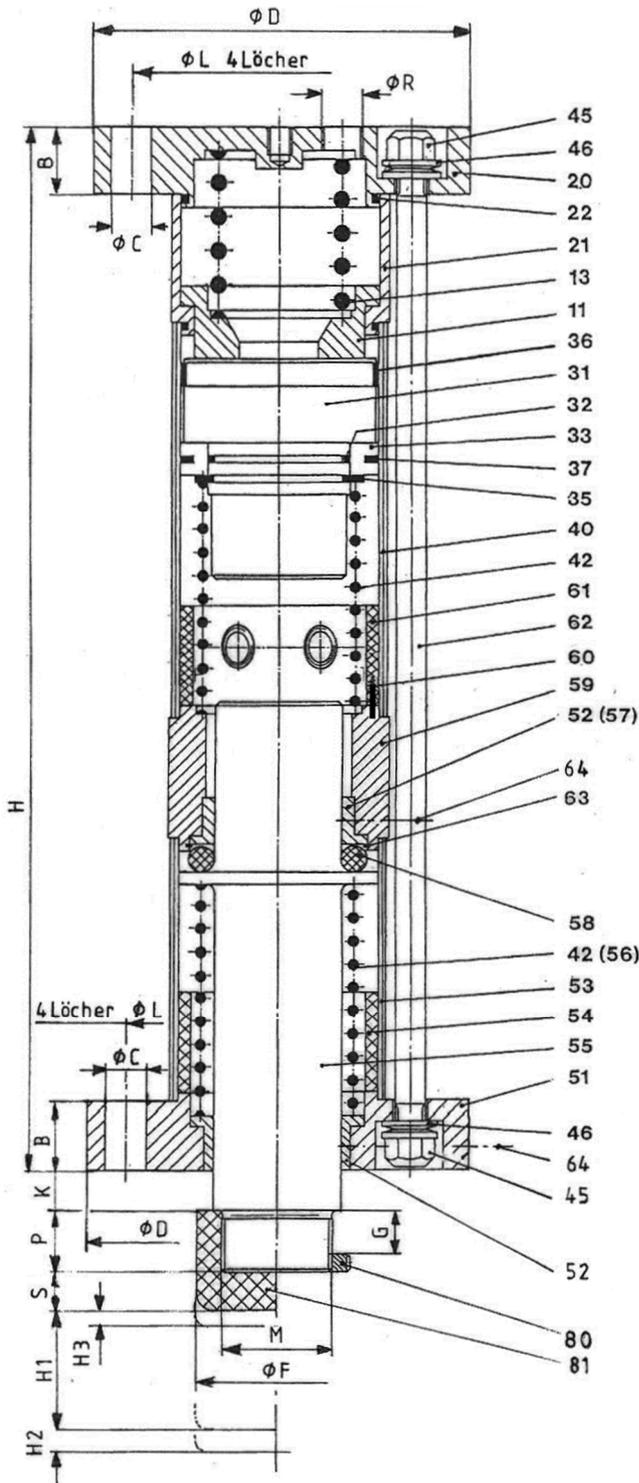


The Distance-Knocker is a Pneumatic Knocker with an additional Impulse Part. The mechanism of action is identical to the standard pneumatic knocker.

The descriptions and terms of our leaflet „Pneumatic Knocker“ are valid for the Distance-Knocker as well and have exactly to be taken into account.

The numbers in brackets refer to the spare parts list and list of parts. The so-called „(impact) piston“ of our leaflet „Pneumatic Knocker“ consists of pos. 31 to 37.



1. Construction and way of function

The picture shows the general construction principles.

The impact piston that is a permanent magnet (31 - 37) clings to the anchor plate (11) at its end-position. The compressed air is led through the lid (20). If the piston force gets stronger than the cling force of the magnet the impact piston tears off the anchor plate (11), gets extremely accelerated by the expanding compressed air and hits at a very high speed onto the piston rod (55).

The piston rod (55) is accelerated spontaneously following the momentum equation. It transfers the energy to the silo wall, bounces off and back against the impact piston (31 to 37).

As the Distance-Knocker gets deaerated the spring (42) is pushing back the impact piston (31 to 37) to the anchor plate (11) and the spring (56) is pushing back the piston rod (55) into its starting position with stroke way H3.

The speed of the piston rod is faster than the human eyes are capable to see

To be avoided:

If the piston rod is not stopped by any solid object it will hit against the rubber spring packing (54) after the stroke way H1. It will be stopped within stroke way H2 by the rubber spring packing (54) and be moved back to the impact piston (31 to 37). → See point 5.16

2. Application

The Distance-Knocker is especially designed to knock off moving or changing containers and drums rotating at low speed as well as for hot walls.

3.Noise protection

We have matching noise reducing hoods type QJSH. If possible the space between base plate (51) and the wall to be knocked off should be insulated or screened at the location to get a better result of noise reduction.

4. Ex-Protection

At the spot of the knock there may occur sparks due to mechanical energy especially on oxidised surfaces and/or tangential strokes. By using external aeration (e.g. with nitrogen) the existence of explosion capable mixtures can be avoided.

5. Installation and operating instructions

5.11 Attention: The Distance-Knocker must only be operated with protection device. Do not reach into the stroke area of the Distance-Knocker. During maintenance the connection to the compressed air line has to be interrupted.

The forged edge at the end of the piston rod, has to be removed time to time.

5.12 The Distance-Knocker has to be securely installed to a greater mass (e.g. machine-construction, U-steel filled with concrete) to cover the recoil.

5.13 The distance between Distance-Knocker and the object to be knocked off has to be in-between $a_{max} = H1 - H3$. and $a_{min} = H3 + H3$ ($H3 =$ safety distance). When using the vulkollan buffer measure S is observe. See point 8. Installation dimensions.

5.14 The wall to be knocked off has to be reinforced but still has to be elastically for that the momentum can be transferred in the wall.

Additional weights on the piston rod (55) will change the speed according the momentum equation. At higher additional weights you have to replace the spring (42) against a stronger one or support it with an additional spring.

5.15 The Distance-Knocker is - like the standard Pneumatic Knocker - not maintenance-free. Additionally the fanged bushes have to be lubricated. Piston-rod and deaeration holes have to be protected against dust and dirt. Clean piston-rod and check if it is moving easily.

5.16 If the piston rod (55) does not return to its end position the impact piston will hit against the emergency rubber spring packing (61). If this one is destroyed it will hit the spring (56) down to its block-length and will finally destroy the whole knocker.

This can be avoided if the knocker is only operated if the piston rod has returned into its end position, e.g. by using a light barrier.

5.17 On rotating drums the Distance-Knocker should knock from on top (Mounting position vertical!) into a small reinforcement ring or ring segments.

5.18 There is working a sidestroke momentum to the Distance-Knocker within the rotation direction of the drum. On installing the Distance-Knocker at an angel of about $\tan \alpha = \text{rotation speed [m/sec]} / 6.5 \text{ [m/sec]}$ to the rotation axis against the rotation direction the sidestroke momentum will be neutralised.

5.19 The fixing unit should be designed in this case the Distance-Knocker may be moved ridgeless against the rotating direction or that it can be pivoted around α .

The momentum must work against the rotation direction.

5.20 The installation of the Distance-Knocker should be executed that way, that it can be removed even when the drum is rotating.

6. Types

Type	Temperature	Piston rod end	Accessories (to be ordered separately):
QJ...A	0 to 70 °C	set off without threads	Buffer made of PE to be fixed on the end of the piston rod
QJ...B		set off whit threads and wrench nut	Buffer made of PE to be screwed on the end of the piston rod. grooved nut
QJ...A-S4	to 140 °C	set off without threads	Buffer made of PE to be fixed on the end of the piston rod
QJ...B-S4		set off whit threads and wrench nut	Buffer made of PE to be screwed on the end of the piston rod. grooved nut

7. Dimensions

Dimensions in mm																	Magnet- cling - force N	Dynam. Energy Nm	weights in [kg]		
TYPE	B	C	D	E	F	G	H	H1	H2	H3	K	L	M	P	R	S			SW	piston- rod	total
QJ 63	22	14	120	35	50	7	345	30	10	3	10	95	M30x1,5	20	1/4"	15	30	640	25	1,4	9,2
QJ 80	24	18	150	45	60	9	425	35	12	4	12	120	M40x1,5	25	1/4"	15	41	1160	58	2,9	17,4
QJ100	31	22	190	64	80	11	515	40	15	5	20	150	M55x2,0	35	3/8"	20	55	1620	97	6,8	33,5
QJ125	45	26	240	80	100	12	670	45	20	9	20	190	M70x2,0	40	1/2"	25	70	2560	205	14,5	70,1

to be changed without notice

8. Installation dimensions.

**Distance (a)
piston rod end (Pos 55) - point of impact**

a_{min} (mm)	a_{max} (mm)	with Vulkollan Buffer (mm)	
H3+H3	H1-H3	+ S	
QJ 63	6	27	+ 15
QJ 80	8	31	+ 15
QJ100	10	35	+ 20
QJ125	18	36	+ 25

**Distance (a)
bottom flange (Pos 51) - point of impact**

a_{min} (mm)	a_{max} (mm)	with Vulkollan Buffer (mm)	
H3+H3+P+K	H1-H3+P+K	+ S	
QJ 63	36	57	+15
QJ 80	45	68	+15
QJ100	65	90	+ 20
QJ125	73	96	+ 25

Subject to change without notice

9. Lubricants recommendations

Temperature in degr. C	Used Material	For assembly and maintenance		Maintance Unit
		Parts of Knocker	Piston Rod grease fitting	Parts of Knocker
-35°C to 100°C Knocker Type QJ... K	POM / NBR / PUR	Shell ALVANIA GL 00 DIN 51826 Teilenr.: 811S9LI-G01-1		Öl HLP 32 z.B Shell 32 Teilenr.: 81001-032
-40°C to 140°C Knocker Type QJ...-x4 K...-x3 K...-x4	Al Sn / FKM	Klüber NH1 94-402 Teile Nr: 811CAMI0HK001NH		Silikonöl z. B BECHEM Berusynth 32 H1

* Dew-point of compressed air has to be 20° C below operation temperature.

** The resistance of the sealings have to be taken into account

The DIN-Standards indicate the minimum quality of the main characteristics. The characteristics of brand mark lubricants (ESSO, SHELL, Klüber etc.) often are significantly better and should be preferred therefore. If required we deliver the here mentioned brand mark lubricants even in small quantities.

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