.2

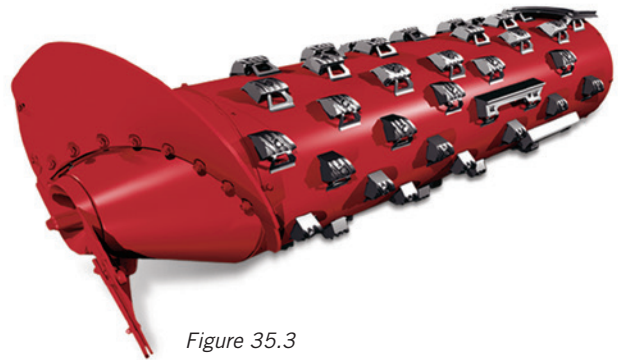


Figure 35.3



Figure 35.4

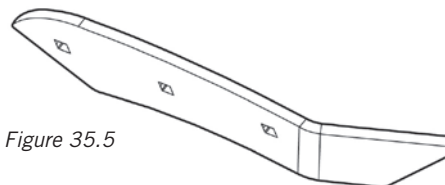


Figure 35.5

COMBINE ADJUSTMENTS

EVALUATING GRAIN LOSS AND COMBINE PERFORMANCE

It's harvest time, and the return on a season's investment in labor, land, fertilizer, herbicide and pesticides all lies with the combine's ability to put every kernel in the grain tank. A tall order, and in reality impossible. But the Axial-Flow combines from Case IH will get you closer to perfection than any other combine.

Some simple steps should be taken as the combine is adjusted to match each crop and season, to check the cutting, threshing and separating performance of the combine, and isolate where adjustment may be necessary to get the best possible sample in the tank, with minimal loss.

A structured method of determining the source of loss is essential prior to making any adjustment to reduce loss. The illustration demonstrates how to make an accurate assessment of the source of harvest loss (see figure 36.1).

The number of seeds counted in each area indicated represents loss in various stages of harvest:

Area A: Pre-harvest loss in standing crop, prior to contact with the header.

Area B: Pre-harvest + Header loss. (Header loss = $B - A$)
Loss occurring at the header due to shatter, dropped ears.

Area C: Pre-harvest + Header + Separator Loss.
(Separator loss = $C - B - A$) Separator loss will not be isolated to the rotor or cleaning system.

Swing the straw spreader up into the windrow mode. Enter an average area of the field, away from edges. Harvest a full swath, at normal operating speed. Travel a minimum of approximately two combine lengths into the field after the machine is full and delivering grain to the grain tank. Stop ground travel and the separator.

Back up approximately one combine length. Safely stop the combine, and perform seed loss evaluation.



Figure 36.1

COMBINE STORAGE

When harvest is done, and you've worked long hours for weeks on end, it is real easy to want to take some time off, or if the conditions are right, get out and do some fall tillage before the snow flies. But, just make sure to give your combine some end-of-season and pre-storage attention before the shed doors close, and it's forgotten until next harvest season. Off-season neglect can cost big in terms of corrosive damage, rust and deterioration, all avoidable with a little thought to prevention and maintenance.

The combine should be stored in a dry, protected location. Outside storage, subject to weather and elements will shorten the life of the machine.

The following procedure should be used to prepare the combine for storage periods of up to 6 months.

1. Remove the header to make cleaning and inspection easier and more thorough.
2. The combine should be thoroughly cleaned before storage to remove chaff and debris that can collect moisture or attract rodents during storage.
 - A high volume and velocity air blower like a leaf blower or industrial compressor works best when debris is dry.
 - Washing the unit will provide the most complete cleaning, removing debris that may be stuck to grease or oily accumulations that cannot be removed with just compressed air or mechanical cleaning; as well as removing the grease and oil as well.
 - High-pressure spray should **NOT** exceed 870 PSI and 140°F. Keep the spray wand at least 11 inches away from the combine surfaces.
 - If the unit is washed, care must be exercised to assure **COMPLETE** removal of chaff and debris, especially from inconspicuous areas where it will result in accelerated rust and corrosion over an extended period of time.
 - Avoid directing a high-pressure water stream toward bearings, seals, oil reservoirs, gearboxes, fuel tank fill, electrical equipment, engine exhaust, air filters and the cab interior.
 - **DO NOT** direct a high-pressure water stream directly perpendicular to bearings and seals. Angling the stream reduces the possibility of water infiltration through seals. The Operator's Manual lists complete precautions for cleaning with high-pressure water.
 - Open removable covers, doors or plugs that allow water to drain from the transition cone or grain tank.
3. Clean the inside of the machine including the concave and separator grate, chaffer and shoe sieves, cleaning fan, clean grain and tailings auger troughs.
 - Open the clean grain and tailings elevator doors
 - Spray the sieves with a rust preventive
4. Clean the inside of the cab and instrument panel. Clean the cab air and recirculation filters.
5. Rodents can damage a combine while in storage. Rodents will eat plastic, insulation or rubber materials, especially when coated with grain dust.
 - Clean the areas where rodents may nest.
 - Leave access panels and doors open to remove convenient nesting pockets. In some conditions, leaving mothballs will help discourage rats and mice.
6. After thoroughly cleaning the combine and allowing it to dry, lubricate the machine as specified in the "Lubrication/ Filters/Fluids section of the Operator's Manual.
7. Check coolant anti-freeze protection. Use only low silicate, heavy-duty coolant in the cooling system.
 - Add cooling system conditioner and change the coolant filter conditioner.
8. Run the engine long enough to completely warm the oil in the crankcase before draining the oil.
 - Remove and replace the oil filter as instructed.
 - Fill the crankcase with fresh oil and run the engine for two to five minutes.
9. Open the drain on the water separator fuel filter and drain water and sediment.
 - Fill the fuel tank with a premium grade diesel fuel. If this fuel grade has not been used regularly, drain the fuel tank and fill with premium diesel fuel. **DO NOT store the combine with biodiesel fuel in the tank or fuel system.**
 - Run the engine for five minutes to circulate the fuel through the fuel injection system.
 - Close the fuel shut off valve between the water separator filter and fuel tank to prevent fuel draining from fuel injection system into the fuel tank.

STORAGE

COMBINE STORAGE *continued*

10. Clean the air cleaner filter and body.
11. Use compressed air or water under pressure to thoroughly clean the radiator and other cooling elements. **DO NOT** direct high-pressure water at an angle to cooling fins, as fins may be bent and damaged.
12. Cover the engine breather pipe and exhaust pipe.
13. Batteries can remain in the combine, but must be fully charged to prevent freezing in cold temperatures.
 - Remove the battery ground cables to prevent slow discharge
14. Store the combine out of direct sunlight. Clean tires before storage, and support the combine on blocking if possible to remove load from the tires.
 - If the combine is not blocked, check tires frequently and maintain inflation during storage
 - Lower the head to remove weight from tires
15. Lubricate chains with light oil or chain lubricant.
16. Lower the head to remove load from the hydraulic system.
 - Retract all hydraulic cylinders if possible. Coat exposed cylinder rods with grease to prevent rust and corrosion (clean grease from rods when removing the combine from storage).
17. Remove tension from belts.
18. On combines equipped with Moisture Sensor, remove the bypass auger and remove grain from the housing. Make sure the auger turns freely in the plastic bearing block. Use the retaining pins to reach through the bearing block to align and hold the auger in place while re-installing the block.

Removing the Combine from Storage

Consult the Operator's Manual. In addition to confirming fluid levels and closing clean out doors, several other inspections are suggested when preparing the combine for use.



ACCESSORIES

AIR COMPRESSOR

On board air compressor

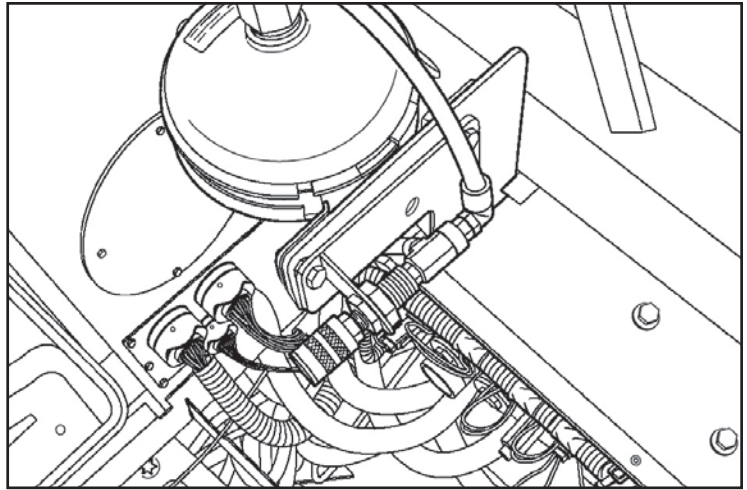
SPECIFICATIONS

60.6 L (16 U.S. gal.) reservoir
(located behind right hand rear trim panel above tire)

4 Quick connect service outlets

- Top of cooler box
- Left hand trim panel latch support
- Under left hand operator deck
- Behind left hand grain tank door

Compressor: Engine gear driven. Lubrication, cooling, air intake systems common with engine. Air gun and hose included and located behind the front left-hand grain tank door.



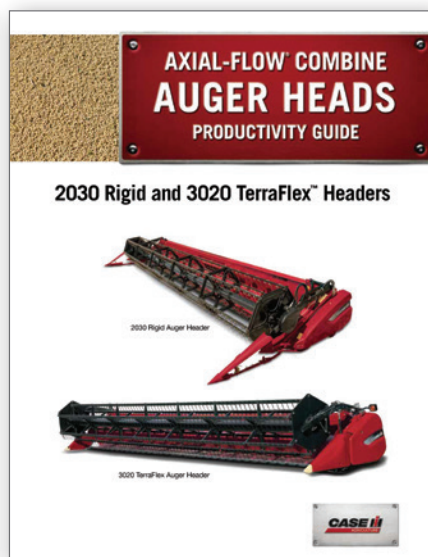
OTHER RESOURCES

HEADER PRODUCTIVITY GUIDES

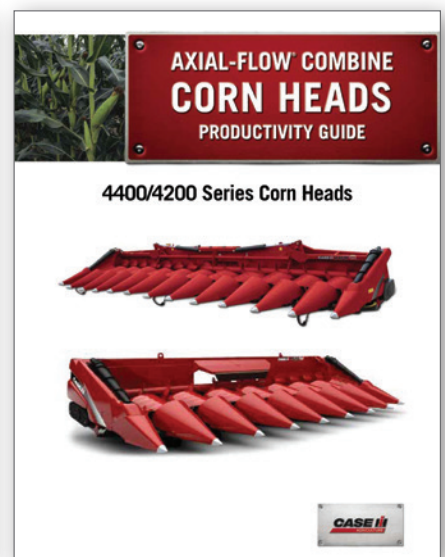
Case IH also has Productivity Guides available on Axial-Flow combine headers:



- GH-2193-15 – Draper Headers



- GH-2199-15 – Auger Heads



- GH-2200-15 – Corn Heads



SAFETY NEVER HURTS!™ Always read the Operator's Manual before operating any equipment. Inspect equipment before using it, and be sure it is operating properly. Follow the product safety signs, and use any safety features provided. CNH Industrial America LLC reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions and illustrative material herein are as accurate as known at time of publication, but are subject to change without notice. Availability of some models and equipment builds varies according to the country in which the equipment is used.

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