D-Hydro

YOUR HOSE ASSEMBLY MACHINE SUPPLIER

SM 38 EC / SM 38 SC

Standard control — Control

Advanced control + foot pedal — Control

Optional

Standard die sets

	Range (mm)	Lenght
38-06	6-16	45
38-08	8–18	45
38-11	11-21	45
38-14	14-24	45
38-17	17-27	45
38-20	20-30	55
38-23	23-33	55
38-26	26-36	55
38-30	30-40	75
38-34	34-44	75
38-39	39-49	85
38-45	45-55	85
38-51*	51-61	85

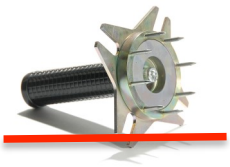
* Max. ferrule diameter before crimping 61 mm

Technical specifications

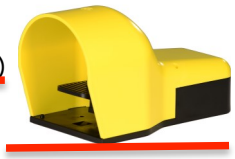
Max hose size	1 1/2" 2 SN, 1 ¼" 4SH
Crimping force (kN):	1650
Max crimping Ø (mm):	61
Max opening (mm):	die diameter + 32
Standard motor:	4 kW 400V 3-Ph
Different voltage versions available	
Control: SM 38 EC	Digital control
SM 38 SC	Advanced digital control
Master dies opening / Length(mm):	105/105
Crimping range (mm):	6 – 61
Weight (kg)	157 (without oil)
Dimensions (LxWxH mm)	640 x 565 x 640
Quick Change-set	Optional
Foot pedal	Optional (only for SC version)
Stand for machine	Optional

Options

Quick Change Set: including storage rack and handle



Solid stand with ability to mount the Quick Change Set and machine



Foot pedal only for SC version

WWW.DHYDRO.COM

Wahlforssinkatu 10 - 80100 Joensuu - Finland - Tel. +358 13 120 490 - info@dhydro.com

D-Hydro

GENERAL INSTRUCTIONS

General Information

The SM 38 EC/SC is delivered with a fully filled oil tank and electricity cable with plug. The machine has to be installed on a solid desk or on the optional Rack with M8 Bolts. The optional die set rack can also be installed on the desk or on the optional Rack with M8 bolts.
This machine is designed for crimping hose fittings only!
Usage for other purposes at user´s own risk!

Rotation direction check of the motor (3-phase models)

1. Check whether the *machine voltage* and the *supply voltage* are *similar*
2. Plug in the machine with the 16 A plug.
3. Switch the electricity on (1)
4. Start the motor (6)
5. Make sure that the motor rotates clockwise in accordance with the markings
6. Stop the motor (7)
7. In case that the motor rotates in wrong direction, switch the electricity wires inside of the plug L1 to L2 and L2 to L1
   NOTE! Only an authorized electrician can do this operation.

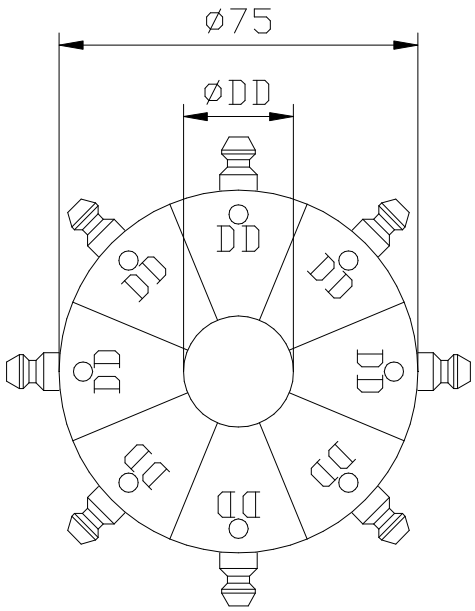
Rotation direction check is not required on single phase models.

Die set pin mounting

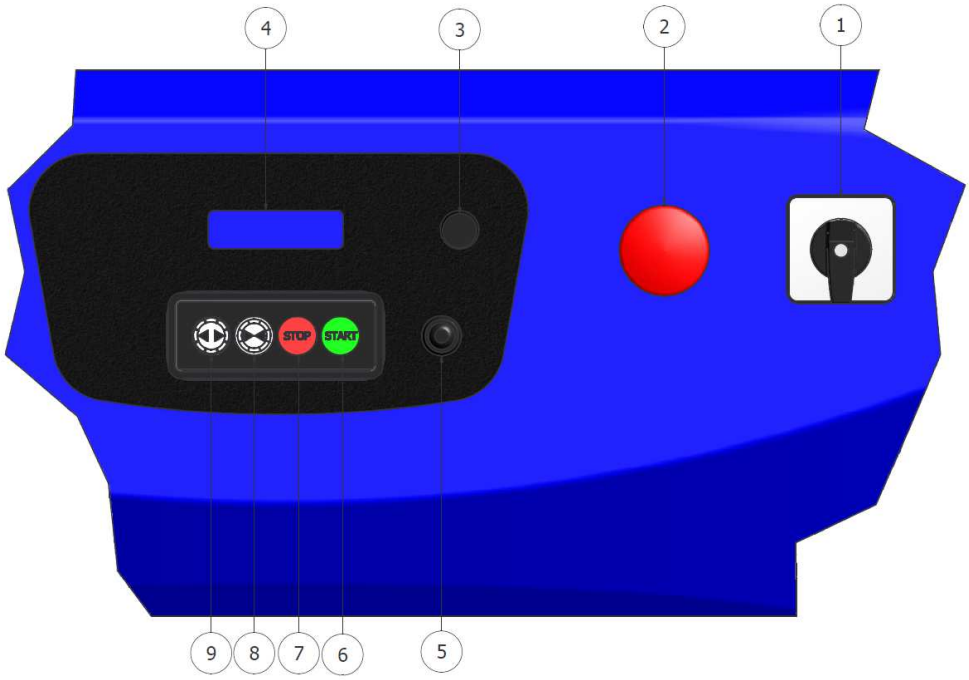
Each die set is delivered with 8 pcs of the die set pins. Carefully check whether all die set pins are **firmly tightened** onto the die set. Use thread locker glue (Loctite or similar) to fix the die set pins. **Incorrect tightened die set pins can prevent solid mounting of the die sets.**

Standard Die sets

DD= smallest swaging diameter	Die Length	Order Code
06	45	38-06
08	45	38-08
11	45	38-11
14	45	38-14
17	45	38-17
20	55	38-20
23	55	38-23
26	55	38-26
30	75	38-30
34	75	38-34
39	85	38-39
45	85	38-45
51	85	38-51
Die set pin		09000010



OPERATION SWITCHES



1. **MAIN ELECTRICITY SWITCH**
When stopped working, switch off electricity (position 0)

2. **EMERGENCY BUTTON**
In case of emergency, push this button and all operations will stop immediately. Turn the button clockwise in order to return it in the up-position

3. **SELECTOR**
By turning the selector you can scroll until the desired function is displayed

4. **DISPLAY**
Depending of the model, EC/SC the features on the display change

5. ENTER BUTTON

- EC Models: push the enter button to lock the diameter set with the selector (Locked appears on the display). Push the enter button again to unlock
- SC Models: push to accept the chosen function with the selector

6. **START BUTTON**
The electric motor will start, the machine is idle

7. **STOP BUTTON**
The motor will stop

8. **SWAGING BUTTON**
The machine will swage the fitting to the chosen diameter

9. **OPENING BUTTON**
The dies will open until the button is released, or the dies are completely opened

D-Hydro

EC CONTROL SYSTEM

Choosing the correct die set

The correct swaging diameter can be asked to the manufacturer of the fittings. The last two numbers of the die set, is the smallest possible swaging diameter. For swaging, choose the closest die set which is smaller than the desired diameter. Each die set has a recommended range of swaging diameters, see the white area in the table. If necessary you can use the grey area, but only if the outer diameter of the fitting before crimping does not exceed the size of the die set with 20mm. For example with the die set 38-23, you should not swage fittings which outer diameter before crimping is over 43 mm!

Die Set	Swaging diameter (mm)										
	0	1	2	3	4	5	6	7	8	9	10
38-06	6	7	8	9	10	11	12	13	14	15	16
38-08	8	9	10	11	12	13	14	15	16	17	18
38-11	11	12	13	14	15	16	17	18	19	20	21
38-14	14	15	16	17	18	19	20	21	22	23	24
38-17	17	18	19	20	21	22	23	24	25	26	27
38-20	20	21	22	23	24	25	26	27	28	29	30
38-23	23	24	25	26	27	28	29	30	31	32	33
38-26	26	27	28	29	30	31	32	33	34	35	36
38-30	30	31	32	33	34	35	36	37	38	39	40
38-34	34	35	36	37	38	39	40	41	42	43	44
38-39	39	40	41	42	43	44	45	46	47	48	49
38-45	45	46	47	48	49	50	51	52	53	54	55
38-51	51	52	53	54	55	56	57	58	59	60	61

Installing the die sets

1. Open the master dies completely.
2. **Stop the motor**.
3. Install the dies so you are able to see the marks.

Removing the die sets

1. Open the master dies completely.
2. **Stop the motor**.
3. Remove the dies one by one

Swaging

1. Set the desired swaging diameter.
   Example: desired swaging diameter 24,6. Use the die set 38-23, adjust the display to 1,6 **(23+1.6=24.6)**

2. Complete the swaging. In order to ensure the quality of the swaging, you need an Interpreter, a piece of metal with correct dimension. By pushing the interpreter into the fitting you find out whether the swaging has succeeded or not. For successful swaging the inner measurement of the fitting ought to be decreased.

SC CONTROL SYSTEM

Main screen

When the machine is switched on, following screen will appear:

- **MANUAL**: the swaging and opening of the cylinder is done manually using the opening and swaging button. Automatic - and Auto pedal – mode are also available.
- **STAND**: the standard die set list is active. Special die set list can be used as well if installed on the chip
- **08,0**: Swaging diameter set by the user
- **+0.0mm**: Fine tuning (correction) of the swaging diameter min –0.5mm and max +0.5mm
- **38-08**: die set size needed to crimp displayed swaging diameter

Menu options

Push enter button to access the "SWAG SETUP"-menu. Following choices can be made by turning the selector:

- **Start swaging**: After each selection, the program will automatically return to this position. When pushing enter button the machine is ready for swaging
- **Lock die set**: This option menu is required when the selected swaging diameter is not in the recommended area of the die set in use (see paragraph EC control system - Choosing the correct die set). Only manual mode can be used .Following choices can be made when accessing this menu
  - *Choose die set*: you can choose the die set from the die set list which is active
  - *Swaging diameter*: set the swaging diameter. Maximum 10 mm bigger than minimum diameter from the die set chosen
  - *Correction*: Fine tuning of the swaging diameter min –0.5mm and max +0.5mm
  - *Opening diameter*: setting of the max opening of the cylinder after each swaging cycle.
    - Max opening = max opening of the machine.
    - Min opening = selected swaging diameter + 5mm
- **Swaging diameter**: Standard menu when swaging with standard die sets. Following choices can be made when accessing this menu
  - *Swaging diameter*: set the swaging diameter. Die sets needed to crimp displayed swaging diameter changes automatically.

- *Correction*: Fine tuning of the swaging diameter min –0,5mm and max +0,5mm
- *Opening diameter*: pre-set of the max opening of the cylinder after each swaging cycle.
  - Max opening = max opening of the machine.
  - Min opening = selected swaging diameter + 5mm

- **Mode select**: different operation modes can be selected.
  - *Manual mode*: Swaging cycle is controlled by pushing the swaging and opening button
  - *Automatic mode*: Swaging cycle is controlled by the swaging button only. The cylinder will open automatically (according to the swaging settings) once the correct swaging diameter is reached
  - *Auto Pedal mode*: Swaging cycle is controlled with a foot pedal (Optional). When pushing the pedal the swaging action will start, the cylinder will open automatically (according to the swaging settings) once the correct swaging diameter is reached

- **QC-Tool change**: irrespective of the swaging settings the cylinder will open and close completely in order to take out and mount the appropriate die set (***only in Manual mode***)

- **Die set table**: Select the appropriate die set list when using other die sets than the standard list. For more information about the non-standard lists, contact the factory

- **Opening delay**: time between the opening of the cylinder and the reaching of the correct swaging diameter (***only in Automatic and Auto pedal mode***)

- **Main setup**: Following choices can be made when accessing this menu. After each selection in this menu, the program will automatically return to this position.
  - *Swaging counter*: amount of swaging actions since the last reset of counter
    - Reset: Yes/No (can be selected using the selector and enter button)
  - *Select language*: following language can be selected
    - English: Standard
    - Suomi
    - French
    - German
  - *Measuring unit*:
    - Metric system: mm
    - Imperial system: inch
  - *Load die sets*: Contact factory for more information
  - *Info*: Following choices can be made when accessing this menu
    - Machine type
    - Serial number
    - Program version

When turning the selector knob completely clockwise in the "SWAG SETUP"-menu the "MAIN SETUP"/Factory setup-menu can be entered. ***This menu can only be accessed after entering a unique code. Only certified and trained persons can access this menu. To exit this menu push the enter button 4 times.***

Maintenance

Regularly clean the master dies and die sets when they look dirty. An old tooth brush can be helpful. The cylinder should be cleaned out from all metal dust by using a small magnet. After 8 hours of use, the master dies have to be properly cleaned and greased with our special high quality grease (molybdenum grease: Tribol Molub Alloy OG Heavy). Ask your distributor for more information and availability of our grease.

The hydraulic oil should be changed after the first 500 hours, afterwards every 1000 hours.
Minimum oil level, 2,2 kW: First line from bottom of the dipstick.
Minimum oil level, 4 kW: Second line from bottom of the dipstick.

Technical Specifications

Max. fitting size	1 ½”
Die opening	32 mm
Swaging force	1650 kN
Max. pressure	300 bar
Operating voltage	380 or 220 V
Motor, 3ph models	4 kW
Motor, 1ph models	2,2 kW
Hydraulic oil	TB32 lift
Oil volume, 4kW:	20 L
Oil volume, 2.2 kW:	15 L

Dimensions

Height	3-phase models: 640 mm Single phase: 645 mm
Width	640 mm
Depth	565 mm
Weight	172 kg (including 20L of oil)