

# GOPHER

Speed Controlled Rotary Cleaning for Straight Tubes



The Gopher self-rotary tool is ideal for cleaning evaporator tubes and liquor lines. It has the power to cut through coke, polymers, coatings and latex — anything clogging tubes or pipes as small as 2 inches (50 mm) in diameter. The Gopher is offered in two pressure ranges up to 40,000 psi (2800 bar).

The Gopher delivers speed-controlled rotary cleaning for tubes 2–6 inches (51–152 mm) in diameter.

## COMPETITIVE ADVANTAGES

- Low cost high pressure seats and seals and common ATF fluid for ease of maintenance
- Simple nozzle changes allow you to match all cleaning applications
- Different heads match a wide range of flow options, allowing the operator the ability to switch from different pumps
- External port plug allows for fluid refill without tool disassembly

FEATURES	BENEFITS
<ul style="list-style-type: none"><li>• Self-rotary, speed controlled</li></ul>	<ul style="list-style-type: none"><li>• Rotary tools provide complete internal coverage while speed control provides optimum jet delivery</li></ul>
<ul style="list-style-type: none"><li>• Two head options</li></ul>	<ul style="list-style-type: none"><li>• 7-port unplugging option for maximum forward hitting power and a 6-port polishing head for IRIS inspection polishing</li></ul>
<ul style="list-style-type: none"><li>• Multiple jetting configurations</li></ul>	<ul style="list-style-type: none"><li>• Same tool can be re-jetted to match a wide variety of cleaning applications — great for when you need more pulling force or forward hitting power</li></ul>

# GOPHER TOOL OVERVIEW

## QUESTIONS TO ASK THE CUSTOMER

- What size and length of hose are you using?
- What pressure and flow are you operating?
- Do you need an adapter?
- Do you need a backout preventer?  
*You should always use a backout preventer with high pressure pipe cleaning tools.*
- Do you need a centralizer or stinger?

## TOOL SPECIFICATIONS

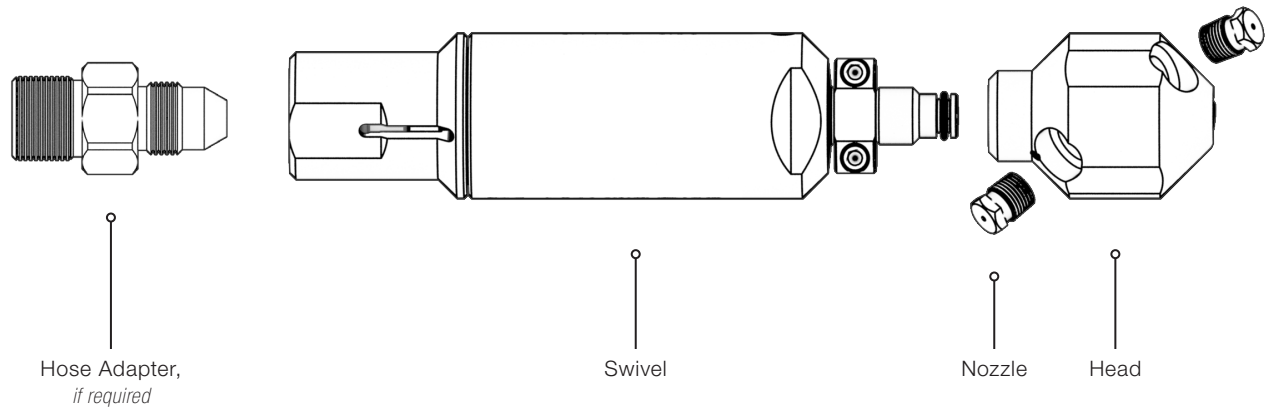
MODEL	GO-MP9	GO-H9-C
<b>Pressure Range</b>	2–22k psi 140–1500 bar	22k–40k psi 1500–2800 bar
<b>Flow Range</b>	8–25 gpm 30–95 l/min	4–10 gpm 15–40 l/min
<b>Flow Coefficient</b>	0.84 Cv	0.30 Cv
<b>Rotation Speed</b>	600–1000 rpm	600–1000 rpm
<b>Inlet Connection</b>	9/16 MP	9/16 HP
<b>Port Size</b>	1/8 NPT (P2)	1/4-28 UNF (S4)
<b>Nozzle Type</b>	AP2	OS4
<b>Port Plug</b>	<b>GP 025-P2SS</b>	<b>OS4 002</b>
<b>Swivel Diameter</b>	1.6 in. 42 mm	1.6 in. 42 mm
<b>Swivel Length</b>	7.8 in. 200 mm	7.8 in. 200 mm
<b>Swivel Weight</b>	2.3 lb 1.0 kg	2.6 lb 1.2 kg
<b>Head Weight</b>	0.60–0.75 lb 0.27–0.34 kg	0.60–0.75 lb 0.27–0.34 kg
<b>Maximum Water Temperature</b>	160 °F 70 °C	160 °F 70 °C

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# GOPHER TOOL CONFIGURATION

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## A complete Gopher tool configuration requires the following components:

1. Swivel for required working pressure
2. Head for required pressure, flow and application
3. Nozzles/Plugs of appropriate number and size

## The following items may also be required:

- Suitable hose/lance adapter
- Centralizer

## To configure a Gopher tool, the following information should be obtained:

- Pump pressure and flow
- Hose length and ID
- Hose end fitting

# GOPHER TOOL CONFIGURATION

## ORDERING A STANDARD PACKAGE

StoneAge offers standardized Gopher tool packages for the most commonly used configurations. These packages come fully assembled and include: 1. Swivel, 2. Head, and 3. Nozzles specified to jetting.

*PLEASE NOTE: Hose/lance adapters are not included in these packages. If an adapter is required for your configuration, it must be ordered separately. See Fittings and Adapters for options.*

The following table shows the configurations of standard Gopher tool packages:

MAXIMUM PRESSURE	HEAD TYPE	PACKAGE CONTENTS	PACKAGE PART ID
22k psi 1500 bar	Polisher	1 x 22k psi/1500 bar Gopher swivel 1 x Polisher head 6 x AP2 Attack Tip nozzles/plugs	<b>GO-MP9-POL-PKG</b>
	Unplugger	1 x 22k psi/1500 bar Gopher swivel 1 x Unplugger head 5 x AP2 Attack Tip nozzles/plugs	<b>GO-MP9-UNP-PKG</b>
40k psi 2800 bar	Polisher	1 x 40k psi/2800 bar Gopher swivel 1 x Polisher head 6 x OS4 Sapphire nozzles/plugs	<b>GO-H9-C-POL-PKG</b>
	Unplugger	1 x 40k psi/2800 bar Gopher swivel 1 x Unplugger head 5 x OS4 Sapphire nozzles/plugs	<b>GO-H9-C-UNP-PKG</b>

### When ordering a standard Gopher package, you should specify:

1. Package Part ID
2. Pump pressure and flow
3. Hose length and ID
4. Jetting configuration with nozzle/plug locations
5. Hose/lance adapter, if required

FOR EXAMPLE:

QTY	PART ID	DESCRIPTION
1	<b>GO-MP9-POL-PKG</b>	Pump 15 gpm 15,000 psi 1/2 in. ID hose 75 ft long
1	<b>AF 065-MP9-P8</b>	Adapter for 1/2 NPT

## ORDERING BY LINE ITEM

Complete tools can be configured by following the steps outlined on the following pages. Contact StoneAge Customer Service for questions about specific applications.

## STEP 1 SWIVEL SELECTION

There are two Gopher swivel options available. Select the correct swivel based on the maximum working pressure required for the application.

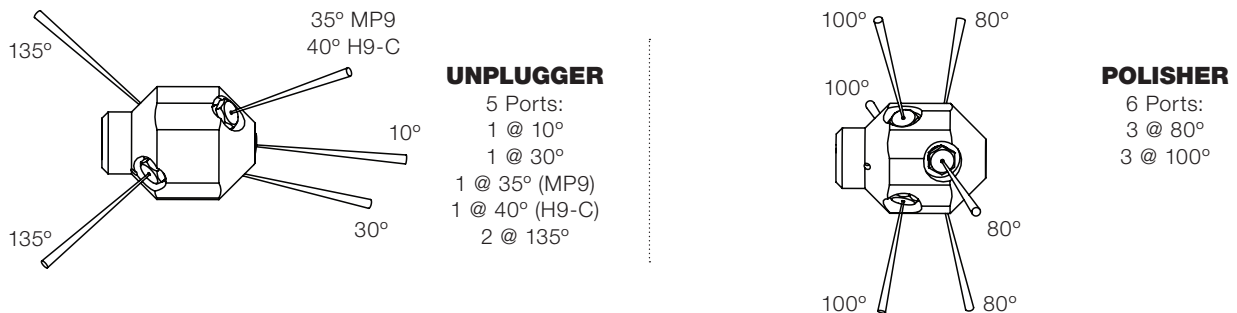
MAXIMUM PRESSURE	INLET CONNECTION	SWIVEL PART ID
22k psi 1500 bar	9/16 MP	<b>GO-MP9</b>
40k psi 2800 bar	9/16 HP	<b>GO-H9-C</b>

## STEP 2 HOSE/LANCE CONNECTION

A hose/lance connector may be required. A Gopher swivel is typically connected to a hose or lance with either a collar and gland nut or a hose adapter. See *Fittings and Adapters* for available options.

## STEP 3 HEAD SELECTION

There are two standard head configurations for Gopher tools. Custom heads are available on request.



The correct head specification is based on the swivel, pressure, and flow of the pump.

SWIVEL	PRESSURE	FLOW	UNPLUGGER HEAD	POLISHER HEAD
<b>GO-MP9</b>	15k psi 1000 bar	9–18 gpm 34–68 l/min	<b>GO 043-R.17</b>	<b>GO 042-R.14</b>
		18–25 gpm 68–95 l/min	<b>GO 043-R.08</b>	<b>GO 042-R.07</b>
	22k psi 1500 bar	10–15 gpm 38–57 l/min	<b>GO 043-R.17</b>	<b>GO 042-R.14</b>
		15–25 gpm 57–95 l/min	<b>GO 043-R.08</b>	<b>GO 042-R.07</b>
<b>GO-H9-C</b>	30k psi 2100 bar	4–8 gpm 15–30 l/min	<b>GO 343-R.18</b>	<b>GO 342-R.14</b>
		8–12 gpm 30–45 l/min	<b>GO 343-R.08</b>	<b>GO 342-R.08</b>
	40k psi 2800 bar	4–8 gpm 15–30 l/min	<b>GO 343-R.18</b>	<b>GO 342-R.14</b>
		8–12 gpm 30–45 l/min	<b>GO 343-R.08</b>	<b>GO 342-R.08</b>

*PLEASE NOTE: Pressures and flows in the above table are only approximations of common jetting scenarios.*

For most accurate head selection, use the StoneAge Jetting App:

**JETTING.STONEAGETOOLS.COM**

# GOPHER TOOL CONFIGURATION

## STEP 4 NOZZLES AND PLUGS

Gopher tool heads can be jetted in different configurations depending on the application. Here are the nozzle/plug configurations that are suitable for the Gopher tools:

HEAD STYLE	10° PORT	30° PORT	35° PORT	135° PORTS
Unplugging	1 x Nozzle	1 x Nozzle	1 x Nozzle	2 x Nozzle
	1 x Nozzle	1 x Plug	1 x Plug	2 x Nozzle
	1 x Plug	1 x Nozzle	1 x Nozzle	2 x Nozzle
	1 x Plug	1 x Plug	1 x Plug	2 x Nozzle

HEAD STYLE	80° PORTS	100° PORTS
Polisher	3 x Nozzle	3 x Nozzle
	3 x Plug	3 x Nozzle

Once you have confirmed the jetting configuration, use the StoneAge Jetting App to determine nozzle sizes:

**JETTING.STONEAGETOOLS.COM**

See *Nozzles and Extensions* for information on StoneAge Sapphire nozzles.

## STEP 5 CENTRALIZER OPTIONS

A centralizer helps to protect the tool as it passes through the pipe and balances jet standoff distance for more consistent cleaning. In cases where pipe size is more than 1.5 times the diameter of the tool, a centralizer is an important safety device, preventing the tool from turning around and thrusting backwards out of the pipe.

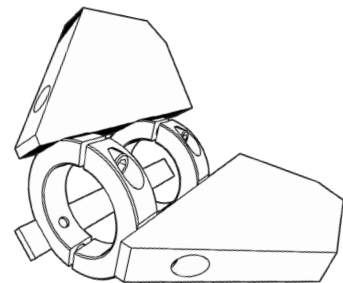
Two types of centralizers are available for Gopher tools:

### CENTRALIZER WITH SKIDS AND COLLARS

PIPE SIZE	CENTRALIZER (COMPLETE)	WEIGHT	COLLAR*	SKID**
4 in. 100 mm	GO 070-4	1.4 lb 0.6 kg	GO 070.1	RJ 070.2-4
5 in. 127 mm	GO 070-5	1.6 lb 0.7 kg	GO 070.1	RJ 070.2-5
6 in. 152 mm	GO 070-6	1.9 lb 0.9 kg	GO 070.1	RJ 070.2-6
8 in. 203 mm	GO 070-8	2.2 lb 1.0 kg	GO 070.1	RJ 070.2-8
12 in. 305 mm	GO 070-12	4.0 lb 1.8 kg	GO 070.1	RJ 070.2-12

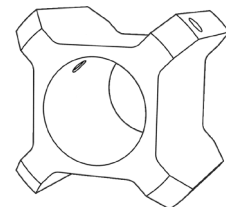
\*Set of 2 collars

\*\*Set of 3 skids with 6 screws



### PLASTIC CENTRALIZER WITH SET SCREWS

PIPE SIZE	CENTRALIZER (COMPLETE)	WEIGHT
3 in. 76 mm	GO 075-3	0.3 lb 0.1 kg
4.5 in. 114 mm	GO 075-4.5	0.4 lb 0.2 kg

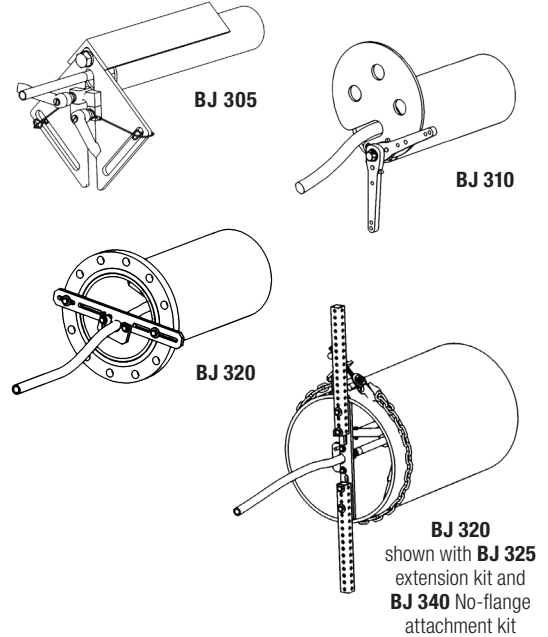


## STEP 8 BACKOUT PREVENTER

Backout preventers increase operator safety by keeping the tool from backing out of the pipe. Several options are available including fixtures for small diameter pipes, pipes with various flange bolt circle diameters, and adapters for pipes with no-flange entry.

PIPE SIZE	HOSE OD	BACKOUT PREVENTER	DESCRIPTION	WEIGHT
2–6 in. 51–150 mm	0.3–0.7 in. 8–18 mm	<b>BJ 305*</b>	Backout preventer for small pipes	5.6 lb 2.5 kg
4–8 in. 100–200 mm	0.3–1.5 in. 8–38 mm	<b>BJ 310</b>	Backout preventer for small to medium pipes	7.6 lb 3.4 kg
5–17 in. 130–430 mm	0.3–1.5 in. 8–38 mm	<b>BJ 320</b>	Backout preventer for medium to large pipes	6.3 lb 2.9 kg
15–36 in. 380–910 mm	N/A	<b>BJ 325</b>	Extension kit for <b>BJ 320</b> backout preventer	8.5 lb 3.6 kg
8–36 in. 130–910 mm	N/A	<b>BJ 340</b>	No-flange kit for <b>BJ 320</b> backout preventer	17 lb 7.7 kg

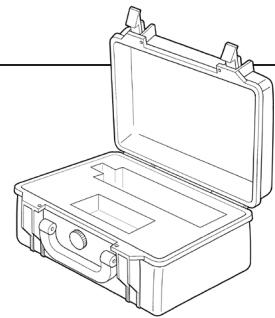
\*Securing device not supplied



## STEP 7 ACCESSORIES

A Pelican™ brand protection/carrying case with custom cut foam insert is available for Gopher tool models.

EXTERIOR DIMENSIONS (L X W X D)	INTERIOR DIMENSIONS (L X W X D)	COLOR	CASE PART ID
11.6 x 8.3 x 3.8 in. 29.6 x 21.2 x 9.6 cm	10.5 x 6.0 x 3.2 in. 26.8 x 15.3 x 8.0 cm	Black	<b>BC 080</b>



## STEP 8 MAINTENANCE RESOURCES

SWIVEL	SERVICE KIT	SEAL KIT	OVERHAUL KIT	TOOL KIT	LUBRICANT	MANUAL
<b>GO-MP9</b>	<b>GO 600</b>	<b>GO 602</b>	<b>GO 610</b>	<b>GO 612</b>	<b>GP 044</b>	<b>PL 511</b>
<b>GO-H9-C</b>	<b>GO 600-H9-C</b>	<b>BC 602-H9-C</b>	<b>GO 610-H9-C</b>	<b>GO 612</b>	<b>GP 044</b>	<b>PL 510</b>

Kit components and tool maintenance/assembly videos are available on our website:

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For questions or help with a specific application, configuration or tool repairs, please contact StoneAge Customer Service.

# GOPHER TOOL CONFIGURATION

## When ordering a Gopher tool by line item, you should specify:

1. Swivel Part ID
2. Head Part ID
3. Nozzle/plug Part IDs
4. Part ID of hose/lance adapter, if required
5. Part IDs of any accessories or maintenance items

### FOR EXAMPLE:

Gopher tool with Polisher head, plugs for 80° ports, nozzles for 100° ports. 15,000, psi 15 gpm. 100 ft 1/2 in. ID hose with 1/2 NPT Male end. Centralizer for 8 in. pipes and a Service Kit.

QTY	PART ID	DESCRIPTION
1	<b>GO-MP9</b>	Gopher Swivel Assy, 22k psi
1	<b>GO 042-R.14</b>	Polisher head, 22k psi 1/8 NPT ports
3	<b>GP 025-P2SS</b>	Hex socket plug, 1/8 NPT, SS
3	<b>AP2 038</b>	Attack Tip 1/8 NPT
1	<b>AF 065-MP9P8</b>	Adapter 9/16 MP Male 1/2 NPT Female 15k psi
1	<b>GO 070-8</b>	Centralizer assembly
1	<b>GO 600</b>	Service Kit for GO-MP9 swivel