



**SHEAR
DANIELI HENSCHEL
CIV 600-8LL I**



TECHNICAL DESCRIPTION

***DANIELI* HENSCHEL**



1 OVERVIEW

DANIEMI HENSCHEL wing shears of CIV type are developed to complete our range of hydraulic shears with continuous feeding and side pre-compression box.

These shears are versatile and can shear or bale the scrap.

Scrap metal are loaded into a box fitted with wings reducing them to the appropriate shearing width.

Then scraps are pushed towards the shearing head under the action of a pushing cylinder.

With this kind of shears, the shearing length can be accurate enough.

2 FEATURES

2.1 Shearing head

It incorporates:

- Sturdy and wide-sized mechanically welded one-piece frame.
- Clamping ram 'vertical reducer' providing the compression of the scraps and holding them during the cut.
- Shearing ram supporting the upper blade, guided by slides of broad width and length.
 - These slides are orthogonal at the back and prismatic at the front. Their clearance can be adjusted from outside the shear.
 - . This ram is a cast steel single piece. Its length ensures efficient guidance and high rigidity of the whole unit.
 - . The cutting blades are reversible. Their rest is done on counter-blades made of treated steel imparting the stress. The upper blade is mobile and inclined.

The exact position of the moving parts is stated by magnetostrictive transducers integrated to the cylinders.

2.2 Pre-compression box

It incorporates:

- Mechanically welded centre floor fitted with stiffening ribs.
- One arched outside wing designed to first reduce the scrap volume and also to guide the second wing.
- One right angle inside wing designed to reduce the scrap volume and to set width and height of the pre-compressed "log" of scrap.
- A pushing ram driving the pre-compressed scrap towards the shearing blades. The shearing length is defined by its movement.

The opposing operation of both wings is efficient and fast to reduce the volume of the material in process.



2.3 Protections

The machine and operators protection incorporates:

- Protection of the motor pump units and the electromagnetic parts.
- Hydro electric distributors fitted below the box. Their efficient protection does not prevent their access which is easy for maintenance operation.
- An anti-spatter wing on the shearing head minimizing the scattering of sheared products into the machine front area.
- Steel nets holding potentially dangerous hydraulic hoses in position in case of breaking and preventing from dangerous oscillation.
- Holding locks of the shearing ram and the clamping device, with electrical sensor, to be manually inserted during maintenance operations in this area.
- Locking devices holding box wings in closed position, with electrical sensor, to be set manually before any travel by road.
- Visual and audible alarm for the machine motions, France and Western Europe operating areas.

2.4 Hydraulic power unit

The hydraulic power station incorporates:

- One main tank.
- One electric motor.
- One high pressure pump adjusted to the high rating pressure for a maximum working stress. Refer to technical specification chart.
- Auxiliary low pressure pumps for combination of great speed to each movement. Refer to technical specification chart.
- Typical timing system with slide valves.
- Fine and continuous filtration on main circuit with electrical clogging indicator.
- Cooling system by air / oil exchangers.
- System holding in temperature the hydraulic oil in case of low outside temperatures to maintain the installation out of frost and to secure the pumps during the starting.
This system is automatically activated according to the temperature of the oil in the tank.

2.5 Electric system

It incorporates the engine starting device and the PLC function in one cabinet.

The electric cabinet door incorporates a display returning information and operating mode selectors.

The shear is fitted with a radio control for an operation by remote control, especially from a crane feeding the charging box.

Supply of a compact repair console fitted with electric control manipulators, automatic or inching operation.

The connection between control panel and cabinet is done by multiconductor electric cable.

2.6 Remote troubleshooting system

The machine has been fitted with a remote information module.

The remote connection is done by GSM for any site in France and in Western Europe. In other geographical areas, a separated telephone line is needed for the connection (RTC network).

The DANIEMI HENSCHEL Customer Service centre is connected to the machine through this system providing the information required for a troubleshooting.



3 OPERATION

Both wings are activated separately by the operator. Their force provides a rapid reduction of the scrap metal.

The over stroke function of the inside wing provides a log of lower volume than the closed box one. The purpose is to make the compression of some materials easier and to reduce the wear of the inside of the box during the advance towards the cut.

The automatic cycle can start once the wings are positioned. The pusher ram moves forward step by step according to the length preset by the operator.

For some materials and with caution, the automatic closing of the wings can be selected by the operator.

After each forward motion of the pushing ram, the scrap is compressed by the clamping device, further sheared.

The machine can also bale the scrap. The compression being is realized against the vertical clamping ram in down position.

At the end of the cycle, the bale's extraction is done by means of a grab from the box or through the shearing head by means of the pushing ram.

Indexing: for some kind of processed scrap, the shearing ram vertical motion can be linked to the clamping ram stroke. Using this function provides reduction of the shearing ram wasted stroke and the productivity is optimized.

Working phases are: the preparing of scrap, the shearing properly, that starts after the wings closing, and the opening. When the shearing or baling cycle is over, the pusher returns to back position and the wings are opened for a new charge.

4 MAINTENANCE

The blades replacement is easy thanks to a simple and easy access.

All cylinder rods are made of half-hard steel, grinded and hard-chrome-plated. Seals (piston, rod, head seals) are selected and dimensioned for pressures much higher than the ones used.

The strongly stressed cylinders are made with bronze guides.

Main areas of material impingement are protected and lined with wear plates made of wear resistant steel.

Elements requiring a daily lubrication are gathered on greasing strips, readily accessible, making maintenance interventions easier.

Working parameters and defaults information are stated on a LCD display located on the front of the electric cabinet.



5 TECHNICAL SPECIFICATIONS

| CIV 600-8LL I | | International System of Units (SI) |
|--|-------------------------|------------------------------------|
| Shear | | |
| - Shearing force | | 600 t (2x300t) |
| - Clearance under blade | | 600 mm |
| - Cut width | | 800 mm |
| - Cut length_Increment | | 0,1 to 0,9 m _ 0,1 m lead |
| - Blade width | | 840 mm |
| - Mobile upper blade inclination angle | | 10° |
| - Clamp force | | 100 t |
| - Clamp length | | 300 mm |
| - Maximum clearance under clamp | | 600 mm |
| - Clamp stroke | | 600 mm |
| - Cut rate up to | | 5 cuts/min |
| Pre-compression box | | |
| - Length | | 7380 mm |
| - Width box opened | | 2400 mm |
| - Width box closed | | 750 mm |
| - Depth box closed | | 565 mm |
| - Cylinder force on inside wing | | 3 x 130 t |
| - Maximal torque at hinge's axle (inside wing) | | 220 t.m |
| - Cylinder force on outside wing | | 2 x 130 t |
| - Maximal torque at hinge's axle (outside wing) | | 147 t.m |
| - Infeed pusher force | | 130 t |
| Power | | |
| - Total installed power (400V 3-phase.50Hz + Neutral + Earth) | | 215 kW (288 hp) |
| Hydraulic unit | | |
| - Capacity for hydraulic oil | | 2500 l |
| - High pressure pumps | Max flow _ Max pressure | 386 l/min _ 350 bar |
| - Low pressure pumps | Max flow _ Max pressure | 785 l/min _ 140 bar |
| Shearing capacity (for steel strength = 360 N/mm²) | | |
| - Round | | 160 mm |
| - Square | | 141 mm |
| - Plate 750mm wide | | 83 mm thickness |
| Productive output | | |
| - Sheared hour production ^(a) | | < 14 t/h |
| - Baled hour production ^(b) | | < 34 t/h (car body) |
| Sound pressure | | |
| - Acoustic pressure level ^(c) | | 90 dB(A) |

^(a) Material production figures are estimates depending on variation of infeed material density, shearing length and method of loading.

^(b) Material production figures are estimates depending on variation of infeed material density and method of loading.

^(c) Estimates made on measurement 1 m away from the shear and 1,6 m high, empty and automatically operating. The infeed and the processing of the materials increase this figure.

**TECHNICAL SPECIFICATIONS (continuation)**

| CIV 600-8LL I | | International System of Units (SI) |
|--|--|------------------------------------|
| Wear plates | | |
| - Hardness class | | 410 HB |
| Supervision display | | |
| - Diagonal size | | 8 " |
| Remote control | | |
| - Maximal range | | 30 m |
| - Frequency | | 433 MHz |
| Control desk panel | | |
| - Feeding cable length | | 8 m |
| Operating usual climatic conditions | | |
| - Temperature | | -10°C à + 40°C |
| - Hygrometry | | Maxi 90% |
| - Altitude | | 0 à 1000 m |
| Indicative weight of the machine | | |
| - Empty weight, options excluded | | 52 t |
| - Running weight, options excluded | | 54,5 t |
| Standard colours ^(d) | | |
| - Shear body | | RAL 7043 Grey |
| - Moving and protective parts | | RAL 6018 Green |
| Options 'not included into the standard offer' | | |
| - Soundproofing _ acoustic pressure level ^(c) | | 85 dB(A) |
| - High density pushing cylinder | | 150 t _ 35,4 daN/cm ² |
| - Charging bucket | | 7 m ³ |

^(d) Two epoxy paint coats of 40µm each.

With respect to performance enhancement, **DANIEMI HENSCHEL** reserves the right to modify the technical features of this equipment without any prior notice

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6 OPTIONS, NOT INCLUDED INTO THE STANDARD OFFER

6.1 Equipment for heavy cold

This equipment has been designed to allow for the machine starting in case of low temperatures (down to - 25°C). It incorporates:

- Reinforced qualities of the shear structure
- Oil heating system by throttling
- Enhanced electrical cabinet heating.

6.2 Hot countries equipment

Specifically designed for high ambient temperatures under shelter ($0 < t^{\circ} < 50^{\circ}\text{C}$): enhanced cooling capacity of the hydraulic oil.

6.3 Tropicalization

Designed for very wet environment (relative humidity over 90%). The cabinet is air-conditioned and the electric components are tropicalized.

6.4 Specific colours

Specific colours defined by the customer for the shear body or/and moving parts. Epoxy paint, 2 coats of 40 µm each.

6.5 Soundproofing

The motor pump group is soundproofed to limit the sound emission to dB(A). Refer to technical specification chart.

6.6 Coating of the pusher cylinder rod

Induction coating of the pusher cylinder rod, on to its entire length, leading to a surface hardness of 57 HRC. This option limits the risk of cylinder scratches and consequently hydraulic oil leakage or malfunction.

6.7 High density pushing cylinder

Fitting of a pusher ram cylinder of higher pushing force, for the production of bales requiring a significant pressure load. This cylinder allows for the ejection of bales through the shearing head. Refer to technical specifications chart.

6.8 Ribbed box plates below pusher

Box base fitted with ribbed wear plates below the pushing ram. The ribs rectangle shape is to limit thin sheets passing under the ram.

6.9 Assisted manual lubrication pump

Pneumatic or electric pump for a daily manual lubrication direct onto the distribution strips and/or onto weekly lubrication points.

6.10 Servo control of the additional equipments

Operating control of the equipments at the machine output (vibrating box, conveyor, etc).



6.11 Charging bucket

Side charging bucket operated by hydraulic cylinder. The scrap load can be prepared while the previous one is being sheared.

A metallic cover below the charging bucket is to protect the inside wing pipes and cylinders.

6.12 Fire protection

Spray system against fire protecting sensitive elements in the periphery of the charging box.

6.13 Hydraulic oil

Supply of the hydraulic transmission oil for first charge of the power station tank.

6.14 Consumable spares 1000 hours

Set of mechanical, hydraulic and electrical consumable spares (filters, fuses, etc...) exclusive of the cutting blades and the hydraulic oil. These consumable spares are estimated for 1000 operating hours.

6.15 Set of cutting blades

One set of cutting blades, fixed and moveable, as well as the retaining fastenings.

6.16 Spare parts

Set of mechanical, hydraulic and electrical spare parts for replacement of any failure of parts essential for the machine operation. (Counter blades, seals, sensors, solenoids, analogical cards, etc...)

6.17 Fixed blades hydraulic holding

Hydraulic tightening and loosening for a fast and easy replacement of the lower blades.

6.18 Specific options

- Special requests on supplies, brands or types by the customer
- Electric adaptation: tension and frequency, 3-phased network and specific neutral system
- Outlet device
- High working altitude > 1.000 m
- Remote control adaptation
- Etc...

These specific versions are quoted and manufactured upon request.