

Operating Manual

Thank you for buying a Wanjet S55!

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Dimensions (L x W x H), cm	130 x 30 x 165
Weight, kg	172
Motor power - wheel traction, W	200
Motor power - hose reel, W.....	100
Battery capacity, Ah (ha)	65 Ah, C5
Speed, m/min	20-80 m/min
Sectional spraying possible	yes
Digital path length setting	yes
Hose reel capacity*	
Wanjet 3/8" lightweight hose, m	250
Wanjet 1/2" lightweight hose, m	150
Max working pressure, bar	50
Possible pipe rail width c/c, cm**	38-100

*The machine works only with Wanjet lightweight hose.

**The standard is 42 cm. For other c/c distances, a special solution must be made for the wheels, shaft reinforcement and shaft bearings.

The wheels operate with a pipe-rail c/c tolerance of +25 mm/-20 mm.

IMPORTANT: The pipe rail must not slope by more than 2 degrees from the horizontal plane in any direction.

The working principles

Wanjet S55 is a spray robot for applying chemicals in greenhouses with a pipe-rail system. The computer-controlled spray robot is easy to operate.

On the control box you will find the main switch, emergency stop and five push buttons.

Once the robot's hose has been connected to a sprayer, the operating procedure is as follows:

Position the machine on the main path with the spray boom a few centimetres from the first plants, then start it by pressing one of the five push buttons.

The valve on the machine opens automatically and pressurises the spray boom.

The operator pushes the machine forward until the front wheels pull it onto the pipe rail.

When the machine runs forward, it sprays either the right or left side of the path.

At the end of the path, it stops automatically and the spray boom makes a double turn to the left while spraying continuously.

The machine then runs backwards and sprays the opposite side of the path. It exits the pipe rail completely and sprays the last plant on the opposite side. The motor stops and the valve closes the spray boom. The operator can then move the machine to the next path in a few seconds and repeat the procedure.

Safety instructions



- The main switch must only be on while the unit is operating.
- The operator must always stay behind the machine (on the same side as the handle) during operation.
- Standing in front of or beside the machine is dangerous. The operator must work behind the handle and ensure that no one enters the operating area.
- If any protective cover is defective or open, press the emergency stop and turn the main switch off. Repair the fault before operating the machine again.
- Always disconnect the battery cable (under the front cover) before opening the control box.
- Follow the chemical manufacturer's instructions on personal protection and safety precautions.
- Never exceed the lowest maximum pressure rating of the machine, hose or spray boom.
- Never clean the machine with a high-pressure cleaner.
- Check the machine and equipment before each use:
 - Cables and cable connections
 - Mechanical damage
 - Leaks
 - Protective covers
 Do not start the machine if any check is unsatisfactory.
- Always wear safety glasses and gloves when handling the batteries.
- Ensure that the machine is not near a fire or spark hazard while the batteries are being charged.

Optional functions & equipment

The unit is supplied with standard software (from version 3.40), which supports:

- A magnet sensor system that can replace the digital path-length setting. This is useful where path lengths vary considerably. A magnet in each path helps the machine detect when the end of the path is near.
After detection, the machine automatically slows down, stops and returns.
This solution requires special wiring on the machine. (Information D133 is not included in this manual.)
- A gutter-cleaning device for hanging gutters (instructions are not included in this manual).
- An indoor roof-cleaning device with oscillating nozzles.
(Instructions and wiring diagram D134 are not included in this manual.)
- A signal lamp for poor lighting or long viewing distances on the control box, allowing the operator to see whether the machine is moving forwards, moving backwards or has stopped.
(Assembly and wiring instructions P17 are not included in this manual.)

With special software and wiring, the unit can be equipped with:

- A dosing injector with tank
(Instructions and wiring diagram P18 are not included in this manual.)
- An automatic lifting spray boom extension, especially useful with low crops and overhead wires. For example, cucumber crops may need spraying above the wires. The automatic lifting extension makes it easy to move the machine from path to path with the extension boom below the wires. Instructions and wiring diagram D130 are not included in this manual.

Choose mode

The machine can detect magnets on the path if a magnet sensor is installed in MAGNET mode.

The machine can also be used for cleaning purposes in CLEAN mode.

In SPRAY mode, the machine counts the selected distance to travel.

The selected mode is shown on the left of the second line of the display window.

To change the mode:

1. Press the emergency stop on the control box.
2. Press the upper left push button and keep it pressed at the same time as the main switch is turned on.
3. Change mode by pressing the "+" push button. A counter will count down from 30 to 0. The selected mode - spray, clean or magnet - appears on the second line. After making your selection, wait until the counter reaches 0. Only "emergency switch" will then appear in the window. After releasing the emergency stop, the mode will appear on the left of the second line in the display window.

Initial start-up of the unit

1. Read the entire instruction manual before starting the machine for the first time. If anything is unclear, contact your distributor for further information.
2. Ensure that the spray boom can turn freely on the machine.
3. First start the machine in manual mode to check its functions.
4. If you test the machine with liquid, use clean water for the first test run.
5. When first running the machine in automatic mode, the operator should follow it along the path to check its operation.
The hose is normally supplied unpressurised and could, for example, be pinched when pressurised.

The control unit

Functions of the control-box push buttons and switches



Main switch

Turns on power to the control box.

Many parameters are reset when the main switch is turned off and on again. Do not use it to stop the machine while any motor is operating, as this may damage the electronics. When the battery charger is connected, it charges the batteries only if the main switch is off.

Emergency switch

Cuts power to the motors and forces the valve to close. Use it only in an emergency.

Left display push button

Activates the command in the lower-left corner of the display.

Right display push button

Activates the command in the lower-right corner of the display. A second button at the bottom of the box has the same function.

The "+" push button

Increases the value of a parameter.

The "-" push button

Decreases the value of a parameter.

The display window

The text in the window guides the operator step by step through the operation.

When the main switch is turned on, total operating hours are shown for 2 s, followed by the start menu for automatic operation:

```
Aut mode S55 x,xx
Mode      bat yyyy %
--next
Select
```

x,xx = software version

Mode = spray, magnet or clean (to change the mode, see page 3).

yyyy = battery charge level. This value is more reliable after the machine completes one automatic spray cycle. The processor measures the value during each cycle and retains it until the next cycle. Switching off resets the value. A battery level below 20% prevents automatic operation from starting, thereby protecting the batteries.

Always charge the batteries when the machine is not in operation. This extends their service life.

Operating instructions - Settings

Before operating the unit for the first time, or whenever you want to change the basic settings, turn on the main switch and select SET as follows:

1. Press the "-" push button twice; SET appears on the first line.
2. Press SELECT using the upper-right button.

Speed

1. Set the desired application speed from 20 to 80 using the +/- push buttons.
2. Confirm by pressing Next (upper-right button).

Exit speed

This is the final speed (for the last 2.5 m) as the robot exits the pipe rail onto the main path.

1. Set the desired exit speed between 15 and 40 using the +/- push buttons.
2. Confirm by pressing Next.

Before setting the delayed closing value, verify on several paths that the machine always exits the pipe rail fully, so the spray boom passes the last plant before it stops.

Sectional spraying start position

1. Use +/- to set the distance from the main path at which spraying should begin.
To spray the entire path, set the value to 0.0 m.
A value greater than the path length means that the unit will run without opening the valve.
2. Confirm the value by pressing Next.

Flow switch control: on or off

1. Press the "-" button to select the desired setting.
Off means the machine ignores whether the flow switch detects liquid output. On means that, in automatic mode, the machine stops if the flow switch cannot detect output when it should.
The machine continues automatically when liquid output returns.
2. Confirm by pressing Next.

Number of spray boom turns at end of path

The minimum number of turns from one side of the path to the other is 1. If an extra dose is required, set the value to 2. The boom then makes a double turn at the end of the path.

1. Change the value using +/-.
2. Confirm by pressing Next.

Delayed valve closing

The machine slows to the exit speed about 2.5 m from the main path on its return. The interval between the start of deceleration and valve closure can be set. (Before adjusting, verify that the machine exits fully onto the main path.)

1. Set the valve-closing delay in increments of 0.1 s using +/-.
2. Confirm by pressing Next.

Search stop

1. Use the "-" button to set this function to On or Off.

When On, the machine slows before the end of the path (according to the path-length setting) and stops to turn the spray boom only after reaching a mechanical stop. This function makes it possible to control the stop position precisely and eliminate counting errors caused by sideways movement on long pipe rails. If On is selected, forced forward power can be set using +: 0 = none, 1 = low, 2 = high.

With setting 1 or 2, the wheels continue forwards after the end is detected while the spray boom turns, preventing the machine from rolling backwards.

Use this function only when the pipe rail slopes upwards at the end of the path. If setting 1 is insufficient, use 2.

2. Confirm the selection by pressing Next.

Cleaning

This setting has no effect unless CLEAN mode is selected. The available settings are:

0 = f/b: The valve opens while the machine is moving forwards and backwards.

1 = backw only: The machine runs forwards to the end with the valve closed and opens the valve while moving backwards.

2 = roof: For the oscillating cleaning device. The unit runs forwards with the valve closed. At the end, it starts the oscillating device and opens the valve. Both switch off only after the machine has returned to the main path.

The unit is now ready for operation. The settings are stored for future use, with or without batteries in the machine. Press "-" to switch to manual or automatic operation.

Operating instructions - special functions**Reversed spray boom turning**

Press and hold the "+" button while turning on the main switch, then release it within 2 s of switching on. The spray boom will turn in reverse. When the machine runs forwards, the spray boom sprays the left side of the path; when it runs backwards, it sprays the right side. To reset the reversed spray boom turning function, turn the main switch off and on once.

Forced backwards running

Press and hold the "-" button while turning on the main switch, then release it within 2 s of switching on. The spray boom turns and the machine runs backwards with the valve closed until the main switch is turned off. The unit runs at the exit speed. Use this function only to return the machine to the main path after a stop in the path. The machine must be switched off using the main switch. This function makes it easier to return the machine to the main path after an interrupted spray cycle.

Operating instructions - manual operation

Manual mode is used to move the unit on the rail, perform maintenance and set the working pressure. To select this mode:

1. Press the "-" button until Manual mode appears on the screen.
2. Confirm by pressing Select (the upper-right push button).

Manual operation is now possible:

1. Press Valve (upper-left push button) to open the valve. If the flow switch detects output, FSON appears in the upper-right corner of the display.
2. Press + to move forwards.
The drive wheels run forwards at the application speed set in Settings.
3. Press - to move backwards.
The wheels run backwards at the exit speed set in Settings (for safety).
The hose reel retrieves the hose.
The spray boom makes a turn.

When the button is released, the boom remains in its position until Forward is pressed or manual operation is ended by pressing Exit (upper-right push button). The valve can be used with either the forwards or backwards function.

Operating instructions - automatic operation in spray and cleaning modes

To start automatic operation, select Automatic mode when it appears in the display window.

After pressing Select, the unit requests the path length:

1. Enter the value using +/-.

Note: Allow a safety margin of at least 1 m.

2. Start the unit by pressing Start.

If flow-switch control is active, the valve opens and the display shows "error no liquid" until liquid flows through the system. The wheel motor then starts. Push the machine onto the pipe rail until it moves by itself.

If flow-switch control is not active, the valve opens when the wheel motor starts.

(This applies when sectional spraying is set to 0.)

On returning to the main path, the machine slows to the set exit speed about 2.5 m before the main path. The delayed valve-closing time determines the interval between this point and valve closure.

At the end of the cycle, the battery charge-level value is updated automatically. This value is more reliable than the value shown when the main switch is first turned on, because it is measured with the batteries under load.

Position the machine at the next path. If the path length is the same, press Start to spray the next path.

Operating instructions - automatic operation in magnet mode

This mode works only if a magnet sensor is installed on the machine and magnets are fitted to the pipe rails. In automatic operation, the message "Pathlength???" is replaced by "adjust stop (0-3) after magnet".

For settings below 2.5 m, the stopping point depends partly on the speed. After changing the speed, check that the stopping point leaves a safe margin before the last possible stopping position.

With setting 0, for example, the motor switches off when the magnet is detected. The machine then moves a little farther because of its kinetic energy.

Install the magnets 3 m from the desired stopping point.

Error messages during automatic operation

Two error messages may appear during automatic operation:

Error - No liquid

This message can appear only when flow-switch control is active in Settings.

The machine stops and shows this message when:

1. There is no liquid output. The valve remains open and the machine restarts automatically when output resumes.
2. The liquid output is too low (<2.6 l/min).
3. The flow switch is dirty or defective.

When the flow switch detects liquid output again, the machine automatically resumes the program.
(To test the flow-switch function, see Operating instructions - manual operation.)

Error - counting

This message appears when:

1. The machine stops or runs more slowly than expected.
2. The wheel motor is overloaded.
3. The inductive sensor or electronics cannot detect that the wheels are moving.

When a counting-error message appears, two options are shown on the screen:

Continue - press this to restart the machine and resume the program where it stopped.

Reset - press this to reset all values. It is recommended that you return the machine to the main path and restart the spray cycle.

Service and maintenance

Batteries

Charge the batteries after every operation, even if the charge level is high. This extends battery service life. If you are not using the charger supplied with the machine, always use one that can remain connected continuously while the unit is not operating, without damaging the batteries.

Wheels

Check the wheels regularly. Remove all plant residue. Wheels in poor condition increase battery consumption and may cause unnecessary traction and counting problems.

The flange wheels must contact only one side of the pipe rail during operation. Contact on both sides may cause the machine to climb and become overloaded.

Chain

Lubricate the chain regularly.

Hose

Check the hose regularly.

Take particular care on the main path to prevent the hose from being bent too tightly.

Cleaning

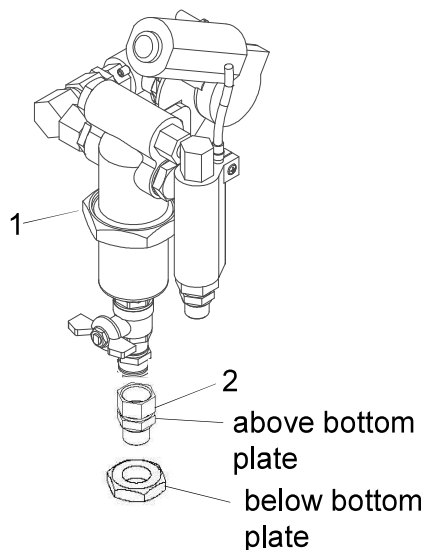
Clean the machine after each operation.

Use a damp cloth to clean the outside.

Never clean the machine with a water jet, as this may damage the electronics and bearings.

Flush the filter by opening the ball valve below it.

To remove the filter cartridge, loosen nut no. 2 in the drawing below. Lift and tilt the filter slightly, then loosen nut no. 1 and remove the cartridge.



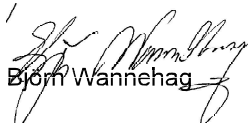
Guarantee

1. The guarantee period is 6 months from the date of delivery.
2. Defective parts repaired or replaced in agreement with Wanjet AB are free of charge.
Damage caused by normal wear or improper handling is excluded from the guarantee.
3. Labour and transport costs are charged to the customer.
4. The guarantee is valid only when the unit has been operated in accordance with the recommendations in this operating manual.
5. Under no circumstances is Wanjet AB responsible for injury to persons or animals, property damage, or consequential loss arising from use or misuse of the unit.

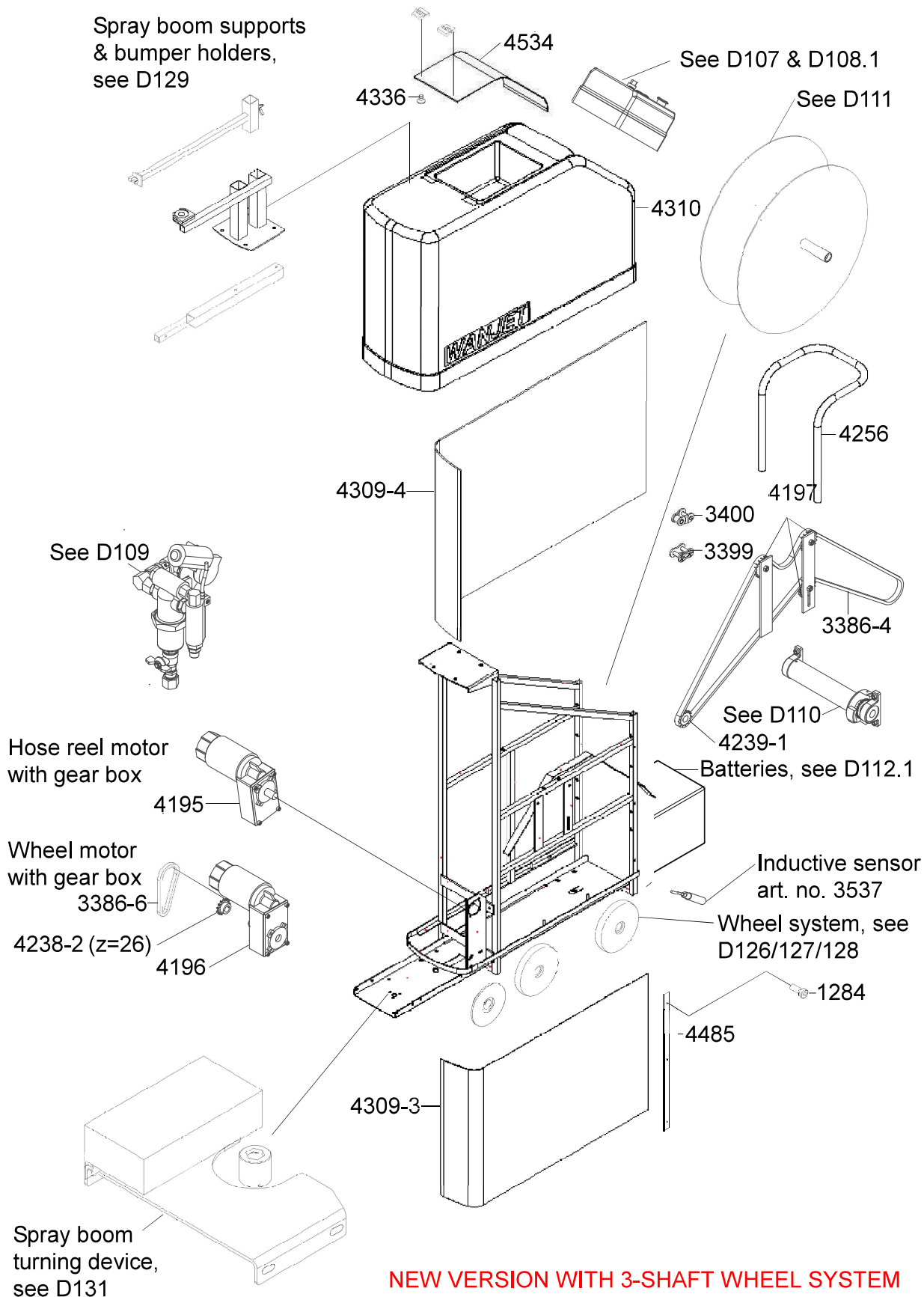
CE Declaration of conformity

We hereby declare that this product conforms to the following directives:

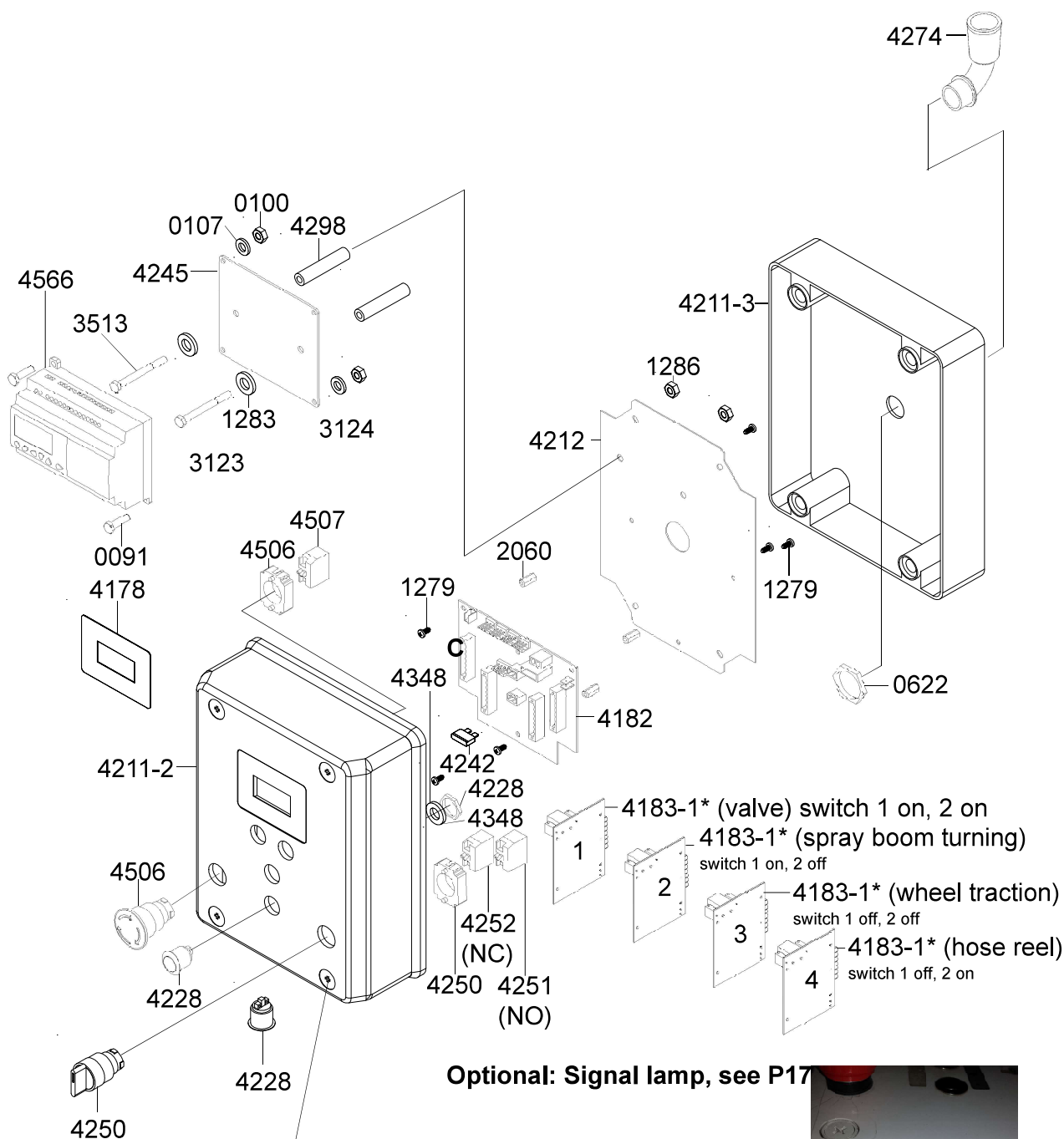
89/392/EEC, 91/368/EEC, 93/44/EEC and 93/68/EEC.


Björn Wannehag

Wanjet AB



**NEW VERSION WITH 3-SHAFT WHEEL SYSTEM
FOR OLDER VERSION SEE D113**



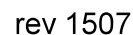
4211-5 Cover screw
(available as a spare part only
without the hinge)

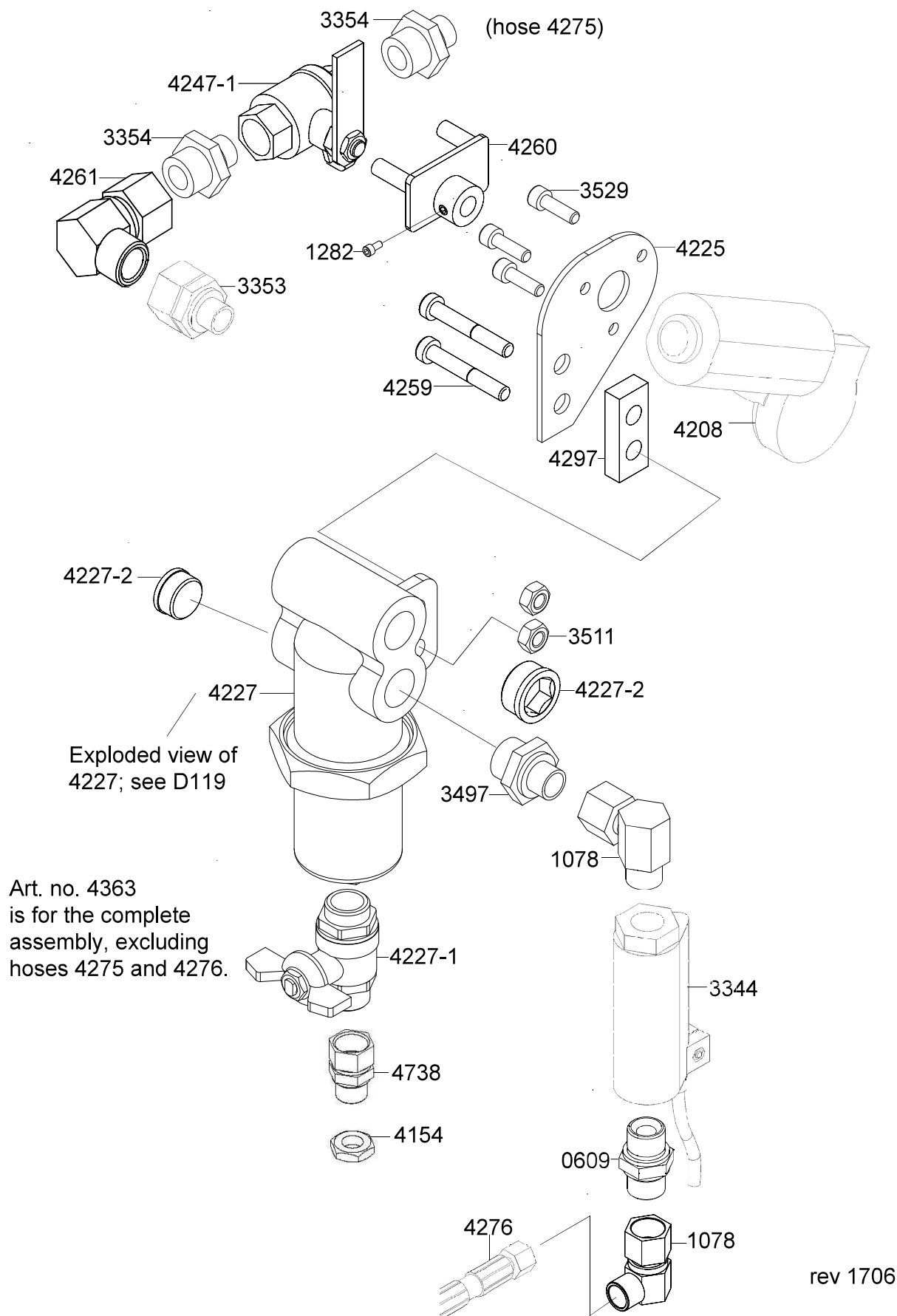
Wiring diagram, see D108.1

*For models with a belt-driven boom-turning device, use version 4183-1 in the boom-turning position (2). The speed card is marked v1.03 on the rear. This version can also be used in all other positions, regardless of the boom-turning system fitted to the machine.
If the machine has a belt-driven boom-turning device, always order 4183-1 when a speed card is required.

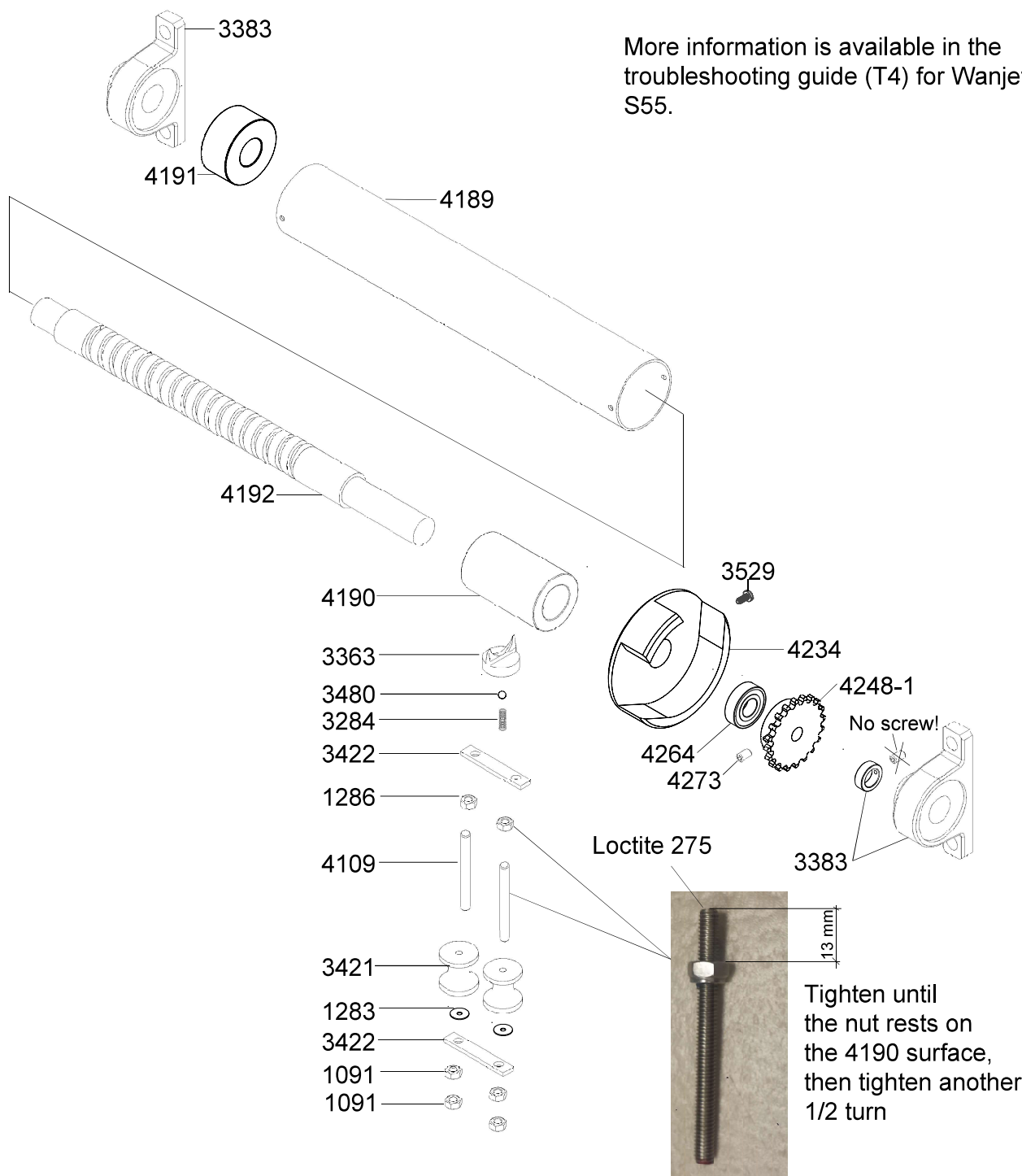
rev 1704



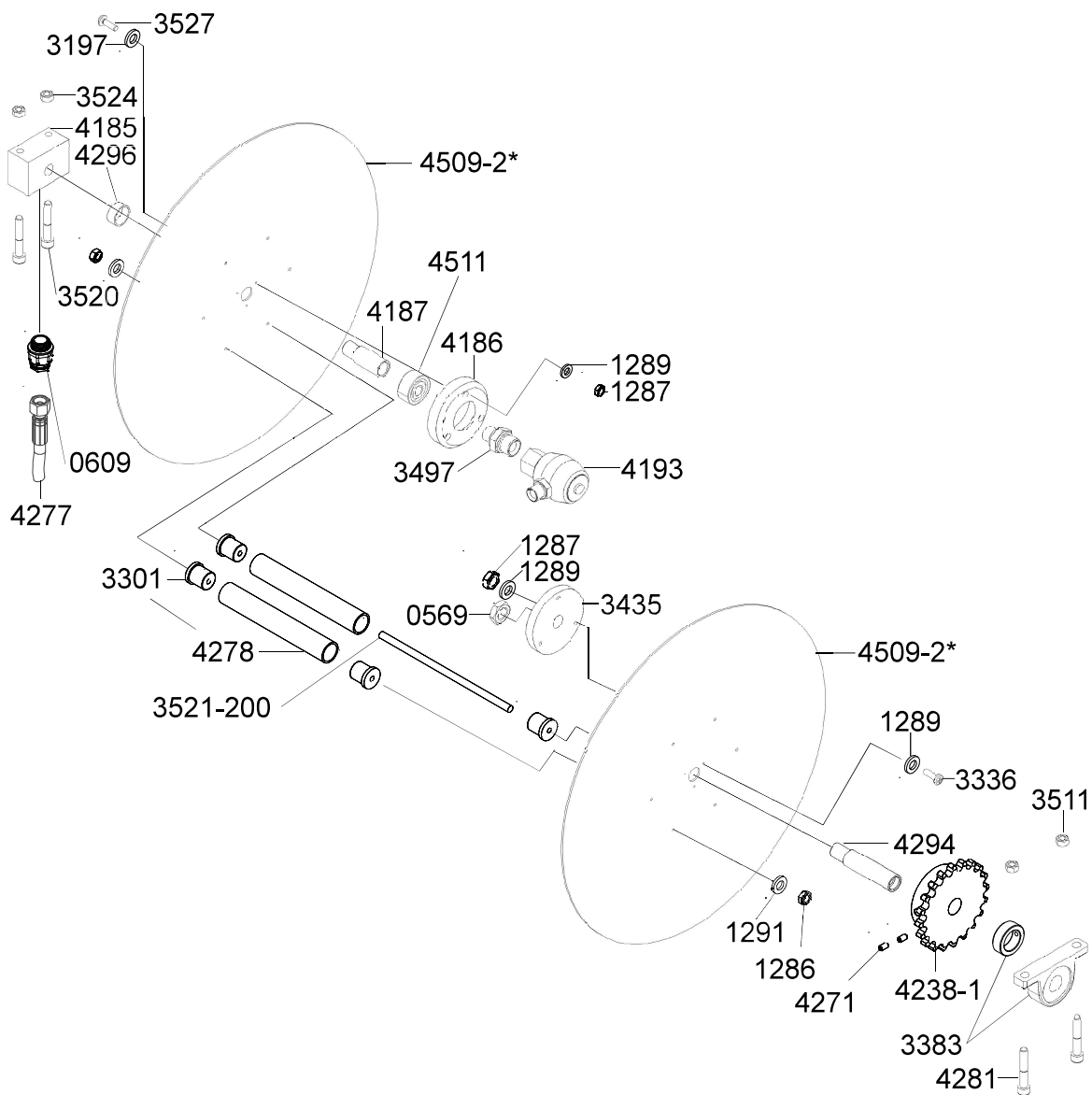




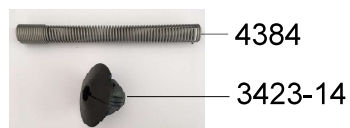
More information is available in the troubleshooting guide (T4) for Wanjet S55.



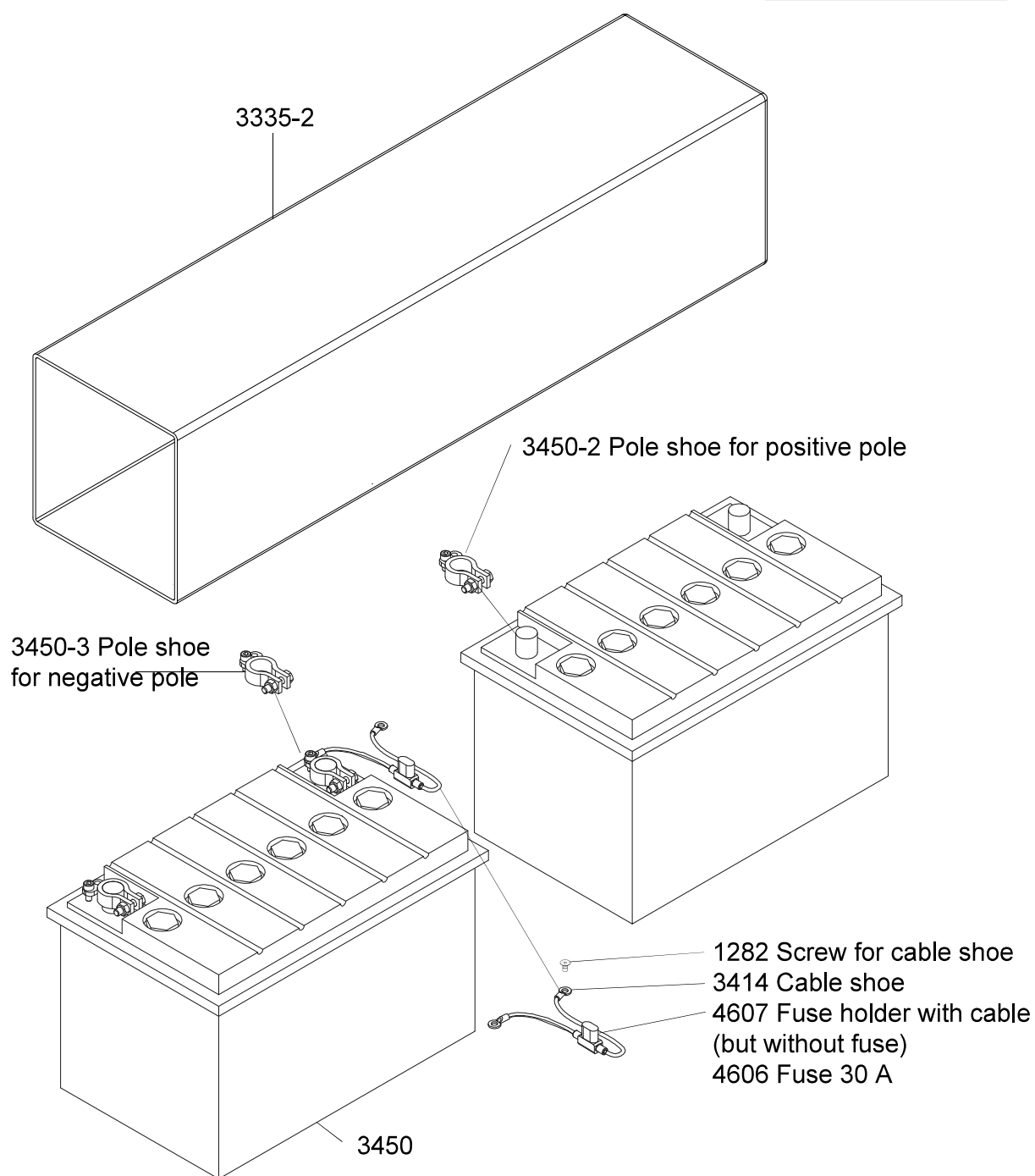
rev 1507



Hose stop and spring
The hose stop and spring are supplied when ordering the spray hose 5404 (3/8").



rev 1704

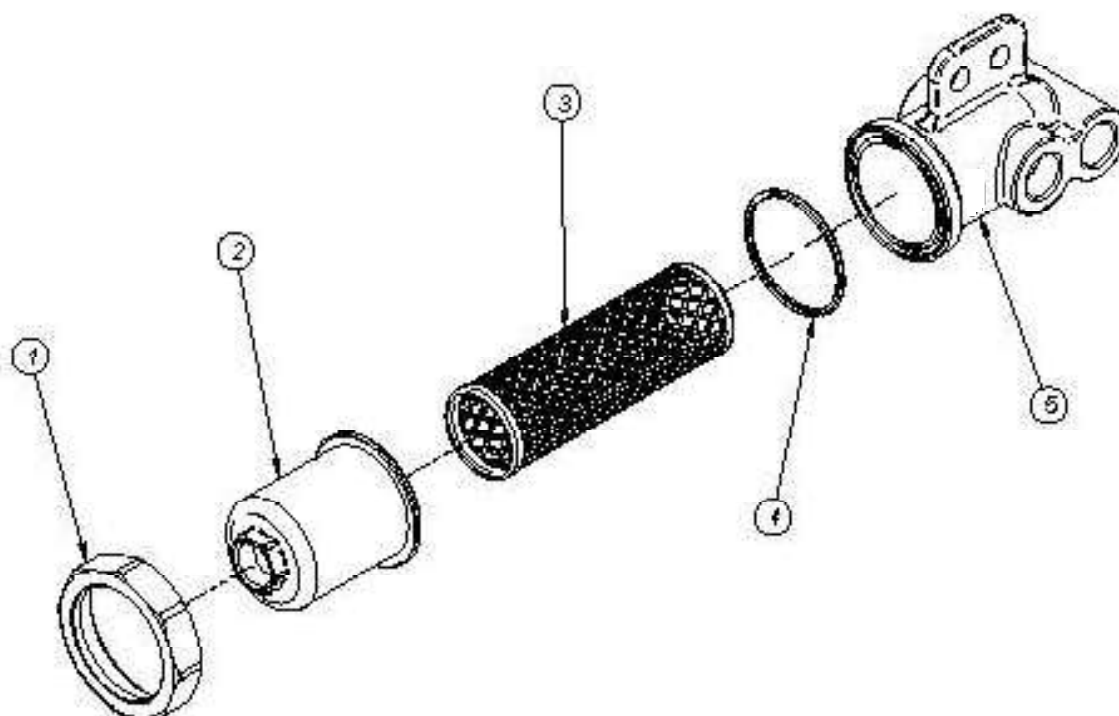


3450-4 cables +/- for connecting battery to machine



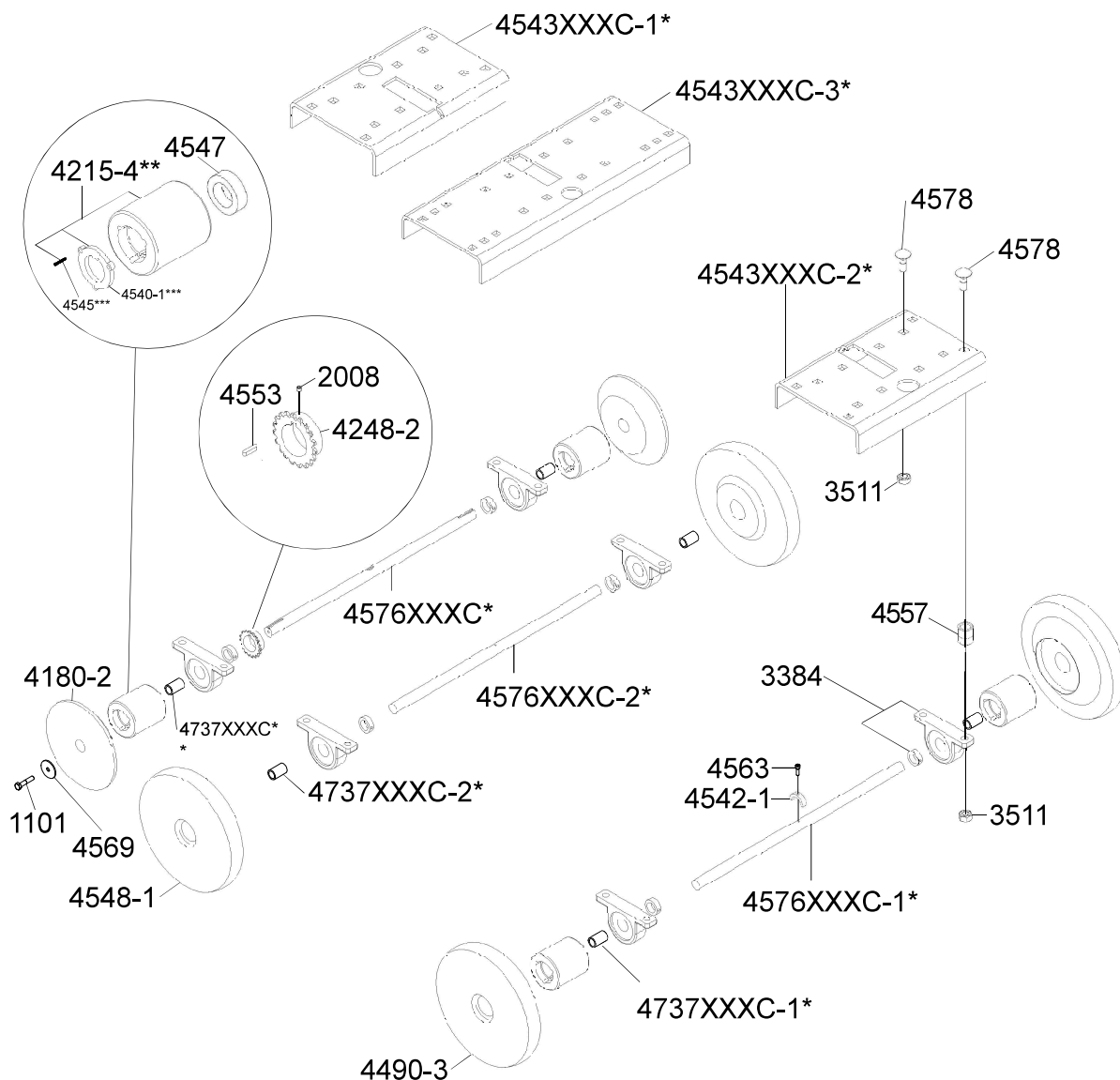
Optional:

Fit flat-pin connector, art. no. 3425, to the end of the battery cables (3450-4).



Position	Art. no.
1	4227-7
2	4227-6
3	4227-4
4	4227-3
5	4227-5

30 mm, three shaft system, closed version

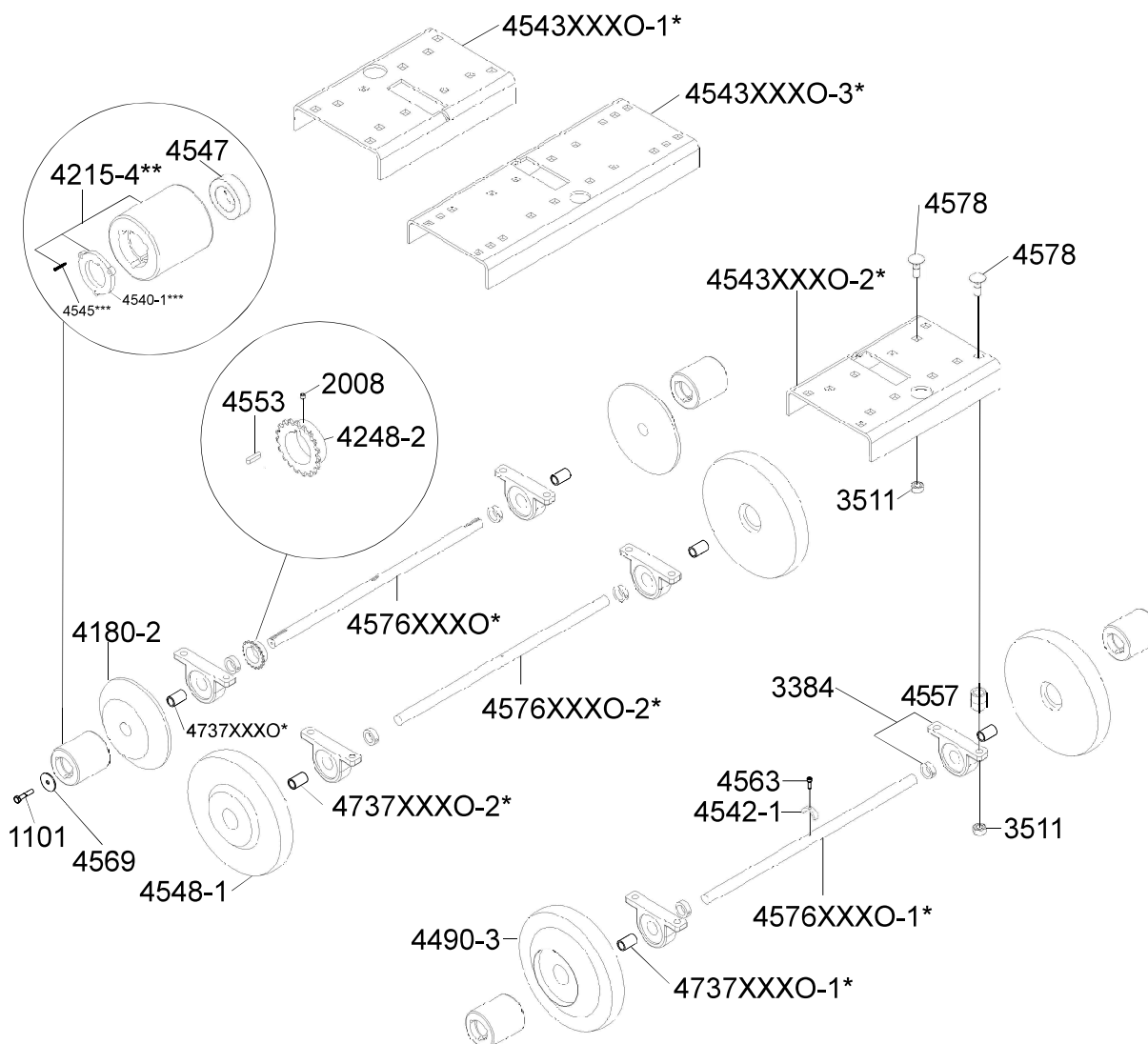


* XXX in this code is the pipe-rail c/c expressed in mm (shaft manufactured with a tolerance of 10-25 mm). C indicates closed entry, with the flange on the outside.

** This item consists of three different components.

*** This is not available as a spare part; the article number is intended only for Wanjet's internal use.

30 mm, three shaft system, open version

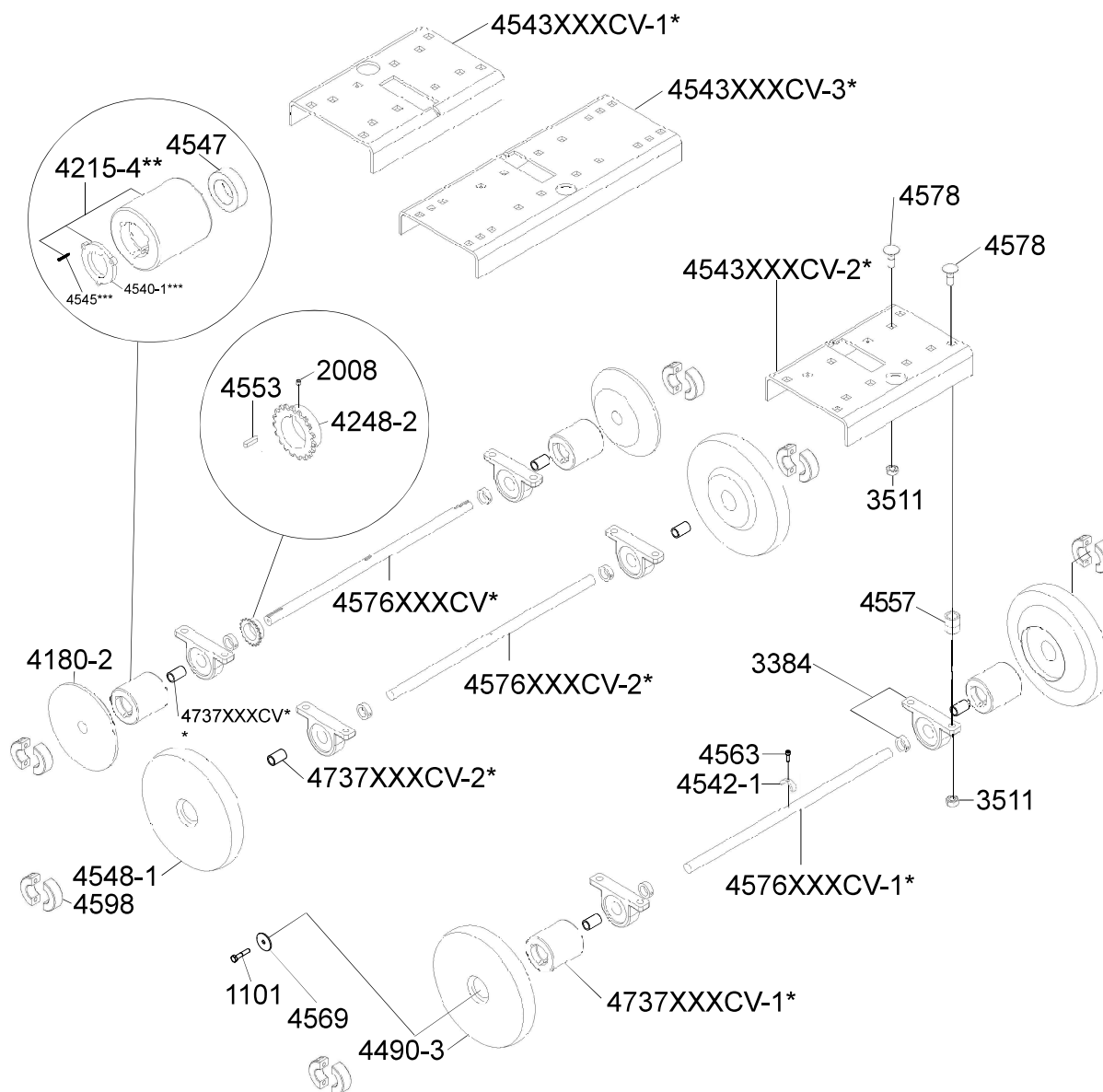


* XXX in this code is the pipe-rail c/c expressed in mm (shaft manufactured with a tolerance of 10-25 mm). O indicates open entry, with the flange on the inside.

** This item consists of three different components.

*** This is not available as a spare part; the article number is intended only for Wanjet's internal use.

30 mm, three shaft system variable width, closed version

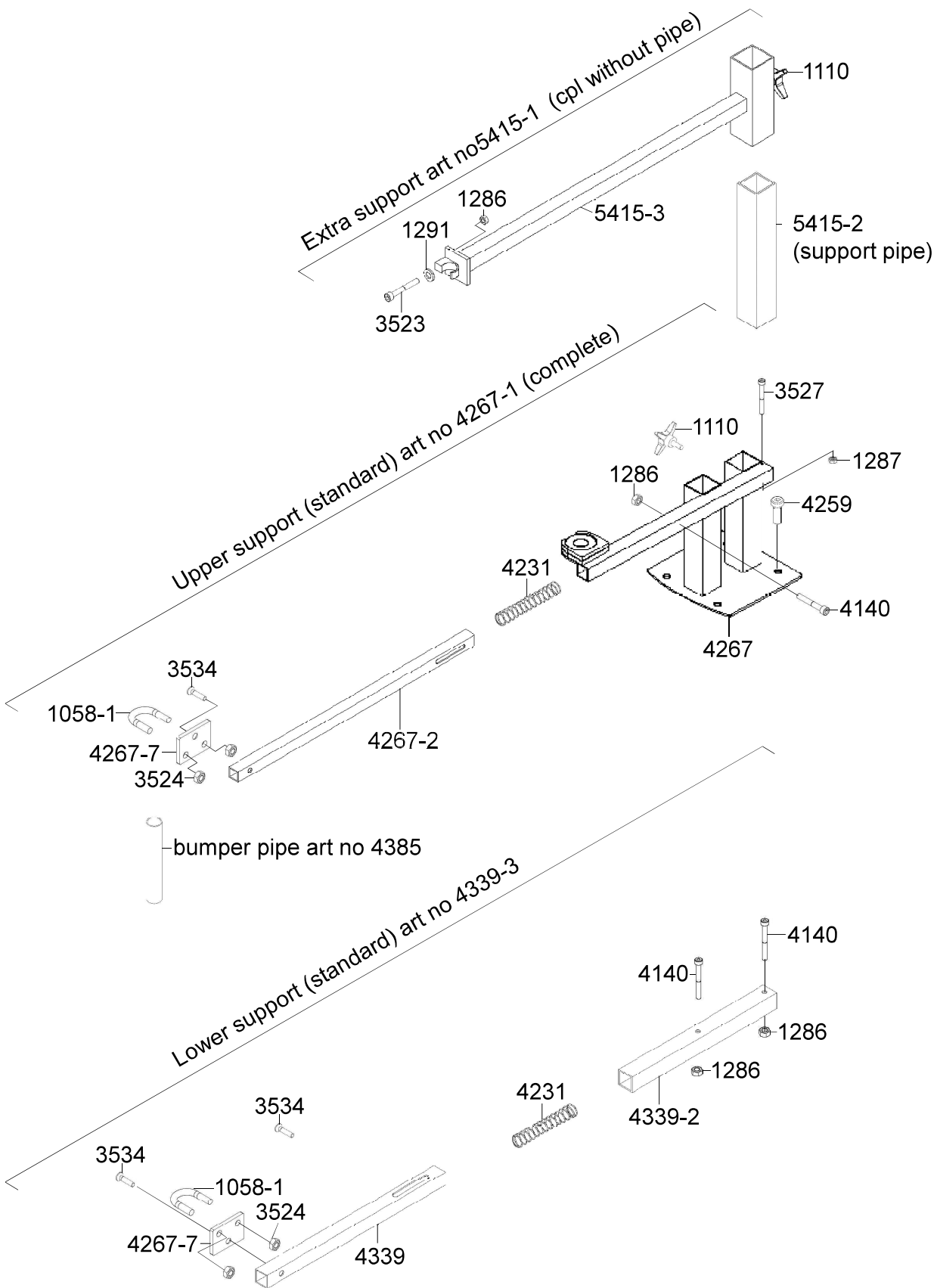


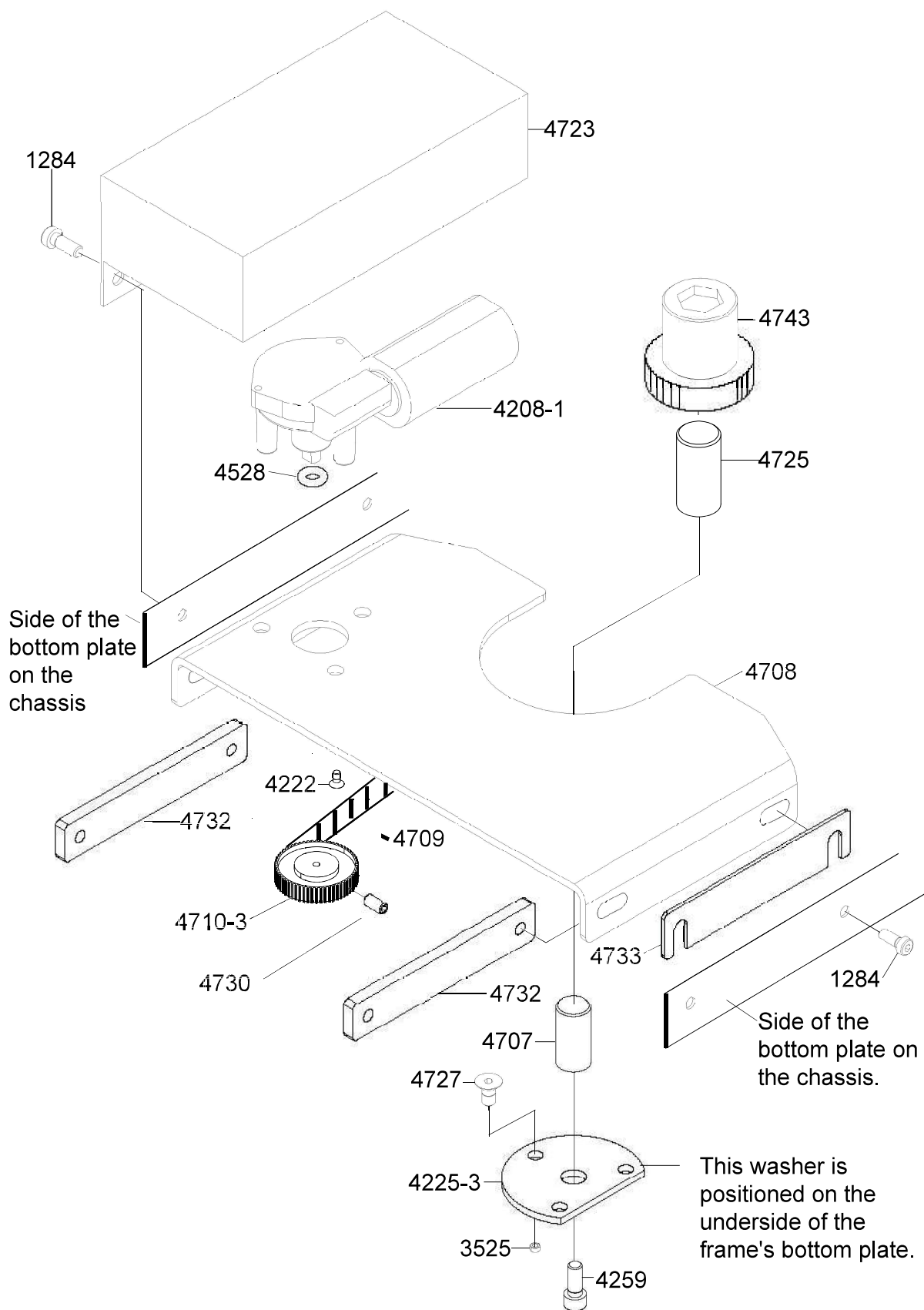
* XXX in this code is the pipe-rail c/c expressed in mm (shaft manufactured with a tolerance of 10-25 mm). C indicates closed entry, with the flange on the outside.

** This item consists of three different components.

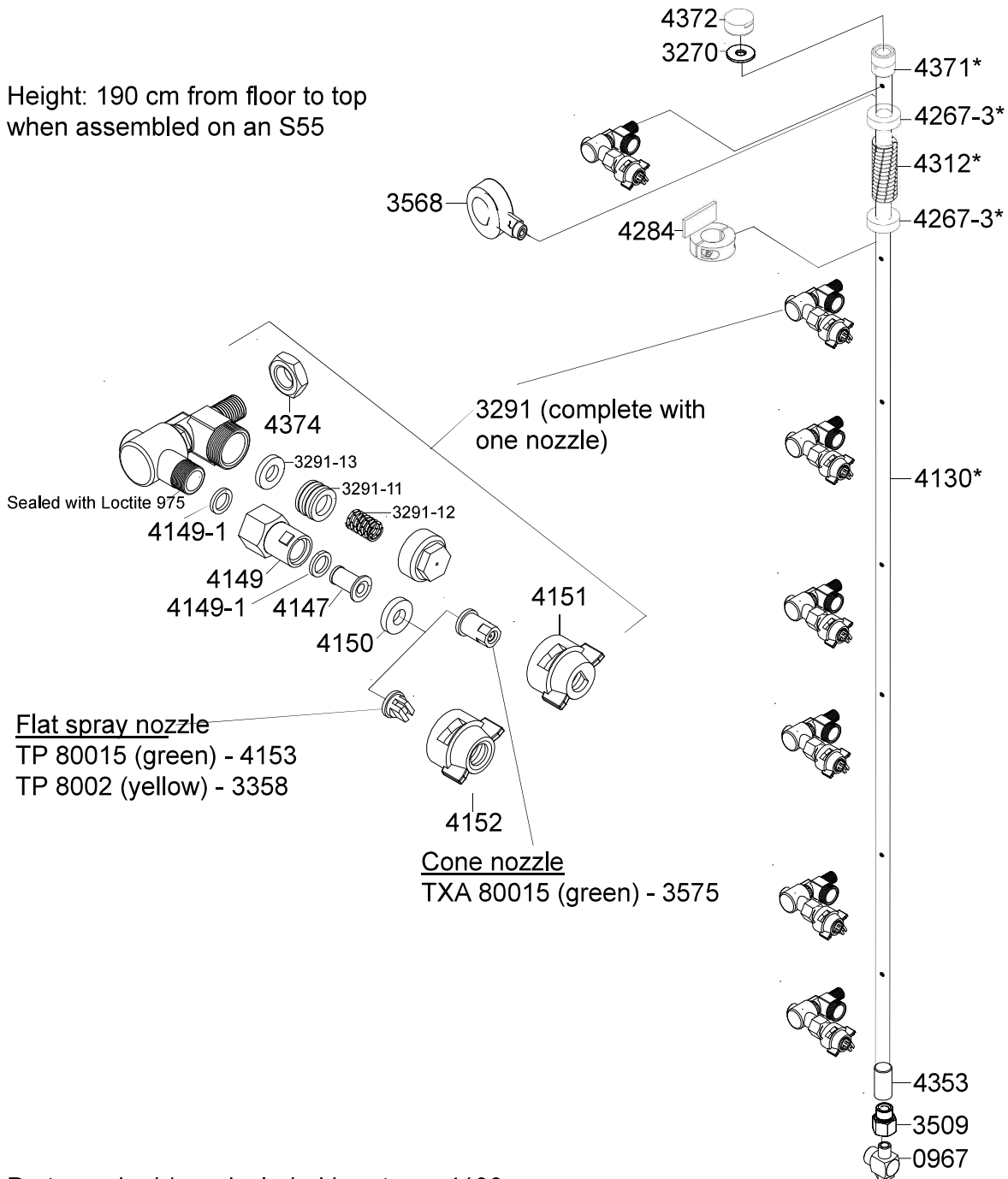
*** This is not available as a spare part; the article number is intended only for Wanjet's internal use.

**** The split tension ring and spacers change position depending on the desired width.





Height: 190 cm from floor to top
when assembled on an S55



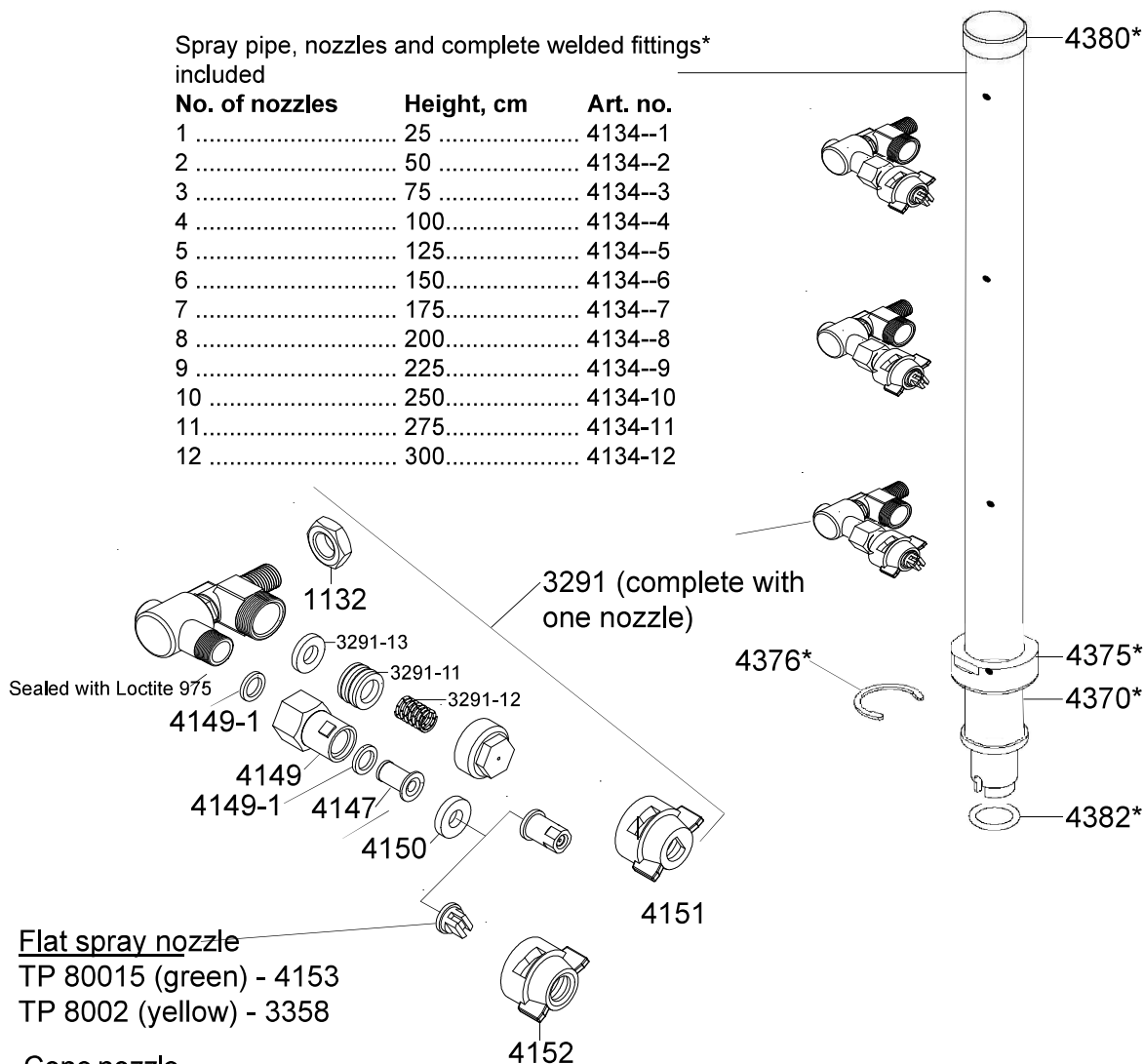
Parts marked * are included in art. no. 4130.

Output diagram for the nozzles, see P9

View of welded connections, see D125

Spray pipe, nozzles and complete welded fittings* included

No. of nozzles	Height, cm	Art. no.
1	25	4134--1
2	50	4134--2
3	75	4134--3
4	100.....	4134--4
5	125.....	4134--5
6	150.....	4134--6
7	175.....	4134--7
8	200.....	4134--8
9	225.....	4134--9
10	250.....	4134-10
11.....	275.....	4134-11
12	300.....	4134-12



Flat spray nozzle

TP 80015 (green) - 4153

TP 8002 (yellow) - 3358

Cone nozzle

TXA 80015 (green) - 3575

Parts marked * are included in the spray boom.

Output diagram for the nozzles, see P9

View of welded connections, see D125

Output for TeeJet nozzles

Conical ceramic nozzle types

TXA8015VK (green, art. no. 3575)

TXA8002VK (yellow)

Bar	l/min	l/min
5	1,50	2,00
7	1,76	2,40
10	2,00	2,80
15	2,60	3,40
20	3,60	4,00

Flat-spray ceramic nozzle types

TP80015VK (green, art. no. 4153)

TP 8002VK (yellow, art. no. 3358)

Bar	l/min	l/min
5	0,76	1,02
7	0,90	1,21
10	1,08	1,44
15	1,32	1,77
20	1,52	2,04