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CYLINDERS & WET KITS



TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD TÜV SÜD
 ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ CERTIFICADO ◆ CERTIFICAT



CERTIFICATO

Nr 50 100 2740 - Rev. 06

Si attesta che / This is to certify that

IL SISTEMA QUALITÀ DI
THE QUALITY SYSTEM OF

H.S. PENTA S.p.A.
SEDE LEGALE E OPERATIVA:
VIA PROVENTA 31
I-48018 FAENZA (RA)

È CONFORME AI REQUISITI DELLA NORMA
HAS BEEN FOUND TO COMPLY WITH THE REQUIREMENTS OF

UNI EN ISO 9001:2008

Questo certificato è valido per il seguente campo di applicazione
This certificate is valid for the following product or service range

Progettazione, fabbricazione ed assistenza di cilindri oleodinamici in particolare telescopici per ribaltabili; progettazione e costruzione dispositivi idraulici per cilindri oleodinamici, in particolare anticaduta e fine corsa (IAF 18)

Design, manufacture and after-sale service of telescopic hydraulic cylinders for tipping gears; design and construction of hydraulic devices for hydraulic cylinders, hose burst valves and end-of-stroke devices (IAF 18)



SOQ N° 048A ISSI N° 005G PRD N° 081B
SGA N° 018D ITX N° 001L ISP N° 057E
SCR N° 005F PRS N° 077C LAB N° 0078
Membro degli Accordi di Mutual Recognition
EA, IAF e IAC
Signatory of EA, IAF and IAC Mutual Recognition Agreements

Per l'Organismo di Certificazione
For the Certification Body
TÜV Italia S.r.l.

Paolo Merenda
Direttore Certificazione

Data di emissione / Issue date
2012-05-15

Data di scadenza / Expiry date
2015-04-30

Organizzazione certificata per la prima volta in data 2003-05-20

"La validità del presente certificato è subordinata a sorveglianza periodica a 12 mesi e al riesame completo del sistema di gestione aziendale con periodicità triennale"

"The validity of the present certificate depends on the annual surveillance every 12 months and on the complete review of company's management system after three-years"

CYLINDERS & WET KITS

Index

Truck

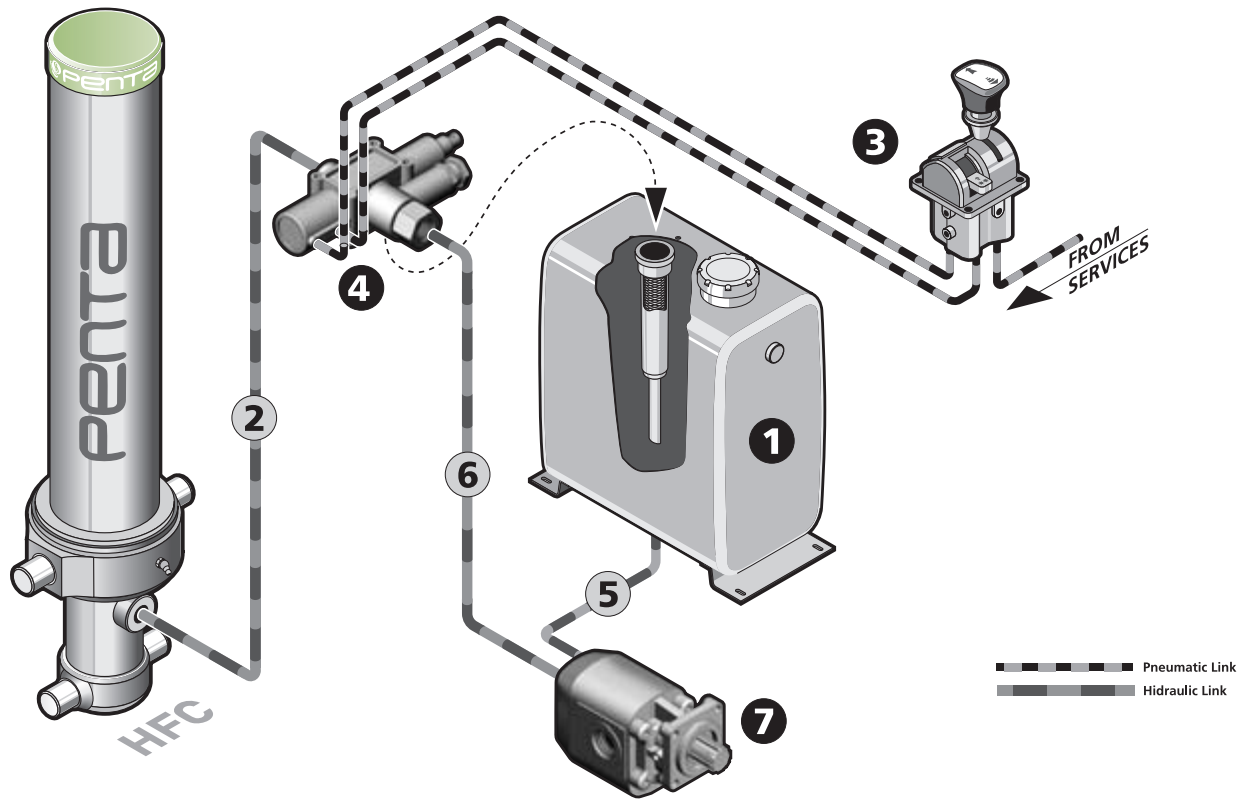
- 2 HFC 6x4 WET KIT Modules
- 3 HFC 129 3 Front Mount Cylinder
- 4 HF 6x4 WET KIT Modules
- 5 HF 129 3 Front Mount Cylinder
- 6 HFC 8x4 WET KIT Modules
- 7 HFC 149 4 Front Mount Cylinder
- 8 HF 8x4 WET KIT Modules
- 9 HF 149 4 Front Mount Cylinder
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Truck ► HFC 6x4 WET KIT MODULES

WET KIT DIAGRAM



MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC00700010001	REAR MOUNTED OIL TANK, 70LT OIL VOLUME	1
2	JA0019067	PRESSURE KIT, VALVE TO CYLINDER	1
	D71500019F002	HOSE R2T G3/4" F90-FD L=1500MM	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G034035	TIPPING VALVE KIT	1
	J60064001	FILTER AND PLATE FITTING VALVE KIT	1
	U01G034P20013	HYDRAULIC VALVE DM130 130L/M TVM200	1
5	J40045018	SUCTION KIT, Ø45MM	1
	D72000045F001	HOSE R4 Ø45 L=2000MM	1
6	J90019053	PRESSURE KIT, PUMP TO VALVE	1
	D72500019F001	HOSE R2T G3/4" FD-F90 L=2500MM	1
7	Y106532405501	GEAR PUMP, 65cc BI-ROTATIONAL, 4 HOLES	1

OPTIONALS

● Penta Body Clamp See page 36

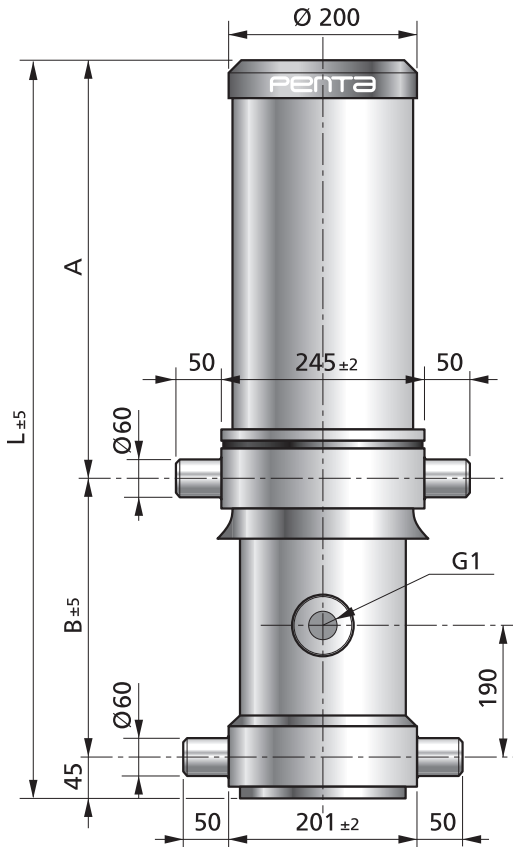
● Truck-Trailer Kit See page 36

● End of stroke device See page 36

Truck ▶ HFC 129 3 FRONT MOUNT CYLINDER

WITH OUTER COVER

EFFECTIVE DIAMETER [mm] **129 - 111 - 95**

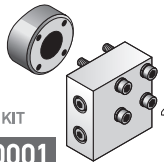


OPTIONAL

OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT

ADG100001

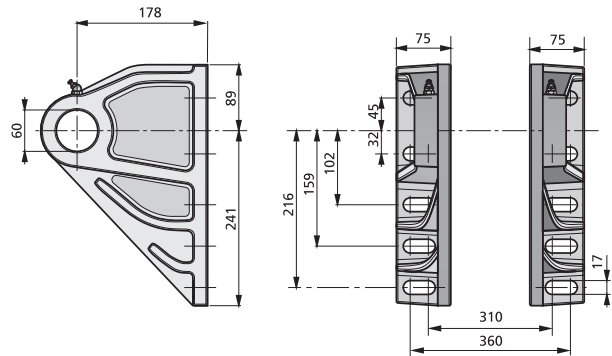


ACCESSORIES



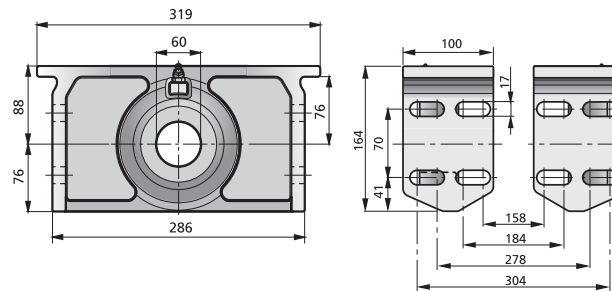
UPPER BRACKET • PAIR

A80060002



BOTTOM BRACKET • PAIR

A90060002



Caution for Upper and Bottom Brackets

Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.



Pull-out

Dimension marked as **B** (closed centre dimension) refers to cylinder completely closed. It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **B** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.



Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm ³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFC 3500 129 3	4213601293010	3	3500	167	34,7	200	29-55	1464	1108	311
HFC 3840 129 3	4214701293010	3	3840	178	38,1	200	29-55	1579	1214	320

SEAL KIT CODE

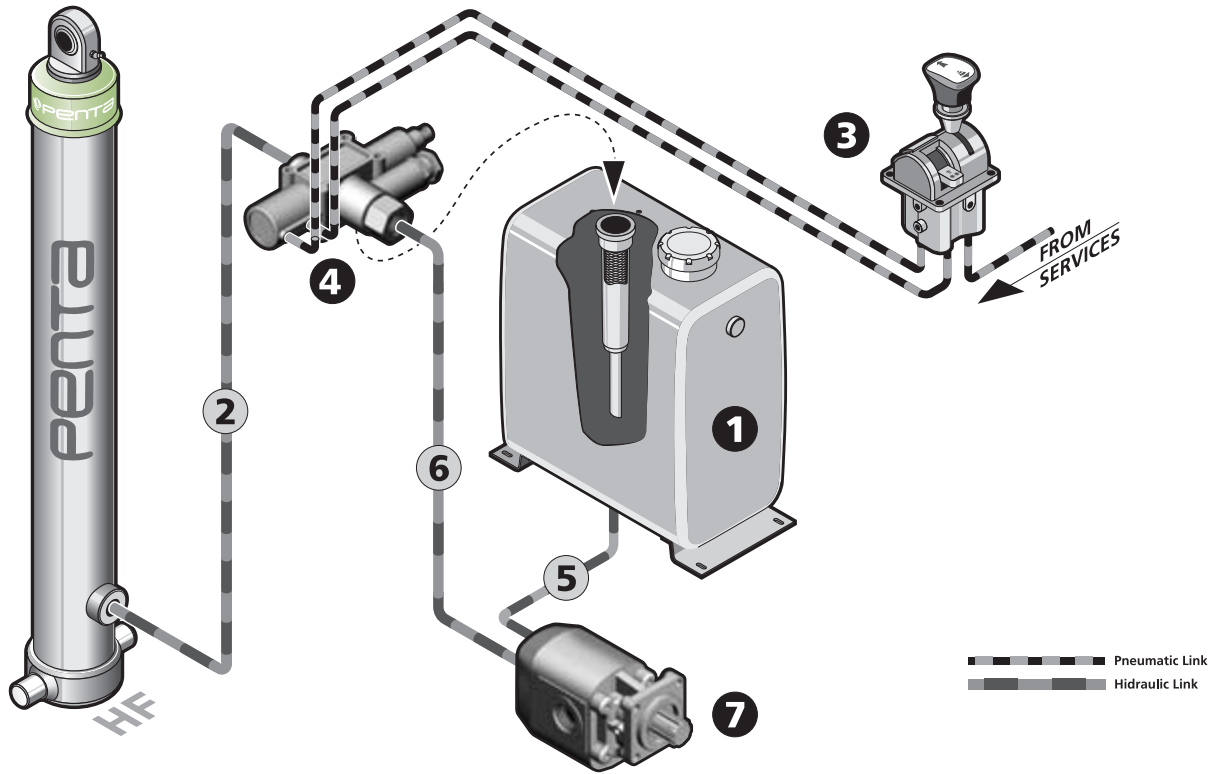
K241001293001

SLIDER KIT CODE

K141001293001

Truck ► HF 6x4 WET KIT MODULES

WET KIT DIAGRAM



MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC00700010001	REAR MOUNTED OIL TANK, 70LT OIL VOLUME	1
2	JA0019067	PRESSURE KIT, VALVE TO CYLINDER	1
	D71500019F002	HOSE R2T G3/4" F90-FD L=1500MM	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G034035	TIPPING VALVE KIT	1
	J60064001	FILTER AND PLATE FITTING VALVE KIT	1
	U01G034P20013	HYDRAULIC VALVE DM130 130L/M TVM200	1
5	J40045018	SUCTION KIT, Ø45MM	1
	D72000045F001	HOSE R4 Ø45 L=2000MM	1
6	J90019053	PRESSURE KIT, PUMP TO VALVE	1
	D72500019F001	HOSE R2T G3/4" FD-F90 L=2500MM	1
7	Y106532405501	GEAR PUMP, 65cc BI-ROTATIONAL, 4 HOLES	1

OPTIONALS

● Penta Body Clamp  See page 36

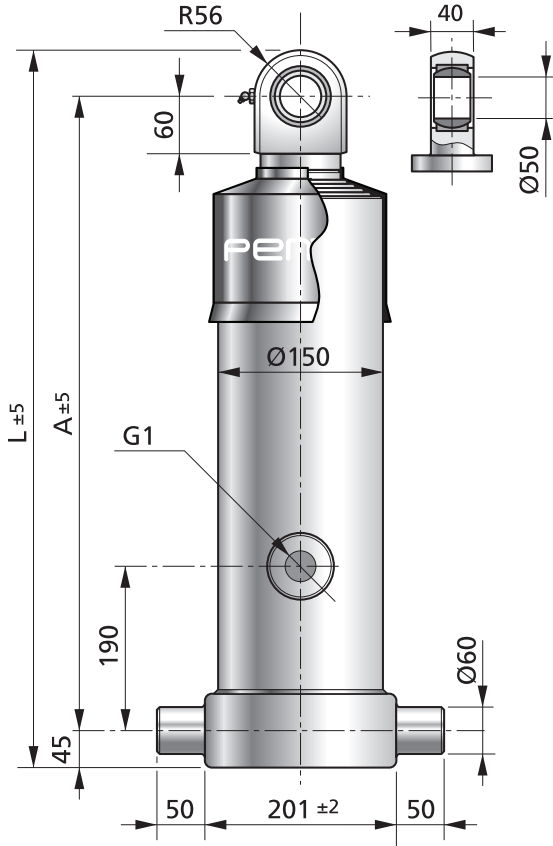
● Truck-Trailer Kit  See page 36

● End of stroke device  See page 36

Truck ▶ HF 129 3 FRONT MOUNT CYLINDER

PINS TO EYE

EFFECTIVE DIAMETER [mm] **129 - 111 - 95**

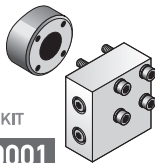


OPTIONAL

OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT

ADG100001

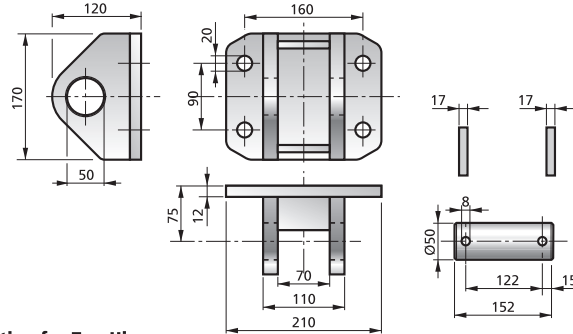


ACCESSORIES



TOP HINGE

A40050013



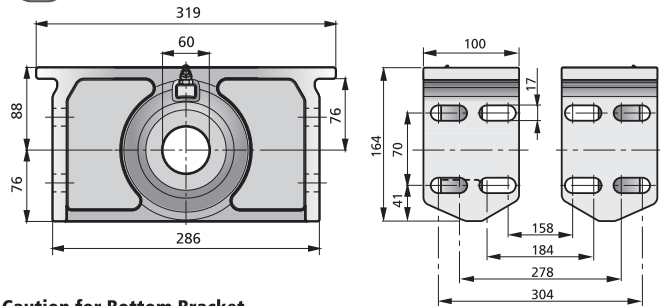
Caution for Top Hinge

It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.



BOTTOM BRACKET • PAIR

A90060002



Caution for Bottom Bracket

Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.



Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed. It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.



Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm ³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]
HF 3500 129 3	4113601293010	3	3500	123	34,7	200	29-55	1528	1427
HF 3840 129 3	4114701293010	3	3840	132	38,1	200	29-55	1683	1582

SEAL KIT CODE

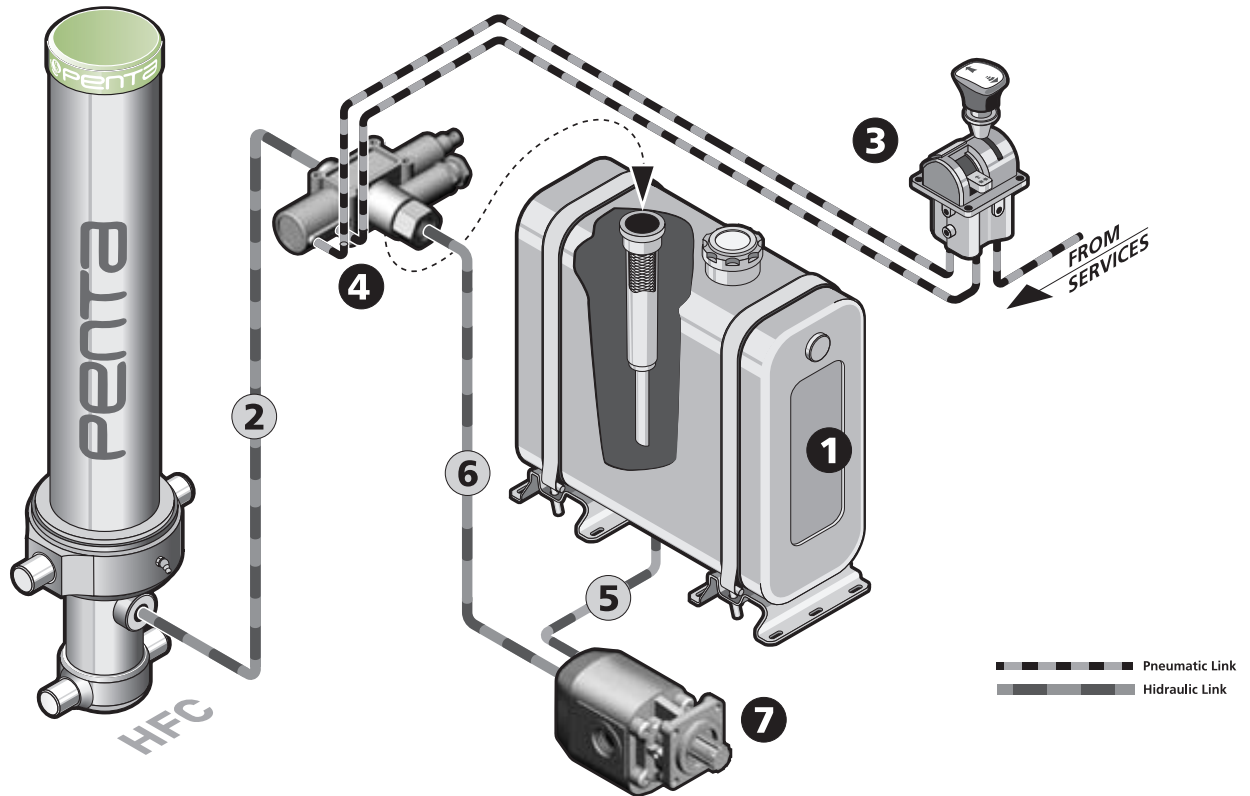
K241001293001

SLIDER KIT CODE

K141001293001

Truck ► HFC 8x4 WET KIT MODULES

WET KIT DIAGRAM



MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC01100010001	REAR MOUNTED OIL TANK, 110LT OIL VOLUME	1
2	JA0019067	PRESSURE KIT, VALVE TO CYLINDER	1
	D71500019F002	HOSE R2T G3/4" F90-FD L=1500MM	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G034034	TIPPING VALVE KIT	1
	J60064003	FILTER AND PLATE FITTING VALVE KIT	1
	U01G034P20013	HYDRAULIC VALVE DM130 130L/M TVM200	1
5	J40051019	SUCTION KIT, Ø51MM	1
	D72000051F001	HOSE R4 Ø51 L=2000MM	1
6	J90025051	PRESSURE KIT, PUMP TO VALVE	1
	D72500025F008	HOSE R2T G1" FD 1"-F90 3/4" L=2500MM	1
7	Y108432404401	GEAR PUMP, 84CC BI-ROTATIONAL, 4 HOLES	1

OPTIONALS

● Penta Body Clamp  See page 36

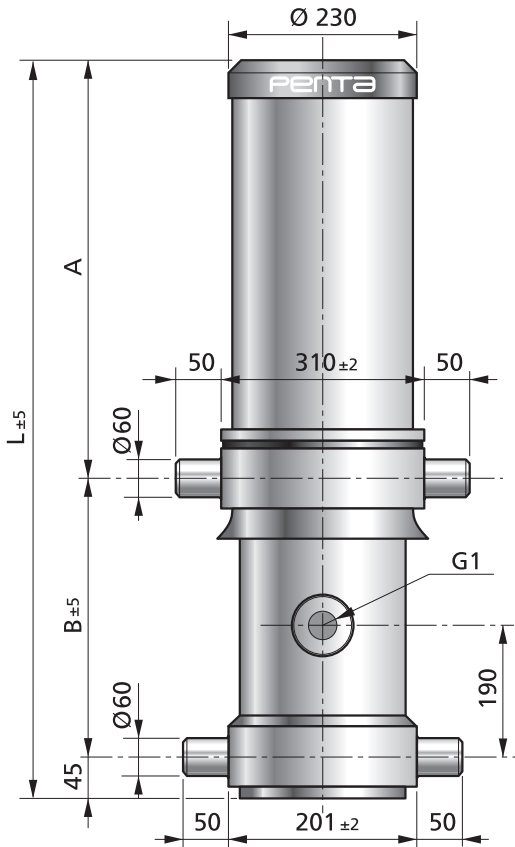
● Truck-Trailer Kit  See page 36

● End of stroke device  See page 36

Truck ▶ HFC 149 4 FRONT MOUNT CYLINDER

WITH OUTER COVER

EFFECTIVE DIAMETER [mm] **149 - 129 - 111 - 95**



OPTIONAL

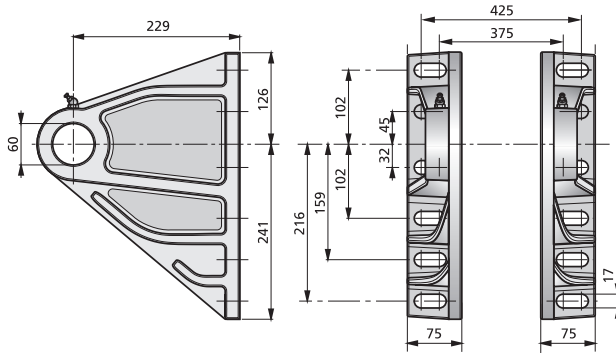


ACCESSORIES



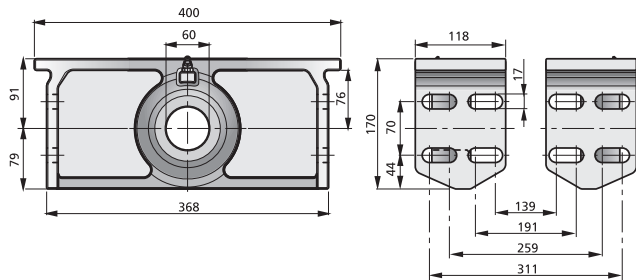
UPPER BRACKET • PAIR

A80060001



BOTTOM BRACKET • PAIR

A90060003



Caution for Upper and Bottom Brackets

Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.



Pull-out

Dimension marked as **B** (closed centre dimension) refers to cylinder completely closed. It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **B** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.



Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm ³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFC 4350 149 4	4212801494010	4	4350	225	51.3	200	34-64	1397	1023	329
HFC 4950 149 4	4214301494010	4	4950	254	58.4	200	34-64	1547	1173	329
HFC 5110 149 4	4214701494010	4	5110	262	60.3	200	34-64	1627	1255	327

SEAL KIT CODE

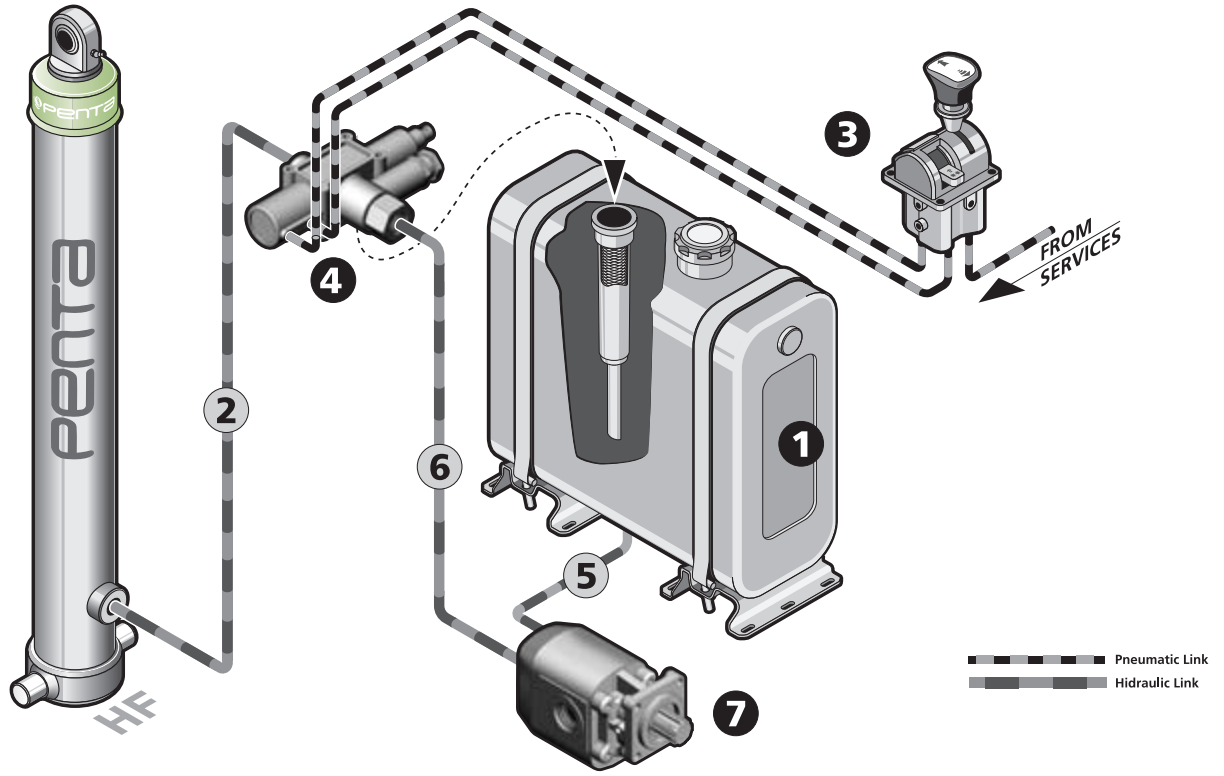
K241001494001

SLIDER KIT CODE

K141001494001

Truck ► HF 8x4 WET KIT MODULES

WET KIT DIAGRAM



MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1	DC01100010001	REAR MOUNTED OIL TANK, 110LT OIL VOLUME	1
2	JA0019067	PRESSURE KIT, VALVE TO CYLINDER	1
	D71500019F002	HOSE R2T G3/4" F90-FD L=1500MM	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G034034	TIPPING VALVE KIT	1
	J60064003	FILTER AND PLATE FITTING VALVE KIT	1
	U01G034P20013	HYDRAULIC VALVE DM130 130L/M TVM200	1
5	J40051019	SUCTION KIT, Ø51MM	1
	D72000051F001	HOSE R4 Ø51 L=2000MM	1
6	J90025051	PRESSURE KIT, PUMP TO VALVE	1
	D72500025F008	HOSE R2T G1" FD 1"-F90 3/4" L=2500MM	1
7	Y108432404401	GEAR PUMP, 84CC BI-ROTATIONAL, 4 HOLES	1

OPTIONALS

● Penta Body Clamp  See page 36

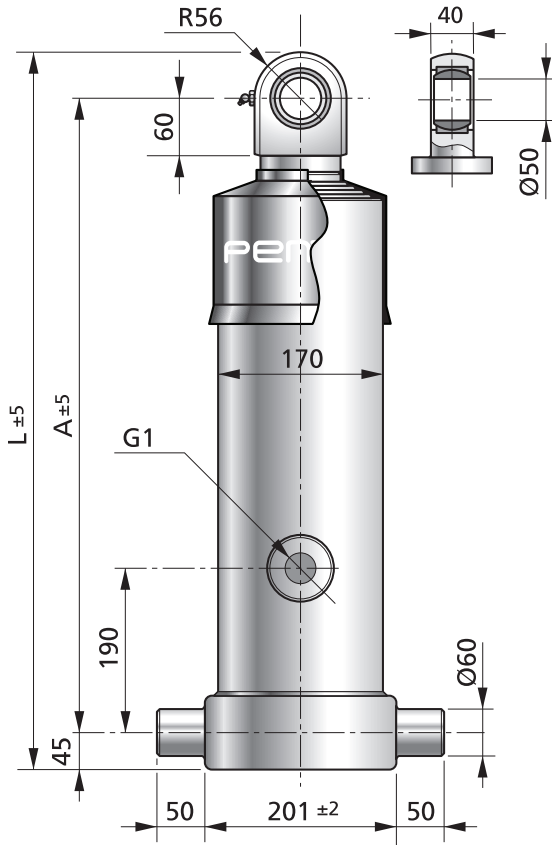
● Truck-Trailer Kit  See page 36

● End of stroke device  See page 36

Truck ▶ HF 149 4 FRONT MOUNT CYLINDER

PINS TO EYE

EFFECTIVE DIAMETER [mm] **149 - 129 - 111 - 95**



OPTIONAL

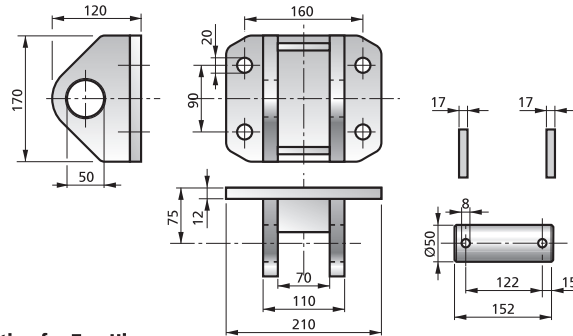


ACCESSORIES



TOP HINGE

A40050013



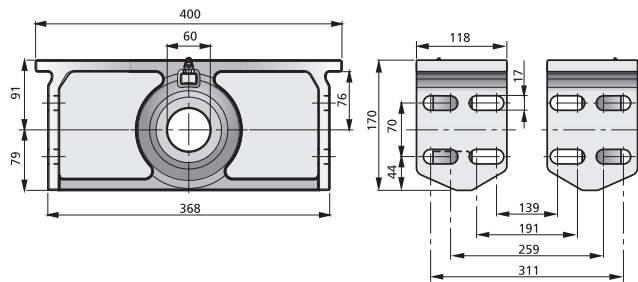
Caution for Top Hinge

It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.



BOTTOM BRACKET • PAIR

A90060003



Caution for Bottom Bracket

Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.



Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed. It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.



Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm ³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]
HF 4350 149 4	4112801494010	4	4350	154	51.3	200	34-64	1459	1358
HF 4650 149 4	4113601494010	4	4650	164	54.8	200	34-64	1534	1433

SEAL KIT CODE

K241001494001

SLIDER KIT CODE

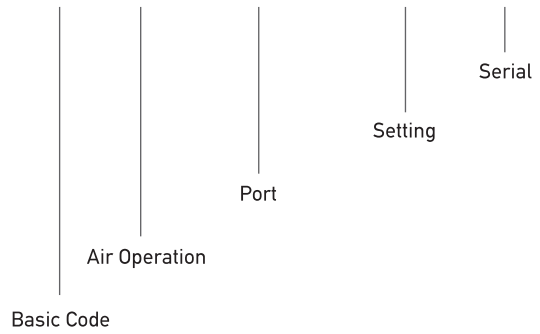
K141001494001

► **HT-VALVE DM130** TIPPING VALVE



DECODING

U 01 G034 P200 13

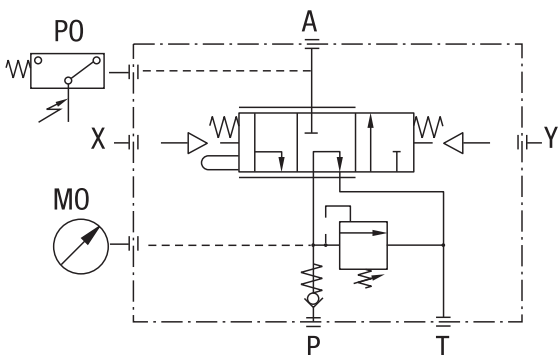


TECHNICAL DATA

FLOW RATE	[lt/min]	130	FLUID TEMPERATURE	[°C (t)]	-25 / +80
MAX WORKING PRESSURE	[bar]	350	VISCOSITY RANGE	[cSt]	12 - 100
MAX PEAK PRESSURE (< 0.1s)	[bar]	500	FILTERING ISO 4006 β _x =75	[µm]	20 - 17 25
T PORT MAX PRESSURE	[bar]	30	WEIGHT	[kg]	4.5
MINERAL OIL		ISO VG 46	MAX PNEUMATIC WORKING PRESSURE	[bar]	12

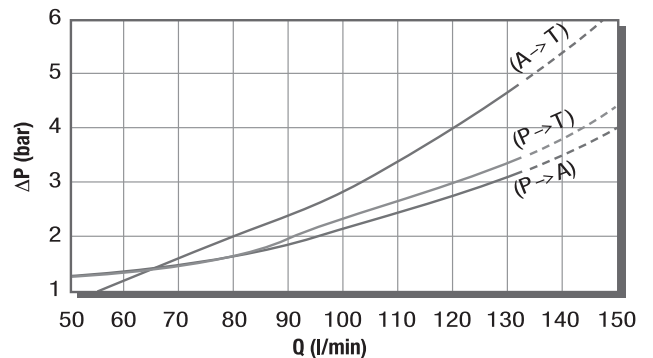
- Pneumatic or mechanical operated 130 l/min distributor, for tipping vehicles, with tractor only.
- It performs tipping, fast lowering and progressive lowering (by means of mechanical control cable TXZ or the progressive pneumatic control like CP/DP).
- The inlet check valve and the adjustable relief valve are built-in.
The relief valve range is from 140-220 bar (std.=200 bar) or (upon request) from 220-350 bar (std.=250 bar).
- End-of-stroke rope or protection cup.
- Flange connection to tank or chassis is available.
- Upon request manometer or pressure switch gauge.

FUNCTIONAL DIAGRAM

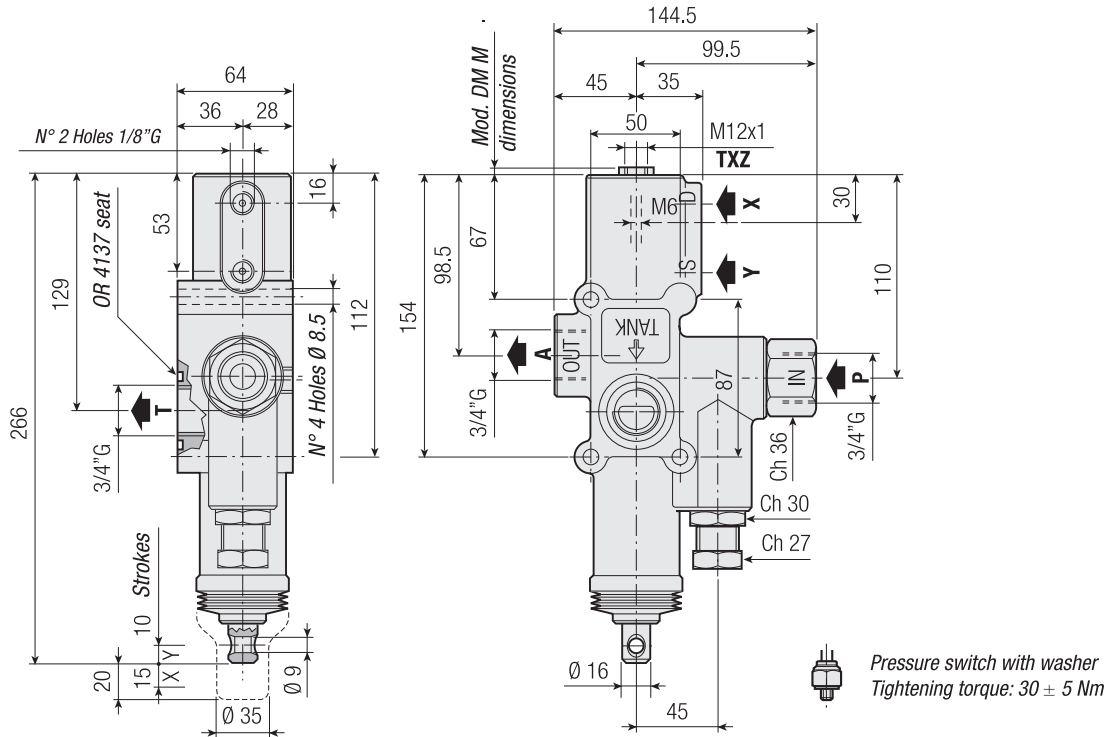


PRESSURE DROP

- Refer to OIL TYPE
ISO VG 46 A 50° (ν = 30 cst)

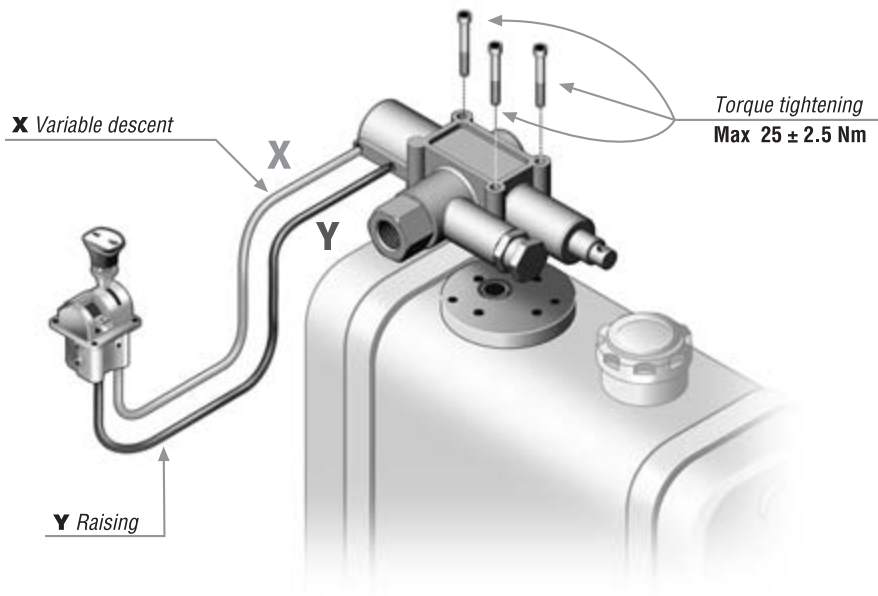


Standard Version



DESCRIPTION	CODE
Pressure switch	DK0F09

STUD KIT FOR TANK MOUNTING



DESCRIPTION	CODE
Complete valve Kit	J3G034034-35 (U01G034P20013 + J60064001-3)
Filter and plate fitting valve Kit	J60064001-3 (see pag. 13-15)

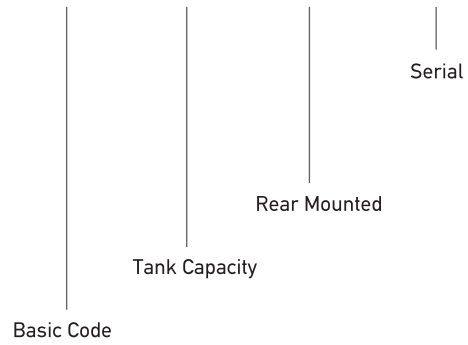
► **DC2 OIL TANK**



Rear mounted with provision for return filter

DECODING

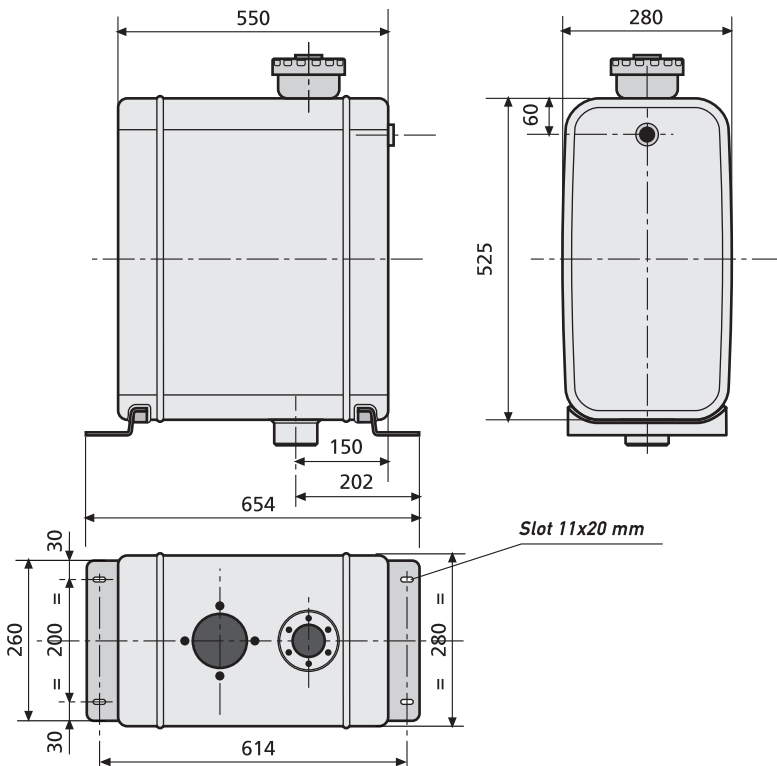
DC 0070 001 0001



TECHNICAL DATA

CODE	MATERIAL	BRUTO VOLUME [lt]	WORKING VOLUME [lt]
DC00700010001	Acciaio - Steel	70	65

Steel oil tank - standard colour: BLACK (other versions and accessories upon request)



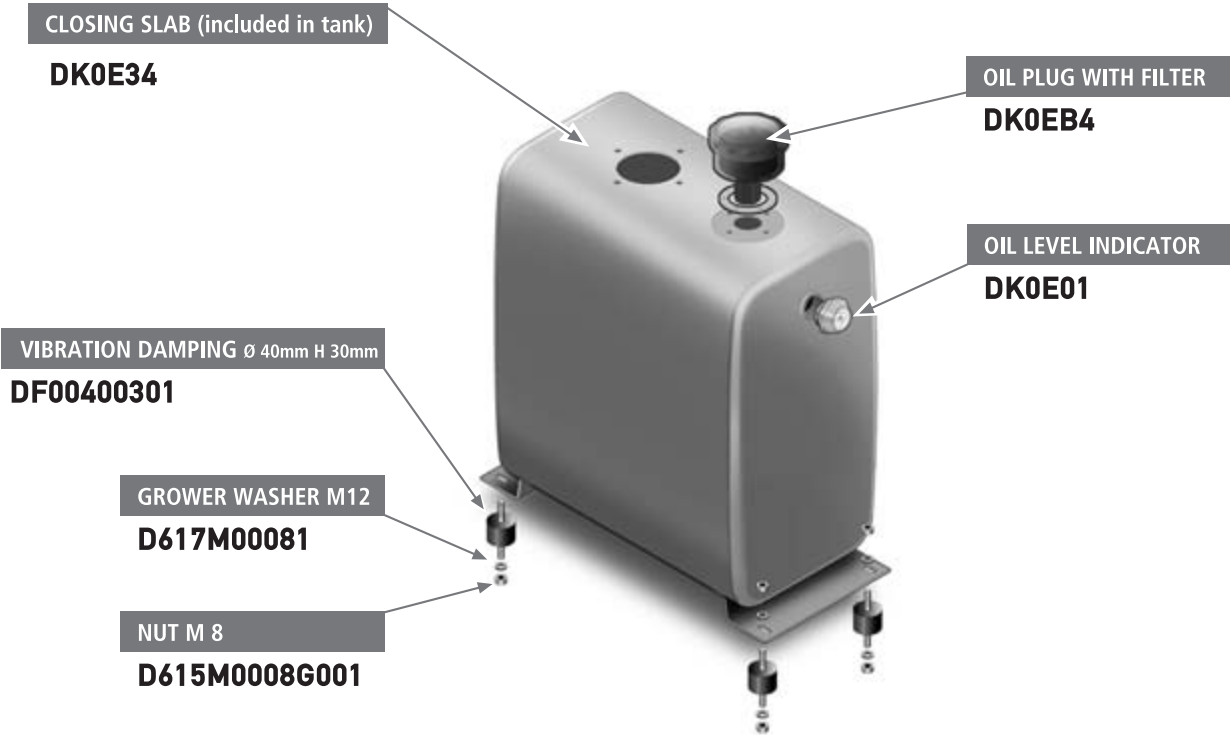
NOTES

The tank will be supplied with ball valve 1"1/4 M/F conical with butterfly handle.
The tank will be supplied without filter and plate for mounting valve (optional).

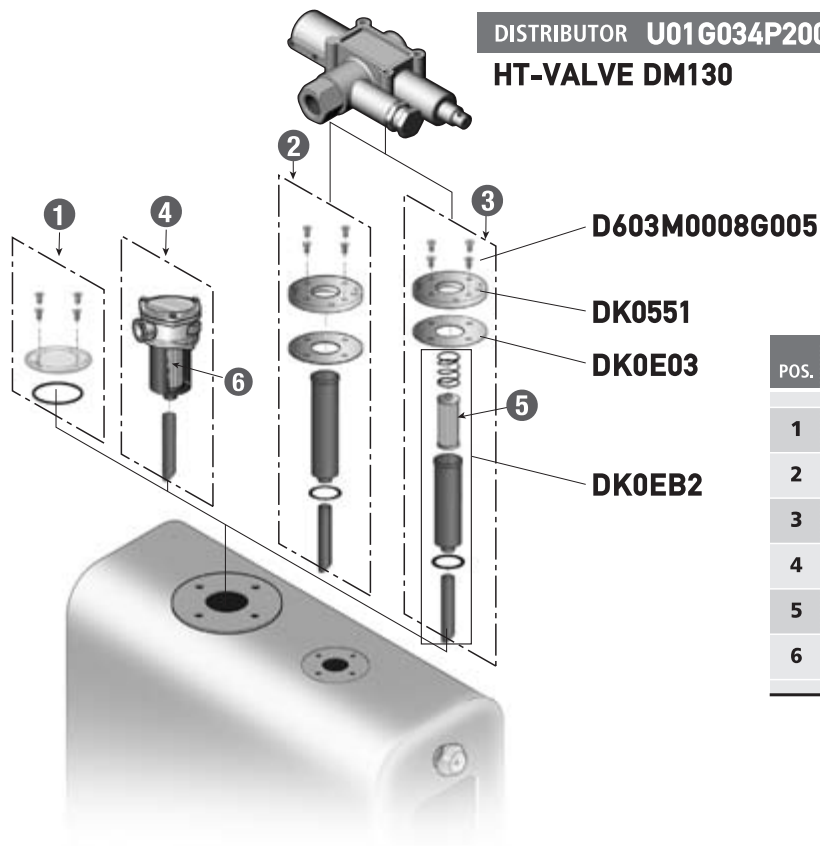
BALL VALVE CODE

D408G01140003

COMPONENTS (Included)



POSSIBLE CONFIGURATIONS WITH HT-VALVE DM130



POS.	DESCRIPTION	TANK CAPACITY	CODE
1	Closing Plate (included in tank)		DK0E34
2	Distributor mounting plate	70 - 110	J60064002
3	Distributor mounting plate with filter	70 - 110	J60064001
4	Filter	70 - 110	DG00800702
5	Paper cartridge 25 micron		DK0EB3
6	Paper cartridge 25 micron		DK0E31

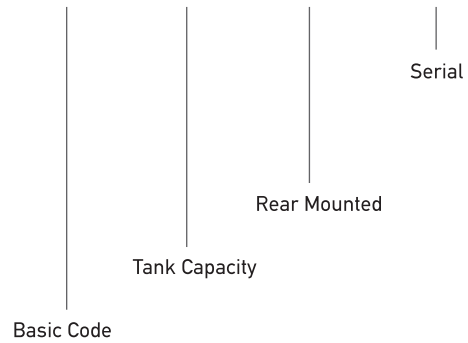
► **DC3 OIL TANK**



Rear mounted with provision for return filter

DECODING

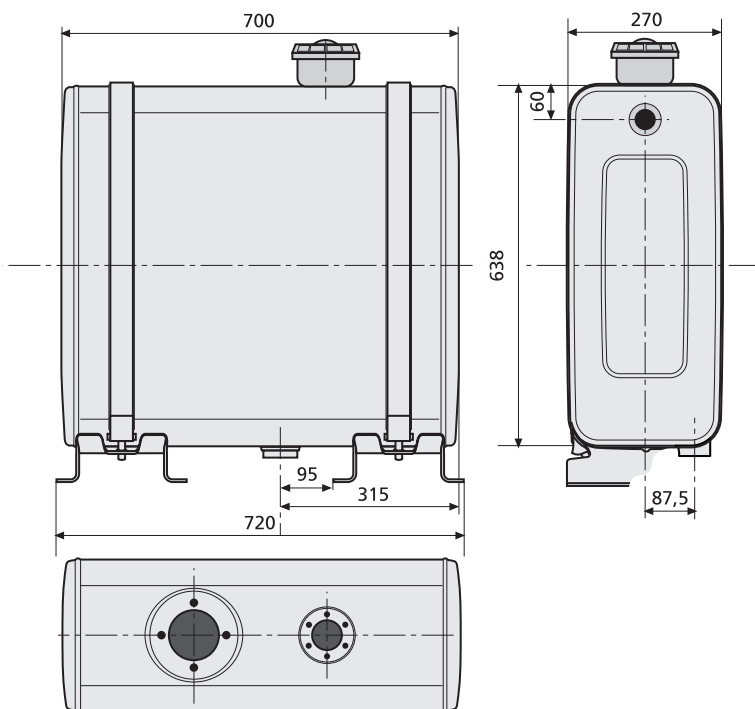
DC 0110 001 0001



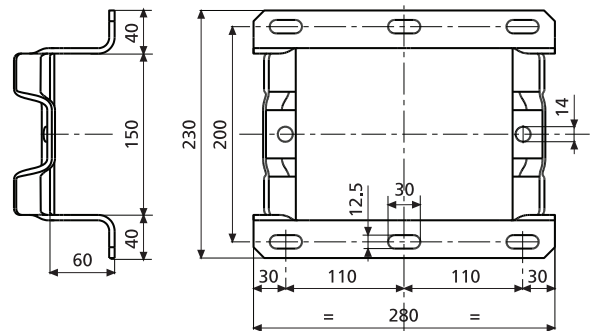
TECHNICAL DATA

CODE	MATERIAL	BRUTO VOLUME [lt]	WORKING VOLUME [lt]
DC01100010001	Acciaio - Steel	110	90

Steel oil tank - standard colour: BLACK (other versions and accessories upon request)



SUPPORTS



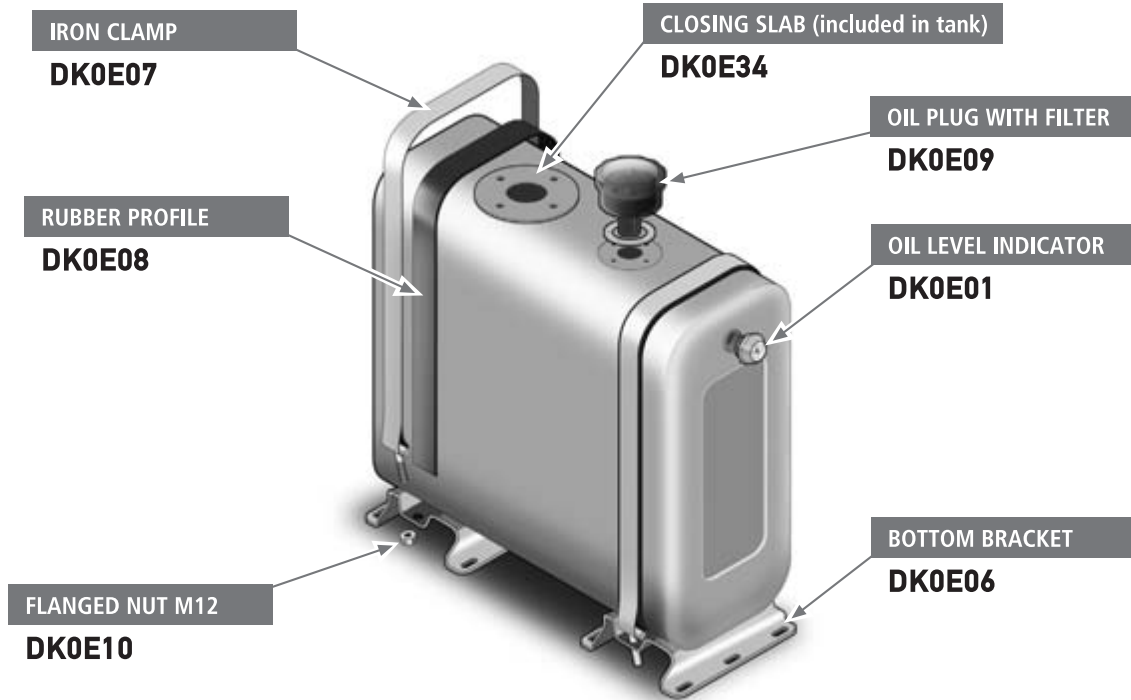
NOTES

The tank will be supplied with ball valve 1"1/4 M/F conical with butterfly handle.
The tank will be supplied without filter and plate for mounting valve (optional).

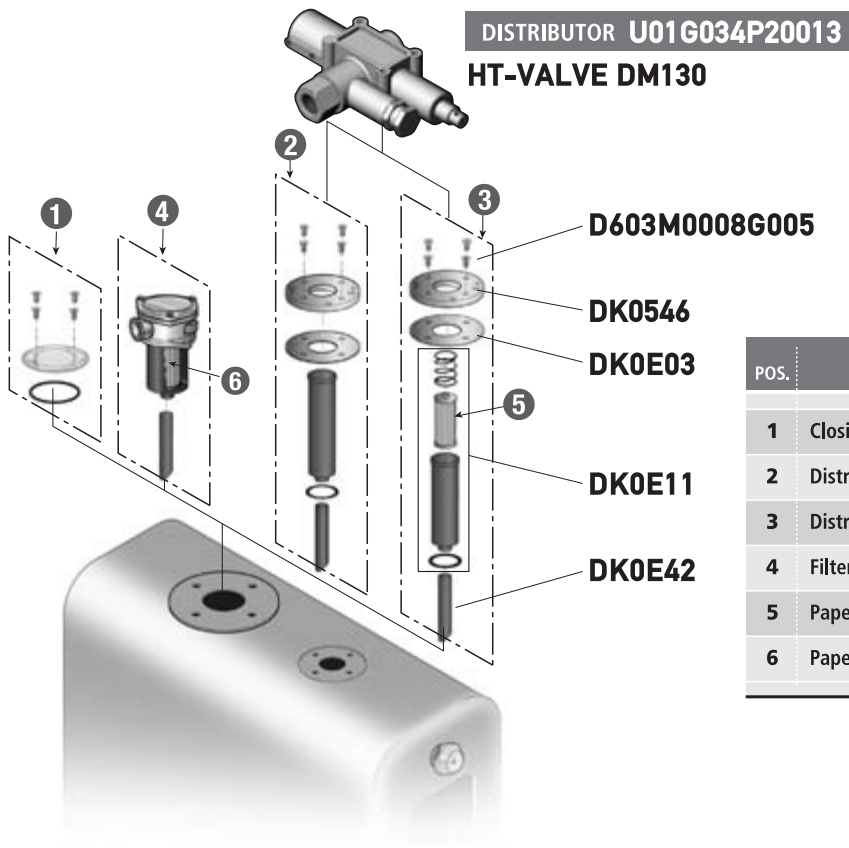
BALL VALVE CODE

D408G011140003

COMPONENTS (Included)

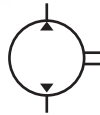


POSSIBLE CONFIGURATIONS WITH HT-VALVE DM130



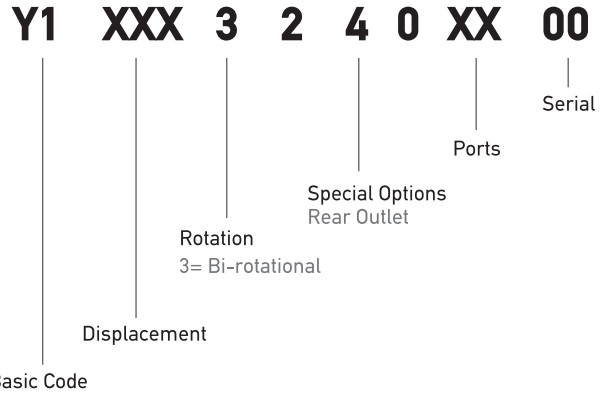
POS.	DESCRIPTION	TANK CAPACITY	CODE
1	Closing Plate (included in tank)		DK0E34
2	Distributor mounting plate	70 - 110	J60064004
3	Distributor mounting plate with filter	70 - 110	J60064003
4	Filter	70 - 110	DG00800702
5	Paper cartridge 25 micron		DK0EB1
6	Paper cartridge 25 micron		DK0E31

► **HP-GEAR Y1-18** GEAR PUMP



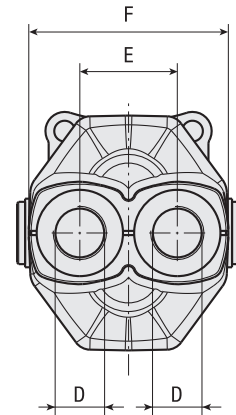
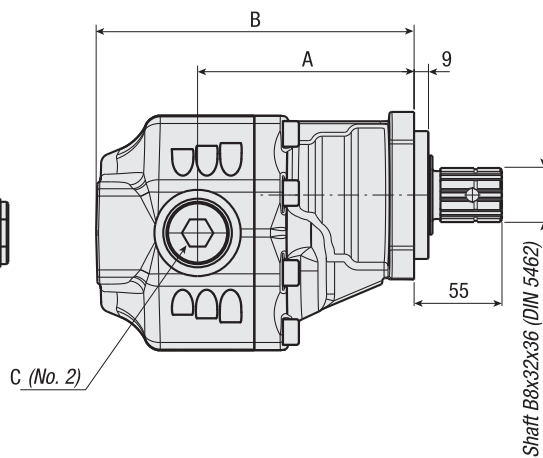
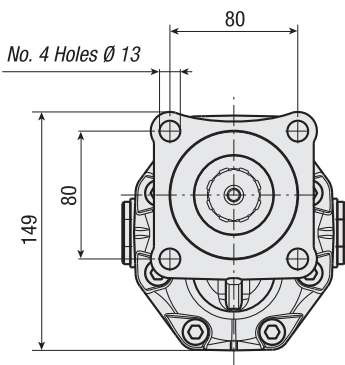
DIN
5462
SE

DECODING



TECHNICAL DATA

CODE	ROTATION	DISPLACEMENT [cm ³ /rev.]	A [mm]	B [mm]	C INLET	D OUTLET	E [mm]	F [mm]	WEIGHT [Kg]
Y106532405501	Bi-rotation	65	141	204	1" G	1" G	61	125	14.8
Y108432404401	Bi-rotation	84	141	216	1 1/4" G	1 1/4" G	70	140	15.6

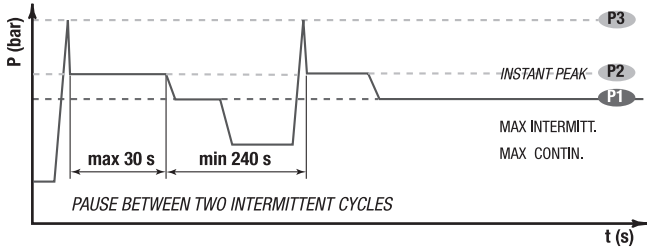


THRUST PLATES KIT CODE
MK2060430000

COMPLETE SEALS KIT CODE
MK2190420000

TECHNICAL DATA

EXAMPLE OF WORKING CYCLES



INLET PRESSURE	[bar]	0.7÷1.5
OPERATING VISCOSITY RANGE	[cSt]	12÷100
MAX PEAK PRESSURE (< 0.1s)	[°C (t)]	-10°÷ +80°

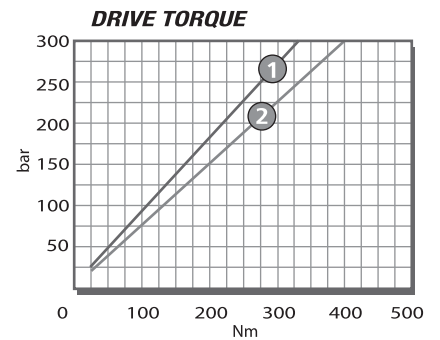
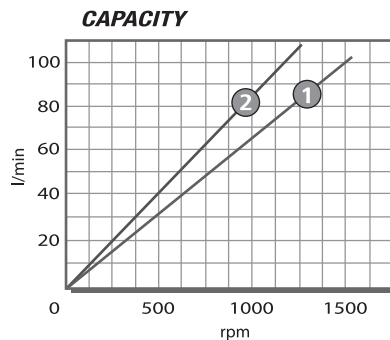
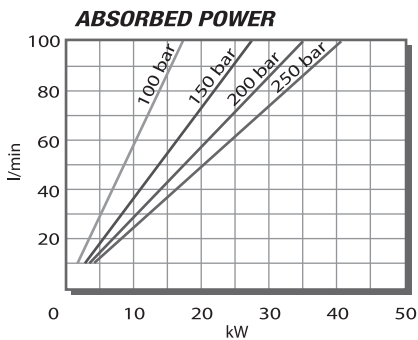
WORKING PRESSURE	CONTAMINATION		$\beta_x = 75$
	NAS 1638		
≤ 200 bar	12	21-18	40 μm
≥ 200 bar	11	20-17	25 μm

◀ RECOMMENDED FILTERING (return or outlet)

		Vg [lt/min]	Y106532405501	Y108432404401
			Bi-directional	Bi-directional
DISPLACEMENT	Vg	[lt/min]	65	84
MAX CONTINUOUS OPERATING PRESSURE	P1	[bar]	200	180
MAX INTERMITT. OPERATING PRESSURE (max 30 s)	P2	[bar]	210	200
MAX PEAK PRESSURE (< 0.1s)	P3	[bar]	220	210
MAX INTERMITTENT SPEED (P ≤ 20 bar)	n3	[r.p.m]	1800	1700
MAX CONTINUOUS SPEED (≤ P1)	n1	[r.p.m]	1500	1400
MIN INTERMITTENT SPEED (≤ P2x0.5) (max 30 s)	n4	[r.p.m]	300	300

DIAGRAMS

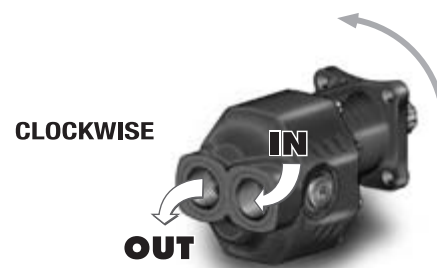
Specifications Refer to OIL TYPE ISO VG 46 A 50° (ν = 30 cst)



① COD. Y106532405501

② COD. Y108432404401

PUMP ROTATION

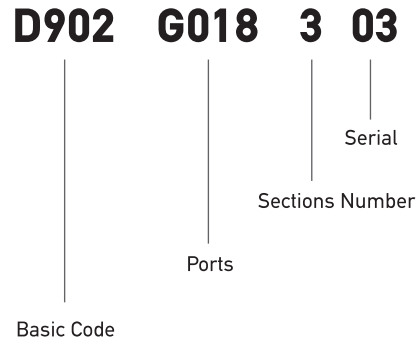


▶ HC-PNEUMATIC D9-6 PNEUMATIC CONTROL



Three Sections

DECODING

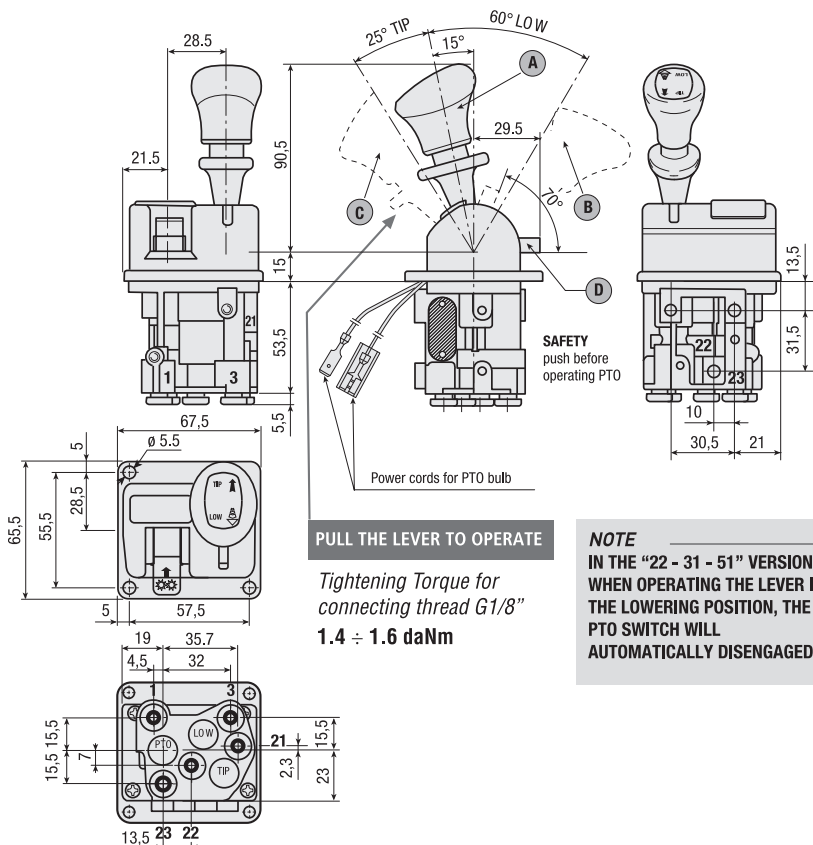


D902G018303 SPECIFICATIONS

- Pneumatic distributor with proportional lowering control and automatic PTO disengagement.
- Tristable lever (three stable positions: rest, low, tip). With automatic PTO disengagement when body is lowering.

TECHNICAL DATA

WORKING MEDIUM	Air	OPERATIVE TEMPERATURE	[°C]	-40°C / +80°C
MAX WORKING PRESSURE	[bar]	NOMINAL DIAMETER	[mm]	Ø4
OPERATING VOLTAGE	[V DC]	CONTACTS		Normally Open

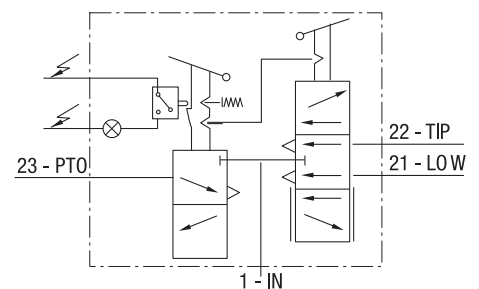


LEVER POSITION

- A** Rest position (with lock)
- B** Operation PORT 21
- C** Operation PORT 22
- D** Operation PORT 23 (with stop)

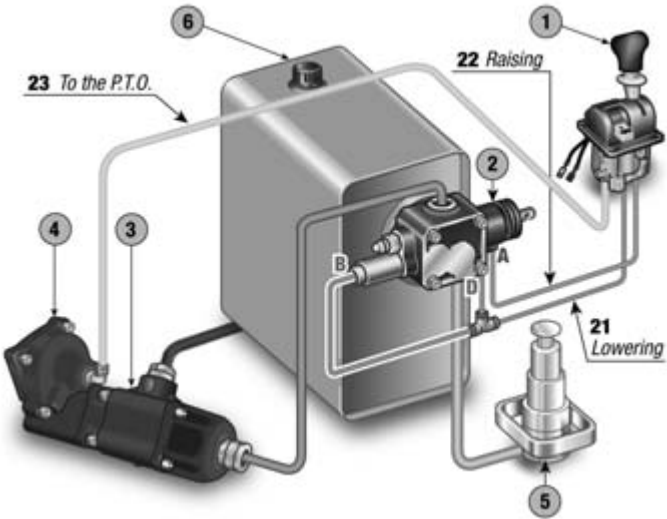
AIR PORTS

- 1** Compressed air supply (IN) G 1/8"
- 21** Control lowering (LOW) G 1/8"
- 22** Control tipping (TIP) G 1/8"
- 23** Power take off engagement (PTO) G 1/8"
- 3** Free exhaust (EX) M5



EXAMPLE OF HOOK-UP

- 1 PNEUMATIC CONTROL 4 POWER TAKE OFF
- 2 DISTRIBUTOR 5 CYLINDER
- 3 PUMP 6 OIL TANK

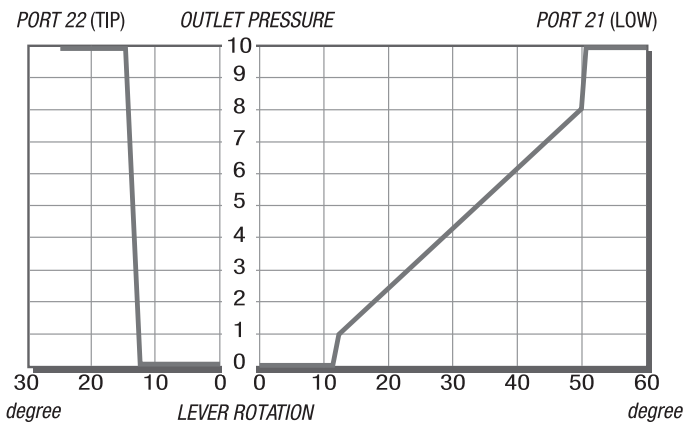


NM3 SPARE PARTS KIT

CODE	DESCRIPTION	
DK0B15	PTO lever Kit with disengagement	
DK0B17	Lever Kit NM	
DK0B14	Lever with cam	

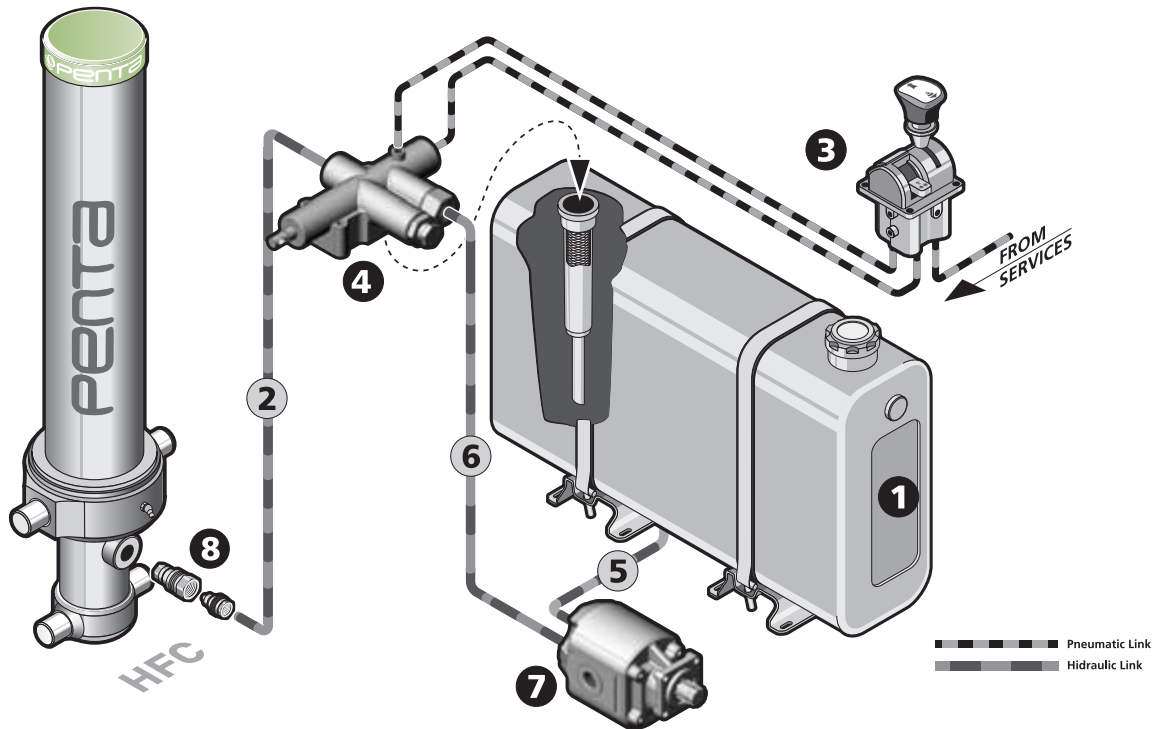
DIAGRAM

DIAGRAM REFERRED TO SUPPLY PRESSURE = 10 bar



Trailer ▶ HFC 169 5 WET KIT MODULES

WET KIT DIAGRAM



MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1a	DC01350010003	REAR MOUNTED OIL TANK, 135LT OIL VOLUME	1
1b	DC01800010001	REAR MOUNTED OIL TANK, 180LT OIL VOLUME (only for cylinder 4216801695010 + 4218801695010)	1
2	JA0025055	PRESSURE KIT, VALVE TO CYLINDER	1
	D74000025F003	HOSE R2T G1" FD-FD L=4000MM	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G100036	TIPPING VALVE KIT	1
	DK0545	FILTER AND PLATE FITTING VALVE KIT	1
	U04G100P20001	DISTRIBUTORE IDRAULICO DM 160 TVM200	1
5	J40051049	SUCTION KIT, Ø51MM	1
	D72000051F001	HOSE R4 Ø51 L=2000MM	1
6	J90025040	PRESSURE KIT, PUMP TO VALVE	1
	D72000025F003	HOSE R2T G1" FD-F90 L=2500MM	1
7a	Y109032404401	GEAR PUMP, 90CC BI-ROTATIONAL, 4 HOLES	1
7b	Y110032404401	GEAR PUMP, 100CC BI-ROTATIONAL, 4 HOLES	1
7c	Y111032404401	GEAR PUMP, 110CC BI-ROTATIONAL, 4 HOLES	1
7d	Y112032404401	GEAR PUMP, 120CC BI-ROTATIONAL, 4 HOLES	1
8	J8G100001	QUICK RELEASE COUPLINGS KIT	1
	D401G01000001	THREADED TYPE G1" FEMALE	1
	D401G01000002	THREADED TYPE G1" MALE	1

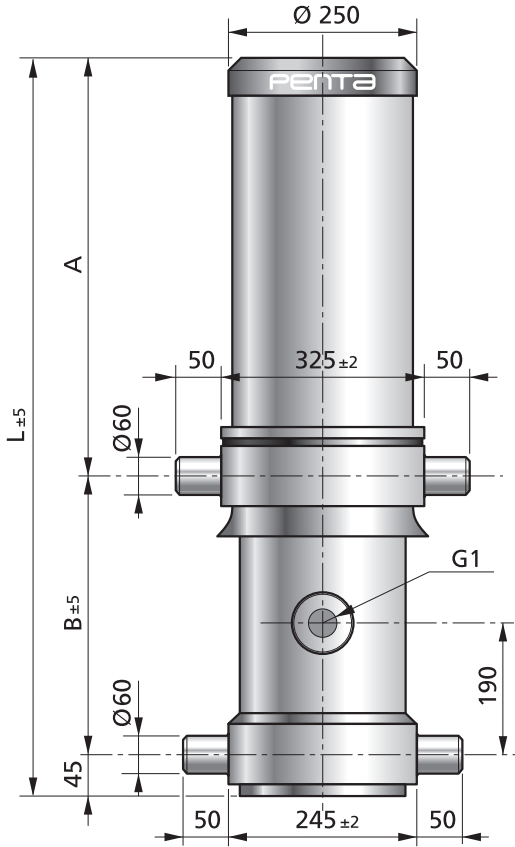
OPTIONALS

● PentaBody Clamp  See page 36

Trailer ▶ HFC 169 5 FRONT MOUNT CYLINDER

WITH OUTER COVER

EFFECTIVE DIAMETER [mm] **169 - 149 - 129 - 111 - 95**

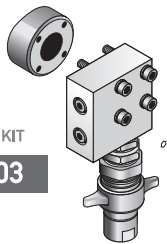


OPTIONAL

OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT

JD0003

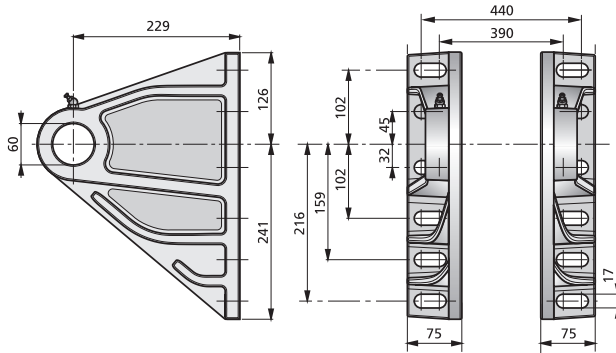


ACCESSORIES



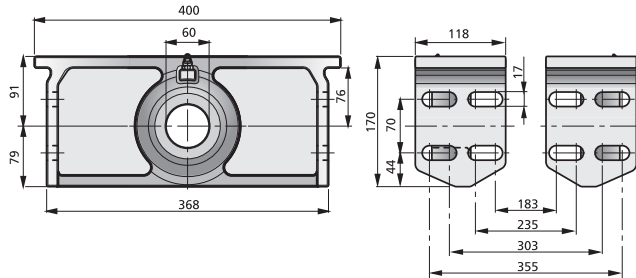
UPPER BRACKET • PAIR

A80060001



BOTTOM BRACKET • PAIR

A90060003



Caution for Upper and Bottom Brackets

Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.



Pull-out

Dimension marked as **B** (closed centre dimension) refers to cylinder completely closed. It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **B** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.



Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm ³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	B
HFC 5420 169 5	4212801695010	5	5420	294	75.4	200	39-73	1412	1034	333
HFC 5800 169 5	4213601695010	5	5800	308	80.6	200	39-73	1492	1104	343
HFC 6170 169 5	4214301695010	5	6170	320	85.8	200	39-73	1562	1188	329
HFC 7120 169 5	4216801695010	5	7120	360	99.1	200	39-73	1812	1438	329
HFC 8070 169 5	4218801695010	5	8070	389	112.3	200	39-73	2002	1619	338

SEAL KIT CODE

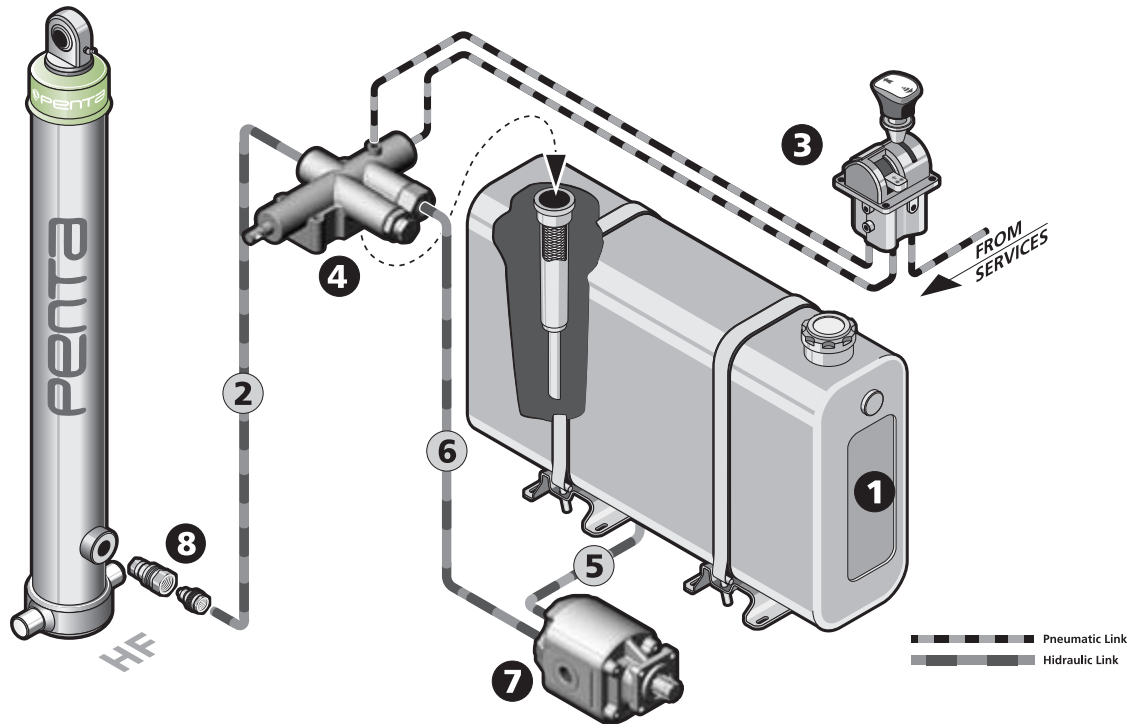
K241001695001

SLIDER KIT CODE

K141001695001

Trailer ▶ HF 169 5 WET KIT MODULES

WET KIT DIAGRAM



MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1a	DC01350010003	REAR MOUNTED OIL TANK, 135LT OIL VOLUME	1
1b	DC01800010001	REAR MOUNTED OIL TANK, 180LT OIL VOLUME (only for cylinder 4116801695010)	1
2	JA0025055	PRESSURE KIT, VALVE TO CYLINDER	1
	D74000025F003	HOSE R2T G1" FD-FD L=4000MM	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G100036	TIPPING VALVE KIT	1
	DK0545	FILTER AND PLATE FITTING VALVE KIT	1
	U04G100P20001	DISTRIBUTORE IDRAULICO DM 160 TVM200	1
5	J40051049	SUCTION KIT, Ø51MM	1
	D72000051F001	HOSE R4 Ø51 L=2000MM	1
6	J90025040	PRESSURE KIT, PUMP TO VALVE	1
	D72000025F003	HOSE R2T G1" FD-F90 L=2500MM	1
7a	Y109032404401	GEAR PUMP, 90CC BI-ROTATIONAL, 4 HOLES	1
7b	Y110032404401	GEAR PUMP, 100CC BI-ROTATIONAL, 4 HOLES	1
7c	Y111032404401	GEAR PUMP, 110CC BI-ROTATIONAL, 4 HOLES	1
7d	Y112032404401	GEAR PUMP, 120CC BI-ROTATIONAL, 4 HOLES	1
8	J8G100001	QUICK RELEASE COUPLINGS KIT	1
	D401G01000001	THREADED TYPE G1" FEMALE	1
	D401G01000002	THREADED TYPE G1" MALE	1

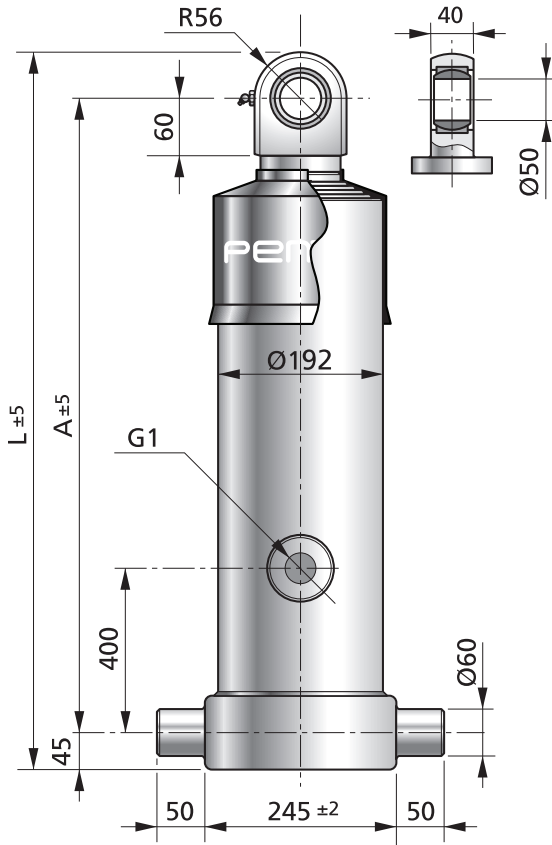
OPTIONALS

● Penta Body Clamp  See page 36

Trailer ▶ HF 169 5 FRONT MOUNT CYLINDER

PINS TO EYE

EFFECTIVE DIAMETER [mm] **169 - 149 - 129 - 111 - 95**

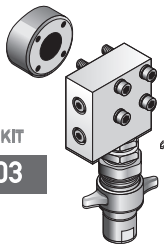


OPTIONAL

OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT

JD0003

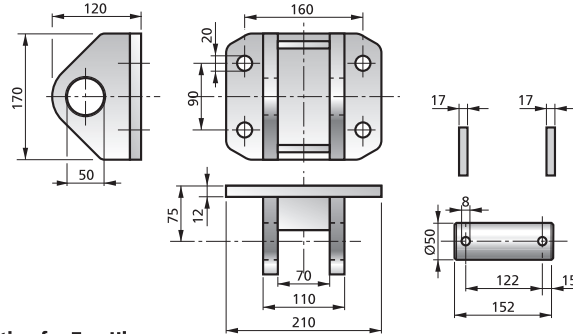


ACCESSORIES



TOP HINGE

A40050013



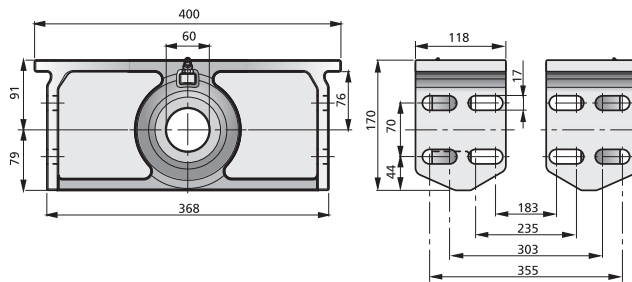
Caution for Top Hinge

It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.



BOTTOM BRACKET • PAIR

A90060003



Caution for Bottom Bracket

Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.



Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed.

It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.



Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm ³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L [mm]	A [mm]
HF 5420 169 5	4112801695010	5	5420	204	75.4	200	39-73	1470	1369
HF 5800 169 5	4113601695010	5	5800	215	80.6	200	39-73	1545	1444
HF 6170 169 5	4114301695010	5	6170	226	85.8	200	39-73	1620	1519
HF 6720 169 5	4116001695010	5	6720	250	93.5	175	39-64	1790	1689
HF 7120 169 5	4116801695010	5	7120	265	99.1	150	35-55	1870	1769

SEAL KIT CODE

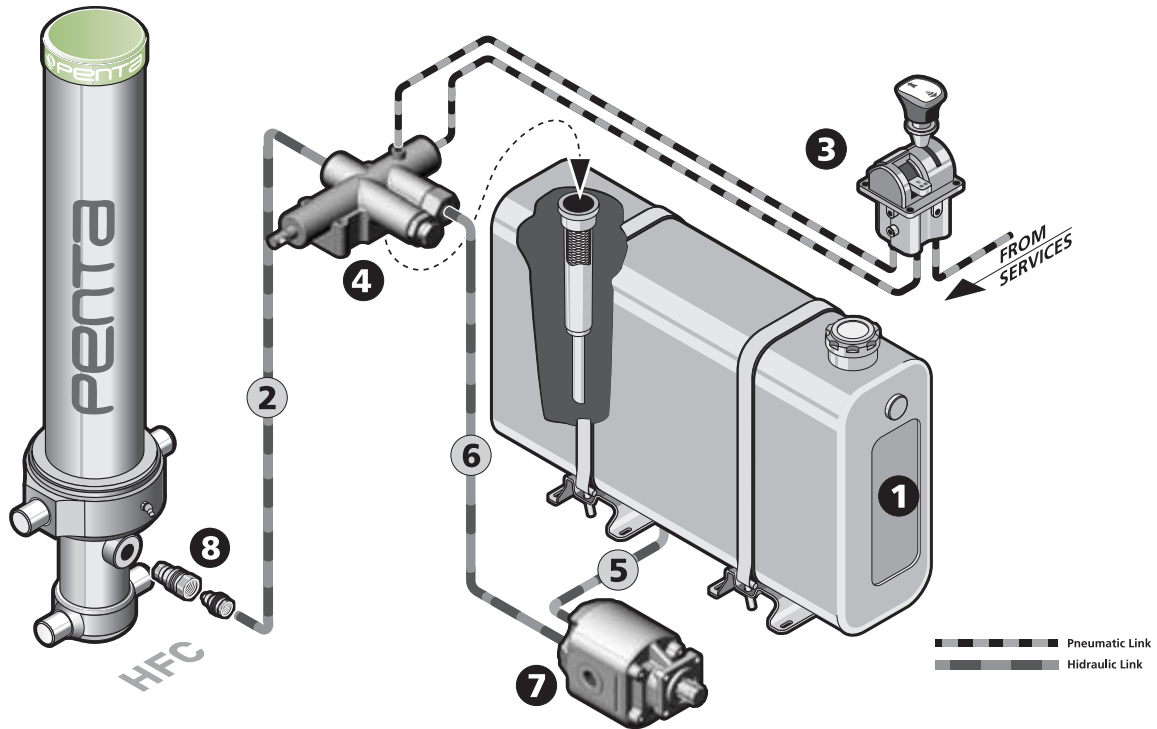
K241001695001

SLIDER KIT CODE

K141001695001

Trailer ▶ HFC 191 5 WET KIT MODULES

WET KIT DIAGRAM



MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1a	DC01800010001	REAR MOUNTED OIL TANK, 180LT OIL VOLUME	1
1b	DC02000010004	REAR MOUNTED OIL TANK, 200LT OIL VOLUME (only for cylinder 4216801915010)	1
2	JA0025055	PRESSURE KIT, VALVE TO CYLINDER	1
	D74000025F003	HOSE R2T G1" FD-FD L=4000MM	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G100036	TIPPING VALVE KIT	1
	DK0545	FILTER AND PLATE FITTING VALVE KIT	1
	U04G100P20001	DISTRIBUTORE IDRAULICO DM 160 TVM200	1
5	J40051049	SUCTION KIT, Ø51MM	1
	D72000051F001	HOSE R4 Ø51 L=2000MM	1
6	J90025040	PRESSURE KIT, PUMP TO VALVE	1
	D72000025F003	HOSE R2T G1" FD-F90 L=2500MM	1
7a	Y109032404401	GEAR PUMP, 90CC BI-ROTATIONAL, 4 HOLES	1
7b	Y110032404401	GEAR PUMP, 100CC BI-ROTATIONAL, 4 HOLES	1
7c	Y111032404401	GEAR PUMP, 110CC BI-ROTATIONAL, 4 HOLES	1
7d	Y112032404401	GEAR PUMP, 120CC BI-ROTATIONAL, 4 HOLES	1
8	J8G100001	QUICK RELEASE COUPLINGS KIT	1
	D401G01000001	THREADED TYPE G1" FEMALE	1
	D401G01000002	THREADED TYPE G1" MALE	1

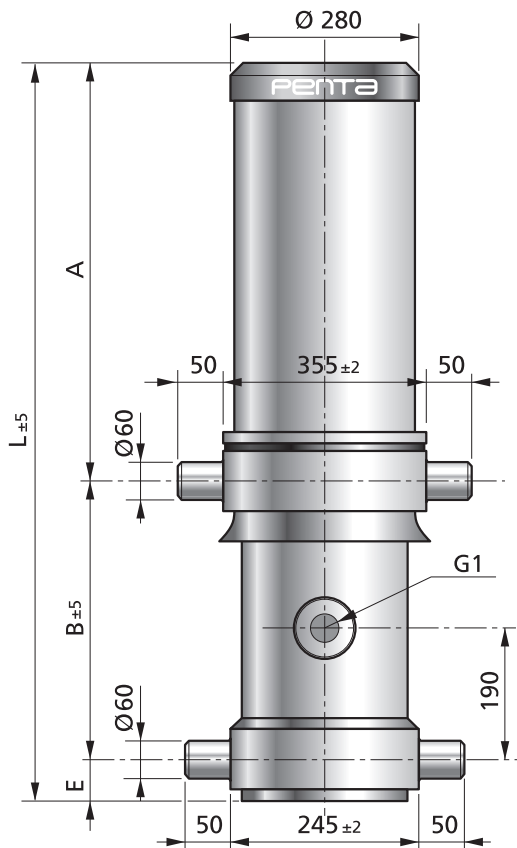
OPTIONALS

● PentaBody Clamp  See page 36

Trailer ▶ HFC 191 5 FRONT MOUNT CYLINDER

WITH OUTER COVER

EFFECTIVE DIAMETER [mm] **191 - 169 - 149 - 129 - 111**

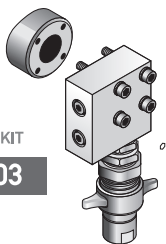


OPTIONAL

OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT

JD0003

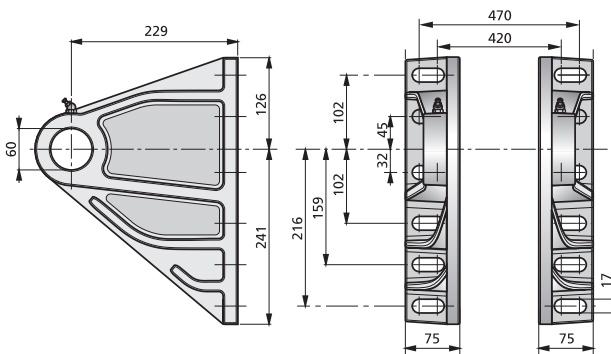


ACCESSORIES



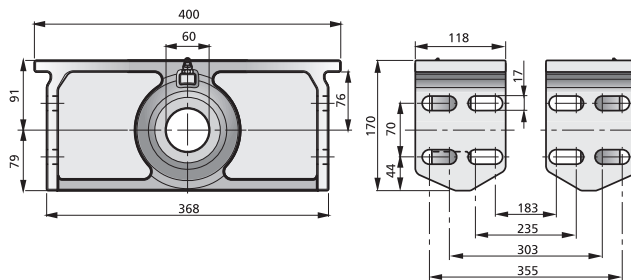
UPPER BRACKET • PAIR

A80060001



BOTTOM BRACKET • PAIR

A90060003



Caution for Upper and Bottom Brackets

Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.



Pull-out

Dimension marked as **B** (closed centre dimension) refers to cylinder completely closed.

It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **B** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.



Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm ³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A	B	E
										[mm]	
HFC 6150 191 5	4214301915010	5	6150	381	111.9	200	52-97	1577	1177	330	70
HFC 7100 191 5	4216801915010	5	7100	433	129.3	200	52-97	1827	1450	332	45

SEAL KIT CODE

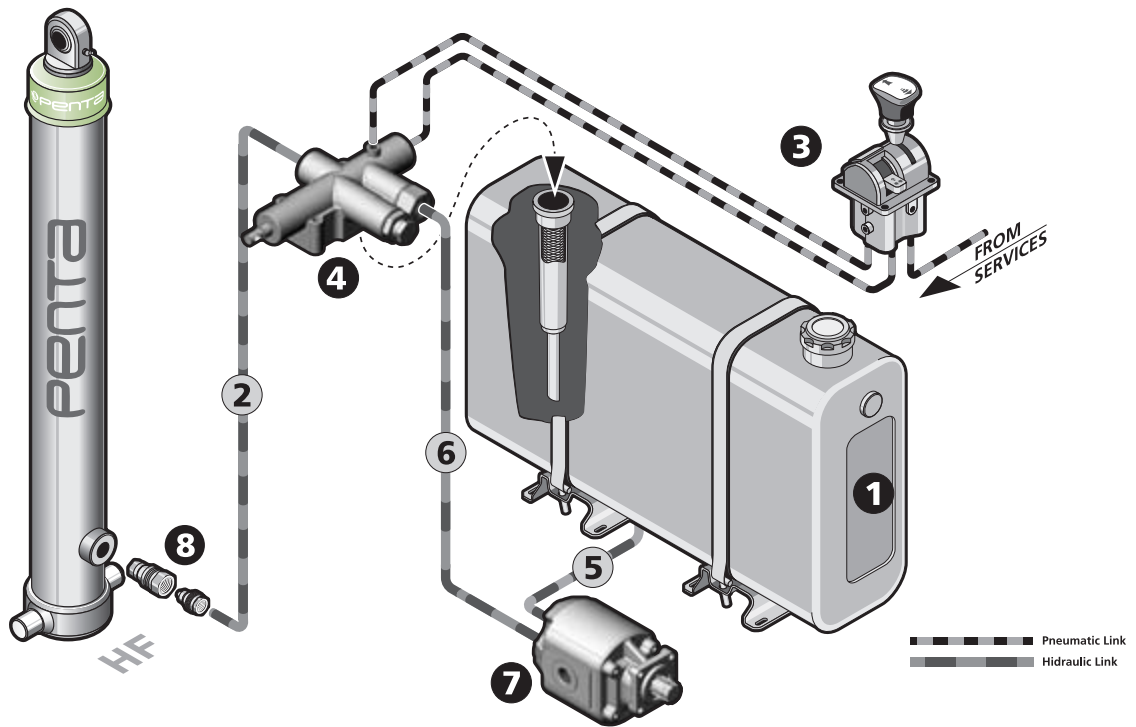
K241001915001

SLIDER KIT CODE

K141001915001

Trailer ▶ HF 191 5 WET KIT MODULES

WET KIT DIAGRAM



MAIN COMPONENTS LIST

POS.	CODE	DESCRIPTION	QTY
1a	DC01800010001	REAR MOUNTED OIL TANK, 180LT OIL VOLUME	1
1b	DC02000010004	REAR MOUNTED OIL TANK, 200LT OIL VOLUME (only for cylinder 4116801915010)	1
2	JA0025055	PRESSURE KIT, VALVE TO CYLINDER	1
	D74000025F003	HOSE R2T G1" FD-FD L=4000MM	1
3	J2G018020	PNEUMATIC CONTROL KIT	1
	D7K025004F001	RILSAN HOSE 6X4, L=25M	1
	D902G018303	PNEUMATIC CONTROL, 3-WAYS TRISTABLE	1
4	J3G100036	TIPPING VALVE KIT	1
	DK0545	FILTER AND PLATE FITTING VALVE KIT	1
	U04G100P20001	DISTRIBUTORE IDRAULICO DM 160 TVM200	1
5	J40051049	SUCTION KIT, Ø51MM	1
	D72000051F001	HOSE R4 Ø51 L=2000MM	1
6	J90025040	PRESSURE KIT, PUMP TO VALVE	1
	D72000025F003	HOSE R2T G1" FD-F90 L=2500MM	1
7a	Y109032404401	GEAR PUMP, 90CC BI-ROTATIONAL, 4 HOLES	1
7b	Y110032404401	GEAR PUMP, 100CC BI-ROTATIONAL, 4 HOLES	1
7c	Y111032404401	GEAR PUMP, 110CC BI-ROTATIONAL, 4 HOLES	1
7d	Y112032404401	GEAR PUMP, 120CC BI-ROTATIONAL, 4 HOLES	1
8	J8G100001	QUICK RELEASE COUPLINGS KIT	1
	D401G01000001	THREADED TYPE G1" FEMALE	1
	D401G01000002	THREADED TYPE G1" MALE	1

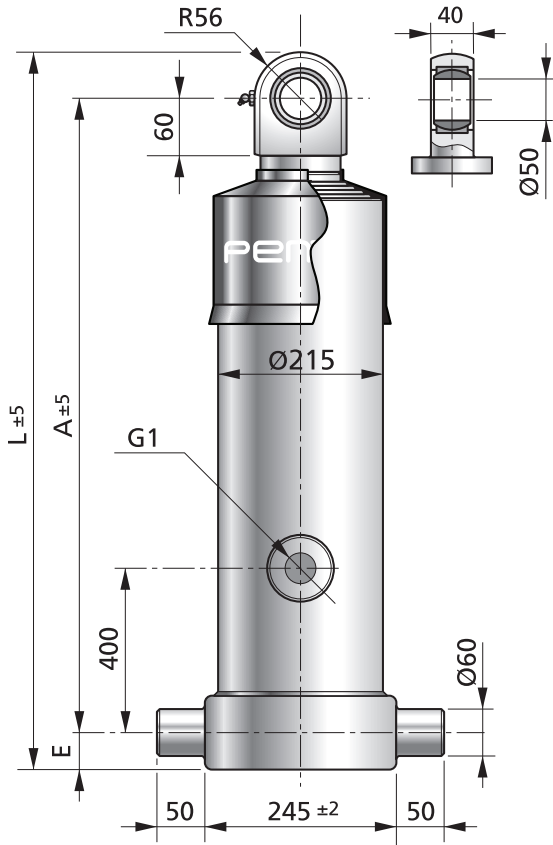
OPTIONALS

● Penta Body Clamp  See page 36

Trailer ▶ HF 191 5 FRONT MOUNT CYLINDER

PINS TO EYE

EFFECTIVE DIAMETER [mm] **191-169-149-129-111**

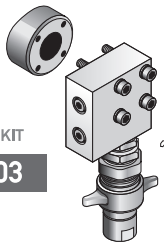


OPTIONAL

OIL PORT FOR DESCENT CONTROL VALVE

DESCENT CONTROL VALVE KIT

JD0003

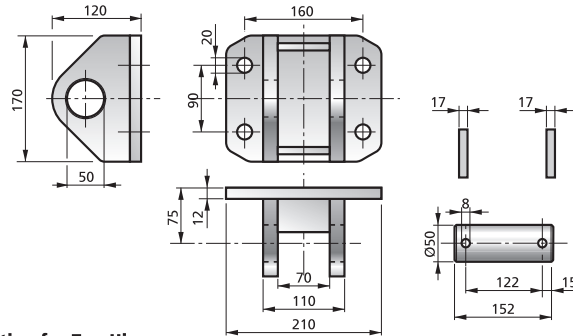


ACCESSORIES



TOP HINGE

A40050013



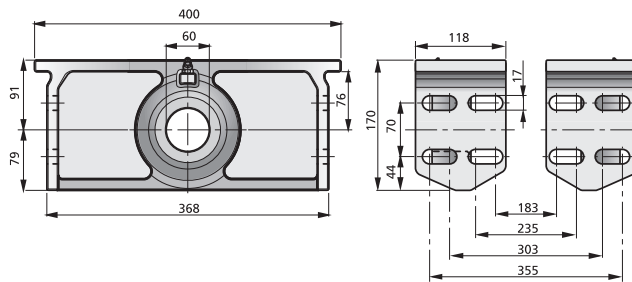
Caution for Top Hinge

It is recommended the fitment of two spacers ensuring the top bearing to be centered on the support and to swivel properly (+/-7°). These spacers are included.



BOTTOM BRACKET • PAIR

A90060003



Caution for Bottom Bracket

Recommended backlash between pin over-bosses and brackets / supports = 3 mm total (1.5 mm each side). It is recommended to fit M16 bolts/nuts, type 8.8 or better.



Pull-out

Dimension marked as **A** (closed centre dimension) refers to cylinder completely closed. It is recommended to fit the cylinder with 20-25 mm pull-out more than the specified **A** dimension, in order to avoid unwanted loads on internal steel stop rings when tipper body is fully loaded.



Chromium Plate

All front mount Penta cylinders have the piston rod hard chrome plated, to ensure better resistance to corrosion and longer lifetime to the seals (the seal set of the piston rod is the most critical, as when the truck is in motion the tipping body can vibrate). Penta do not guarantee standard cylinders against corrosion.

TECHNICAL DATA

MODEL	CODE	EXTENSION N.	POWER STROKE [mm]	MASS [kg]	WORKING VOLUME [dm ³]	MAX. WORKING PRESSURE [bar]	TIPPING CAPACITY [ton]	L	A [mm]	E
HF 6150 1915	4114301915010	5	6150	280	111.9	200	52-97	1626	1500	70
HF 7100 1915	4116801915010	5	7100	323	129.3	200	52-97	1876	1775	45

SEAL KIT CODE

K241001915001

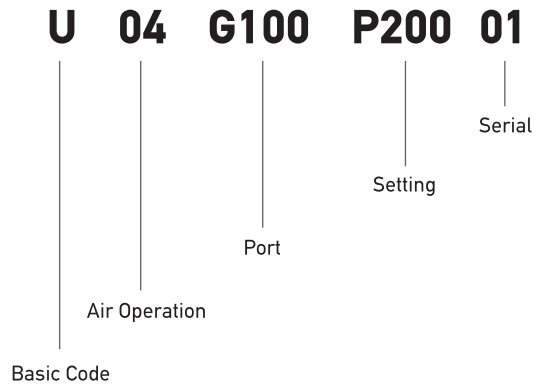
SLIDER KIT CODE

K141001915001

► **HT-VALVE DM160** TIPPING VALVE



DECODING

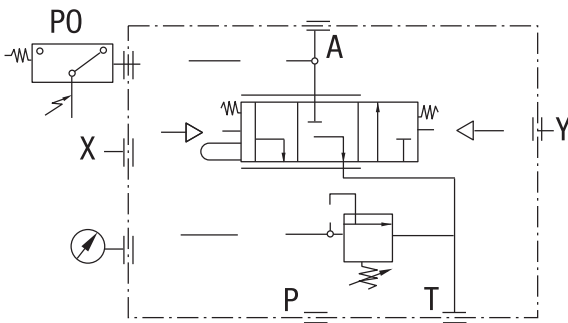


TECHNICAL DATA

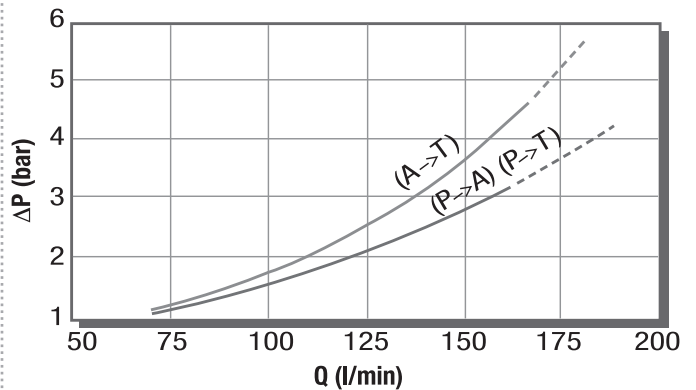
FLOW RATE	[lt/min]	160	FLUID TEMPERATURE	[°C (°f)]	-25 / +80
MAX WORKING PRESSURE	[bar]	350	VISCOSITY RANGE	[cSt]	12 - 100
MAX PEAK PRESSURE (< 0.1s)	[bar]	500	FILTERING ISO 4006 βx=75	[µm]	20-17 25
T PORT MAX PRESSURE	[bar]	30	WEIGHT	[kg]	8 - 9
MINERAL OIL		ISO VG 46	PNEUMATIC WORKING PRESSURE	[bar]	12

- Single acting hydraulic tipping valve with oil flow of 160 l/min, pneumatically controlled.
- Available in two versions: DL with double fixed rising/lowering speed (normal and slow) or proportional DP.
- Inlet check valve and overpressure valve are built-in.
Concerning overpressure safety device three different versions are available: adjustable, with interchangeable cartridge and switch (either with 2 or 3 different pressure settings).
- Equipped with end-of-stroke device.
- Flange connection to tank or to chassis.
- Manometer threaded hole provided.
- Several other optional versions available (ordering code).

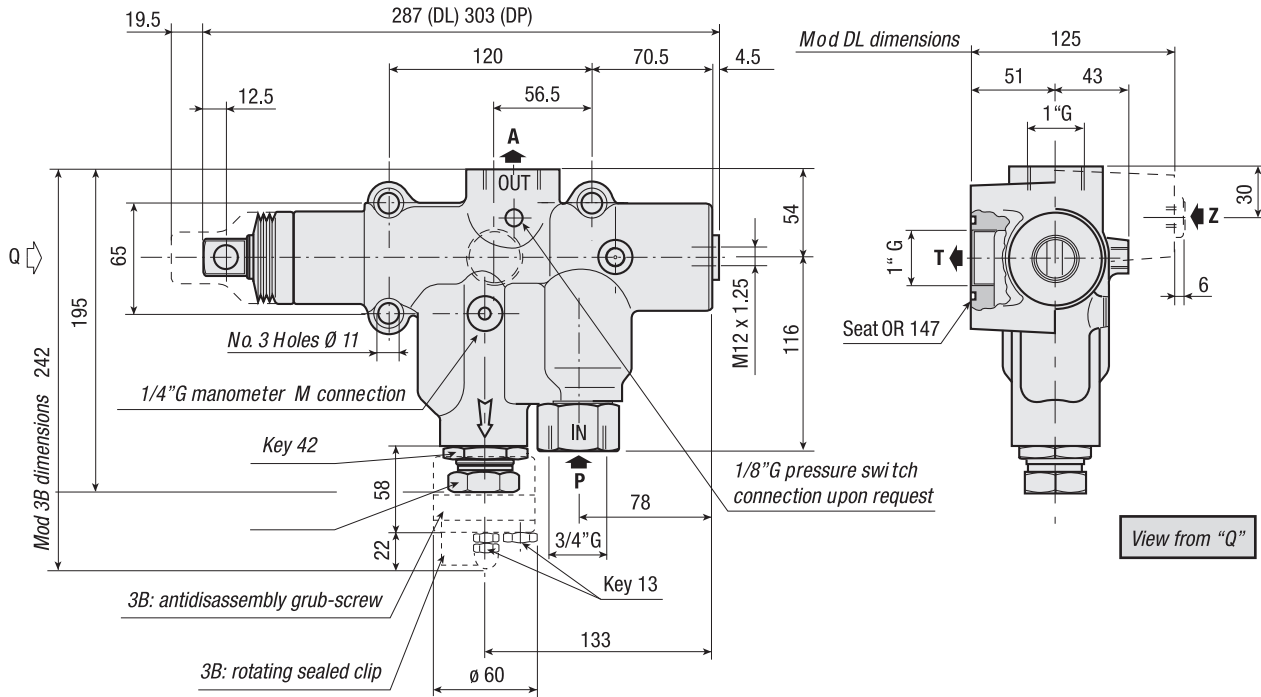
FUNCTIONAL DIAGRAM



PRESSURE DROP

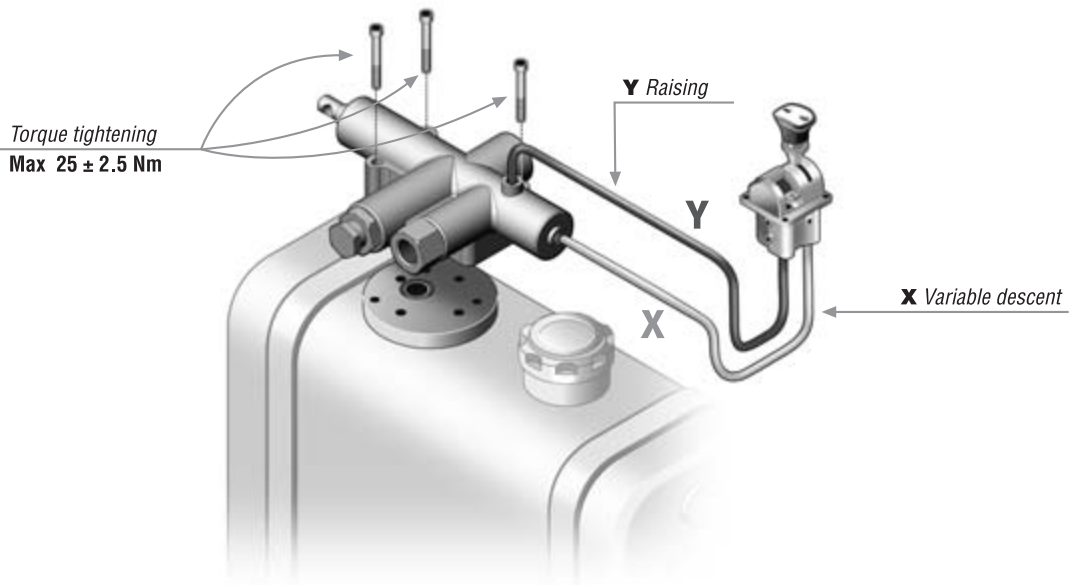


Standard Version



DESCRIPTION	CODE
Pressure switch	DK0F09

STUD KIT FOR TANK MOUNTING



DESCRIPTION	CODE
Complete valve Kit	J3G100036 (U04G100P20001 + J60160001)
Filter and plate fitting valve Kit	J60160001 (see pag. 27)

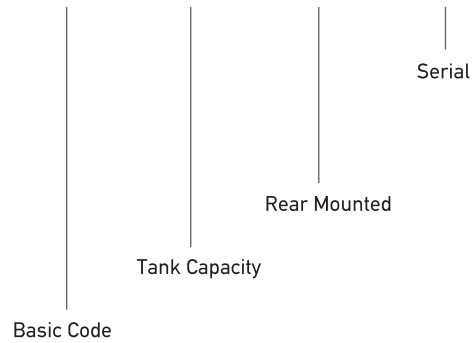
► **DC5 OIL TANK**



Rear mounted with provision for return filter

DECODING

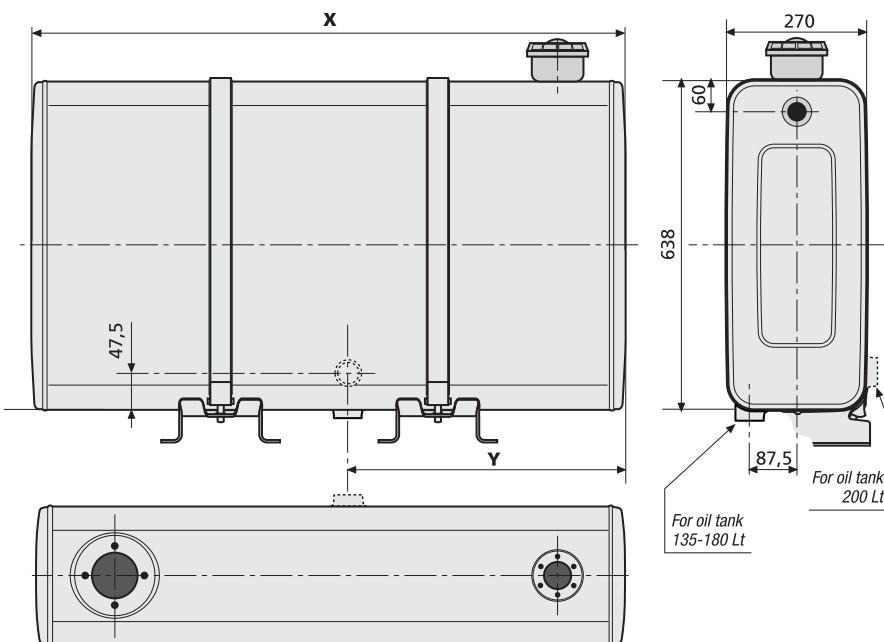
DC XXXX 001 0000



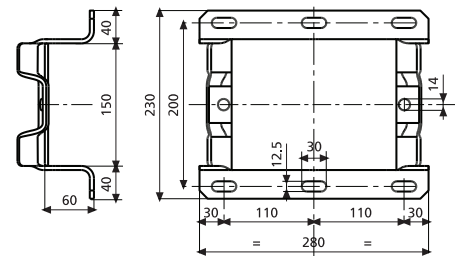
TECHNICAL DATA

CODE	MATERIAL	BRUTO VOLUME [lt]	WORKING VOLUME [lt]	X	Y
DC01350010003	Acciaio - Steel	135	114	860	310
DC01800010001	Acciaio - Steel	180	150	1150	575
DC02000010004	Acciaio - Steel	200	169	1260	630

Steel oil tank - standard colour: BLACK (other versions and accessories upon request)



SUPPORTS



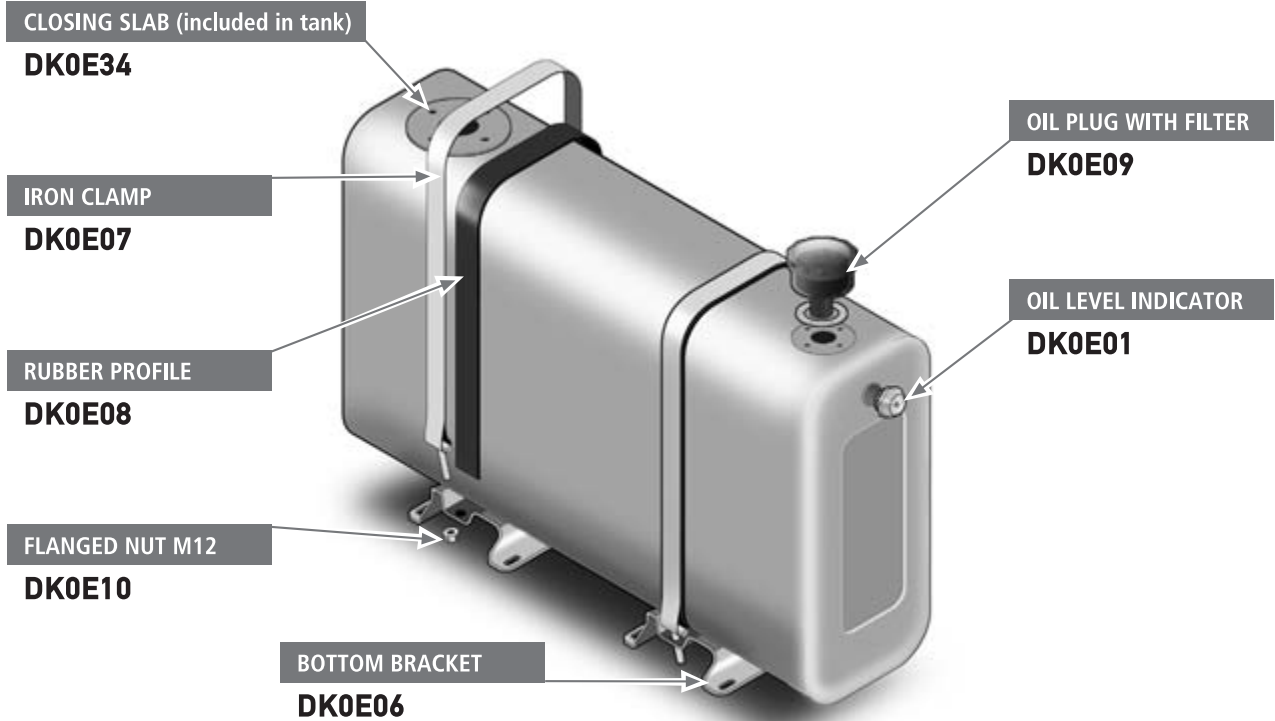
NOTES

The tank will be supplied with ball valve 1"1/2 M/F conical with butterfly handle.
The tank will be supplied without filter and plate for mounting valve (optional).

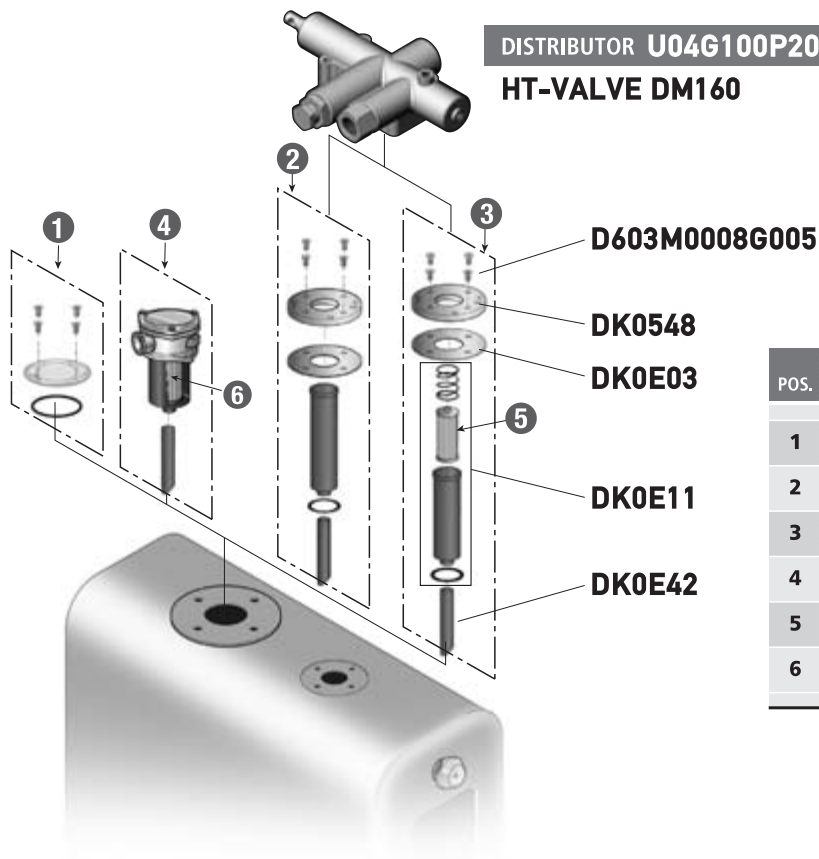
BALL VALVE CODE

D408G01120002

COMPONENTS (Included)

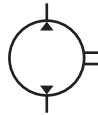


POSSIBLE CONFIGURATIONS WITH HT-VALVE DM160



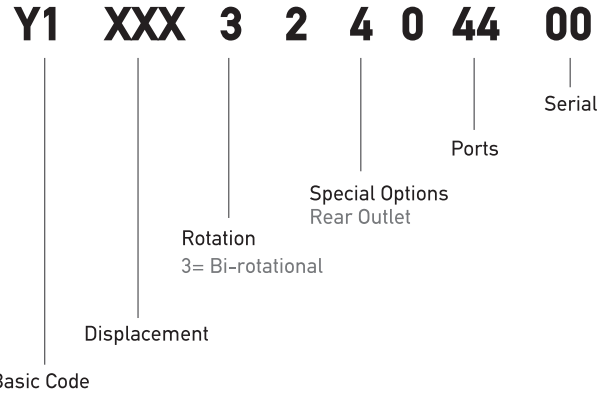
POS.	DESCRIPTION	TANK CAPACITY	CODE
1	Closing Plate (included in tank)		DK0E34
2	Distributor mounting plate	135-180	J60160002
3	Distributor mounting plate with filter	135-180	J60160001
4	Filter	135-180	DG00800702
5	Paper cartridge 25 micron		DK0EB1
6	Paper cartridge 25 micron		DK0E31

▶ **HP-GEAR Y1-17** GEAR PUMP



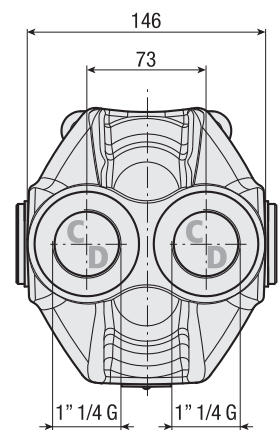
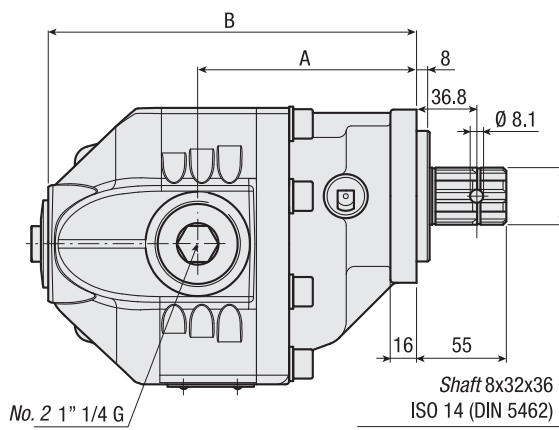
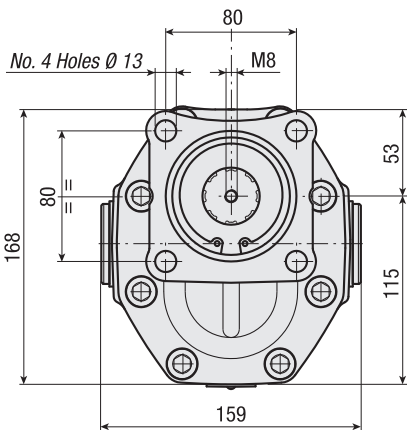
**DIN
5462
SE**

DECODING



TECHNICAL DATA

CODE	ROTATION	DISPLACEMENT [cm ³ /rev.]	A [mm]	B [mm]	C INLET/OUTLET	D OUTLET/INLET	WEIGHT [Kg]
Y109032404401	Bi-rotation	88.8	134	226	1" 1/4 G	1" 1/4 G	20.5
Y110032404401	Bi-rotation	98.5	138	230	1" 1/4 G	1" 1/4 G	21.5
Y111032404401	Bi-rotation	108.3	136	234	1" 1/4 G	1" 1/4 G	22
Y112032404401	Bi-rotation	119.2	141	239	1" 1/4 G	1" 1/4 G	22.9

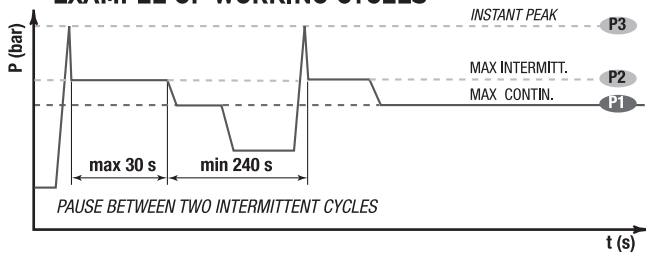


THRUST PLATES KIT CODE
MK20600900000

COMPLETE SEALS KIT CODE
MK21903700000

TECHNICAL DATA

EXAMPLE OF WORKING CYCLES



INLET PRESSURE	[bar]	0.7÷1.5
OPERATING VISCOSITY RANGE	[cSt]	12÷100
MAX PEAK PRESSURE (< 0.1s)	[°C (t)]	-10° ÷ +80°

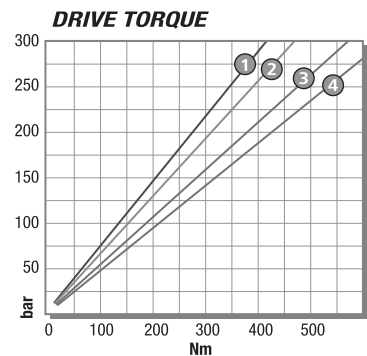
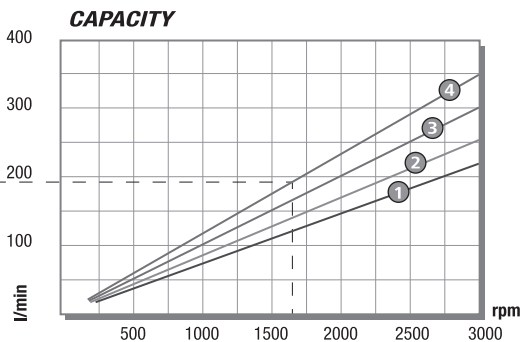
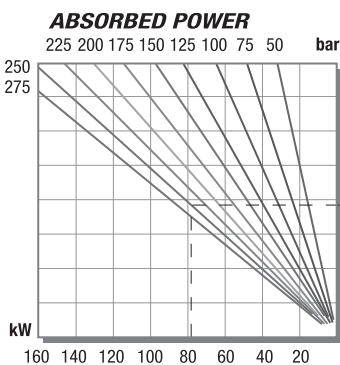
WORKING PRESSURE	CONTAMINATION		
	NAS 1638		$\beta_x = 75$
≤ 200 bar	12	21-18	40 μm
≥ 200 bar	11	20-17	25 μm

◀ RECOMMENDED FILTERING (return or outlet)

			Y109032404401 Bi-rotational	Y110032404401 Bi-rotational	Y111032404401 Bi-rotational	Y112032404401 Bi-rotational
DISPLACEMENT	Vg	[lt/min]	88.8	98.5	108.3	119.2
MAX CONTINUOUS OPERATING PRESSURE	P1	[bar]	250	225	210	210
MAX INTERMITT. OPERATING PRESSURE (max 30 s)	P2	[bar]	275	250	230	230
MAX PEAK PRESSURE (< 0.1s)	P3	[bar]	290	265	245	245
MAX INTERMITTENT SPEED (P ≤ 20 bar)	n3	[r.p.m]	2200	2200	2200	2000
MAX CONTINUOUS SPEED (≤ P1)	n1	[r.p.m]	1800	1800	1800	1500
MIN INTERMITTENT SPEED (≤ P2x0.5) (max 30 s)	n4	[r.p.m]	300	300	300	300

DIAGRAMS

Specifications Refer to OIL TYPE ISO VG 46 A 50° (ν = 30 cst)



- ① COD. Y109032404401
- ② COD. Y110032404401
- ③ COD. Y111032404401
- ④ COD. Y112032404401

PUMP ROTATION

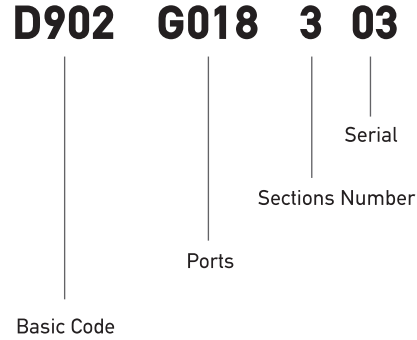


▶ HC-PNEUMATIC D9-6 PNEUMATIC CONTROL



Three Sections

DECODING

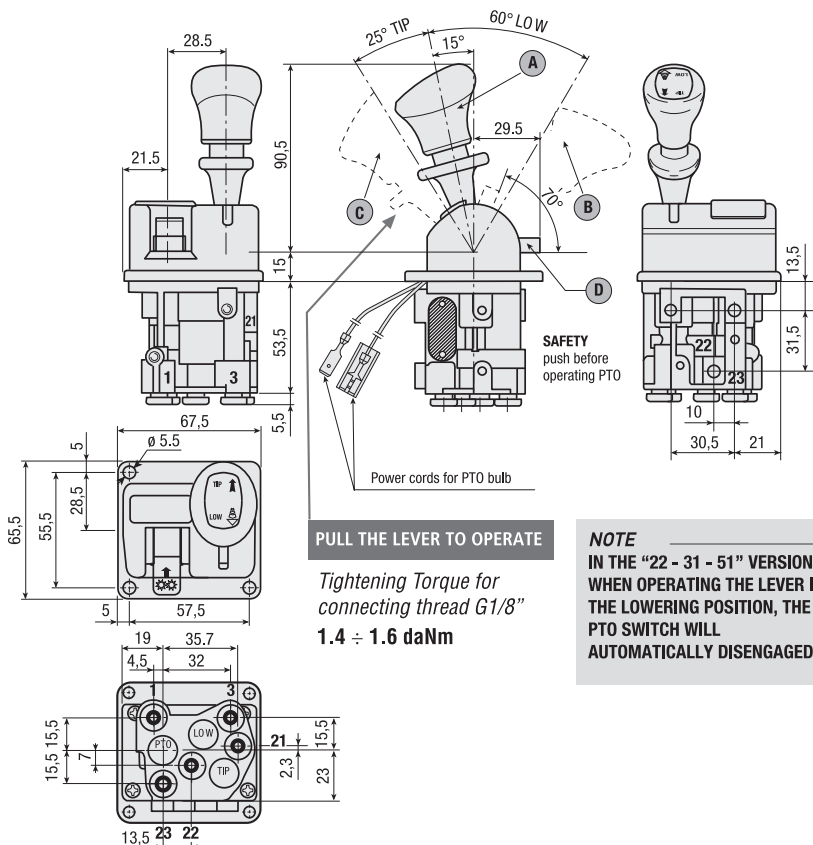


D902G018303 SPECIFICATIONS

- Pneumatic distributor with proportional lowering control and automatic PTO disengagement.
- Tristable lever (three stable positions: rest, low, tip). With automatic PTO disengagement when body is lowering.

TECHNICAL DATA

WORKING MEDIUM	Air	OPERATIVE TEMPERATURE	[°C]	-40°C / +80°C
MAX WORKING PRESSURE	[bar] 12	NOMINAL DIAMETER	[mm]	Ø4
OPERATING VOLTAGE	[V DC] 24	CONTACTS		Normally Open

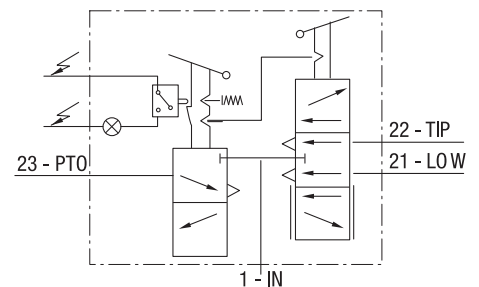


LEVER POSITION

- A** Rest position (with lock)
- B** Operation PORT 21
- C** Operation PORT 22
- D** Operation PORT 23 (with stop)

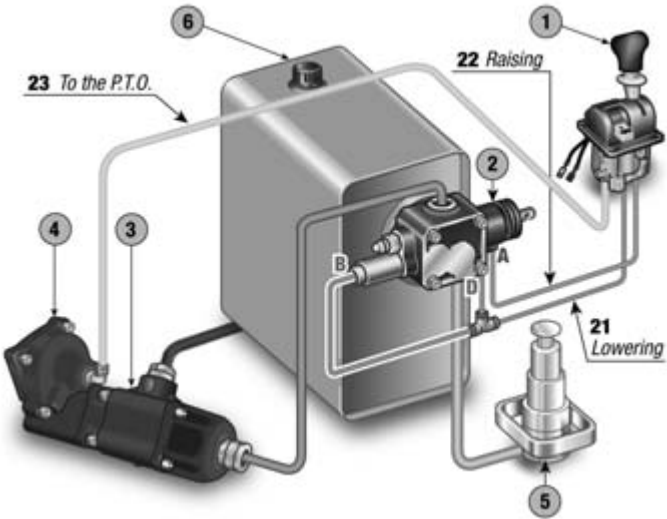
AIR PORTS

- 1** Compressed air supply (IN) G 1/8"
- 21** Control lowering (LOW) G 1/8"
- 22** Control tipping (TIP) G 1/8"
- 23** Power take off engagement (PTO) G 1/8"
- 3** Free exhaust (EX) M5



EXAMPLE OF HOOK-UP

- 1 PNEUMATIC CONTROL 4 POWER TAKE OFF
- 2 DISTRIBUTOR 5 CYLINDER
- 3 PUMP 6 OIL TANK

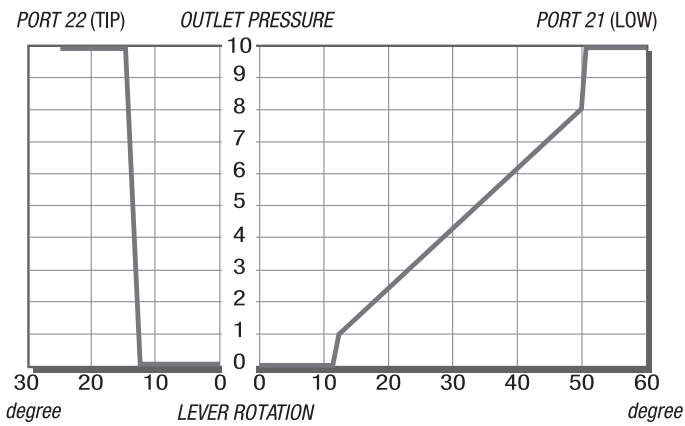


NM3 SPARE PARTS KIT

CODE	DESCRIPTION	
DK0B15	PTO lever Kit with disengagement	
DK0B17	Lever Kit NM	
DK0B14	Lever with cam	

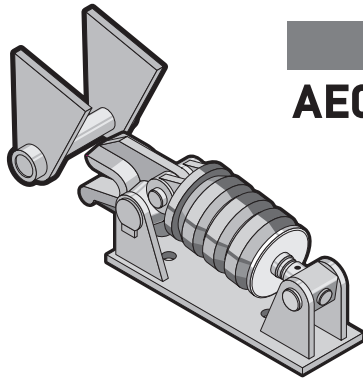
DIAGRAM

DIAGRAM REFERRED TO SUPPLY PRESSURE = 10 bar



▶ **OPTIONALS**

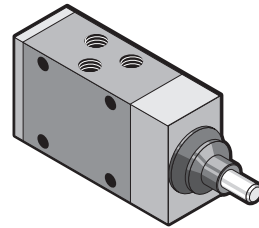
PENTA BODY CLAMP



CODE

AE0110001

END OF STROKE DEVICE



CODE

JD0001

TRUCK-TRAILER KIT



CODE

JC70000000004

▶ **NOTES**

▶ WARNINGS

EN The following catalogue is introducing the range of H.S. Penta cylinders and wet kits for tipping application. For an optimum and maximum usage of the cylinder, H.S. Penta is suggesting the fitment in combination with H.S. Penta wet kits. H.S. Penta wet kits are designed for maximum efficiency and best response in every circumstances. The complete body tipping system is consisting of a cylinder and a hydraulic system which includes: pump, oil tank with return filter, hydraulic distributor (tipping/control valve) provided of a maximum valve (relief valve) pre-set, pneumatic cab control and hydraulic/pneumatic connections. On request it can be completed with: PTO depending on the gear box model, end of stroke device, oil divertors for truck and trailer application, cylinders for tail-door hydraulic locking, cylinders for hydraulic tail-door opening, power packs and many other optional devices. Telescopic cylinders and wet kit are commonly installed on dumping vehicles and are devices which are intended to provide only a lifting force. The machinery into which the cylinders and wet kit are incorporated must comply with the requirements of the in force directives and norms. The cylinder is not a structural member, and is not designed, nor intended to provide stability to the dumping vehicle. Failure to comply with the following instructions will void the product warranty and cancel any liability for any consequence.

Using Conditions: telescopic cylinder are designed to suit tipping operation on tipping vehicle bodies in order to obtain a progressive unload of the material contained in the body, along the full stroke of the cylinder in respect of the using conditions.

The weight of the body in addition to the weight of the material loaded on the body results in the total weight to be tipped-up. The amount of mentioned weights (values) are indicating maximum performances which can be obtained during a tipping time in normal conditions.

The cylinder is dimensioned to support stresses on its longitudinal center line and must not be subjected to any other different kind of mechanical stress (e.g.: side loads).

The aim of the wet kit is to drive the cylinder and consequentially the tipping body. The wet kit main components (such as pump, tipping valve and hoses) are dimensioned to withstand cylinder maximum pressure and tipping capacity. The oil tank is dimensioned in order to have sufficient oil capacity to feed: cylinder, hydraulic components and hoses without interruption of the cylinder operative conditions.

The following are essential hints for the correct assembling of the cylinder and wet kit:

1. During the assembling operations, ensure that cylinder and hoses are properly protected from any contamination such as weld drops, metal shavings or any other foreigner particles.
2. Make sure to hydraulic circuit is always provided of a maximum valve (relief valve). All tipping valves supplied by H.S.Penta are provided of the maximum valve (relief valve) which is set by H.S. Penta to the cylinder operative pressure in order to benefit of the optimum operation of the circuit. **It is strictly prohibited to tamper the original valve setting.**
3. Take care of the hydraulic circuit ensuring the oil tank and hoses are perfectly cleaned and by using premium quality hydraulic oils for hydraulic circuits. Oil tanks supplied by H.S.Penta are provided of a return filter (filtration 25µm) able to keep the circuit clean by contaminations, it is recommended to check the grade of clogging of the filter and its replacement every six months. Ensure to use only hydraulic oils which are fully meeting the requirements specified in enclosure: "Installation manual hydraulic kit for tractors". Never use coolants or additives and never mix different substances together. **Replace the oil every year.**

4. The body must never lay on the cylinder when in rest position. The cylinder must always be fitted with 20mm pull-out.
5. Ensure that the axial play between the inner surface of the brackets and the overbosses of the cylinder is always inferior to 2mm.
6. Never wash the cylinder with high pressure water guns and arrange proper protection during welding or grinding operations. It is strictly prohibited to connect the welding machine ground cable to the cylinder.
7. Weekly: grease all cylinder swivelling parts and its accessories. Monthly: check the fixing torque of the bracket and chassis cradles bolts.
8. Never leave the body raised (if not for normal tipping procedures) to avoid damages to the cylinder.
9. Check frequently the correct functioning of the tipping valve and end of stroke device (if available).
10. To avoid sudden falls of the body (eg.: in case of hose burst or sudden fitting disconnection), on H.S.Penta cylinders it is possible to fit a C.B.S. device (Cylinder Blocking System) produced and patented by H.S.Penta.
11. To manage smooth and constant lowering speed of the body independently from the amount of payload, H.S. Penta cylinders can be fitted with V.C.D. Device (Descent Control Valve) produced by H.S.Penta.
12. All front mount cylinders produced by H.S. Penta have the last step (smaller inner) chromium plated.
13. All H.S. Penta cylinders are painted with a anti-rust synthetic primer with vinyl co-polymer base.
14. All pumps are mono-directional. For the correct use in combination with PTO's it is necessary to check the correct rotation sense. Before starting the circuit, make sure the pump is completely filled up with oil either by bleeding the air from the drainage plug or filling it up in advance. During normal system operation it is recommended a suction pressure of 0.7-1.5 bar, a working viscosity range of 9-100cSt and a fluid temperature range of -25°/+80°C. Screw on the pump only gas-cylindrical (BSP) frontal sealing fittings, do not fit any fittings with conical thread (NPT).
15. Hoses: avoid elbows or restrictions. It is not recommended to put any filtration on the suction line as it can result in pump cavitation. All hoses are dimensioned to suit the cylinder working pressure.

The failure in respecting one or more of the above recommendations and rules is resulting in the automatic expiry of the warranty on both cylinder and wet kit.

For further information please see:

- Hydraulic cylinder for tipping equipment user & maintenance manual - General safety regulations.
- Installation manual hydraulic kit for tractors.
- Service Manual.

► GUARANTEE

1. Guarantee conditions

- 1.1 H.S.PENTA S.P.A. (hereinafter referred to as the "Company") guarantees the satisfactory operation of its hydraulic components, hydraulic cylinders, and respective accessories (hereinafter jointly referred to as the "Products") and the absence of flaws and defects in the same within the limits specified in these General Guarantee Conditions.
- 1.2 This guarantee of satisfactory operation has a validity of two (2) years from the date of sale of the Products.
- 1.3 The Company guarantees the conformity of the Products exclusively to Italian and European Community standards.

2. Guarantee coverage

- 2.1 Without prejudice to the content of the following Article 2.2 regarding hidden defects, the Products will be considered as having been accepted by the purchaser whenever within 5 days from delivery such latter has not provided the Company with written notice of the presence of flaws and/or defects.
- 2.2 Upon pain of relinquishing rights to coverage under the guarantee, the purchaser must provide the Company with written notice of the defect in conformity and/or flaw in the Product or part of the same, specifying the nature of the same in detail within 8 days of the date in which the purchaser has observed such defect in conformity and/or flaw.
- 2.3 The defective Products reported in such notice as per the sense and effect of Article 2.2 above must be conserved by the purchaser for the purpose of examination by the Company.
Following written request from the Company, the purchaser must send the defective Product(s) carriage paid to the latter or the party indicated by the same; whenever after the Company's examination, the Product is declared defective and as such is covered by these General Guarantee Conditions, the Company will reimburse the purchaser for the costs of shipping, while remaining expressly specified that such shipping costs must be within the average reference costs.
The purchaser relinquishes the right to coverage under guarantee whenever he does not permit every reasonable inspection of the Product requested by the Company or whenever after receiving written request from the Company for the return of the Product he fails to do so within 30 days of receiving such request.
- 2.4 Following transmission of due notice by the purchaser performed as per the sense and effect of previous Article 2.2, after ascertaining the existence of the defect or flaw, the Company can take any of the following courses of action at its own discretion:
- (a) provide the purchaser with Products in replacement of those defective free-of-charge;
 - (b) repair the Products directly or through third parties at its own expense; or
 - (c) reimburse the price paid by the purchaser for the Products ascertained defective.
- It is hereby agreed that any Products supplied in replacement of those proven defective must be shipped "ex-works" and that the defective Products returned to the Company will remain the property of such latter.
- 2.5 With the exception of those mentioned in Article 2.4 above, the costs and expenses incurred by the replacement or repair of the defective Products must be borne by the purchaser.
For mere purposes of example without excluding others, the purchaser must bear the costs for:
- (a) consumptions caused by the removal of the defective Products from the machinery in which they were installed and the subsequent re-installation of the same;
 - (b) the transport of materials and/or equipment;

- (c) lubricants and/or expendable materials necessary for the replacement or repair of the defective Products;
- (d) the re-painting of the Products;
- (e) the transfer expenses of the Company's personnel during checking for flaws and defects reported by the purchaser.

2.6 Nothing will be due to the purchaser by way of compensation for the time that the machinery in which the defective Products are installed remain out of operation for the repair or replacement of the same, and the Company must be considered expressly released from liability for any direct or indirect damage, cost or expense derived by such machinery inactivity.

2.7 For the parts of the Product replaced or repaired, the guarantee will be automatically extended for a new 2-year period from the date of such replacement or repair.

2.8 Except in case of fraudulent intention or serious neglect, the Company will not be liable in any way for any direct or indirect damage, cost, loss, or expense to persons and/or property derived from the operation and use of the Products and/or the interruption of activity of the machinery in which the Products are installed, given that the guarantee specified in Article 2 is the only remedy in the purchaser's favour.

3. Guarantee exclusions

- 3.1 The Company will not provide guarantee coverage for defects in conformity and/or flaws in the Product or any of its parts for any of the following cases:
- (a) reasons due or linked to normal wear;
 - (b) the failure of the purchaser to correctly perform the procedures for the installation, use (or equivalent), and maintenance of the Products specified in the Use and Maintenance manual provided by the Company together with the Products;
 - (c) the incorrect use and/or operation of the Products or accident caused by the negligence, inexperience, or imprudence of the purchaser;
 - (d) the inadequate maintenance of the Products by the purchaser or modifications, repair and/or replacement made by the same without the Company's written consent;
 - (e) shock or impact against the vehicle or machinery in which the Products are installed; and
 - (f) causes other than defects in fabrication and/or engineering, working, and/or materials.
- 3.2 Guarantee coverage will also be excluded whenever:
- (a) the Company is not placed in the conditions to promptly perform the necessary repair or replacement of defective Products;
 - (b) the Products are modified by the purchaser;
 - (c) the Products are used after the discovery of a flaw or defect;
 - (d) Repairs that are not authorized by the Company are made;
 - (e) the flaw or defect regards paint coatings and/or is represented by the corrosion of parts of the Product coated or not coated.

4. Applicable Law - Controversy

- 4.1 These General Guarantee Conditions are regulated by Italian Law with the express exclusion of the application of the United Nations Convention on international movable property sales contracts.
- 4.2 Any controversy derived from these General Guarantee Conditions, including those regarding their validity, interpretation, execution and resolution that cannot be settled out of court will be subjected to the exclusive decision of the Court of Ravenna, Italy.

"General guarantee conditions" 19/11/2008

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