



PCT/CH99/00032

WO99/51907

Device for connecting a pipe socket,
a tubular mounting part or a fitting to a pipe

5

The invention relates to a device for connecting a pipe socket, tubular mounting part or fitting to a pipe, in particular a water pipe, having a connecting part which is to be connected by a first end to the pipe by means of a press connection and by a second end to the pipe socket, mounting part or fitting.

DE-U-91 13 050 by the Applicant describes such a device having a connecting part which has, at one or at both ends, a socket to which the end of a composite pipe can be joined in a water-tight manner by pressing using pressing tongs. In the design according to Figures 1 to 3, the connecting part has a first end for producing a press connection and a second end having an external thread for producing a screw connection to a sanitary mounting. In the case of the design according to Figure 4, both ends each have a socket for producing a press connection.

The invention is based on the object of providing a device of the above-mentioned type which is to be even more simple to handle for installation purposes.

In the case of a device of the generic type, the object is achieved by the second end of the connecting part forming a plug-in connection with a receiving part of the pipe socket, tubular mounting part or fitting. In order to join a pipe to a mounting, a fitting or a pipe socket, the connecting part then merely has to be plugged into the receiving part before or after the press connection to the pipe is produced. Time-consuming screwing processes are avoided and the connection is simplified at installation locations which are tight and difficult to get at. According to a development of the invention, the second end is of essentially the same design as



the first end. The connecting part then therefore has two ends which can be connected in each case to a pipe by means of a press connection. The connecting part can therefore be designed in such a manner that it can be used either for
5 connecting pipes or for connecting one pipe to a mounting, a pipe socket or a fitting. The holding in storage and also the installation are therefore substantially simplified.

If, according to a development of the invention, a
10 housing of the receiving part is provided with an opening into which a radially expandable retaining ring is inserted, a particularly advantageous design of the plug-in connection in terms of structure is produced. This retaining ring can be produced as a separate, loose part as a plastic part. When the
15 second end is inserted into the receiving part, the retaining ring is expanded radially and connects the connecting part to the pipe socket, tubular mounting part or to the fitting.

The invention also relates to a mounting or to a fitting
20 for a device as claimed in claim 1 and also to a connecting part for such a mounting or fitting.

Further advantageous features result from the dependent patent claims, the description below and also the drawing.
25

An exemplary embodiment of the invention is explained in greater detail below with reference to the drawing, in which:
Figure 1 shows a longitudinal section through a device according to the invention,
30 Figure 2 shows a section through a retaining ring,
Figure 3 shows a view of the retaining ring according to Figure 2,
Figure 4 shows a section through a fitting, and
Figure 5 shows a view of the fitting according to Figure 4.
35

The device 1 shown in Figure 1 essentially comprises a connecting part 7 and a fitting 4 into which a retaining ring 8 is inserted. The connecting part 7 has a first end 7a and a



second end 7b. Both ends are designed as cylindrical sockets and have an uneven outside 13 into which a rubbery elastic sealing ring 9 is inserted in each case. The connecting part 7 has, approximately centrally, two integrally formed, encircling flanges 11 and 12 which are arranged at a distance from each other and extend radially outward.

The first end 7a forms a press connection with a pipe 10. The pipe 10 is preferably a water pipe and, for example, a composite pipe. Pipes of this type are generally known and can be deformed plastically in order to produce a press connection. Pressing tongs 2, by means of which the press connection has been produced, are indicated schematically in Figure 1. These pressing tongs 2 are, of course, removed again once the press connection is produced. The flange 11 serves here as a stop for the pipe 10 and for positioning the pressing tongs 2. The sealing ring 9 is pressed between the pipe end 7a and the pipe end 10a and ensures the tightness of the press connection.

20

The second end 7b is of the same design as the first end 7a. However, the external diameter of this second end 7b can differ from the external diameter of the first end 7a. It is, however, in any case designed in such a manner that it can likewise be used for producing a press connection. The second end 7b is therefore likewise a tubular socket, but here forms a connector part which is inserted into an opening 5 of a receiving part 4 of the fitting 3. The second end 7b forms a plug-in connection with the receiving part 4. As can clearly be seen in particular in Figure 4, the opening 5 consists of a region 5a which is widened annularly and of a somewhat narrower, cylindrical, tubular region 5b. According to Figure 1, the retaining ring 8, which is preferably produced from plastic by injection molding, is inserted into the region 5a. This ring 8 has, at a front end, a plurality of identical claws 14 which are formed by axial slots 15 and are connected to one another at a rear edge 16. According to Figure 1, the edge 16 bears against a shoulder 20 (Figure 4) of the

~~THIS SHEET HAS BEEN
REPLACED~~

receiving part 4. The claws 14 can be expanded radially and elastically outward. As a whole they form an encircling groove 23 on the inside which serves for receiving the flange 12. The retaining ring 8 is inserted loosely and with little play into the opening 5.

If the second end 7b is inserted into the opening 5 in order to produce the plug-in connection, when the flange 12 is placed on to inclined run-on surfaces 24 the claws 14 are expanded elastically and radially outward, with the result that the flange 12 can snap into the groove 23. The claws 14 then essentially return back into the rest position and grip around the flange 12.

The receiving part 4 has, at the front end, a radially and obliquely inwardly directed edge 6 which forms an axial stop for the retaining ring 8. If the flange 12 is now snapped into the retaining ring 8, the retaining ring 8 can no longer be pulled out of the opening 5, since, as mentioned, the edge 6 forms a stop for the retaining ring 8. The flange 12 retains the claws 14 in the position shown, with the result that these claws 14 are unable to yield radially inward if it is attempted to release the plug-in connection by pulling out the connecting part 7. An essentially non-releasable plug-in connection is therefore formed when the connecting part 7 is plugged completely into the opening 5 of the fitting 3. The connection could, if necessary, be released by destruction of the retaining ring 8.

The tightness of the plug-in connection is ensured by the sealing ring 9 which, in the region 5b of the opening, bears against the inside of the tubular section of the fitting 3. This tubular region 5b receives a substantial part of the second end 7b and at this end 7b lies against the connecting part 7a and forms a support. The connecting part 7 is therefore held in an axially secure manner in the opening 5 of the fitting 3, is sealed and is secured against axial tilting.

THIS SHEET HAS BEEN
REPLACED

THIS SHEET HAS BEEN
REPLACED

THIS SHEET HAS BEEN
REPLACED

5 The connecting part 7 can also be used for connecting two pipe ends. In this case, the second end 7b, like the first end 7a, is used to produce a press connection. Like the flange 11, in this case the flange 12 forms a stop for a pipe 10 and for guiding the pressing tongs 2.

10 The fitting 3 is produced, for example, from brass. It has an internal thread 26 at one connecting end 15 for a further connection. The fitting 3 can therefore be connected to a further part at the end 25 by means of a screw connection. However, the fitting 3 can also be a mounting, a tubular mounting part or a pipe socket. An essential feature is the tubular receiving part 4 which enables the production of a plug-in connection to the part 7.

15

20 During installation, the press connection between the part 7 and the composite pipe 10 is generally produced by means of the pressing tongs 2. The free end 7b is subsequently inserted into the receiving part 4 as explained above. The snap-in connection with the retaining ring 8 takes place automatically here and tools are not required for this. A plug-in connection of this type can also be produced very simply at a location which is difficult to get at and, as mentioned, without tools. The snapping-in of the retaining
25 ring 8 can clearly be recognized and can also be checked. It is therefore ensured that the plug-in connection is always completed. This is an essential aspect in the sphere of sanitary technology.

This Sheet Has Been Replaced





* C L M S *

PCT/CH99/00032

WO99/51907

Patent claims

1. A device for connecting a pipe socket, tubular mounting
5 part or fitting (3) to a pipe (10), in particular a water
pipe, having a connecting part (7) which is to be connected by
a first end (7a) to the pipe (10) by means of a press
connection and by a second end (7b) to the pipe socket,
10 mounting part or fitting (3), characterized in that the second
end (7b) of the connecting part (7) forms a plug-in connection
with a receiving part (4) of the pipe socket, tubular mounting
part or fitting (3).
2. The device as claimed in claim 1, characterized in that
15 the second end (7b) is of essentially the same design as the
first end (7a).
3. The device as claimed in claim 1 or 2, characterized in
that a receiving part (4) of the pipe socket, tubular mounting
20 part or fitting (7) has an opening (5) into which a radially
expandable retaining ring (8) is inserted.
4. The device as claimed in claim 3, characterized in that
the retaining ring (8) is inserted loosely into said opening
25 (5).
5. The device as claimed in claim 3 or 4, characterized in
that the retaining ring (8) has gripping means (14) which grip
around a flange (12) of the connecting part (7).
30
6. The device as claimed in claim 5, characterized in that
the gripping means (14) have a plurality of radially and
elastically deflectable claws.
- 35 7. The device as claimed in one of claims 3 to 6,
characterized in that the retaining ring (8) has a groove (23)
which runs around its inside and into which a flange (12) of
the connecting part (7) can be snapped.



8. The device as claimed in one of claims 3 to 7, characterized in that the retaining ring (8) is produced from an elastic plastic.

5

9. The device as claimed in one of claims 3 to 8, characterized in that the receiving part (4) has an edge (6) which engages in said opening (5) and forms an axial stop for the retaining ring (8).

10

10. The device as claimed in one of claims 1 to 9, characterized in that the connecting part (7) is a press fitting.

15 11. The device as claimed in claim 10, characterized in that the connecting part (7) is designed either for connecting two pipes or for connecting one pipe to a pipe socket, tubular mounting part or fitting.

20 12. The device as claimed in one of claims 1 to 11, characterized in that the receiving part (4) has a tubular region (5) in which the second end (7b) is supported.

25 13. The device as claimed in one of claims 1 to 12, characterized in that the connecting part (7) has two flanges (11, 12) arranged at a distance from each other, the one flange (12) being used to produce a plug-in connection and the other flange (11) being used to produce a press connection.

30 14. The device as claimed in one of claims 1 to 13, characterized in that the connecting part (7) has two sealing rings (9) which are arranged on the outside and at a distance from each other.

35 15. The device as claimed in one of claims 1 to 14, characterized in that the plug-in connection is a snap-in connection.



16. A mounting, fitting or pipe socket for a device as claimed in one of claims 1 to 15, characterized in that a radially expandable retaining ring (8) is inserted into the opening (5) of the receiving part (4).

5

17. The mounting, fitting or pipe socket as claimed in claim 16, characterized in that the opening (5) has a rear and a front stop (20, 6) for the axial fixing of the retaining ring (8).

10

18. The mounting, fitting or pipe socket as claimed in claim 16 or 17, characterized in that a rear stop (20) is a shoulder and a front stop (6) is a radially inwardly projecting mouth edge.

15

19. The mounting, fitting or pipe socket as claimed in one of claims 16 to 18, characterized in that it has a housing made of metal and the retaining ring (8) is produced from plastic.

20. A connecting part for a mounting, fitting or pipe socket as claimed in claim 16, characterized in that it has two ends (7a, 7b) which are designed in the form of sockets and are each provided either for producing a press connection or a plug-in connection.

25

21. The connecting part as claimed in claim 20, characterized in that the connecting part is a press fitting.



This Sheet Has Been Replaced



THIS SHEET HAS BEEN
REPLACED

THIS SHEET HAS BEEN
REPLACED

PCT/CH99/00032

WO99/51907

Abstract

5

Device for connecting a pipe socket,
a tubular mounting part or a fitting to a pipe

10 The invention relates to a device for connecting a pipe
socket, a tubular mounting part or a fitting (3) to a pipe
(10), especially a water pipe. The inventive device comprises
a connecting part (7). A first end (7a) of said connecting
part is to be connected to a pipe (10) by means of a press
connection, and a second end (7b) of the connecting part is to
be connected to the pipe socket, mounting part or fitting (3).
15 The second end (7b) of the connecting part (7) forms a plug-
connection with a receiving part (4) of the pipe socket, the
tubular mounting part or the fitting (3). After the press-
connection is provided, the connecting part (7) is merely
plugged in to connect a pipe (10), for example, to a mounting
20 part.

(Fig. 1)

This Sheet Has Been Replaced



Connector between a pipe socket,
a tubular mounting part or a fitting and a pipe

5

The invention relates to a connector between a pipe socket, a tubular mounting part or a fitting and a pipe, in particular a water pipe, having a connecting part which is connected by a first end to the pipe by means of a press connection and by a second end to the pipe socket, mounting part or fitting.

DE-U-91 13 050 by the Applicant describes a device having a connecting part which has, at one or at both ends, a socket to which the end of a composite pipe can be joined in a water-tight manner by pressing using pressing tongs. In the design according to Figures 1 to 3, the connecting part has a first end for producing a press connection and a second end having an external thread for producing a screw connection to a sanitary mounting. In the case of the design according to Figure 4, both ends each have a socket for producing a press connection.

The invention is based on the object of providing a connector of the above-mentioned type which is to be even more simple to handle for installation purposes.

In the case of a connector of the generic type, the object is achieved by the second end of the connecting part forming a plug-in connection with a receiving part of the pipe socket, tubular mounting part or fitting. In order to join a pipe to a mounting, a fitting or a pipe socket, the connecting part then merely has to be plugged into the receiving part before or after the press connection to the pipe is produced. Time-consuming screwing processes are avoided and the connection is simplified at installation locations which are tight and difficult to get at. According to a development of the invention, the second end is of essentially the same

design as the first end. The connecting part then therefore has two ends which can be connected in each case to a pipe by means of a press connection. The connecting part can therefore be designed in such a manner that it can be used either for
5 connecting pipes or for connecting one pipe to a mounting, a pipe socket or a fitting. The holding in storage and also the installation are therefore substantially simplified.

If, according to a development of the invention, a
10 housing of the receiving part is provided with an opening into which a radially expandable retaining ring is inserted, a particularly advantageous design of the plug-in connection in terms of structure is produced. This retaining ring can be produced as a separate, loose part as a plastic part. When the
15 second end is inserted into the receiving part, the retaining ring is expanded radially and connects the connecting part to the pipe socket, tubular mounting part or to the fitting.

The invention also relates to a mounting or to a fitting
20 for a connector as claimed in claim 1 and also to a connecting part for such a mounting or fitting.

Further advantageous features result from the dependent patent claims, the description below and also the drawing.

25

An exemplary embodiment of the invention is explained in greater detail below with reference to the drawing, in which:
Figure 1 shows a longitudinal section through a device according to the invention,
30 Figure 2 shows a section through a retaining ring,
Figure 3 shows a view of the retaining ring according to Figure 2,
Figure 4 shows a section through a fitting, and
Figure 5 shows a view of the fitting according to Figure 4.

35

The device 1 shown in Figure 1 essentially comprises a connecting part 7 and a fitting 4 into which a retaining ring 8 is inserted. The connecting part 7 has a first end 7a and a

second end 7b. Both ends are designed as cylindrical sockets and have an uneven outside 13 into which a rubbery elastic sealing ring 9 is inserted in each case. The connecting part 7 has, approximately centrally, two integrally formed, encircling flanges 11 and 12 which are arranged at a distance from each other and extend radially outward.

The first end 7a forms a press connection with a pipe 10. The pipe 10 is preferably a water pipe and, for example, a composite pipe. Pipes of this type are generally known and can be deformed plastically in order to produce a press connection. Pressing tongs 2, by means of which the press connection has been produced, are indicated schematically in Figure 1. These pressing tongs 2 are, of course, removed again once the press connection is produced. The flange 11 serves here as a stop for the pipe 10 and for positioning the pressing tongs 2. The sealing ring 9 is pressed between the pipe end 7a and the pipe end 10a and ensures the tightness of the press connection.

The second end 7b is of the same design as the first end 7a. However, the external diameter of this second end 7b can differ from the external diameter of the first end 7a. It is, however, in any case designed in such a manner that it can likewise be used for producing a press connection. The second end 7b is therefore likewise a tubular socket, but here forms a connector part which is inserted into an opening 5 of a receiving part 4 of the fitting 3. The second end 7b forms a plug-in connection with the receiving part 4. As can clearly be seen in particular in Figure 4, the opening 5 consists of a region 5a which is widened annularly and of a somewhat narrower, cylindrical, tubular region 5b. According to Figure 1, the retaining ring 8, which is preferably produced from plastic by injection molding, is inserted into the region 5a. This ring 8 has, at a front end, a plurality of identical claws 14 which are formed by axial slots 15 and are connected to one another at a rear edge 16. According to Figure 1, the edge 16 bears against a shoulder 20 (Figure 4) of the

receiving part 4. The claws 14 can be expanded radially and elastically outward. As a whole they form an encircling groove 23 on the inside which serves for receiving the flange 12. The retaining ring 8 is inserted loosely and with little play into the opening 5.

If the second end 7b is inserted into the opening 5 in order to produce the plug-in connection, when the flange 12 is placed on to inclined run-on surfaces 24 the claws 14 are expanded elastically and radially outward, with the result that the flange 12 can snap into the groove 23. The claws 14 then essentially return back into the rest position and grip around the flange 12.

The receiving part 4 has, at the front end, a radially and obliquely inwardly directed edge 6 which forms an axial stop for the retaining ring 8. If the flange 12 is now snapped into the retaining ring 8, the retaining ring 8 can no longer be pulled out of the opening 5, since, as mentioned, the edge 6 forms a stop for the retaining ring 8. The flange 12 retains the claws 14 in the position shown, with the result that these claws 14 are unable to yield radially inward if it is attempted to release the plug-in connection by pulling out the connecting part 7. An essentially non-releasable plug-in connection is therefore formed when the connecting part 7 is plugged completely into the opening 5 of the fitting 3. The connection could, if necessary, be released by destruction of the retaining ring 8.

The tightness of the plug-in connection is ensured by the sealing ring 9 which, in the region 5b of the opening, bears against the inside of the tubular section of the fitting 3. This tubular region 5b receives a substantial part of the second end 7b and at this end 7b lies against the connecting part 7a and forms a support. The connecting part 7 is therefore held in an axially secure manner in the opening 5 of the fitting 3, is sealed and is secured against axial tilting.

The connecting part 7 can also be used for connecting two pipe ends. In this case, the second end 7b, like the first end 7a, is used to produce a press connection. Like the flange 11, in this case the flange 12 forms a stop for a pipe 10 and for
5 guiding the pressing tongs 2.

The fitting 3 is produced, for example, from brass. It has an internal thread 26 at one connecting end 15 for a further connection. The fitting 3 can therefore be connected
10 to a further part at the end 25 by means of a screw connection. However, the fitting 3 can also be a mounting, a tubular mounting part or a pipe socket. An essential feature is the tubular receiving part 4 which enables the production of a plug-in connection to the part 7.

15

During installation, the press connection between the part 7 and the composite pipe 10 is generally produced by means of the pressing tongs 2. The free end 7b is subsequently inserted into the receiving part 4 as explained above. The
20 snap-in connection with the retaining ring 8 takes place automatically here and tools are not required for this. A plug-in connection of this type can also be produced very simply at a location which is difficult to get at and, as mentioned, without tools. The snapping-in of the retaining
25 ring 8 can clearly be recognized and can also be checked. It is therefore ensured that the plug-in connection is always completed. This is an essential aspect in the sphere of sanitary technology.



PCT/CH99/00032

Chapter II - amended pages

Patent claims

1. A connector between a pipe socket, a tubular mounting
5 part or a fitting (3) and a pipe (10), in particular a water
pipe, having a connecting part (7) which is connected by a
first end (7a) to the pipe (10) by means of a press connection
and by a second end (7b) to the pipe socket, mounting part or
fitting (3), characterized in that the second end (7b) of the
10 connecting part (7) forms a plug-in connection with a
receiving part (4) of the pipe socket, tubular mounting part
or fitting (3).
2. The connector as claimed in claim 1, characterized in
15 that the second end (7b) of the connecting part (7) is of
essentially the same design as the first end (7a).
3. The connector as claimed in claim 1 or 2, characterized
in that a receiving part (4) of the pipe socket, tubular
20 mounting part or fitting (7) has an opening (5) into which a
radially expandable retaining ring (8) is inserted.
4. The connector as claimed in claim 3, characterized in
that the retaining ring (8) is inserted loosely into said
25 opening (5).
5. The connector as claimed in claim 3 or 4, characterized
in that the retaining ring (8) has gripping means (14) which
grip around a flange (12) of the connecting part (7).
- 30 6. The connector as claimed in claim 5, characterized in
that the gripping means (14) have a plurality of radially and
elastically deflectable claws.
- 35 7. The connector as claimed in one of claims 3 to 6,
characterized in that the retaining ring (8) has a groove (23)
which runs around its inside and into which a flange (12) of
the connecting part (7) can be snapped.



8. The connector as claimed in one of claims 3 to 7, characterized in that the retaining ring (8) is produced from an elastic plastic.

5

9. The connector as claimed in one of claims 3 to 8, characterized in that the receiving part (4) has an edge (6) which engages in said opening (5) and forms an axial stop for the retaining ring (8).

10

10. The connector as claimed in one of claims 1 to 9, characterized in that the connecting part (7) is a press fitting.

15 11. The connector as claimed in claim 10, characterized in that the connecting part (7) is designed either for connecting two pipes or for connecting one pipe to a pipe socket, tubular mounting part or fitting.

20 12. The connector as claimed in one of claims 1 to 11, characterized in that the receiving part (4) has a tubular region (5) in which the second end (7b) is supported.

25 13. The connector as claimed in one of claims 1 to 12, characterized in that the connecting part (7) has two flanges (11, 12) arranged at a distance from each other, the one flange (12) being used to produce a plug-in connection and the other flange (11) being used to produce a press connection.

30 14. The connector as claimed in one of claims 1 to 13, characterized in that the connecting part (7) has two sealing rings (9) which are arranged on the outside and at a distance from each other.

35 15. The connector as claimed in one of claims 1 to 14, characterized in that the plug-in connection is a snap-in connection.



16. A mounting, fitting or pipe socket for a connector as claimed in one of claims 1 to 15, characterized in that a radially expandable retaining ring (8) is inserted into an opening (5) of the receiving part (4).

5

17. The mounting, fitting or pipe socket as claimed in claim 16, characterized in that the opening (5) has a rear and a front stop (20, 6) for the axial fixing of the retaining ring (8).

10

18. The mounting, fitting or pipe socket as claimed in claim 16 or 17, characterized in that a rear stop (20) is a shoulder and a front stop (6) is a radially inwardly projecting mouth edge.

15

19. The mounting, fitting or pipe socket as claimed in one of claims 16 to 18, characterized in that it has a housing made of metal and the retaining ring (8) is produced from plastic.

20 20. A connecting part for a mounting, fitting or pipe socket as claimed in claim 16, characterized in that it has two ends (7a, 7b) which are designed in the form of sockets and are each provided either for producing a press connection or a plug-in connection.

25

21. The connecting part as claimed in claim 20, characterized in that the connecting part is a press fitting.

Abstract

5

Connector between a pipe socket,
a tubular mounting part or a fitting and a pipe

The invention relates to a connector between a pipe socket, a
10 tubular mounting part or a fitting (3) and a pipe (10),
especially a water pipe. The inventive connector comprises a
connecting part (7). A first end (7a) of said connecting part
is connected to a pipe (10) by means of a press connection,
and a second end (7b) of the connecting part is connected to
15 the pipe socket, mounting part or fitting (3). The second end
(7b) of the connecting part (7) forms a plug-connection with a
receiving part (4) of the pipe socket, the tubular mounting
part or the fitting (3). After the press-connection is
provided, the connecting part (7) is merely plugged in to
20 connect a pipe (10), for example, to a mounting part.

(Fig. 1)