HLT

MT

BK

CFC

P1

P2

PBW/Starsan

Fermentor out

Drain

Cold water

19 4 6 8

3 5 7

9 10

22

20

1 2 13 14 15 16 17 18 21

11 12

a b c d e f g h i j k l m n o p s w x

Sytem overview
HERMS design with fixed connections and 12 motorized ball valves.
Can perform these steps without swapping hoses: fill with water, heat, mash in, mash, sparge, sparge out, whirlpool and cool, wort to fermentor, clean in place, drain system. All inputs and outputs to the system as a whole are manual, to prevent a mess on the floor.
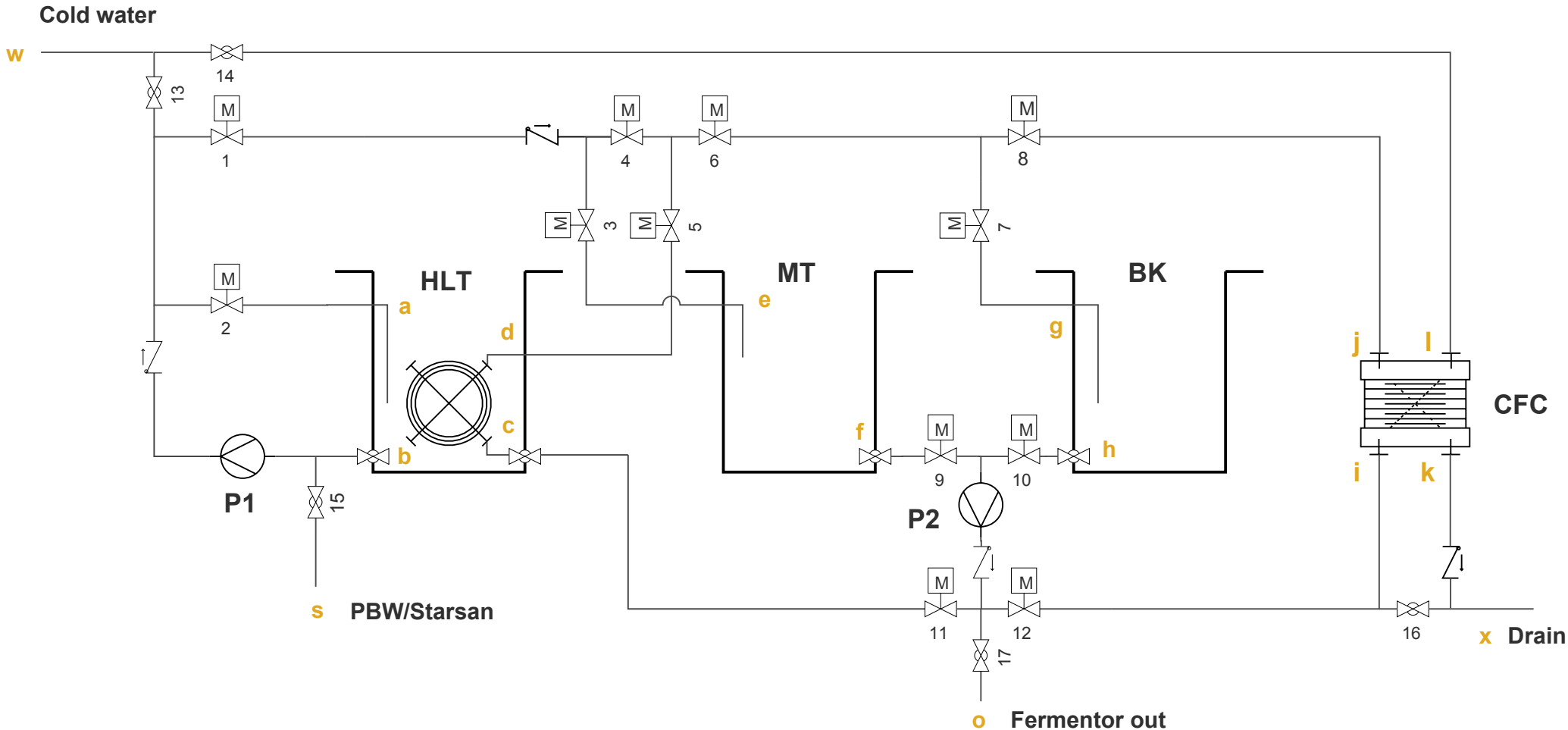
M motorized ball valve   ⋈ manual ball valve   one-way valve

Cold water

w

14

13

M 1

M 4   M 6   M 8

M 3   M 5   M 7

M 2

HLT

a

d

b

c

MT

e

BK

g

CFC

j   l

i   k

M f   M 9   M 10   h

P2

P1

15

s   **PBW/Starsan**

M 11   M 12

17

16

x **Drain**

o   **Fermentor out**

Sytem overview
HERMS design with fixed connections and 12 motorized ball valves.
Can perform these steps without swapping hoses: fill with water, heat, mash in, mash, sparge, sparge out, whirlpool
and cool, wort to fermentor, clean in place, drain system. All inputs and outputs to the system as a whole are
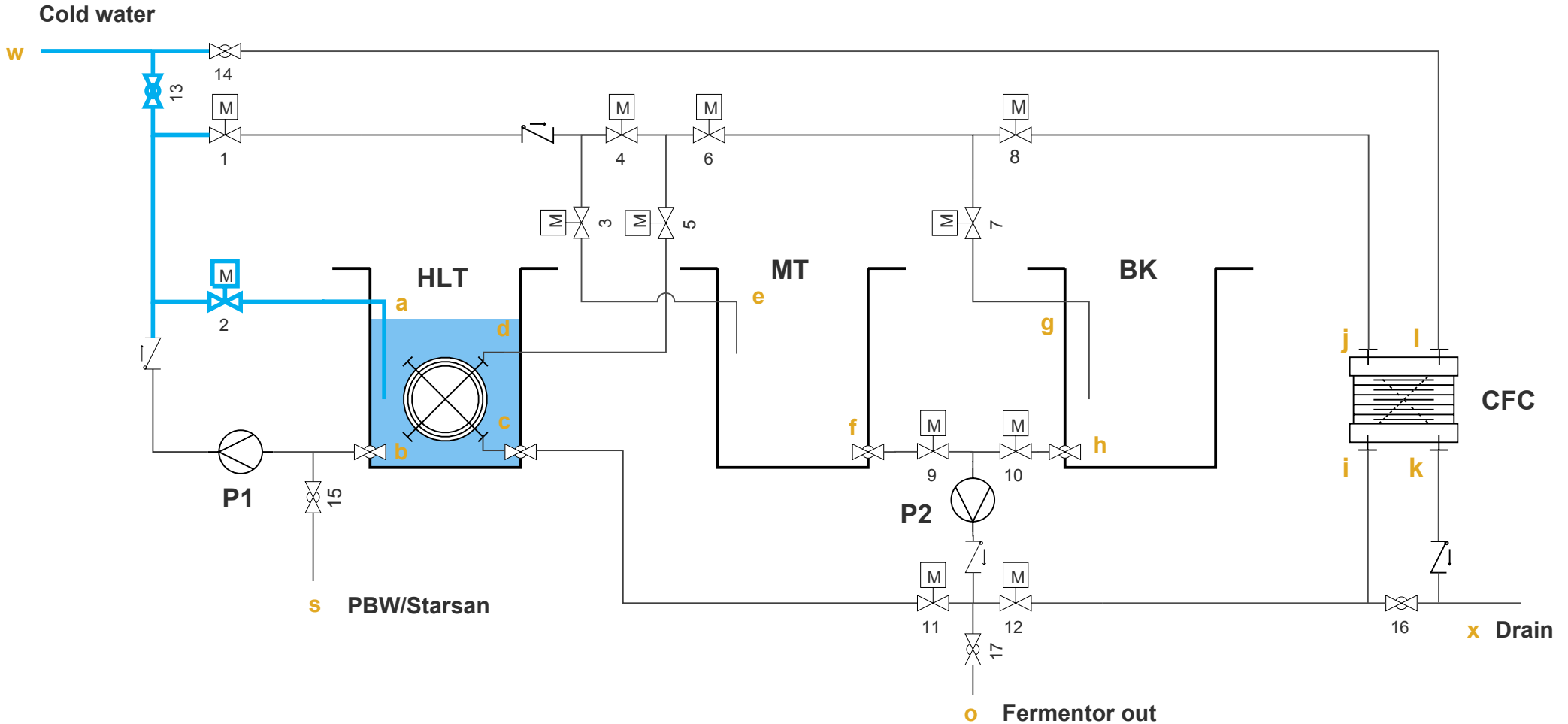manual, to prevent a mess on the floor.
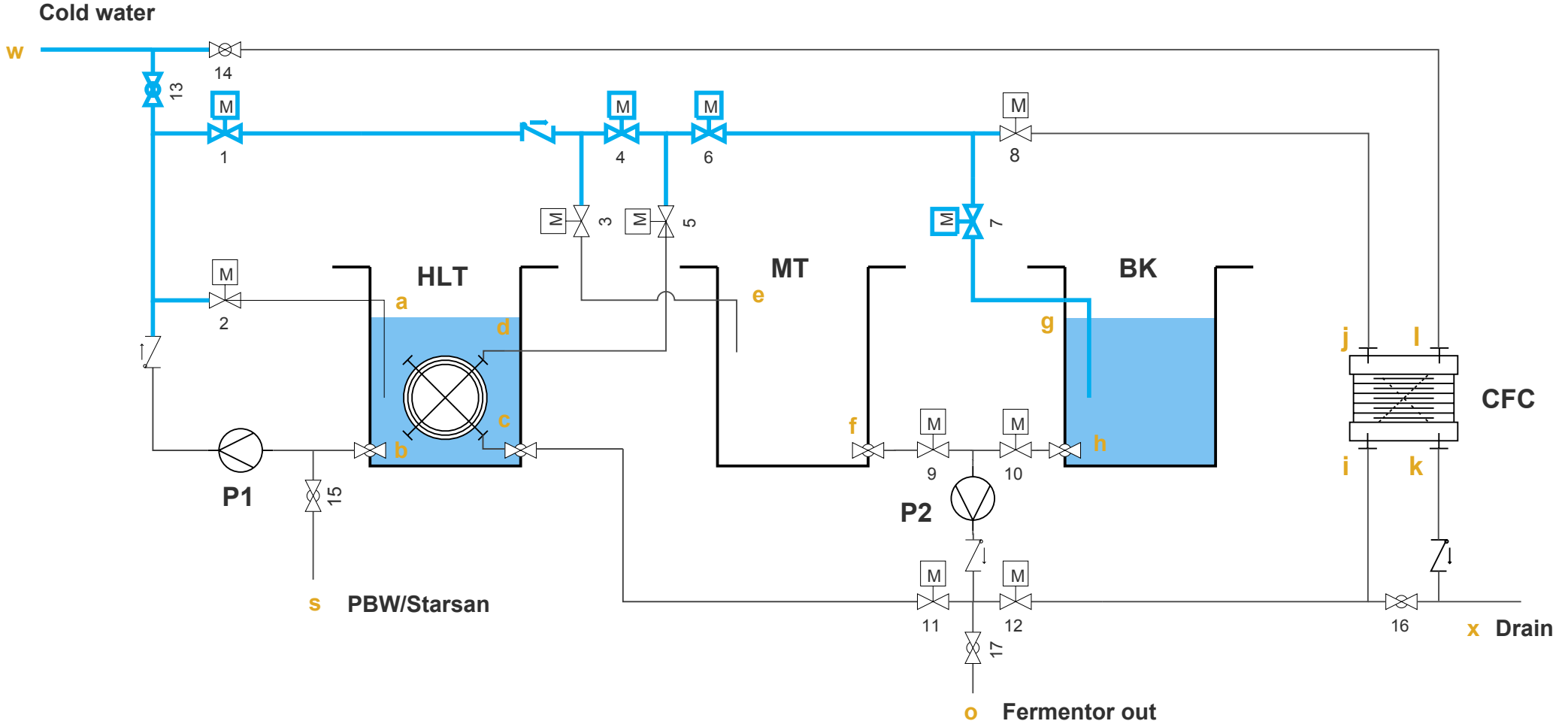
M motorized ball valve   manual ball valve   one-way valve

Cold water

w

14

13

M
1

M
4

M
6

M
8

M
3

M
5

M
7

M
2

HLT

a

d

c

b

MT

e

BK

g

j   l

CFC

i   k

f

M
9

M
10

h

P1

15

P2

M
11

M
12

16

x Drain

17

s   PBW/Starsan

o   Fermentor out
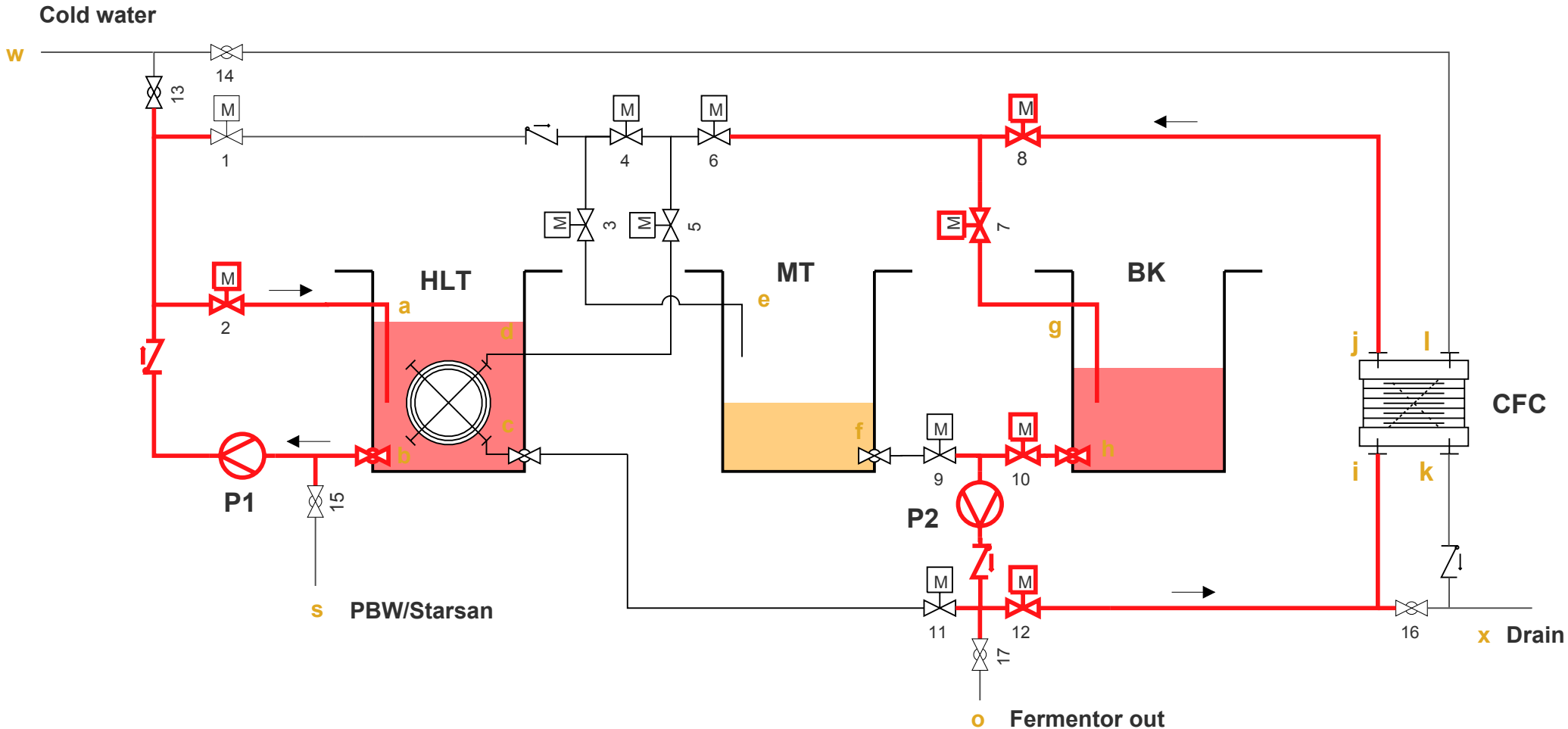
Fill HLT with cold water

From the cold water input, water can flow to the HLT, MT, BK and CFC. This is driven by tap pressure. In absense
of pressure, move the water input before pump 1 at s.
To fill HLT, open manual valve 13. Let the system open valve 2 until full.

Cold water

w

14

13

M
1

M
2

M
3

M
5

M
4

M
6

M
7

M
8

HLT

MT

BK

a

d

c

b

e

f

g

h

CFC

j

l

i

k

P1

15

M
9

M
10

P2

s   **PBW/Starsan**

M
11

M
12

17

16

x   **Drain**
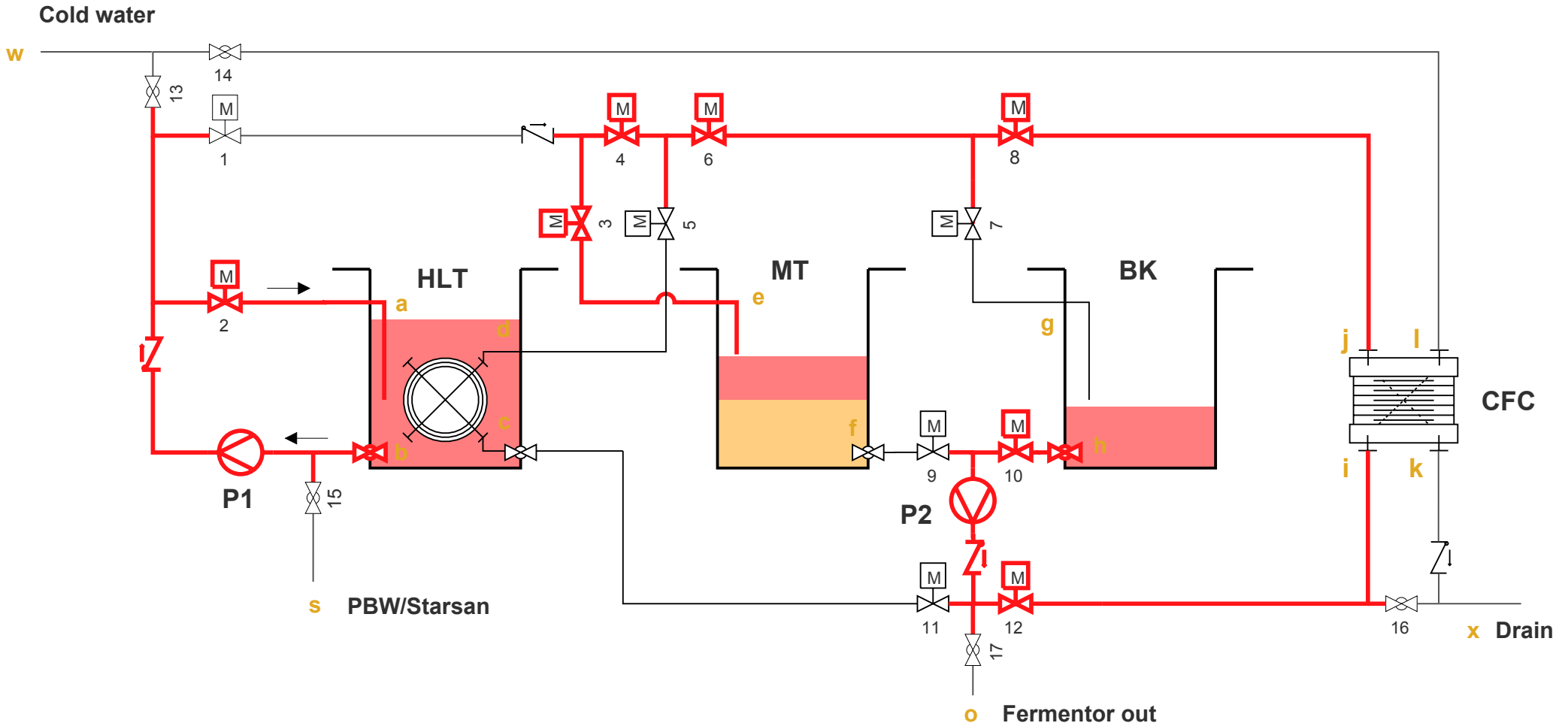
o   **Fermentor out**

Fill BK with cold water
The BK is filled with water after the HLT is full. This water is used for mash in. By using water from the BK, we have
can measure the mash volume in the BK before mashing and the HLT stays full.
System opens 1, 4, 6 and 7 to fill BK until full. Manually close valve 13 when done.

Cold water

w

14

13

M
1

4

6

M
8

M
3

M
5

M
7

M
2

a

HLT

d

c

e

MT

M

g

BK

j

l

CFC

P1

b

f

M
9

M
10

h

i

k

15

s   **PBW/Starsan**

P2

M
11

M
12

16

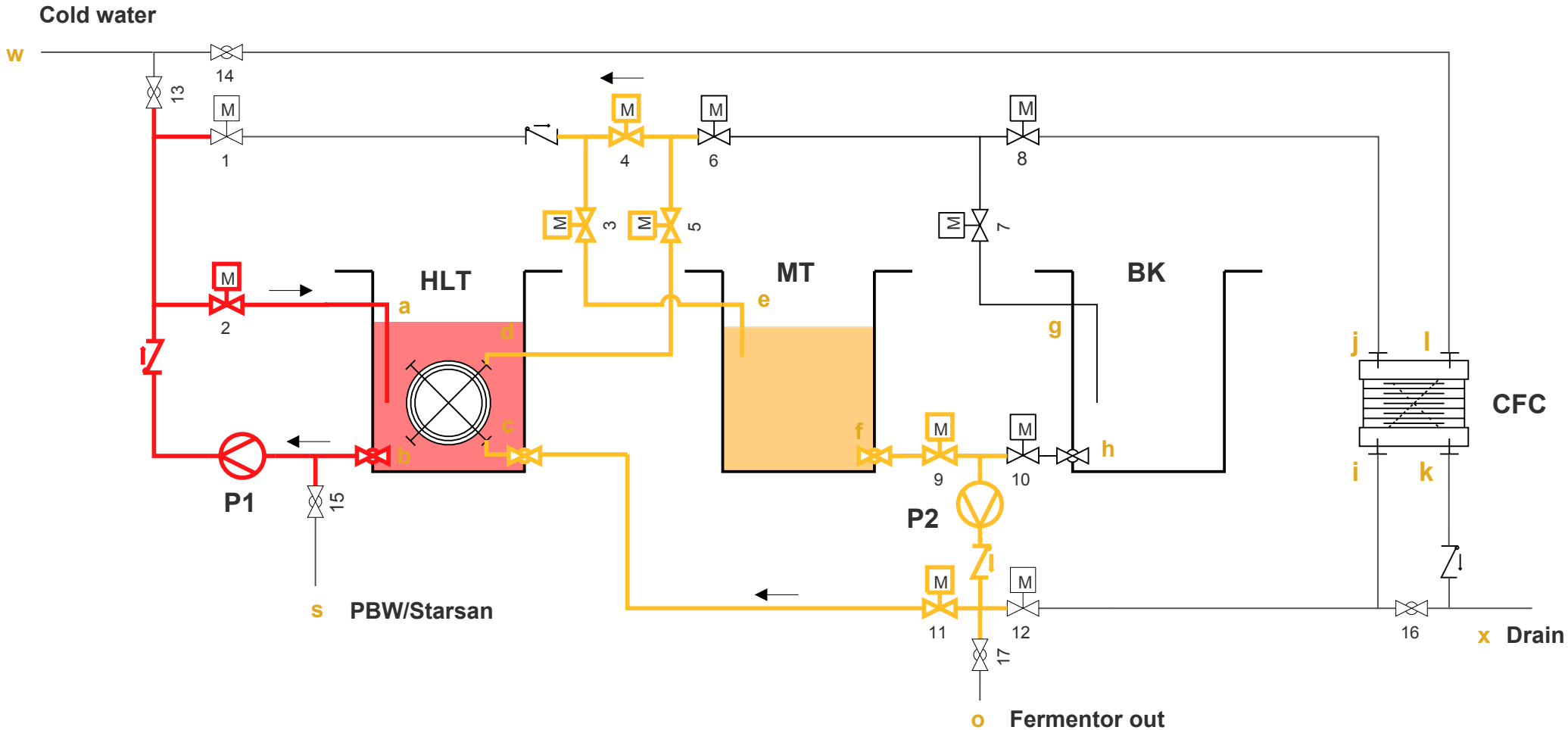x **Drain**

17

o   **Fermentor out**

Heat HLT and BK
The HLT is heated to the first mash temperature, the BK is warmer to account for temperature losses later when
grain is added. The BK and HLT are circulated while heating. In the mean time, grain is added to the MT.

Cold water

w

14

13

1

M

2

P1

15

s   **PBW/Starsan**

HLT

a

d

c

b

M 3

M 4

M 5

M 6

M 7

e

MT

f

9

M

P2

M 10

M 11

M 12

17

o   **Fermentor out**

M 8

g

BK

h

j   l

i   k

CFC

16

x   **Drain**

Strike / Mash in
Hot water from the boil kettle is pumped onto the grains in the mash tun.

Cold water

w

14

13

M
1

M
2

HLT

a

d

M
4

M
6

M
3

M
5

MT

e

M
8

M
7

BK

g

j   l

CFC

i   k

P1

b

c

s   **PBW/Starsan**

15

f

M
9

M
10

h

P2

M
11

M
12

17

16

x Drain

o   **Fermentor out**

Mash

The mash is circulated by pump 2, through the coil in the HLT. By controlling the HLT temperature, the mash
temperature is controlled. The HLT is circulated by P1.

Cold water

w

14

13

M
1

M
2

HLT

a

d

c

b

P1

15

s   **PBW/Starsan**

M
3

M
4

M
5

M
6

M
7

e

MT

f

9

M
10

P2

l

M
11

M
12

17

o   **Fermentor out**

M
8

BK

g

h

j   l

CFC

i   k

16   x   **Drain**
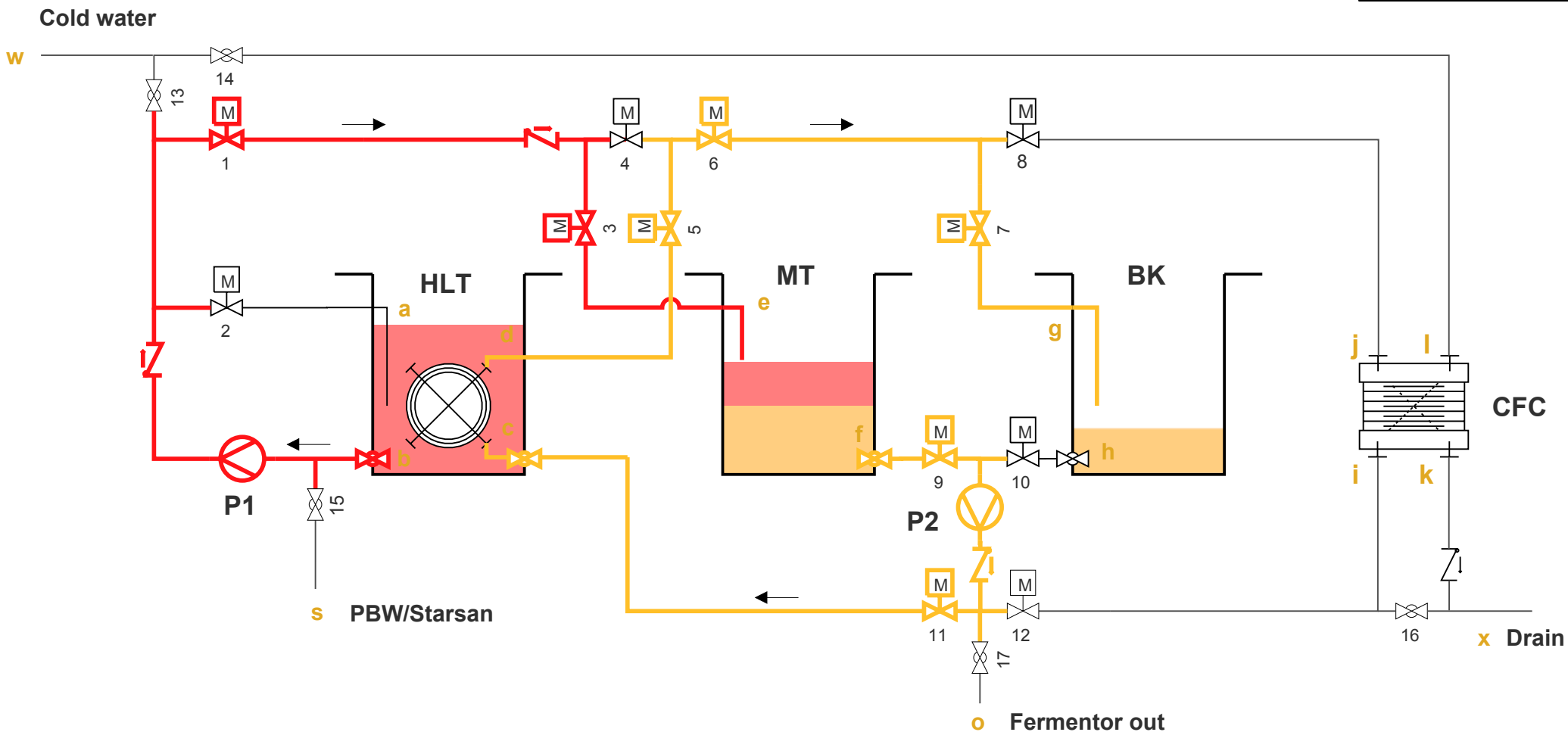
Sparge
Pump 2 pumps wort to the boil kettle via the coil. Hot sparge water from the HLT is pumped on top of the grains in
the MT by pump 1.

Cold water

w

14

13

1

M

4

M

6

M

8

M

3

M

5

M

7

HLT

a

d

2

MT

e

BK

g

j

l

CFC

b

c

f

M

9

M

10

h

i

k

P1

15

P2

M

11

M

12

16

x **Drain**

s **PBW/Starsan**

o **Fermentor out**
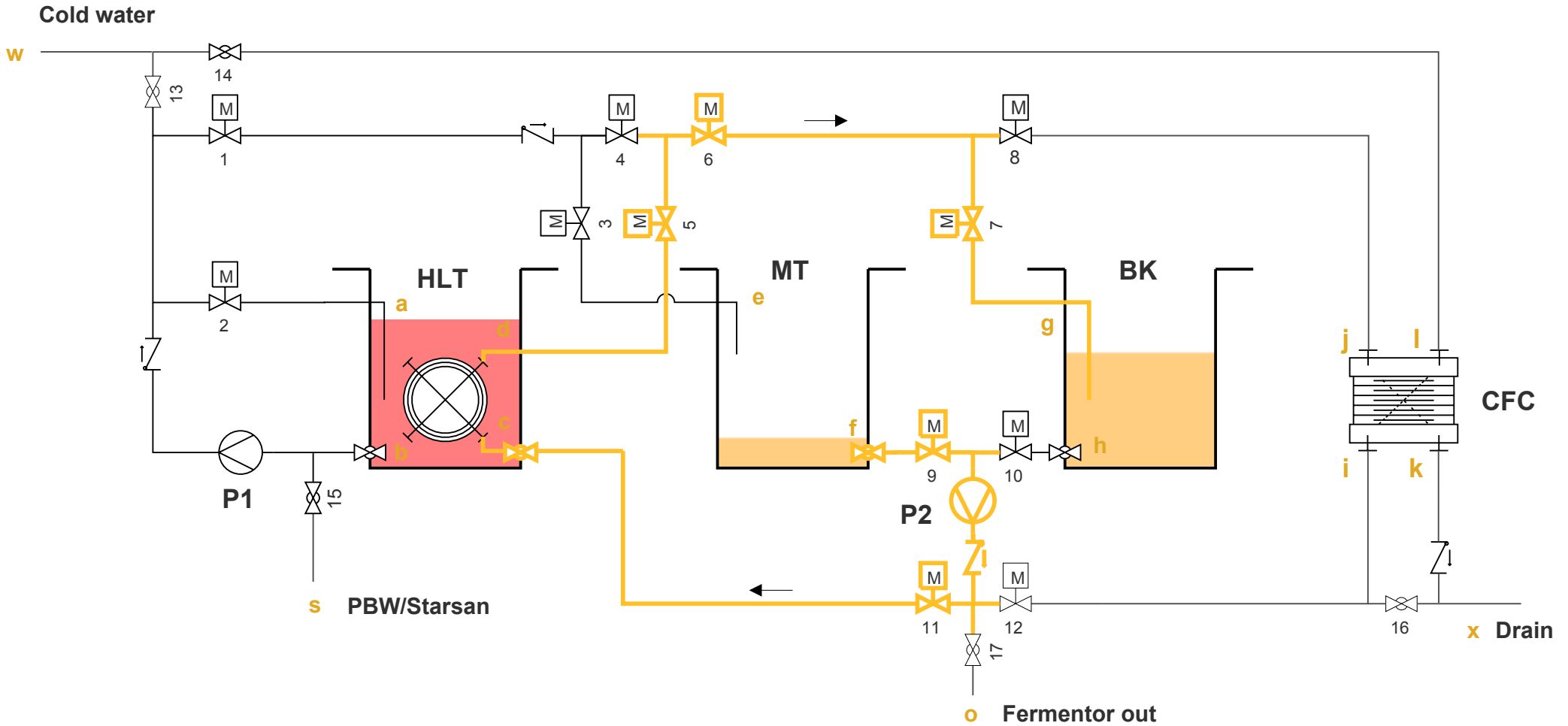
Sparge out
Pump 2 empties the mash tun into the boil kettle. When all the wort is in the boil kettle, all pumps are turned off
and the boil is started.

Cold water

w

14

13

M
1

M   M
4   6

M
8

M   M
3   5

M
7

M
2

HLT

a

d

MT

e

BK

g

j   l

CFC

f   M   M
9   10

h

i   k

P1

15

s   **PBW/Starsan**

P2

M   M
11   12

M   M

16   x   **Drain**

17

o   **Fermentor out**
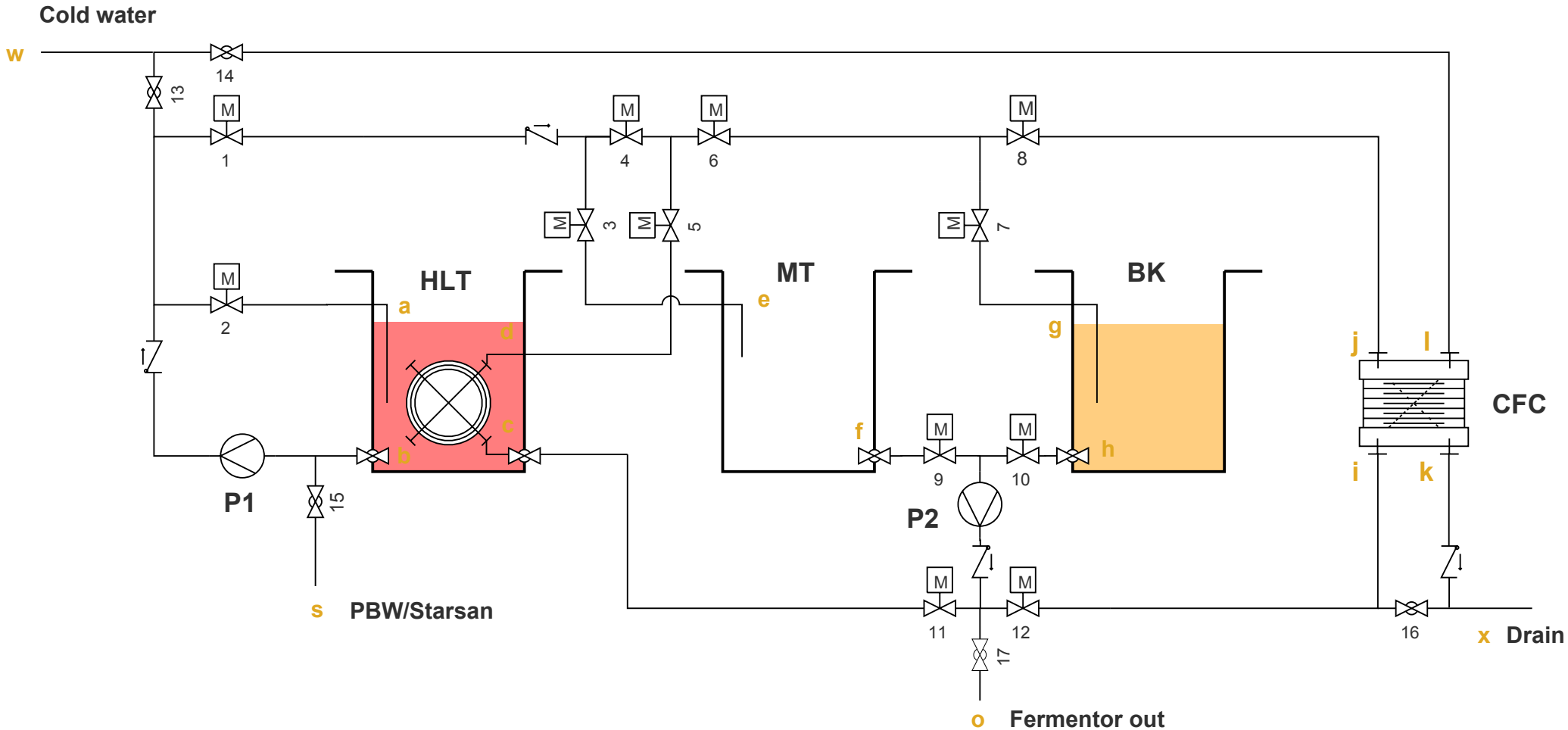
Boiling
No flows active during this step, but added it for clarity: wort is boiled! hops are added!

Cold water

w

14

13

M
1

M
4

M
6

M
8

M
3

M
5

M
7

M
2

HLT

a

d

c

b

P1

15

s   **PBW/Starsan**

MT

e

BK

g

f

M
9

M
10

h

P2

i

M
11

M
12

i

j

l

CFC

i

k

16

x **Drain**

17

o **Fermentor out**
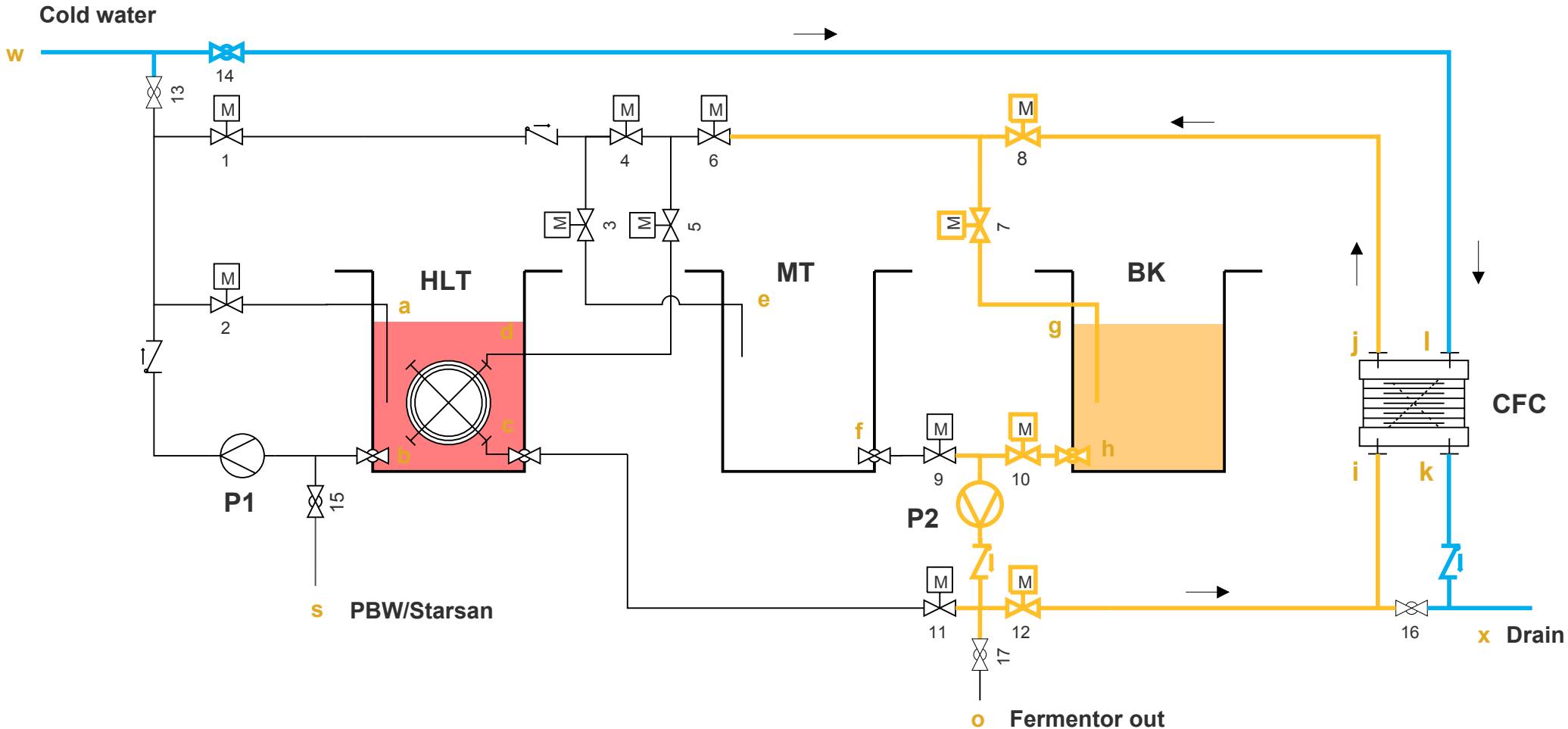
Cooling

After the boil the wort is circulated through the counter flow chiller until pitch temperature is reached.
Valve 14 is manually opened to flow cold water through the CFC, but only after a few minutes of circulating boiling
wort for sanitizing.

Cold water

w

14

13

M
1

M
2

M 3

M 5

4

6

M
8

M 7

HLT

a

d

b

c

MT

e

BK

g

f

M
9

M
10

h

j

l

CFC

i

k

P1

15

P2

i

M
11

M
12

16

x Drain

s **PBW/Starsan**

17

o **Fermentor out**

Wort to fermentor
After cooling, valve 17 is opened manually to pump the finished wort to a fermentor.

Cold water

w

14

13

M
1

M
4

M
6

M
8

M
3

M
5

M
7

M
2

HLT

a

d

c

b

P1

15

s   PBW/Starsan

MT

e

M
9

M
10

f

P2

M
11

M
12

17

o   Fermentor out

BK

g

h

M
7

CFC

j   l

i   k

16

x   Drain
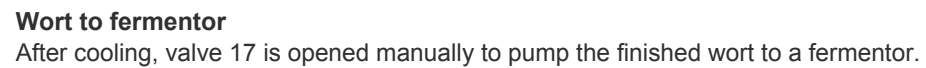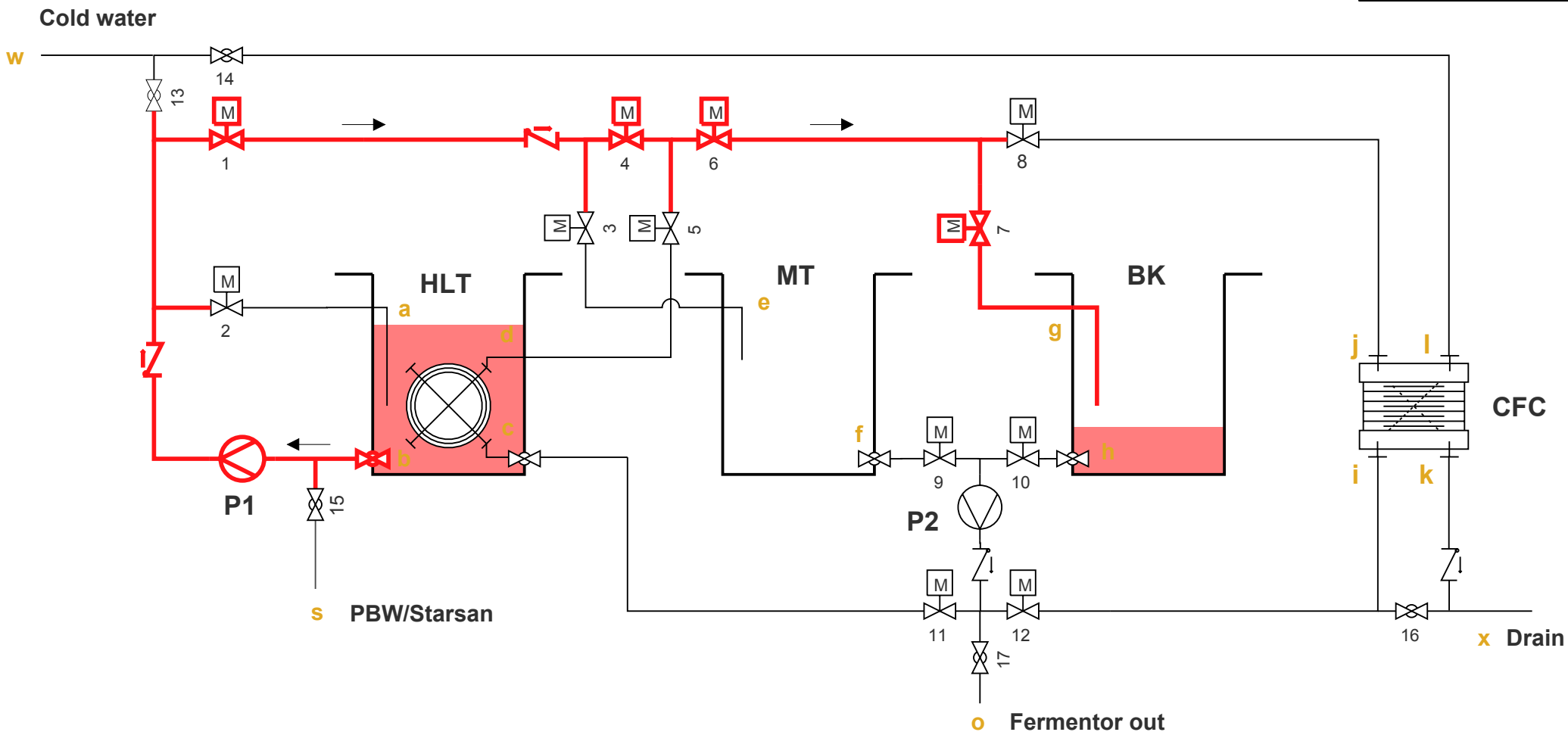
Extra sanitized water
If the volume in the fermentor is too low (due to not estimating evaporation correctly), it can be topped up with water
from the HLT. The water has been heated and is sanitary. To use this, it has to be pumped to the BK first. Then the
steps *cooling* and *to fermentor* are repeated.

Cold water

w

14

13

1

M

4

6

M

8

M

3

M

5

M

7

M

2

M

HLT

a

d

c

b

MT

e

BK

g

h

CFC

j   l

i   k

f

M

9

M

10

M

P1

15

P2

M

11

M

12

16

x **Drain**

17

o **Fermentor out**

s **PBW/Starsan**

Clean in place 1:
Open valves 13 and 16 manually.
Flush boil kettle with cold water, by filling it with pump 1 and emptying it with pump 2.
note: no flow through valve 8.

Cold water

w

14

13

M
1

M
2

HLT

a

d

c

b

P1

15

s **PBW/Starsan**

M
3

3

M
5

5

M
4

4

M
6

6

MT

e

f

9

M
9

M
7

7

M
8

8

BK

g

h

10

M
10

P2

M
11

11

M
12

12

17

o **Fermentor out**

j

i

l

k

CFC

16

x **Drain**

Clean in place 2:
Flush mash tun with cold water, by filling it with pump 1 and emptying it with pump 2.

Cold water

w

14

13

1

M

HLT

a

d

2

c

b

P1

15

s   PBW/Starsan

M   3

M   5

M   4

6

MT

e

M   7

g

M   8

BK

f

9

M

M   10

h

P2

j   l

CFC

i   k

M   11

M   12

16   x   **Drain**

17

o   **Fermentor out**

Clean in place 1:
Flush coil with cold water.

Cold water

w

14

13

1

M

2

HLT

a

d

c

b

P1

15

s   **PBW/Starsan**

M 3

M 5

4

6

M

MT

e

M 7

8

BK

g

f

M 9

M 10

h

P2

M 11

M 12

17

o   **Fermentor out**

j   l

CFC

i   k

16

x   **Drain**
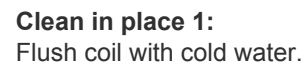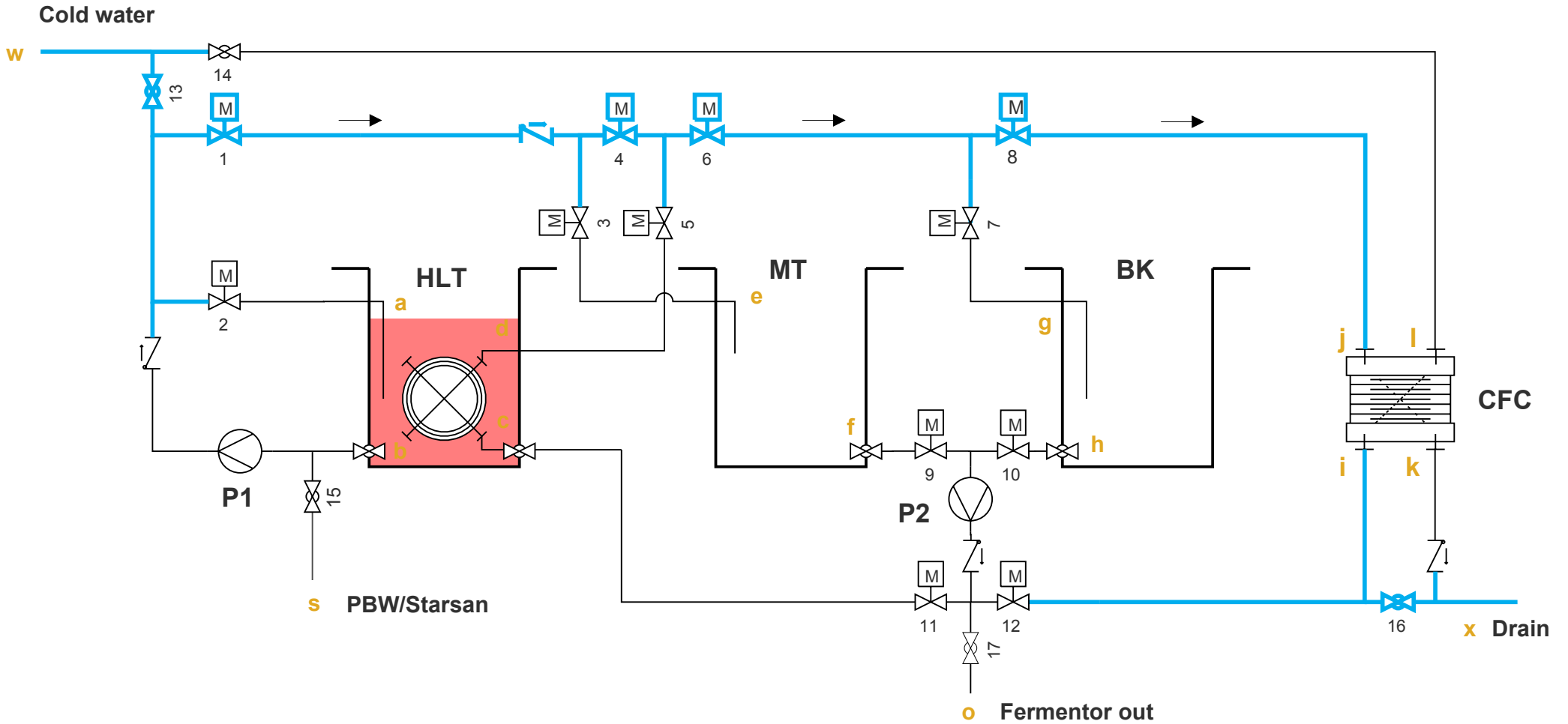
Clean in place 2:
Flush CFC (hot side) with cold water.

Cold water

w

14

13

M
1

M
2

M
4

M
6

M
8

M
3

M
5

M
7

HLT

a

d

MT

e

BK

g

j   l

CFC

i   k

P1

15

f

M
9

M
10

h

P2

s   **PBW/Starsan**

M
11

M
12

17

16

x   **Drain**

o   **Fermentor out**
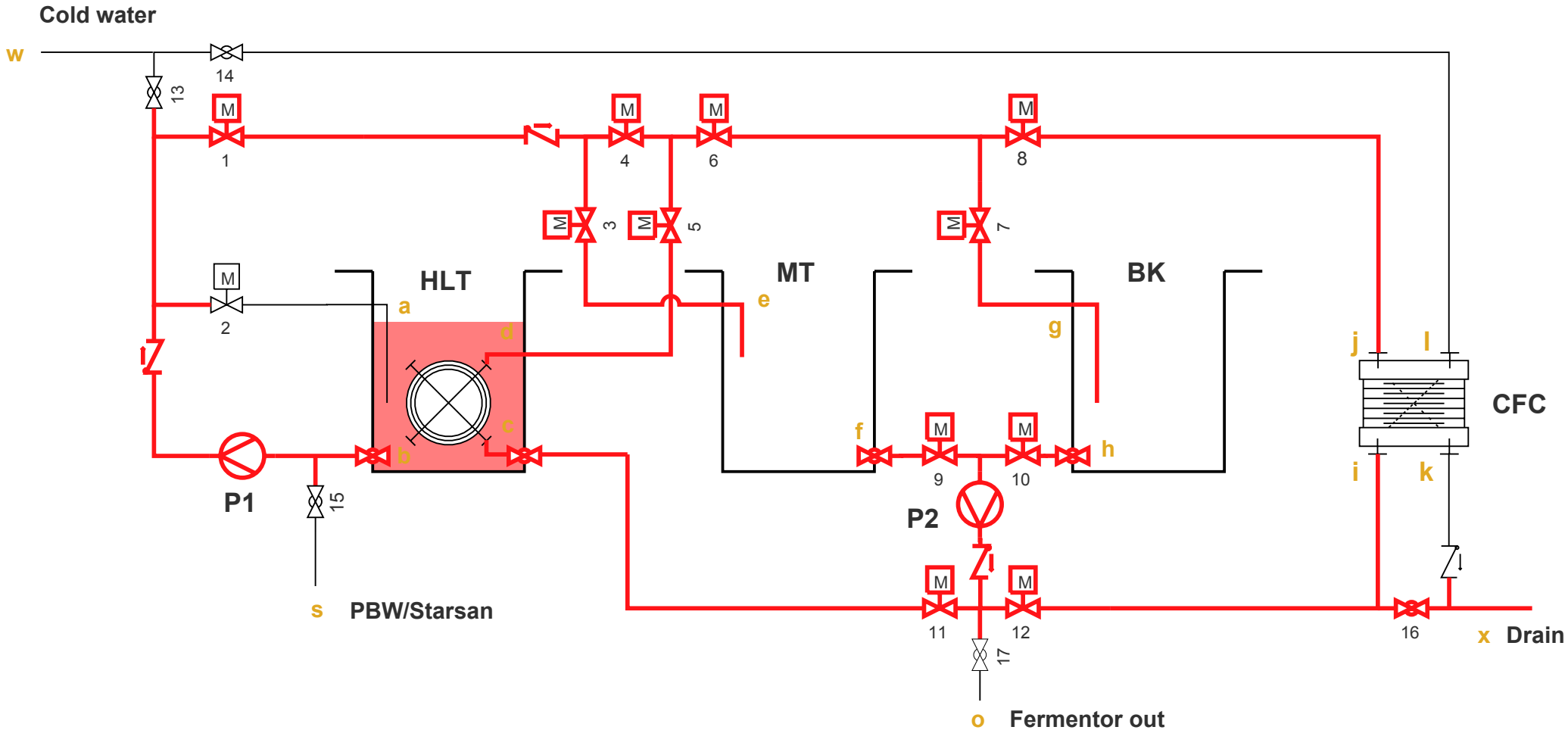
Clean in place: hot water
Clean in place step 1-4 can be repeated with hot water from the HLT.

Cold water

w

14

13

1

M 2

HLT

a

d

b

c

P1

15

s **PBW/Starsan**

M 3

M 5

M 4

M 6

MT

e

M 7

M 8

BK

g

h

f

M 9

M 10

P2

11

M 12

17

o **Fermentor out**

j l

CFC

i k

16

x **Drain**
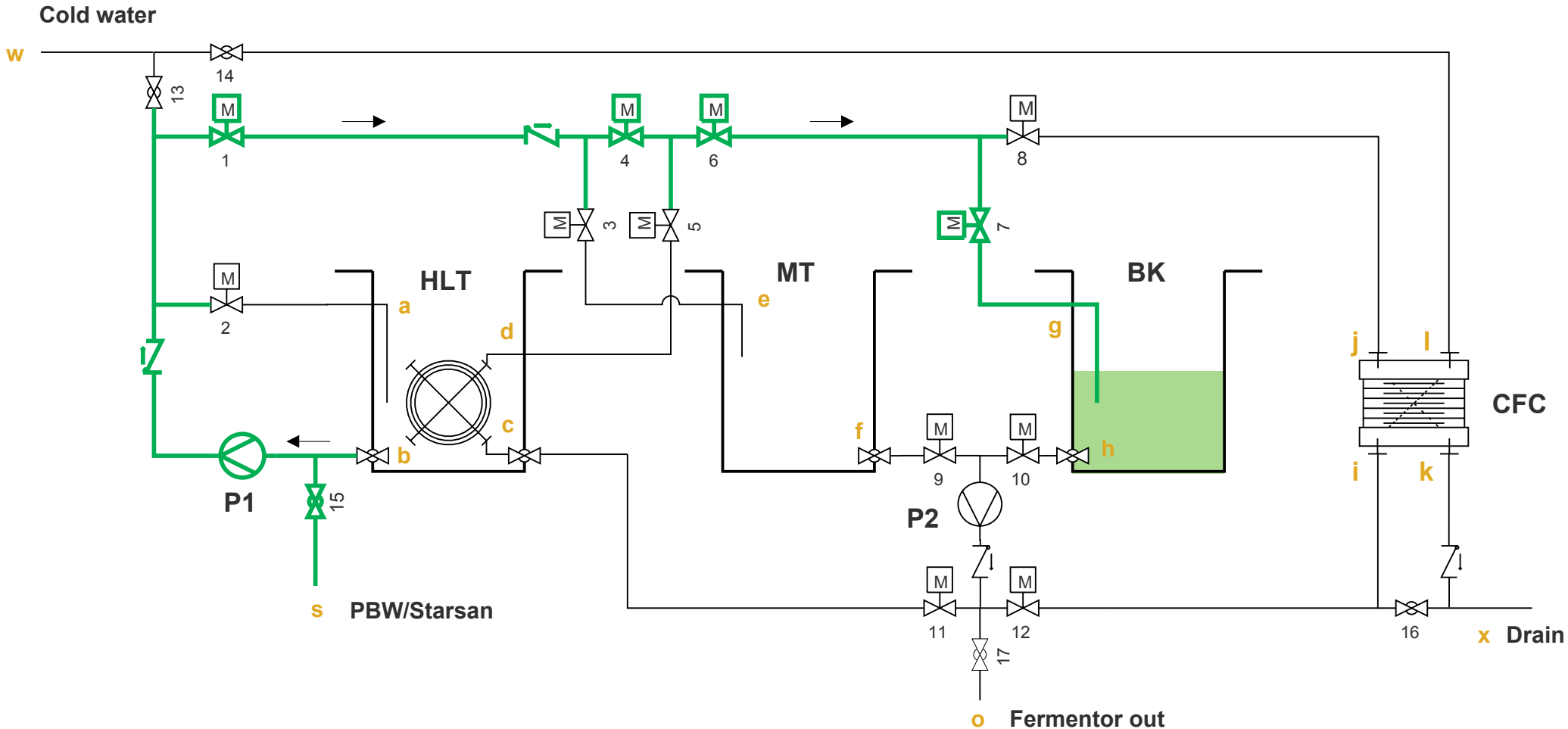
Sanitize/Clean step 1: fill BK with sanitizer
Sanitizer can be pumped to the boil kettle via pump 1 and valve 15 for later circulation through the system.

Cold water

w

14

13

M
1

M
4

M
6

M
8

M
3

M
5

M
7

M
2

HLT

a

d

MT

e

BK

c

b

f

M
9

M
10

h

g

j   l

CFC

i   k

P1

15

P2

M
11

M
12

16

x Drain

s   **PBW/Starsan**

17

o   **Fermentor out**
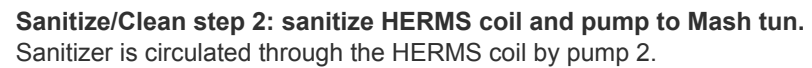
Sanitize/Clean step 2: sanitize HERMS coil and pump to Mash tun.
Sanitizer is circulated through the HERMS coil by pump 2.

Cold water

w

14

13

M
1

M
2

a

HLT

d

M 3

M 5

M
4

M
6

b

c

MT

e

f

M
9

M
10

P2

M
11

M
12

g

M 7

M
8

BK

h

j   l

CFC

i   k

P1

15

s   **PBW/Starsan**

17

16   x **Drain**

o   **Fermentor out**

Sanitize/Clean step 3: Circulate through CFC
Sanitizer is circulated through the HERMS coil by pump 2.

Cold water

w

14

13

M

1

4

6

M

8

M

3

M

5

M

7

M

2

HLT

a

d

MT

e

BK

g

j   l

c

f

CFC

P2

9   10

h

i   k

P1

15

s   **PBW/Starsan**

M

11

M

12

17

16

x   **Drain**

o   **Fermentor out**

Sanitize/Clean step 4: sanitizer out
Pump sanitizer out via fermentor out. Catch it for reuse or dump it.