LPRA/802000/M, LRA/802000/M, LRA/8000/M ISOLine™ 15552 cylinder, double acting

- **ø 32 ... 320 mm**
- **High performance, stability and reliability**
- **Comprehensive range of mountings**
- **Special heavy duty "W" wiper seal as standard**
- **PUR seals ensure efficient low friction operation and long life**
- **Wide temperature range**
- **Shock and vibaration tested to EN 61373 Category 1, class A and B**

Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated
Ports:
1/8" ... 1" ISO G parallel
Standard:
ISO 15552
Operation:
Double acting, adjustable cushioning and magnetic piston.
Single acting and specials available on request.

Operating pressure:
ø 32 ... 125 mm (Profile barrel)
1 ... 12 bar (14 ... 174 psi)
ø 32 ... 200 mm (Round barrel)
1 ... 16 bar (14 ... 232 psi)
ø 250 & 320 mm (Round barrel)
1 ... 10 bar (14 ... 145 psi)
Cylinder diameters:
32, 40, 50, 63, 80, 100, 125, 160, 200, 250, 320 mm
Standard strokes:
25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500 mm
Non-standard strokes:
Available (5 ... 2800 mm)

Operating temperature:
Ø32 ... 125 mm
-40 ... +80 °C (-40 ... +176 °F)
Ø160 ... 320 mm
-30 ... +80 °C (-22 ... +179 °F)

Air supply must be dry enough to avoid ice formation at temperatures below +2 °C (+35 °F).

Standard Materials:
Barrel: Anodised aluminium
End covers: Pressure diecast aluminium (ø 200 ... 320 mm gravity cast aluminium)
Piston rod: Stainless steel (martensitic)

Piston rod seals:
Ø 32 ... 125 mm PUR
Ø 160 ... 320 mm NBR
Piston seals: PUR
Ø 32 ... 125 mm PUR
Ø 160 ... 320 mm NBR
'O'-rings: NBR

Technical data

Cylinder ø (mm)	32	40	50	63	80	100	125	160	200	250	320
Profile barrel	•	•	•	•	•	•	•				
Round barrel	•	•	•	•	•	•	•	•	•	•	•
Port size	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2	G3/4	G3/4	G1	G1
Piston rod ø (mm)	12	16	20	20	25	25	32	40	40	50	63
Piston rod thread	M10 x 1,25	M12 x 1,25	M16 x 1,5	M16 x 1,5	M20 x 1,5	M20 x 1,5	M27 x 2	M36 x 2	M36 x 2	M42 x 2	M48 x 2
Cushion length (mm)	20	22	24	24	26	33	39	43	43	55	60
Initial cushion volume (cm3)	12,8	20,2	36	64	111	235	427	784	1273	2534	4559
Theoretical thrusts at 6 bar outstroke (N)	482	754	1178	1870	3016	4710	7363	12064	18840	29436	48228
Theoretical thrusts at 6 bar instroke (N)	414	633	990	1680	2722	4416	6882	11310	18090	28236	47292
Air consumption at 6 bar outstroke (l/cm)	0,056	0,088	0,137	0,218	0,35	0,55	0,86	1,41	2,2	3,44	5,63
Air consumption at 6 bar instroke (l/cm)	0,048	0,074	0,114	0,195	0,32	0,51	0,79	1,32	2,1	3,3	5,41

Design and sizing in pneumatics

Golden Rules

Design and sizing in pneumatics is often based upon experience coupled with an element of fear of under specifying crucial equipment. In an attempt to ensure enough power, engineers may select over sized cylinders and then select over sized valves to supply them with enough air. The same uncertainty can also lead to over sized specification of air line equipment, fittings and tubing.
The outcome is components larger than necessary that use too much compressed air and waste energy and money.
However when following some well proven golden rules and a few laws of pneumatics it is easy to achieve correctly sized pneumatic installations.

Basics to Consider

The force required, the pressure available, the speed of movement and air consumption. ISO and VDMA standard or compact style also cushioning and sensors. Cylinders are greased on assembly and operate under normal conditions without additional lubrication. However using a lubricator will extend the life of these products.

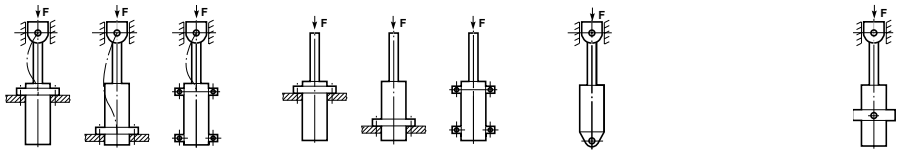
Golden Rule:

The theoretical force of the cylinder should be 25% extra for high speed, 50% extra for low speed and 100% extra for ultra low speed (positioning) applications.

The correct sizing is based upon the required force and applied pressure. Go to page 1 for more information on cylinder sizing and air consumption.

Load and Buckling

For applications with high side loading, use pneumatic slide actators or standard cylinders fitted with guide units.
Alternatively external guide bearings should be installed. When a long stroke length is specified, care must be taken to ensure the rod length is within the limits for prevention of buckling. The table shows the maximum effective length for a variety of installation arrangements.



Cylinder ø (mm)	Piston rod ø (mm)	Load case 1 Pressure (bar)				Load case 2 Pressure (bar)				Load case 3 Pressure (bar)				Load case 4 Pressure (bar)			
		4	6	10	16	4	6	10	16	4	6	10	16	4	6	10	16
32	12	1100	860	650	500	500	390	290	210	650	520	380	290	760	600	450	340
40	16	1600	1200	950	730	730	580	430	320	940	750	560	430	1100	880	660	500
50	20	2000	1600	1200	930	930	740	550	420	1200	960	720	550	1400	1100	840	640
63	20	1500	1200	930	720	720	570	420	310	930	740	550	420	1100	860	650	490
80	25	1900	1500	1100	880	880	700	510	380	1100	910	680	510	1300	1100	800	600
100	25	1500	1200	880	670	670	520	380	270	880	690	510	370	1000	820	600	450
125	32	2000	1600	1200	910	910	710	520	380	1200	940	690	520	1400	1100	820	620
160	40	2400	1900	1500	1100	1100	880	640	480	1400	1200	860	640	1700	1400	1000	760
200	40	1900	1500	1100	860	860	670	480	350	1100	890	650	480	1300	1000	770	580
250	50	2400	1900	1400	1100	1100	850	620	440	1400	1100	830	610	1700	1300	980	730
320	63	3000	2400	1800	1400	1400	1100	780	570	1800	1400	1000	780	2100	1700	1200	930

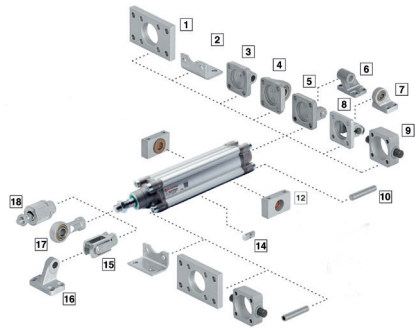
Option selector

★★★A/8★★★★★/★★★/★★★★

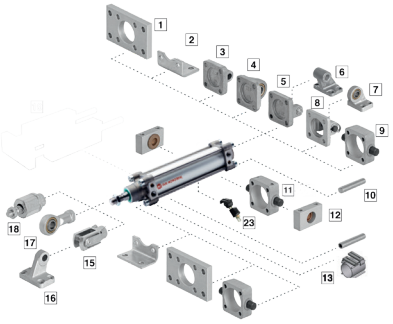
Standard variants	Substitute
Low temperature version -40 °C (-40 °F)	**L**
Standard	**Substitute**
Round barrel	**None**
Profile barrel	**P**
Piston rod material	**Substitute**
Stainless steel martensitic (1.4021 equiv. to SAE grade 410)	**R**
Stainless steel austenitic (1.4305 equiv. to SAE grade 303)	**S**
Hard chromium plated (1.0503 equiv. to SAE grade 1045)	**C**
Stainless steel austenitic & hard chromium plated (1.4305 equiv. to SAE grade 303)	**D**
Cushioning	**Substitute**
(ø 32 ... 125 mm)	**02**
Standard (ø 160 ... 320 mm)	**None**
Cylinder ø (mm)	**Substitute**
032, 040, 050, 063, 080, 100, 125, 160, 200, 250, 320	
Variants ø 32 ... 320 mm (magnetic piston)	**Substitute**
Standard	**M**
Special wiper/seal	**W2**
Piston rod bellow	**MG**
Without cushion	**MW**
Double ended piston rod	**JM**
Four-positon cylinder	**MT**
Extended piston rod	**MU**
A/8***/MU/****/***	**Extension (mm)**

Strokes (mm)	Substitute
5 ... 2800	
Piston rod thread	**Substitute**
Male	**None**
Female	**X**

Cylinder with Profile barrel ø 32 ... 125 mm



Cylinder with Round barrel ø 32 ... 320 mm



Mountings

Model	A	AK	B, G	C	D	D2	F	FH	H
									
	10	18	1	2	5	8	15	9	11
ø	Page 11	Page 11	Page 11	Page 11	Page 12	Page 12	Page 12	Page 12	Page 13
32	QM/8032/35	QM/8025/38	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QM/8025/25	QA/8032/34	QA/8032/28
40	QM/8032/35	QM/8040/38	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QM/8040/25	QA/8040/34	QA/8040/28
50	QM/8050/35	QM/8050/38	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QM/8050/25	QA/8050/34	QA/8050/28
63	QM/8050/35	QM/8050/38	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QM/8050/25	QA/8063/34	QA/8063/28
80	QM/8080/35	QM/8080/38	QA/8080/22	QA/8080/21	QA/8080/23	QA/8080/42	QM/8080/25	QA/8080/34	QA/8080/28
100	QM/8080/35	QM/8080/38	QA/8100/22	QA/8100/21	QA/8100/23	QA/8100/42	QM/8080/25	QA/8100/34	QA/8100/28
125	QM/8125/35	QM/8125/38	QM/8125/22	QM/8125/21	QM/8125/23	QA/8125/42	QM/8125/25	QA/8125/34	QM/8125/28
160	QM/8160/35	QM/8160/38	QM/8160/22	QM/8160/21	QM/8160/23	QA/8160/42	QM/8160/25	-	QM/8160/28
200	QM/8160/35	QM/8160/38	QM/8200/22	QM/8200/21	QM/8200/23	QA/8200/42	QM/8160/25	-	QM/8200/28
250	QM/8250/35	-	QM/8250/22	QM/8250/21	QM/8250/23	-	QM/8250/25	-	QM/8250/28
320	QM/8320/35	-	QM/8320/22	QM/8320/21	QM/8320/23	-	QM/8320/25	-	QM/8320/28

	S	SW	UF	UR	R	SS	US	Groove key
								
	12	6	17	4	3	16	7	14
ø	Page 13	Page 14	Page 13	Page 13	Page 14	Page 14	Page 15	Page 15
32	QA/8032/41	M/P19493	QM/8025/32	QA/8032/33	QA/8032/27	M/P19931	M/P40310	M/P72816
40	QA/8040/41	M/P19494	QM/8040/32	QA/8040/33	QA/8040/27	M/P19932	M/P40311	M/P72816
50	QA/8040/41	M/P19495	QM/8050/32	QA/8050/33	QA/8050/27	M/P19933	M/P40312	M/P72816
63	QA/8063/41	M/P19496	QM/8050/32	QA/8063/33	QA/8063/27	M/P19934	M/P40313	M/P72816
80	QA/8063/41	M/P19497	QM/8080/32	QA/8080/33	QA/8080/27	M/P19935	M/P40314	M/P72816
100	QA/8100/41	M/P19498	QM/8080/32	QA/8100/33	QA/8100/27	M/P19936	M/P40315	M/P72816
125	QA/8100/41	M/P19499	QM/8125/32	QM/8125/33	QM/8125/27	M/P19937	M/P71355	M/P72816
160	QA/8160/41	M/P19679	QM/8160/32	QM/8160/33	QM/8160/27	M/P19938	M/P71356	-
200	QA/8160/41	M/P19683	QM/8160/32	QM/8200/33	QM/8200/27	M/P19939	M/P71357	-
250	-	M/P19446	QM/8250/32	QM/8250/33	-	-	-	-
320	-	M/P19447	QM/8320/32	QM/8320/33	-	-	-	-

Pos.	Style	Standard
1	B, G	Clear anodised aluminium
2	C	Galvanized steel (ø 32 ... 100 mm), Painted steel (ø 125 ... 320 mm)
3	R	Die-cast aluminium
4	UR	Galvanized aluminium Inner ring: steel, Outer ring: brass
5	D	Die-cast aluminium Bolt: galvanized steel (martensitic) Circlip: galvanized steel
6	SW	Die-cast aluminium
7	US	Galvanized aluminium Inner ring: steel, Outer ring: brass

Pos.	Style	Standard
8	D2	Painted cast iron, Bolt: stainless steel (martensitic), Circlip: galvanized steel
9	FH	Cast iron
10	A	Galvanized steel
11	H	Cast iron
12	S	Clear anodised aluminium Bearing: brass
14	Groove key	Steel
15	F	Galvanized steel, Bolt: galvanized steel, Circlip: Galvanized steel

Pos.	Style	Standard
16	SS	Painted cast iron
17	UF	Galvanized steel, Inner ring: steel, Outer ring: brass
18	AK	Galvanized steel
19	51, 61, 81, 85	Anodised aluminium

Sevice kit

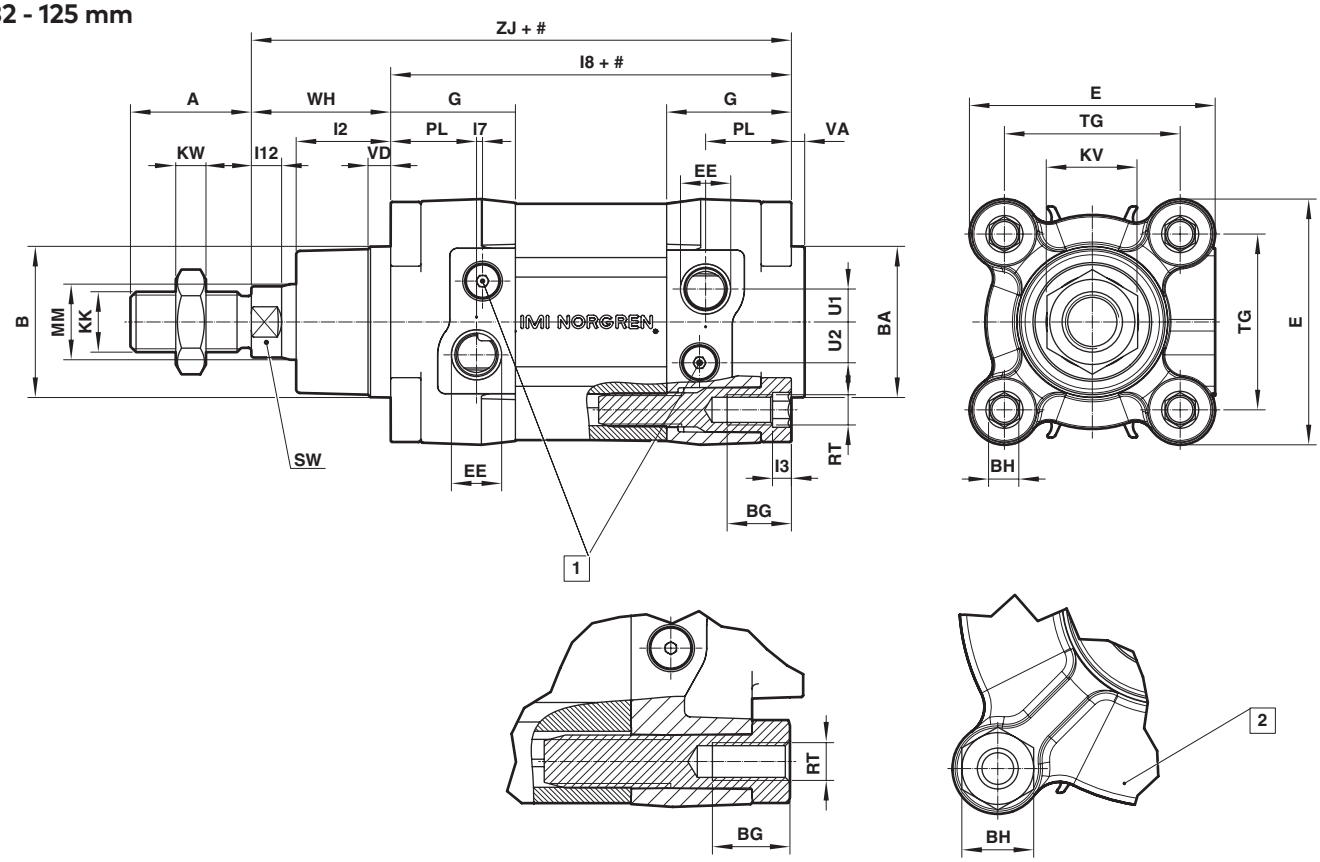
ø	Service kit for Round and Profile barrel 
32	LQA/8032/00
40	LQA/8040/00
50	LQA/8050/00
63	LQA/8063/00
80	LQA/8080/00
100	LQA/8100/00
125	LQA/8125/00
160	LQA/8160/00
200	LQA/8200/00
250	LQA/8250/00
320	LQA/8320/00

Magnetically operated switches

ø	Groove cover  Page 15	SPC/130159  Page 16 & 17	M/50/**  Page 18 & 19	Switch mounting brackets for M/50  23 Page 19
32	M/P72725/1000			QM/27/2/1
40	M/P72725/1000			QM/27/2/1
50	M/P72725/1000			QM/27/2/1
63	M/P72725/1000			QM/27/2/1
80	M/P72725/1000			QM/27/2/1
100	M/P72725/1000			QM/27/2/1
125	M/P72725/1000			QM/27/2/1
160	-			QM/27/2/1
200	-			QM/27/2/1
250	-			QM/27/2/2
320	-			QM/27/2/3

Basic dimensions
LPRA/802000/M, LRA/802000/M, LRA/8000/M
Standard Cylinder
ø 32 - 125 mm

Dimensions in mm
Projection/First angle

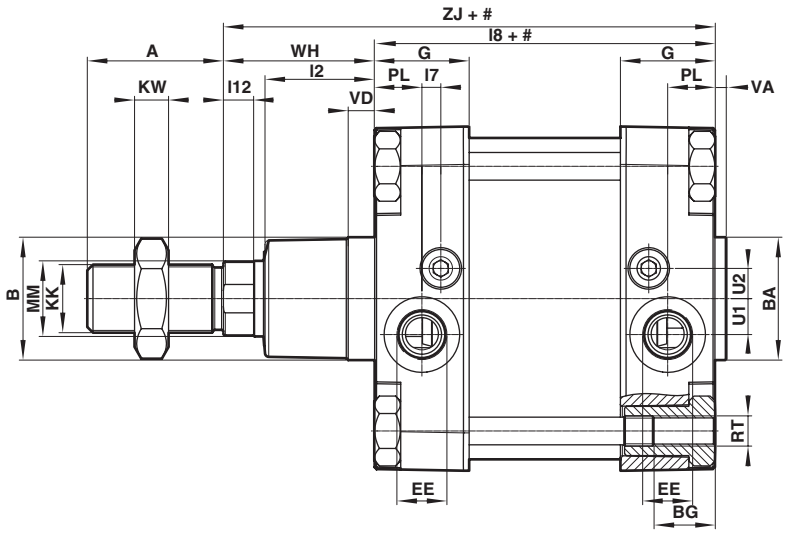


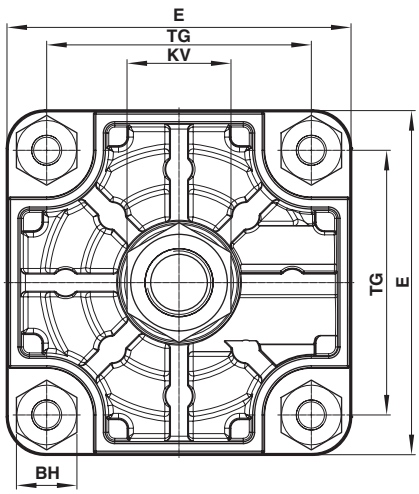
Note:
Standard version LPRA profile barrel actuators use self-tapping screws to secure the end caps to the profile barrel.
Traditional tie rod and tie rod nut versions (same as round barrel LRA versions) are available on request. Contact your local technical office who will be able to advise the appropriate part number for this option.

NORGREN

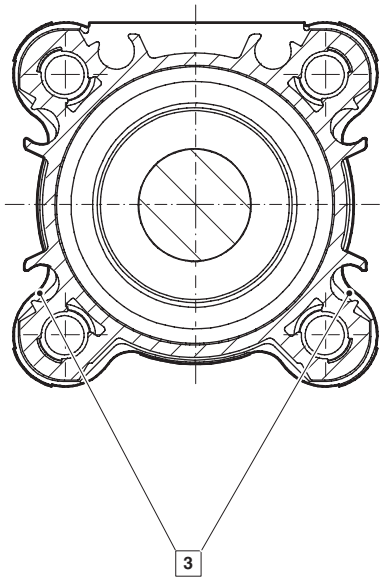
Basic dimensions
LPRA/802000/M, LRA/802000/M, LRA/8000/M
Standard Cylinder
ø 160 - 320 mm

Dimensions in mm
Projection/First angle

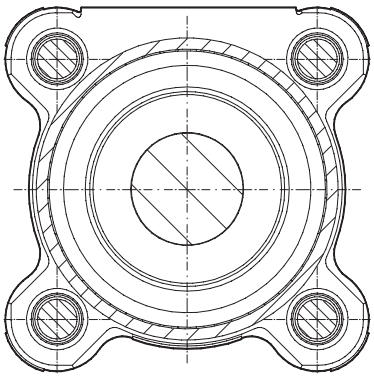




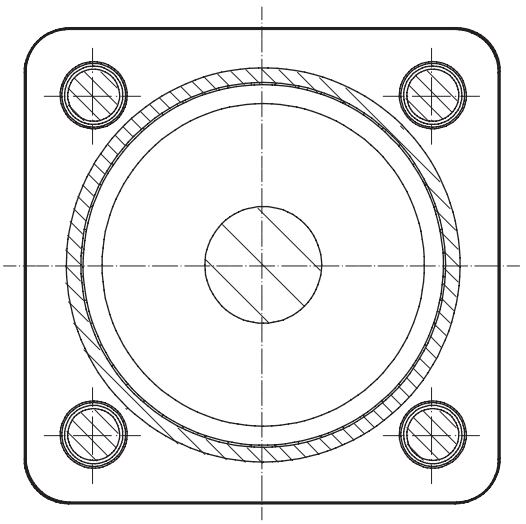
Model Profile barrel
ø 32 ... 125 mm



Model Round barrel
ø 32 ... 125 mm



Model Round barrel
ø 160 ... 320 mm



Stroke

$ Piston rod extension

1 Cushion screw

2 ø 80 ... 320 mm

3 M/50 switches can be mounted flush with the profile

For additional information please contact the technical service or http://www.imi-precision.com

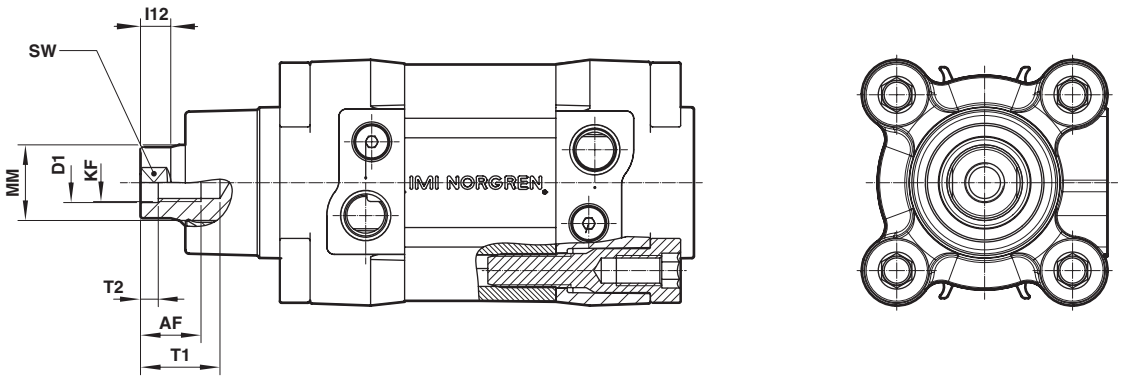
ø	A -0,5	ø B d11	ø BA d11	BG min	BH	□ E	EE	G	KK	KV	KW	L2	L3	L7	L8	L12	ø MM h9	PL	TG
32	22	30	30	16	6	47	G1/8	29	M10 x 1,25	17	5	19,5	4	6,6	94	5,5	12	15	32,5
40	24	35	35	16	6	53	G1/4	34,5	M12 x 1,25	19	6	22	4	5,6	105	6,5	16	21,5	38
50	32	40	40	16	8	65	G1/4	33	M16 x 1,5	24	8	25	5	1,6	106	8	20	22,7	46,5
63	32	45	45	16	8	75	G3/8	36,5	M16 x 1,5	24	8	25	5	3,6	121	8	20	24,2	56,5
80	40	45	45	17	19	95	G3/8	42	M20 x 1,5	30	10	33	-	1,8	128	10	25	29,7	72
100	40	55	55	17	19	113	G1/2	42	M20 x 1,5	30	10	35	-	3,8	138	10	25	27,7	89
125	54	60	60	20	24	140	G1/2	54	M27 x 2	41	13,5	44	-	1,8	160	13	32	39,7	110
160	72	65	65	28,5	32	183,5	G3/4	50	M36 x 2	55	18	58	-	10	180	16	40	25	140
200	72	75	75	28,5	32	224	G3/4	50	M36 x 2	55	18	67	-	10	180	16	40	26	175
250	84	90	90	35	36	280	G1	58	M42 x 2	65	21	80	-	4,5	200	20	50	28	220
320	96	110	110	30	46	350	G1	60	M48 x 2	75	24	90	-	4,5	220	24	63	31	270

ø	RT	SW	U1	U2	VA	VD	WH	ZJ	Model Profile barrel	at 0 mm	per 25 mm	Model Round barrel	at 0 mm	per 25 mm
32	M 6	10	4,6	6,3	3,5	6	26	120	LPRA/802032/M/*	0,49 (kg)	0,06 (kg)	LRA/802032/M/*	0,46 (kg)	0,06 (kg)
40	M 6	13	5,8	9,2	3,5	6	30	135	LPRA/802040/M/*	0,69 (kg)	0,08 (kg)	LRA/802040/M/*	0,65 (kg)	0,08 (kg)
50	M 8	17	8,7	10,8	3,5	6	37	143	LPRA/802050/M/*	1,09 (kg)	0,12 (kg)	LRA/802050/M/*	1,02 (kg)	0,12 (kg)
63	M 8	17	10	12,8	3,5	6	37	158	LPRA/802063/M/*	1,54 (kg)	0,13 (kg)	LRA/802063/M/*	1,46 (kg)	0,14 (kg)
80	M 10	22	12	14,5	3,5	6	46	174	LPRA/802080/M/*	2,64 (kg)	0,20 (kg)	LRA/802080/M/*	2,54 (kg)	0,21 (kg)
100	M 10	22	9	14,5	3,5	6	51	189	LPRA/802100/M/*	3,66 (kg)	0,23 (kg)	LRA/802100/M/*	3,50 (kg)	0,23 (kg)
125	M 12	27	12	17	5,5	8	65	225	LPRA/802125/M/*	6,16 (kg)	0,45 (kg)	LRA/802125/M/*	5,92 (kg)	0,34 (kg)
160	M 16	36	19	16	4	15	80	260	-	-	-	LRA/8160/M/*	14,9 (kg)	0,55 (kg)
200	M 16	36	19	16	5	15	95	275	-	-	-	LRA/8200/M/*	21,7 (kg)	0,60 (kg)
250	M 20	41	22	30	7	13	105	305	-	-	-	LRA/8250/M/*	32,6 (kg)	0,92 (kg)
320	M 24	55	22	30	7	13	120	340	-	-	-	LRA/8320/M/*	59,8 (kg)	1,46 (kg)

* Please insert stroke length.

Cylinder variants
..../802000/MX; /MUX; /MWX
Cylinder with Female Piston Rod Thread

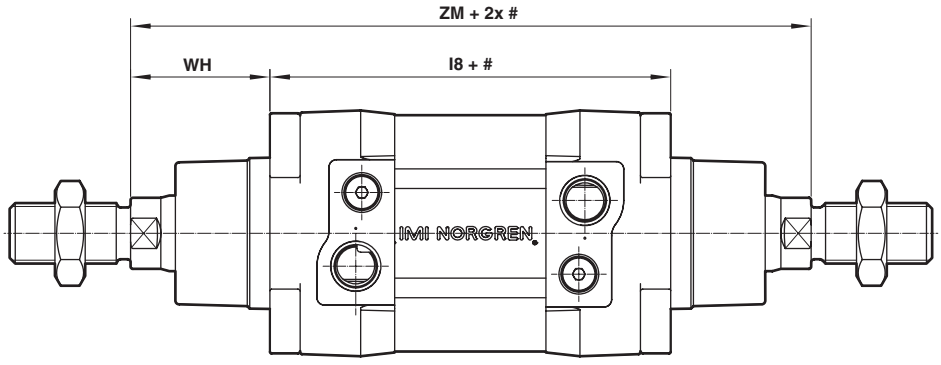
Dimensions in mm
Projection/First angle



ø	AF	ø D1	KF	l12	ø MM h9	SW	T1	T2
32	12	6,4	M6	5,5	12	10	16	2,6
40	12	8,4	M8	6,5	16	13	16	3,3
50	16	10,5	M10	8	20	17	21	4,7
63	16	10,5	M10	8	20	17	21	4,7
80	20	13	M12	10	25	22	25	6,1
100	20	13	M12	10	25	22	25	6,1
125	32	17	M16	13	32	27	38	8

For missing dimensions please see page 6, 7 and 8

LPRA/802000/JM, LRA/802000/JM, LRA/8000/JM,
LPRA/802000/JMX, LRA/802000/JMX Cylinder with Double Ended Piston Rod

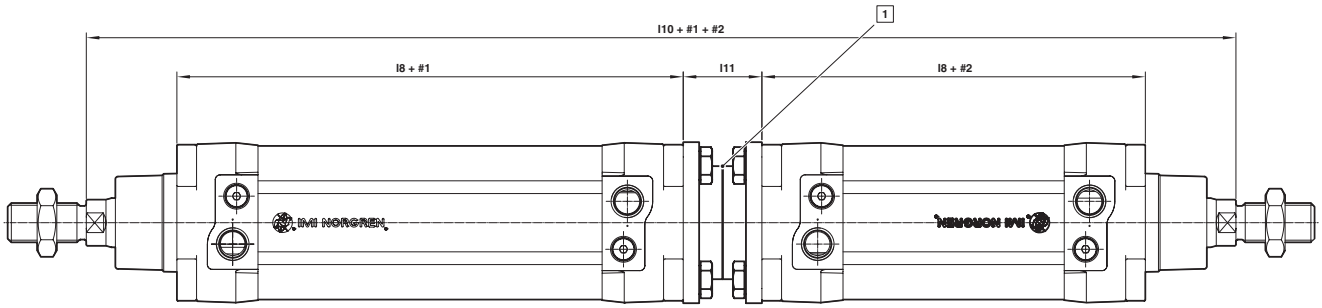


ø	L8	WH	ZM	Model Profile barrel	Model Round barrel
32	94	26	146	LPRA/802032/JM/*	LRA/802032/JM/*
40	105	30	165	LPRA/802040/JM/*	LRA/802040/JM/*
50	106	37	180	LPRA/802050/JM/*	LRA/802050/JM/*
63	121	37	195	LPRA/802063/JM/*	LRA/802063/JM/*
80	128	46	220	LPRA/802080/JM/*	LRA/802080/JM/*
100	138	51	240	LPRA/802100/JM/*	LRA/802100/JM/*
125	160	65	290	LPRA/802125/JM/*	LRA/802125/JM/*
160	180	80	340	-	LRA/8160/JM/*
200	180	95	370	-	LRA/8200/JM/*
250	200	105	410	-	LRA/8250/JM/*
320	220	120	460	-	LRA/8320/JM/*

* Please insert stroke length; For missing dimensions please see page 6, 7 and 8

Cylinder variants
LPRA/802000/MT, LRA/802000/MT, LRA/8000/MT – Four Position Cylinder
LPRA/802000/MTX, LRA/802000/MTX – Four Position Cylinder and Female Piston Rod Thread

Dimensions in mm
Projection/First angle

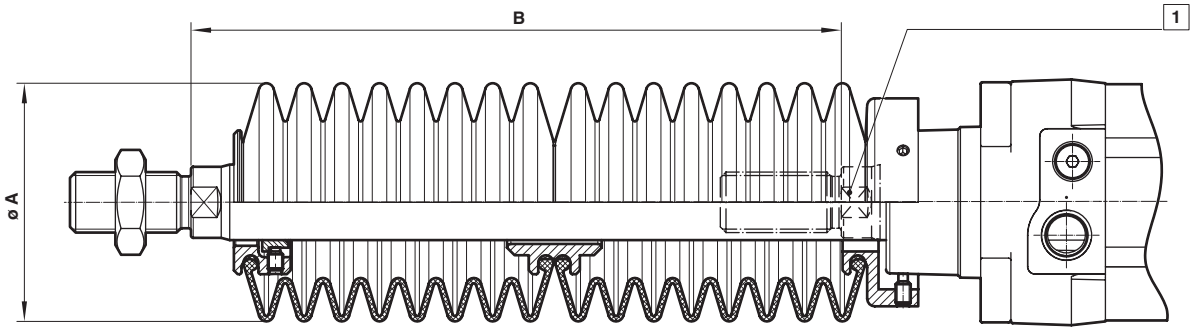


Stroke

ø	l8	l10	l11	WH	Model Profile barrel	Model Round barrel
32	94	267	27	26	LPRA/802032/MT/*/**	LRA/802032/MT/*/**
40	105	297	27	30	LPRA/802040/MT/*/**	LRA/802040/MT/*/**
50	106	318	32	37	LPRA/802050/MT/*/**	LRA/802050/MT/*/**
63	121	344	28	37	LPRA/802063/MT/*/**	LRA/802063/MT/*/**
80	128	386	38	46	LPRA/802080/MT/*/**	LRA/802080/MT/*/**
100	138	416	38	51	LPRA/802100/MT/*/**	LRA/802100/MT/*/**
125	160	494	44	65	LPRA/802125/MT/*/**	LRA/802125/MT/*/**
160	180	532	12	80	-	LRA/8160/MT/*/**
200	180	560	10	95	-	LRA/8200/MT/*/**

* Please insert stroke length 1; ** Please insert stroke length 2
Maximum stroke = stroke 1 + stroke 2; ø 32 = 700 mm, ø 40 = 1000 mm, ø 50 = 1000 mm, ø 63 = 900 mm, ø 80 = 1200 mm, ø 100 = 1100 mm, ø 125 = 1200 mm, ø 160 = 1200 mm, ø 200 = 1100 mm; For missing dimensions please see page 8, 9 and 1

LPRA/802000/MG, LRA/802000/MG, LRA/8000/MG – Cylinder with Piston Rod Bellows
LPRA/802000/MGX, LRA/802000/MGX – Cylinder with Piston Rod Bellows and Female Piston Rod Thread



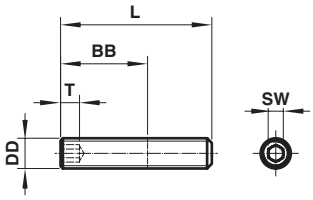
1 Piston rod without bellows

ø	ø A	Max. stroke per bellow	Piston rod extention B for first bellow	for further bellows	Model Profile barrel	Model Round barrel
32	40	60	30	25	LPRA/802032/MG/*	LRA/802032/MG/*
40	63	145	50	32	LPRA/802040/MG/*	LRA/802040/MG/*
50	63	145	40	32	LPRA/802050/MG/*	LRA/802050/MG/*
63	63	145	40	32	LPRA/802063/MG/*	LRA/802063/MG/*
80	80	250	50	45	LPRA/802080/MG/*	LRA/802080/MG/*
100	80	250	50	45	LPRA/802100/MG/*	LRA/802100/MG/*
125	80	250	50	45	LPRA/802125/MG/*	LRA/802125/MG/*
160	116	350	70	60	-	LRA/8160/MG/*
200	116	350	70	60	-	LRA/8200/MG/*
250	116	350	70	60	-	LRA/8250/MG/*
320	143	500	110	100	-	LRA/8320/MG/*

* Please insert stroke length; Maximum stroke: ø 32 = 1860 mm, ø 40 ... 320 = 2000 mm
For missing dimensions please see page 6, 7 and 8

NORGREN

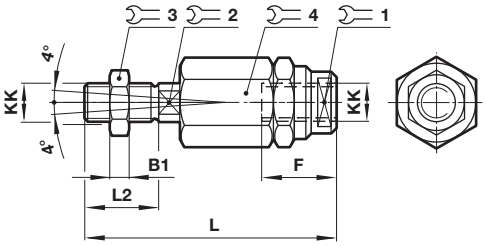
Mountings
Front or rear stud mounting A



ø	BB	DD	L	SW	T (min)	(kg)	Model (A)
32/40	17	M6	30	3	3,5	0,02	QM/8032/35
50/63	23	M8	40	4	5	0,05	QM/8050/35
80/100	28	M10	45	5	6	0,08	QM/8080/35
125	34	M12	60	6	8	0,14	QM/8125/35
160/200	42	M16	70	8	10	0,31	QM/8160/35
250	50	M20	80	10	12	0,92	QM/8250/35
320	60	M24	90	12	15	1,46	QM/8320/35

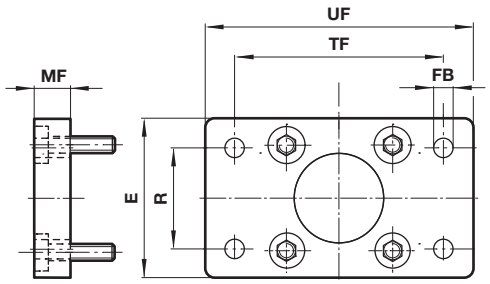
Piston rod swivel
AK

Dimensions in mm
Projection/First angle



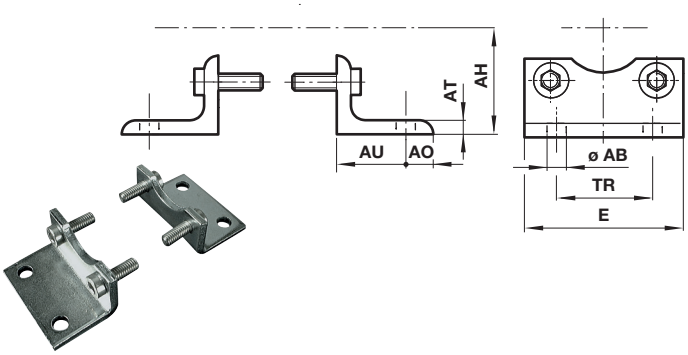
ø	KK	B1	F	L	L2	SW				(kg)	Model (AK)
						1	2	3	4		
32	M10 x 1,25	5	26	73	20	19	12	17	30	0,20	QM/8025/38
40	M12 x 1,25	6	26	77	24	19	12	19	30	0,20	QM/8040/38
50/63	M16 x 1,5	8	34	106	32	30	19	24	42	0,65	QM/8050/38
80/100	M20 x 1,5	10	42	122	40	30	19	30	42	0,72	QM/8080/38
125	M27 x 2	13,5	40	147	54	40	24	41	55	1,70	QM/8125/38
160/200	M36 x 2	18	78	251	72	50	36	55	75	5,4	QM/8160/38

Front flange B, G
Conforms to ISO 15552, type MF1 and MF2



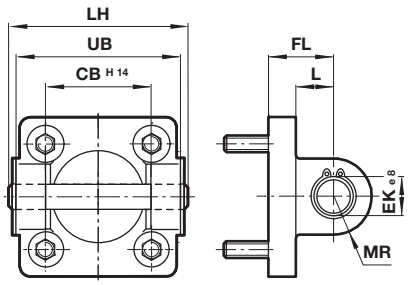
ø	E	ø FB	MF	R	TF	UF	(kg)	Model (B, G)
32	50	7	10	32	64	80	0,10	QA/8032/22
40	55	9	10	36	72	90	0,12	QA/8040/22
50	65	9	12	45	90	110	0,21	QA/8050/22
63	75	9	12	50	100	125	0,27	QA/8063/22
80	100	12	16	63	126	154	0,63	QA/8080/22
100	120	14	16	75	150	186	0,89	QA/8100/22
125	140	16	20	90	180	224	1,59	QM/8125/22
160	180	18	20	115	230	280	2,65	QM/8160/22
200	220	22	25	135	270	320	4,47	QM/8200/22
250	280	26	25	165	330	395	7,09	QM/8250/22
320	350	33	30	200	400	475	12,84	QM/8320/22

Foot mounting C
Conforms to ISO 15552, type MS1



ø	ø AB	AH	AO	AT	AU	E	TR	(kg)	Model (C)
32	7	32	8	4	24	48	32	0,15	QA/8032/21
40	10	36	9	4	28	53	36	0,18	QA/8040/21
50	10	45	10	5	32	64	45	0,30	QA/8050/21
63	10	50	12	5	32	74	50	0,39	QA/8063/21
80	12	63	19	6	41	98	63	0,80	QA/8080/21
100	14,5	71	19	6	41	115	75	0,95	QA/8100/21
125	16	90	20	9	45	140	90	2,40	QM/8125/21
160	18	115	20	8	60	180	115	3,5	QM/8160/21
200	22	135	30	9	70	220	135	5,25	QM/8200/21
250	26	165	35	10	75	280	165	9,5	QM/8250/21
320	33	200	45	16	85	350	200	22	QM/8320/21

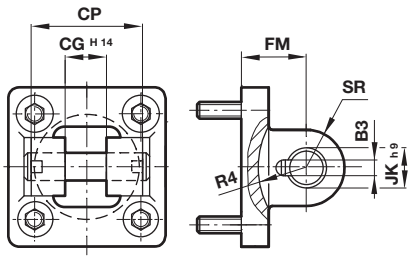
Rear clevis D
Conforms to ISO 15552, type MP2



ø	CB H14	ø EK e8	FL	L	LH	MR	UB	(kg)	Model (D)
32	26	10	22	13	52	9	45	0,11	QA/8032/23
40	28	12	25	16	60	12	52	0,16	QA/8040/23
50	32	12	27	17	68	12	60	0,22	QA/8050/23
63	40	16	32	22	79	15	70	0,34	QA/8063/23
80	50	16	36	22	99	15	90	0,54	QA/8080/23
100	60	20	41	27	119	20	110	0,90	QA/8100/23
125	70	25	50	29	140	25	130	2,70	QM/8125/23
160	90	30	55	37	182	30	170	4,3	QM/8160/23
200	90	30	60	40	182	30	170	6,1	QM/8200/23
250	110	40	70	47	218	40	200	19	QM/8250/23
320	120	45	80	50	238	45	220	30,5	QM/8320/23

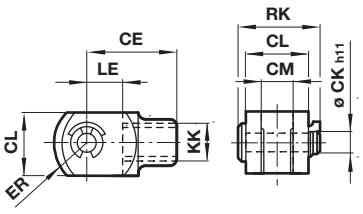
Rear clevis D2
Conforms to ISO 15552, type AB6

Dimensions in mm
Projection/First angle



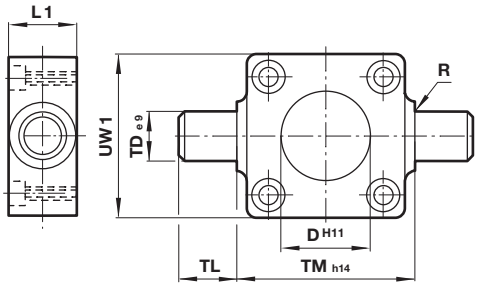
ø	CG H14	CP	B3	ø JK h9	FM	SR	R4	(kg)	Model (D2)
32	14	34	3,3	10	22	11	17	0,20	QA/8032/42
40	16	40	4,3	12	25	12	20	0,23	QA/8040/42
50	21	45	4,3	16	27	14,5	22	0,36	QA/8050/42
63	21	51	4,3	16	32	18	25	0,55	QA/8063/42
80	25	65	4,3	20	36	22	30	0,90	QA/8080/42
100	25	75	4,3	20	41	22	32	1,45	QA/8100/42
125	37	97	6,3	30	50	30	42	2,7	QA/8125/42
160	43	122	6,3	35	55	36	46	4,3	QA/8160/42
200	43	122	6,3	35	60	38	49	6,1	QA/8200/42

Piston rod clevis F
Conforms to DIN ISO 8140



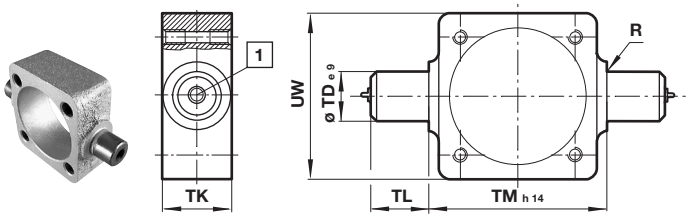
ø	KK	CE	ø CK h11	CL	CM	ER	LE	RK	(kg)	Model (F)
32	M10 x 1,25	40	10	20	10	16	20	27,5	0,09	QM/8025/25
40	M12 x 1,25	48	12	24	12	19	24	33,5	0,13	QM/8040/25
50/63	M16 x 1,5	64	16	32	16	25	32	42	0,33	QM/8050/25
80/100	M20 x 1,5	80	20	40	20	32	40	51	0,67	QM/8080/25
125	M27 x 2	110	30	55	30	45	54	73,5	1,35	QM/8125/25
160/200	M36 x 2	144	35	70	35	57	72	94	3	QM/8160/25
250	M42 x 2	168	40	85	40	77	84	107	6,4	QM/8250/25
320	M48 x 2	192	50	96	50	88	96	123	8,7	QM/8320/25

Front or rear detachable trunnion FH
Conforms to VDMA 24562 part 2, type MT 5/6



ø	ø D H11	L1	R	ø TD e9	TL	TM h14	UW1	(kg)	Model (FH)
32	30	16	1	12	12	50	45	0,20	QA/8032/34
40	35	20	1,6	16	16	63	55	0,38	QA/8040/34
50	40	24	1,6	16	16	75	65	0,60	QA/8050/34
63	45	24	1,6	20	20	90	75	1,10	QA/8063/34
80	45	28	1,6	20	20	110	100	1,90	QA/8080/34
100	55	38	2	25	25	132	120	3,50	QA/8100/34
125	60	50	2	25	25	160	145	6,50	QA/8125/34

Centre trunnion – H
Conforms to ISO 15552, type MT4
Used for cylinder model with round barrel



1 Grease nipple from ø 125 mm to ø 320 mm

ø	R max.	ø TD e9	TK	TL	TM h14	UW	XV min.	XV max. + #	(kg)	Model (H)
32	1	12	20	12	50	50	65	81	0,16	QA/8032/28
40	1,6	16	24	16	63	58	76,5	88,5	0,35	QA/8040/28
50	1,6	16	28	16	75	70	84	96	0,65	QA/8050/28
63	1,6	20	28	20	90	80	87,5	107,5	0,85	QA/8063/28
80	1,6	20	28	20	110	100	102	118	1,2	QA/8080/28
100	2	25	38	25	132	126	112	128	2,3	QA/8100/28
125	2	25	50	25	160	152	144	146	3,3	QM/8125/28
160	2,5	32	50	32	200	192	155	185	5,3	QM/8160/28
200	2,5	32	50	32	250	240	170	200	9,4	QM/8200/28
250	3,2	40	60	40	320	318	193	217	18	QM/8250/28
320	3,2	50	70	50	400	400	215	245	30	QM/8320/28

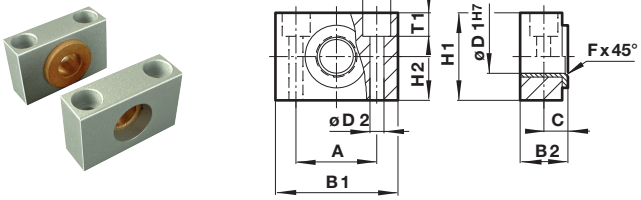
Note: Style 'H': These mountings are only supplied assembled complete with the
cylinder. Unless otherwise specified, units will be supplied with dimension 'XV min'. plus half the stroke length. 'XV' = Distance from the piston rod shoulder to the centre of the mounting (Please see drawing).

Not for use on profile options.
This item is suited to all loads including heavy duty loads.
This item is for replacement only
H mounting must be initially ordered with the cylinder.

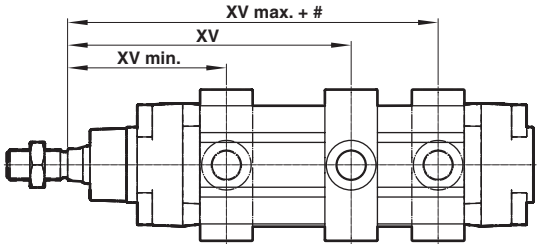
Trunnion support S
Conforms to ISO 15552, type AT4

Dimensions in mm
Projection/First angle

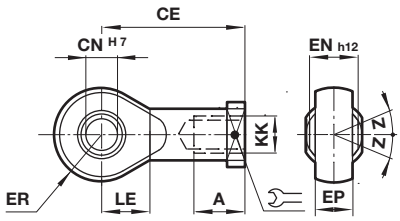
#
Stroke



ø	A	B 1	B 2	C	ø $D1_{H7}$	ø D2	ø D3	F x 45°	H 1	H 2	T1	(kg)	Model (S)
32	32	46	18	10,5	12	6,6	11	1	30	15	6,8	0,10	QA/8032/41
40/50	36	55	21	12	16	9	15	1,6	36	18	9	0,14	QA/8040/41
63/80	42	65	23	13	20	11	18	1,6	40	20	11	0,18	QA/8063/41
100/125	50	75	28,5	16,5	25	14	20	2	50	25	13	0,34	QA/8100/41
160/200	60	92	39	21,5	32	18	26	2,5	60	30	15,5	1,9	QA/8160/41

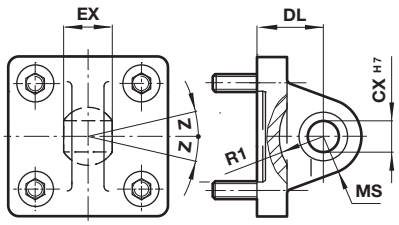


Universal piston rod eye UF
Conforms to DIN ISO 8139



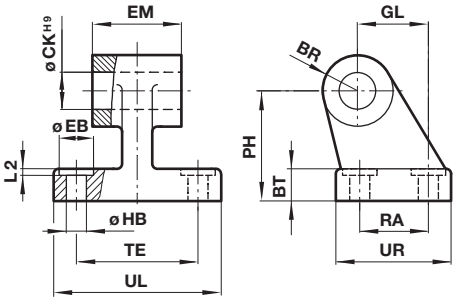
ø	Thread KK	A	CE	ø CN_{H7}	EN h12	ER	LE	Z	(kg)	Model (UF)
32	M10 x 1,25	20	43	10	14	14	15	9°	0,09	QM/8025/32
40	M12 x 1,25	22	50	12	16	16	17	13°	0,13	QM/8040/32
50/63	M16 x 1,5	28	64	16	21	21	22	15°	0,33	QM/8050/32
80/100	M20 x 1,5	33	77	20	25	25	26	15°	0,67	QM/8080/32
125	M27 x 2	51	110	30	37	35	36	15°	1,35	QM/8125/32
160/200	M36 x 2	56	125	35	43	40	41	16°	3	QM/8160/32
250	M42 x 2	60	142	40	49	45	46	17°	6,4	QM/8250/32
320	M48 x 2	65	160	50	60	57,5	59	12°	8,7	QM/8320/32

Universal rear eye UR
Conforms to ISO 15552, type MP6



ø	ø CX H7	EX	MS	DL	R1	Z	(kg)	Model (UR)
32	10	14	16	22	13	13°	0,15	QA/8032/33
40	12	16	18	25	16	13°	0,25	QA/8040/33
50	16	21	21	27	19	15°	0,40	QA/8050/33
63	16	21	23	32	22	15°	0,55	QA/8063/33
80	20	25	28	36	24	14°	0,90	QA/8080/33
100	20	25	30	41	27	14°	1,50	QA/8100/33
125	30	37	40	50	36	17°	2,70	QM/8125/33
160	35	43	44	55	41	16°	4,6	QM/8160/33
200	35	43	48	60	42	16°	7,3	QM/8200/33
250	40	49	50	70	47	16°	16,5	QM/8250/33
320	50	60	58	80	52	14°	26	QM/8320/33

Wide hinge SW
Conforms to ISO 15552, type AB7

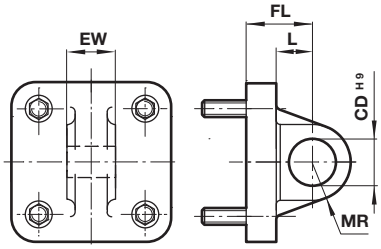


ø	BR	BT	PH	ø CK H9	ø EB	EM	GL
32	10	7	32	10	12	25,6	21
40	11	9	36	12	12	27,6	24
50	13	11	45	12	15	31,6	33
63	15	11	50	16	15	39,6	37
80	15	14	63	16	18	49,6	47
100	18	15	71	20	18	59,6	55
125	22	20	90	25	20	69	70
160	31	25	115	30	20	89	97
200	31	30	135	30	26	89	105
250	39	35	165	40	40	109	128
320	44	40	200	45	48	119	150

ø	ø HB	L2	RA	TE	UL	UR	(kg)	Model (SW)
32	6,6	1,6	18	38	50	31	0,05	M/P19493
40	6,6	1,6	22	41	53	35	0,07	M/P19494
50	9	1,6	30	50	65	45	0,14	M/P19495
63	9	1,6	35	52	67	50	0,18	M/P19496
80	11	2,5	40	66	84	60	0,28	M/P19497
100	11	2,5	50	76	94	70	0,42	M/P19498
125	14	3,2	60	94	124	90	2,70	M/P19499
160	14	4	88	118	156	126	6,3	M/P19679
200	18	4	90	122	162	130	8	M/P19683
250	22	4	110	150	200	160	13,4	M/P19446
320	26	4	122	170	234	186	22	M/P19447

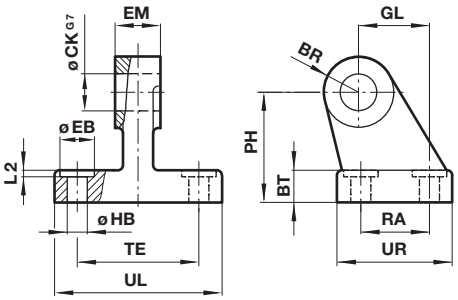
Rear eye R
Conforms to ISO 15552, type MP4

Dimensions in mm
Projection/First angle



ø	ø CD H9	EW	FL	L	MR	(kg)	Model (R)
32	10	25,6	22	13	9	0,09	QA/8032/27
40	12	27,6	25	16	12	0,11	QA/8040/27
50	12	31,6	27	17	12	0,17	QA/8050/27
63	16	39,6	32	22	15	0,24	QA/8063/27
80	16	49,6	36	22	15	0,37	QA/8080/27
100	20	59,6	41	27	20	0,59	QA/8100/27
125	25	69,6	50	33	25	3,20	QM/8125/27
160	30	89,6	55	35,5	30	6,1	QM/8160/27
200	30	89,6	60	37	30	6,8	QM/8200/27

Narrow hinge SS

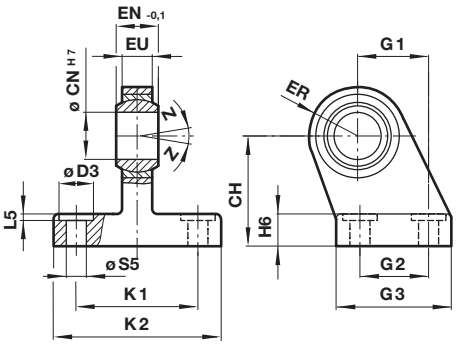


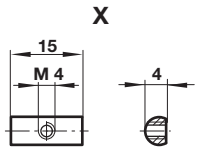
ø	BR	BT	ø CK G7	ø EB	EM	GL	ø HB	L2	PH	RA	TE	UL	UR	(kg)	Model (SS)
32	10	8	10	11	10	21	6,6	1,6	32	18	38	51	31	0,15	M/P19931
40	11	10	12	11	12	24	6,6	1,6	36	22	41	54	35	0,20	M/P19932
50	13	12	16	15	16	33	9	1,6	45	30	50	65	45	0,48	M/P19933
63	15	12	16	15	16	37	9	1,6	50	35	52	67	50	0,50	M/P19934
80	15	14	20	18	20	47	11	2,5	63	40	66	86	60	0,75	M/P19935
100	19	15	20	18	20	55	11	2,5	71	50	76	96	70	1,20	M/P19936
125	22	20	30	20	30	70	14	3,2	90	60	94	124	90	2,50	M/P19937
160	31	25	35	20	35	97	14	4	115	88	118	156	126	6,00	M/P19938
200	31	30	35	26	35	105	18	4	135	90	122	162	130	7,60	M/P19939

Swivel hinge US
Conforms to VDMA 24562 part 2

Groove key M/P72816
Weight: 0,01 (kg)

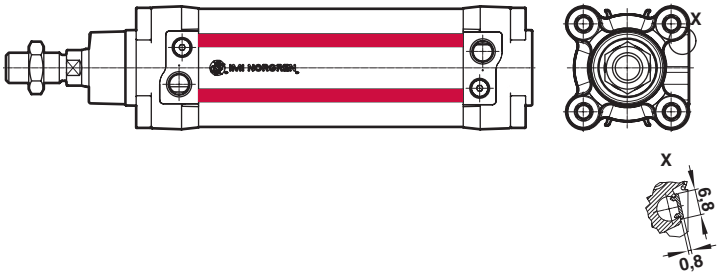
Dimensions in mm
Projection/First angle



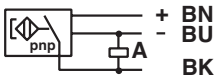


ø	CH	ø CN H7	ø D3	EN -0,1	ER	EU	G1	G2	G3	H6	K1	K2	L5	S5	Z	(kg)	Model (US)
32	32	10	11	14	16	10,5	21	18	31	10	38	51	1,6	6,6	13°	0,19	M/P40310
40	36	12	11	16	18	12	24	22	35	10	41	54	1,6	6,6	13°	0,24	M/P40311
50	45	16	15	21	21	15	33	30	45	12	50	65	1,6	9	15°	0,46	M/P40312
63	50	16	15	21	23	15	37	35	50	12	52	67	1,6	9	15°	0,59	M/P40313
80	63	20	18	25	28	18	47	40	60	14	66	86	2,5	11	14°	1,03	M/P40314
100	71	20	18	25	30	18	55	50	70	15	76	96	2,5	11	14°	1,40	M/P40315
125	90	30	20	37	40	25	70	60	90	20	94	124	3,2	14	17°	3,10	M/P71355
160	115	35	20	43	44	28	97	88	126	25	118	156	4	14	16°	6,40	M/P71356
200	135	35	26	43	47	28	105	90	130	30	122	162	4	18	16°	9,10	M/P71357

Groove cover M/P72725/1000



- **Magnetically operated solid state switch SPC/130159 - round style**
- **Suitable for all cylinder ranges with magnetic piston**
- **Switches can be mounted flush in all profile cylinders. Adaptor supplied for tie rod cylinders.**
- **Reliable switching with very fast response time. Flexible PUR cable**
- **Particularly suited for use in high levels of vibration**
- **LED indicator as standard**
- **CE verificated**



Technical features

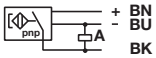
Operation:
SPC/130159 (PNP) open collector
output with LED (yellow)
Switching voltage (Ub):
10 ... 30 V d.c.
Switching voltage output:
Ub - 2 V
Inducted voltage:
0,5 V
Switching current (see graph):
100 mA max.

Switching power:
3 W max.
Response time:
< 0,5 ms
Operating frequency:
1 kHz
Protection rating (EN 60529):
IP 67
Cable type:
PUR 3 x 0,14
Cable length:
5m

Bend radius:
15 mm for cable in fixed installation
30 mm for cable in movable installation
Electromagnetic compatibility according to:
EN 60947-5-2
Operating temperature:
-40 ... +80 °C (-40 ... 176 °F)

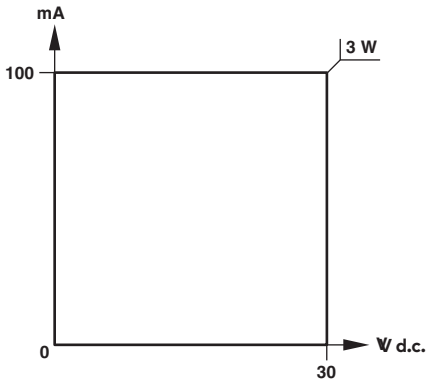
Materials:
Body: plastic
Cable: PUR

Technical data - Solid state

Symbol	Voltage (V d.c.)	Current maximum (mA)	Function	Operating temperature (°C)	LED	Protection class	Plug	Cable length (m)	Cable type	Weight (g)	Model
	10 ... 30	100	PNP	-40 ... +80	•	IP67	—	5	PUR 3 x 0,14	37	SPC/130159

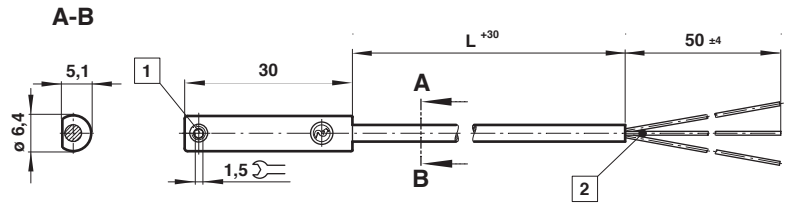
Color code: BK = black, BN = brown, BU = blue

Switching current and switching voltage



Dimensions
Cable length L = 5 m

Dimensions in mm
Projection/First angle

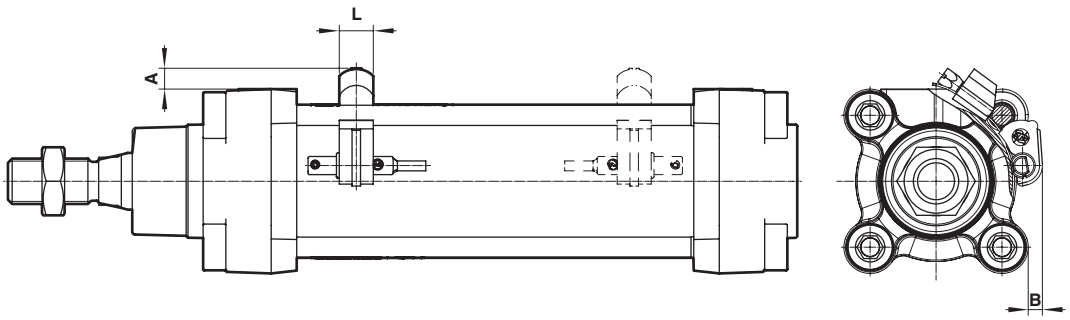


1 Fixing screw
2 Color code: BK = black; BN = brown; BU = blue

QM/27/2/1 – Switch mounting brackets for Round barrel Switch: M/50

ø	A	B	L	Weight (kg)	Model
32	9	6	12	0,010	QM/27/2/1
40	9	7	12	0,010	QM/27/2/1
50	7	5	12	0,010	QM/27/2/1
63	7	6	12	0,010	QM/27/2/1
80	4	4	12	0,010	QM/27/2/1

ø	A	B	L	Weight (kg)	Model
100	3	2	12	0,010	QM/27/2/1
125	-2	-2	12	0,010	QM/27/2/1
160	-10	-9	12	0,010	QM/27/2/1
200	-17	-16	12	0,010	QM/27/2/1
250	-10	-6	35	0,085	QM/27/2/2
320	-20	-16	35	0,072	QM/27/2/3



- **Magnetically operated solid state switch M50 - round style**
- **Suitable for all cylinder ranges with magnetic piston**
- **Switches can be mounted flush in all profile cylinders. Adaptor supplied for tie rod cylinders.**
- **Reliable switching with a very fast reponse time**
- **LED indicator as standard**
- **CE certified**
- **UL listed**

Technical features

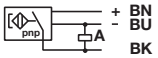
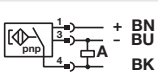
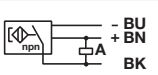
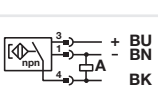
Operation:
M/50/EAP (PNP) open collector output with LED (yellow)
M/50/EAN (NPN) grounded emitter output with LED (yellow)
M/50/IOP (PNP) Easy IO-Link open collector output with LED (yellow)
Switching voltage (Ub):
10 ... 30 V d.c.
Switching voltage output:
Ub - 2 V

Inducted voltage:
0,5 V
Switching current (see graph overleaf):
100 mA max.
Switching power:
3 W max.
Response time:
< 0,5 ms for EAP switch
< = 1 ms for IOP switch
Operating frequency:
1 kHz

Protection rating (EN 60529):
IP67 (standard)
IP68 for type: M/50/EAP/5U
Operating temperature:
-40 ... +80 °C (-40 ... 176 °F)
(IP67 & IP68)
Cable type:
PVC 3 x 0,12 (standard)
PUR 3 x 0,14 (M/50/EAP/5U)
Cable length:
2, 5 and 10 m
Electromagnetic compatibility according to:
EN 60947-5-2

Materials:
Body: plastic
Cable: see table below

Technical data - Solid state -additional information see data sheet N/en 4.3.007

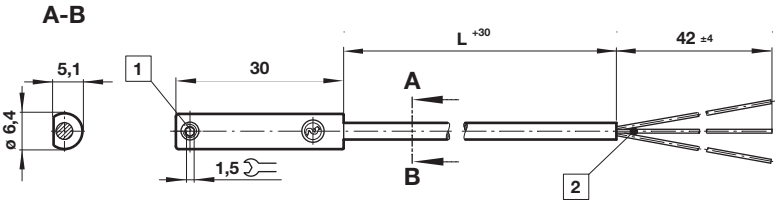
Symbol	Voltage (V d.c.)	Current maximum (mA)	Function	Operating temperature (°C)	LED	Protection class	Plug	Cable length (m)	Cable type	Weight (g)	Model
	10 ... 30	100	PNP	-40 ... +80	•	IP67	—	2, 5 or 10	PVC 3 x 0,12	37	M/50/EAP/*V
	10 ... 30	100	PNP	-40 ... +80	•	IP67	—	5	PVC 3 x 0,12	37	M/50/IOP/5V
	10 ... 30	100	PNP	-40 ... +80	•	IP68	—	5	PUR 3 x 0,14	37	M/50/EAP/5U
	10 ... 30	100	PNP	-40 ... +80	•	IP67	M8 x 1	0,3	PVC 3 x 0,14	16	M/50/EAP/CP *1)
	10 ... 30	100	PNP	-40 ... +80	•	IP67	M8 x 1	0,3	PVC 3 x 0,14	16	M/50/IOP/CP *1)
	10 ... 30	100	PNP	-40 ... +80	•	IP67	M12 x 1	0,3	PVC 3 x 0,14	16	M/50/EAP/CC *1)
	10 ... 30	100	NPN	-40 ... +80	•	IP67	—	2, 5 or 10	PVC 3 x 0,12	37	M/50/EAN/*V
	10 ... 30	100	NPN	-40 ... +80	•	IP67	M8 x 1	0,3	PVC 3 x 0,14	16	M/50/EAN/CP *1)

*** Insert cable length; *1) Plug-in connector below; Color code: BK = black, BN = brown, BU = blue**

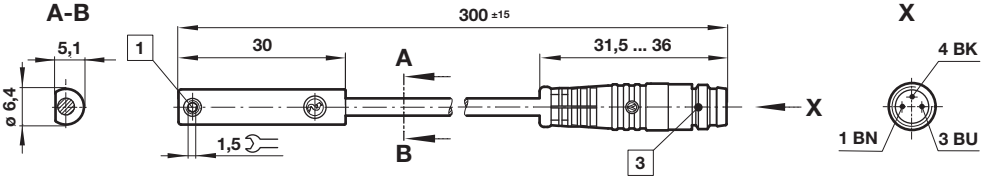
Dimensions

Dimensions in mm
Projection/First angle

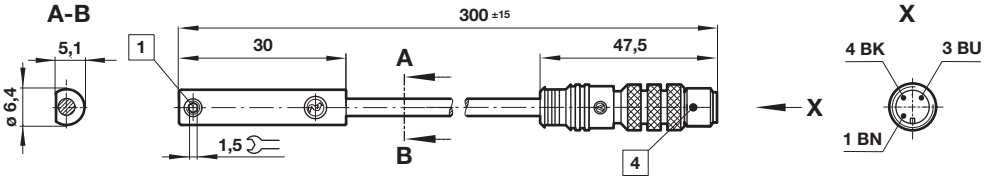
M/50/EAP/*V,
M/50/EAN/*V
Cable length L = 2, 5 or 10 m



M/50/EAP/CP,
M/50/EAN/
CP



M/50/EAP/
CC



1 Fixing screw
2 Color code: BK = black; BN = brown; BU = blue
3 Plug M8 x 1
4 Plug M12 x 1

Accessories

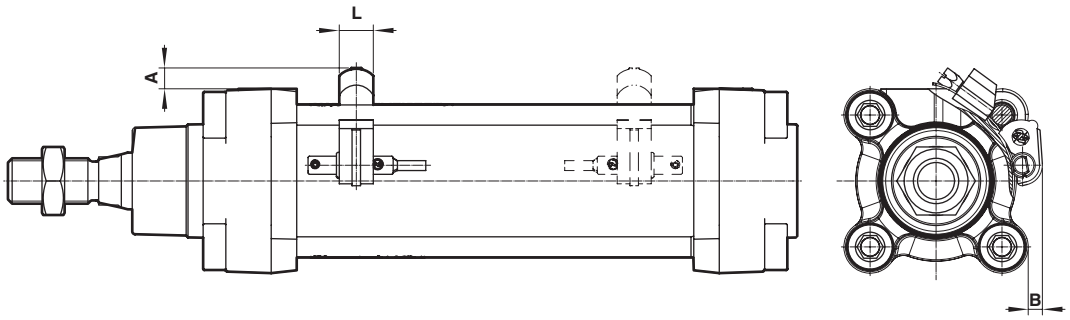
Plug-in connector cable with nut

Outer cover	Cable length (m)	Weight (kg)	Connector	Connector
PVC 3 x 0,25	5	0,18	M8 x 1	M/P73001/5
PUR 3 x 0,25	5	0,18	M8 x 1	M/P73002/5
PUR 3 x 0,34	5	0,21	M12 x 1	M/P34594/5

QM/27/2/1 – Switch mounting brackets for Round barrel Switch: M/50

ø	A	B	L	Weight (kg)	Model
32	9	6	12	0,010	QM/27/2/1
40	9	7	12	0,010	QM/27/2/1
50	7	5	12	0,010	QM/27/2/1
63	7	6	12	0,010	QM/27/2/1
80	4	4	12	0,010	QM/27/2/1

ø	A	B	L	Weight (kg)	Model
100	3	2	12	0,010	QM/27/2/1
125	-2	-2	12	0,010	QM/27/2/1
160	-10	-9	12	0,010	QM/27/2/1
200	-17	-16	12	0,010	QM/27/2/1
250	-10	-6	35	0,085	QM/27/2/2
320	-20	-16	35	0,072	QM/27/2/3



Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under »**Technical features/data**«.
Before using these products with fluids other than those specified, for non-industrial applications, life-support systems or other applications not within published specifications, consult
IMI Precision Engineering, Norgren GmbH.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.
System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.
System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.