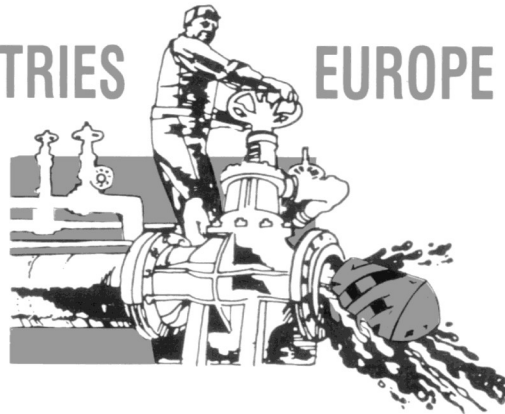




GIRARD INDUSTRIES

EUROPE LTD.



GIRARD "POLLY-PIGS"

TYPE	DESIGN	DENSITY	FUNCTION
ASK (Aqua Swab) ACCS (Aqua Criss Cross Swab) ACCS-SC (Aqua Criss Cross Swab Silicon Carbide)	 	Light approximately: 26-30 kg/m ³	Light drying up to 1 km Light drying up to 4 km Light drying up to 4 km
AB (Aqua Bare) ACC (Aqua Criss Cross) ACC-WB (Aqua Criss Cross Wire Brush) ACC-SC (Aqua Criss Cross Silicon Carbide)	 	Medium approximately: 96-110 kg/m ³	Regular drying up to 15 km Longer drying up to 35 km Longer scraping up to 35 km Longer scraping up to 35 km
SBD (Scarlet Bare Duraform) SCC (Scarlet Criss Cross) SCC-WB (Scarlet Criss Cross Wire Brush) SCC-SC (Scarlet Criss Cross Silicon Carbide)	 	Heavy approximately: 144-180 kg/m ³	Heavy drying up to 300 km Heavy wiping up to 300 km Heavy scraping up to 300 km Heaviest scraping up to 300 km
SPECIAL DESIGNS			
GRAY HARD SCALE MAXI-BRUSH (Light Wire) MAXI-BRUSH (Heavy Wire)	 	Heavy approximately: 144-180 kg/m ³	Industriel scraping up to 450 km Maximum scraping up to 450 km Maximum scraping up to 450 km

**GIRARD's 30 years of manufacturing and field experience
offers you the best engineered foam pig on the market**

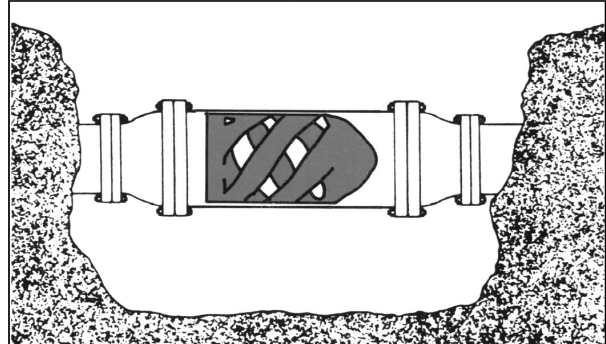
GIRARD POLLY PIGS are pipeline cleaners. The patented design consists of a flexible, bullet shaped foam cylinder with a sealed concave base and tough spirals of urethane rubber adhered to its surface.

When a GIRARD POLLY PIG is put into a line, three important things happen:

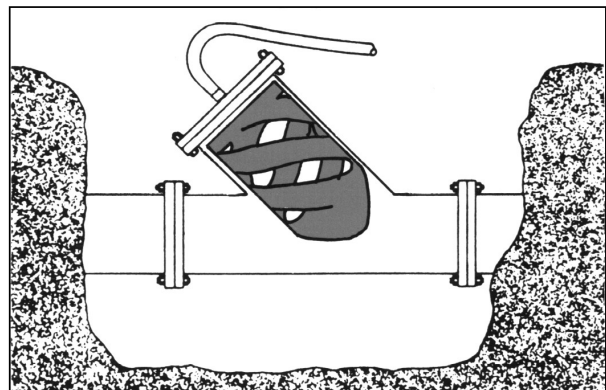
1. The POLLY PIG being slightly oversized, causes a friction drag which is the resistance to the pressure being applied to the rear of pig.
2. As pressure is applied to the rear end, the cylindrical body and urethane spirals begin to compress longitudinally and expand radically acting like a wedge into the pipe. This is termed "polly-pigging".
3. When pressure is applied to the rear of the POLLY PIG there is a high pressure, low volume bypass going from back to front of the pig which is a jetting action, comparable to squeezing the end of a garden hose.

This jetting action is important because it helps lubricate and cool the pig. It also helps in the cutting away of materials on the walls of the pipe, thus prolonging the life of the coating and keeping loose debris in front of the pig in a state of suspension which reduces the possibility of plugging.

If low "C" factors, inadequate flow, or unwanted foreign matter such as iron oxide (red water), waxes, sediment, alum, calcium carbonates, barium sulphides and the like are causing problems in your system, POLLY PIGS in most cases provide the solution.

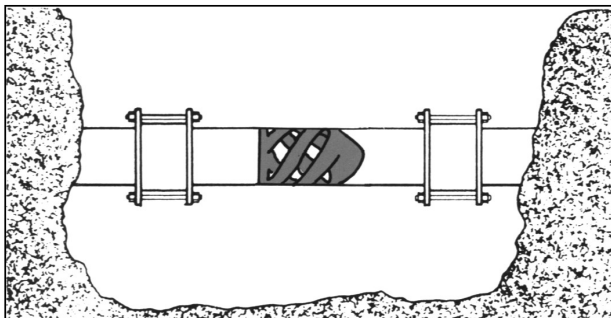


A POLLY PIG can be launched with the aid of: two swage reducers at least one pipe size larger than the OD of the POLLY PIG, one spool piece approximately the same length as the POLLY PIG, and two couplings. A portion of the line is simply removed and replaced by the spool piece containing the POLLY PIG, when the pressure behind the pig becomes great, it will reduce itself in diameter and pass into the line.

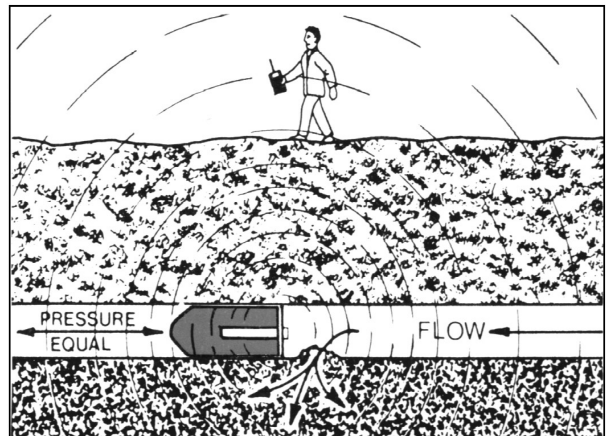


An other way to launch a POLLY PIG is by using a standard "Y". Equipment required includes only a pressure flange, coupling and the "Y" itself. The flexibility of the POLLY PIG pays off here. It can be placed in the topside of the "Y" and pressure applied through the flange. When the required volume of pressure is reached, the POLLY PIG will make the turn at the base of the "Y" and enter the pipeline.

LAUNCHING



In small diameter pipes, the actual section of pipe that has been removed can be used to launch the POLLY PIG. As the pig is manufactured from polyurethane, it can be banded down and forced into the removed section of the line. This eliminates the need for spool piece and swage reducers. The pipe section can be left in the line and used at the next pigging.



A miniature transmitter, housed within a POLLY PIG enables serious leak to be located accurately using a hand held receiver. When cleaning a problem line, the POLLY PIG progress can be monitored by a similar technique, using two receivers.

**GIRARD's POLLY PIG is the fastest,
most economical and safest pipeline cleaning method known.**

ECONOMICAL

- due to the low cost of the POLLY PIG's and very short downtime.

SAFE

- when GIRARD's method of "progressive pigging" is utilized.

FAST

- because excavations are kept to a minimum, due to the fact that standard POLLY PIG cannormally clean up to 300 MI of pipe in a single run.
(Specials are also manufactured which can travel up to 2000 MI in a single run)

1. Isolate the section to be cleaned.
2. Open all valves in the system.
3. Check direction of flow with GIRARD Swab.
4. Run full size ASK Bare pig.
Measure it to determine true size of opening.
5. Run Criss Cross-pig that will just fit opening in building with full size Bare Swab behind to ensure seal.
6. Graduate Criss Cross-pig diameters in increments until full ID is accomplished.
7. Flush system with full-sized Bare pig and examine. It should be undamaged and reusable.
The pipeline is now clean and ready for use.

ACC

ASK ACC

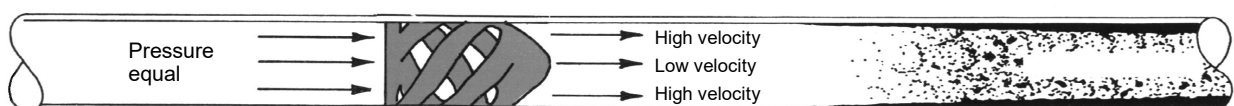
ASK ACC

AB

ASK

— FLOW —→

This diagram shows schematically how the progressive pigging technique works by shaving off successive layers of encrustation gradually, so avoiding a "plugged" line.



This illustrates the forces at work enabling the POLLY PIG to clean efficiently and keep debris ahead in a state of suspension.

WATER DISCOLOURATION

- if "bleeding" is causing consumer complaints, the line can be brought back to bare metal, using wire brush or silicone carbide POLLY PIGS.

LINE REFURBISHMENT

- the same technique can be used to speed up to the cleaning aspect of mortar or epoxy relining contracts.

6" line

250 G.P.M.
before pigging



800 G.P.M.
after pigging



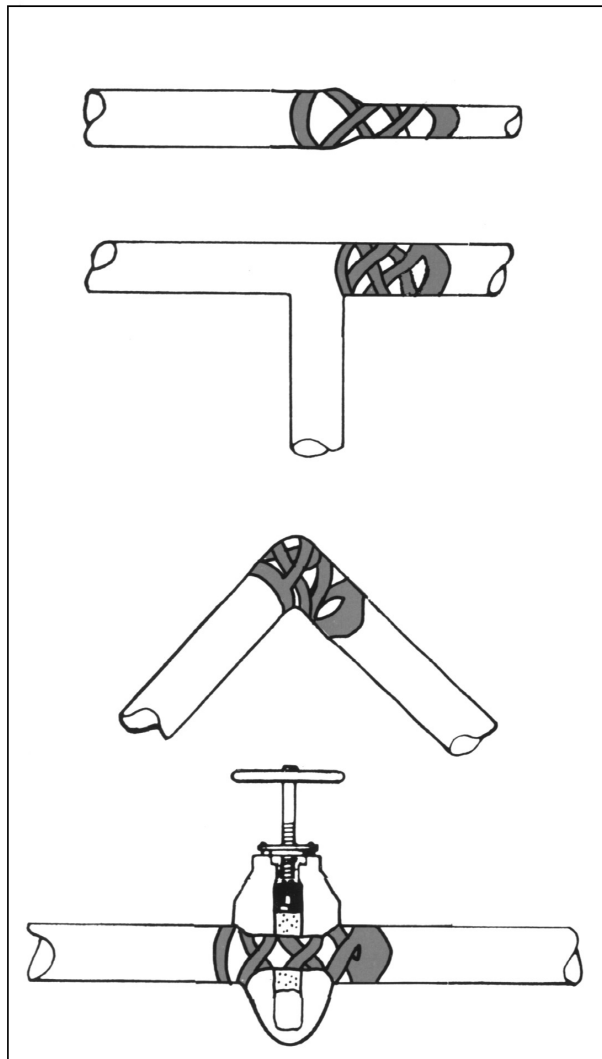
COMMISSIONING OF NEW LINES

CONSTRUCTION DEBRIS

- POLLY PIGS can remove mill scale, welding rods, rocks, shovels, rodent, ect., to ensure a clean line.

VERSATILITY

- the POLLY PIG's unique ability to cross tees, turn short radius ells, travel through multi dimensional lines, and pass through reduced openings (up to 65% reduction) such as valves, fittings, ect., eliminates 99% of the otherwise necessary "cut-ins". See illustration below.



HYDROSTATIC TESTING

- prior to a pressure test, a Bare POLLY PIG propelled through the line, ahead of the water, will ensure that pressure readings are accurate by removing all pockets of air that may be trapped in the system. Should the line fail, it can also be dewatered by propelling a Bare POLLY PIG using clean compressed air, before carrying out repairs.

PIPE MATERIALS

- POLLY PIG's can be used in any type of pipe - steel, concrete, cast iron, asbestos, cement, PVC, MDPE.

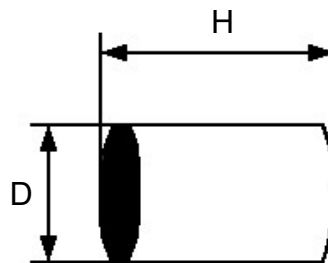
FINANCIAL SAVINGS

- it is common knowledge that if the "C" value in any water line drops from 140 (new pipe) to 70, almost four times as much horsepower for pumped water will be required to maintain the same flow. Periodic cleaning with POLLY PIG's will economically maintain the maximum "C" factor. In the USA where this system was pioneered, the cost of water main and supply line cleaning has been cut by 80%, mainly as a result of the reduced number of the line "cut-ins" required when a versatile POLLY PIG is used.

TECHNICAL ASSISTANCE

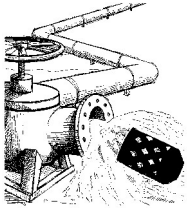
- if you need any advices and technical assistance - please call us!

Dimensionslist ASK



Foam data: Volume ca 26 kg/m³ - tensile strength 115 - 130 kPa - extension 200%

DIMENSIONS		
RECOMMENDED STANDARD SIZE FOR ASK		
Inner diameter (Ø) pipe	Outer diameter (Ø) ASK D mm	H mm
36-40	50	80
50	65	95
65	75	120
75	100	150
100	125	170
125	150	200
150	200	300
200	250	350
250	300	400
300	350	450
350	400	550
400	450	650
450	500	700
500	550	800
550	600	900
600	650	950
650	700	1050
700	750	1100
750	800	1200
800	850	1250
850	900	1300
900	950	1350
950	1000	1400
1000	1050	1450



Approximate pressures and flow suggested for GIRARD Polly Pig

Nominal pipediameter		Pressure in bar		Liquid flow liter per minute	Gaseous flow m³ per minute
		Launching	Running		
2"	50 mm	6,9 - 13,7	2,7 - 6,8	113 - 189	0,6 - 2,7
3"	80 mm	6,9 - 10,3	2,4 - 5,8	264 - 378	1,3 - 4,8
4"	100 mm	5,1 - 8,6	2,0 - 5,5	454 - 757	2,0 - 7,7
5"	125 mm				
6"	150 mm	3,5 - 6,9	2,1 - 5,1	946 - 1703	3,8 - 14
8"	200 mm	2,0 - 5,5	1,8 - 4,9	1703 - 3028	6,8 - 21
10"	250 mm	2,1 - 4,1	1,8 - 3,4	2838 - 4731	8,9 - 27
12"	300 mm	2,1 - 3,4	1,4 - 3,1	3785 - 6813	13 - 34
14"	350 mm	1,4 - 3,4	1,1 - 2,7	5299 - 9463	14 - 47
16"	400 mm	1,1 - 3,1	0,7 - 2,7	6813 - 11355	15 - 53
18"	450 mm	1,1 - 2,7	0,7 - 2,0	7570 - 15140	19,3 - 68
20"	500 mm	0,7 - 1,7	0,35 - 1,4	10598 - 18925	23,8 - 72
22"	550 mm		0,35 - 1,4	11355 - 22710	
24"	600 mm	0,7 - 1,7	0,35 - 1,4	15140 - 26495	34,3 - 103
26"	650 mm		0,35 - 1,4	18925 - 30280	
28"	700 mm		0,35 - 1,4	22710 - 34065	
30"	750 mm	0,7 - 1,3	0,35 - 1,1	29710 - 41635	53 - 134
32"	800 mm				
36"	900 mm	0,7 - 1,3	0,35 - 0,7	37850 - 60560	77 - 194
40"	1000 mm	0,7 - 1,3	0,35 - 0,7	45420 - 75700	95 - 239
42"	1050 mm	0,7 - 1,3	0,35 - 0,7	49205 - 83270	105 - 264
48"	1200 mm	0,7 - 1,3	0,35 - 0,7	64345 - 104830	137 - 344
54"	1350 mm	0,7 - 1,3	0,35 - 0,7	83270 - 143830	174 - 436
60"	1500 mm	0,7 - 1,3	0,35 - 0,7	98410 - 158970	214 - 538
72"	1800 mm	0,7 - 1,3	0,35 - 0,7	140045 - 246025	309 - 776

Liter per minut are based on 1 - 1,5 meter per second!

M³ per minut are based on 1,5 - 3 meter per second!

NOTE:

Volumes and pressure are recommend only. NOT TO BE CONSIDERED AS ABSOLUTE REQUIREMENTS. Requirements will vary according to the type of pipe, fluid, gas, materials in pipe, viscosity, temperature ect..