BELEF®

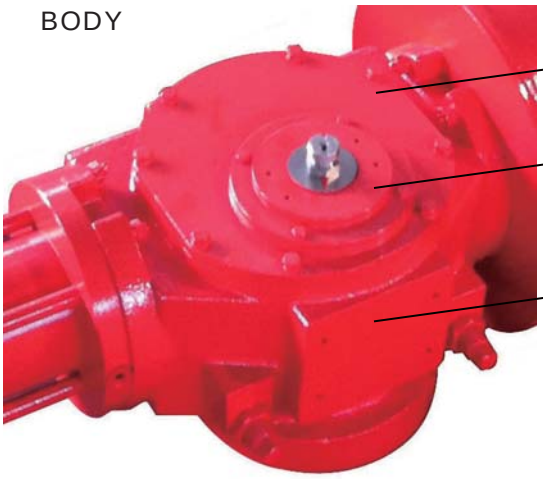
ACTUATOR

YS-Series Scotch Yoke Hydraulic Actuator

© BELEF PNEUMATIC ACTUATORS CO.,LTD.

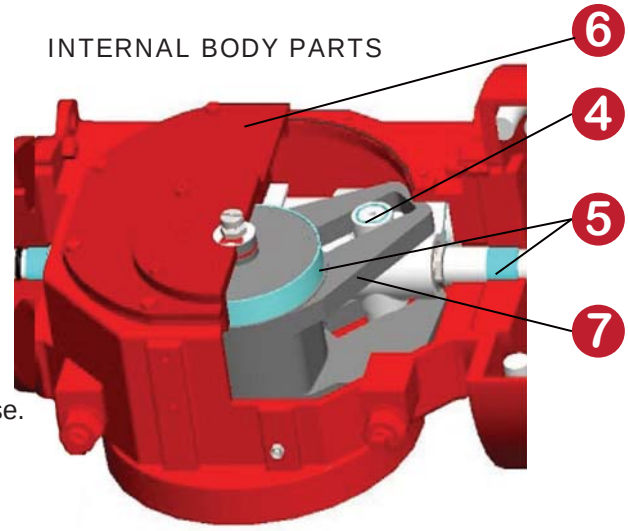
Ver.2014.1

BODY



1. Internal o-rings to ensure water ingress protection.
2. NAMUR standard for all sizes for assembly of switch boxes and positioners.
3. Threaded parts in front and the back side of the body for easy assembly of a pneumatic control panel.

INTERNAL BODY PARTS



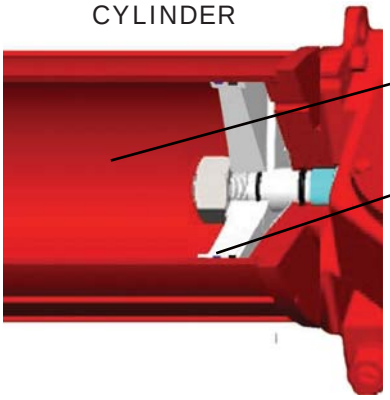
4.Round rolled is used, reducing the friction between the yoke arm and pin, minimizing the wear.

5.Replaceable bearings protect the sliding and rotating components, suitable for either dry or lubricated working conditions.

6.PTFE thrust bar prevents yoke pin axial movement, transuferring axial loads directly to the drive module case.

7.Connects the piston rod with the guide block, compensating for side load deflection and reducing wear on rod, bearings and seals.

CYLINDER



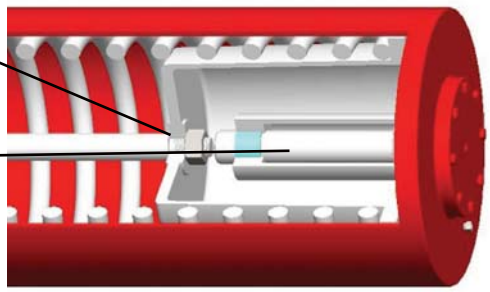
8. **CYLINDER**
The inner surface of cylinder is coated by PTFE, to prevent resistance and self-lubricating.

9. **PISTONS SEALS**
Double sealing, with o´ring and dynamic ring to prevent metal to metal contact between the piston and the cylinder.

SPRING MODULE

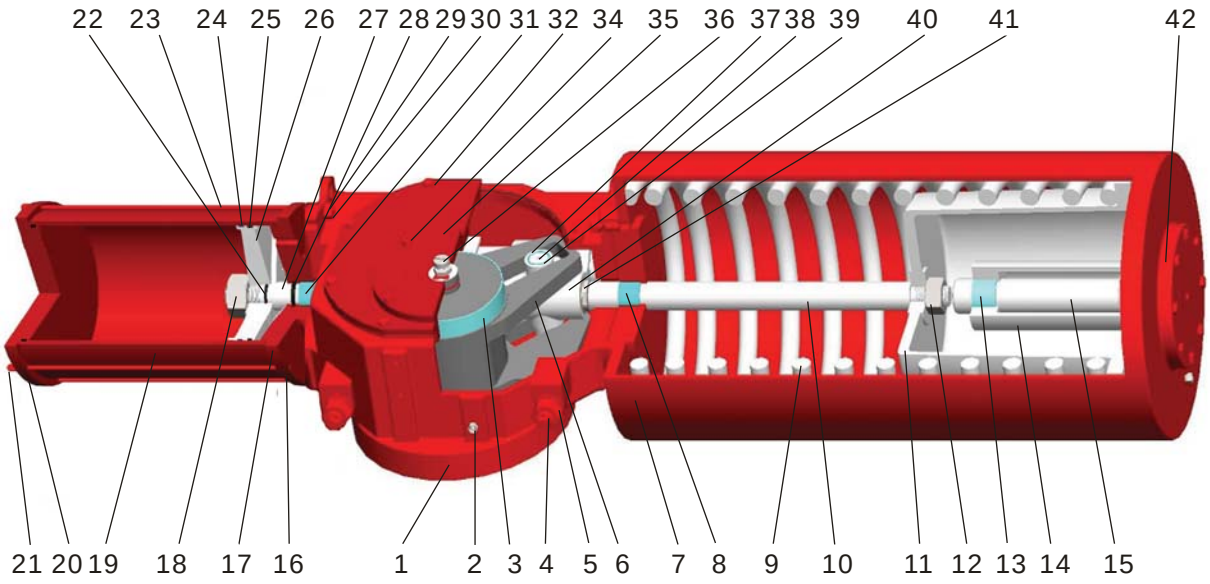
SPRING MODULE
Safe spring Lock, prevents spring module detachment from the drive module.

SPRING MODULE
Internal Hydraulic cylinder for manual pump override.

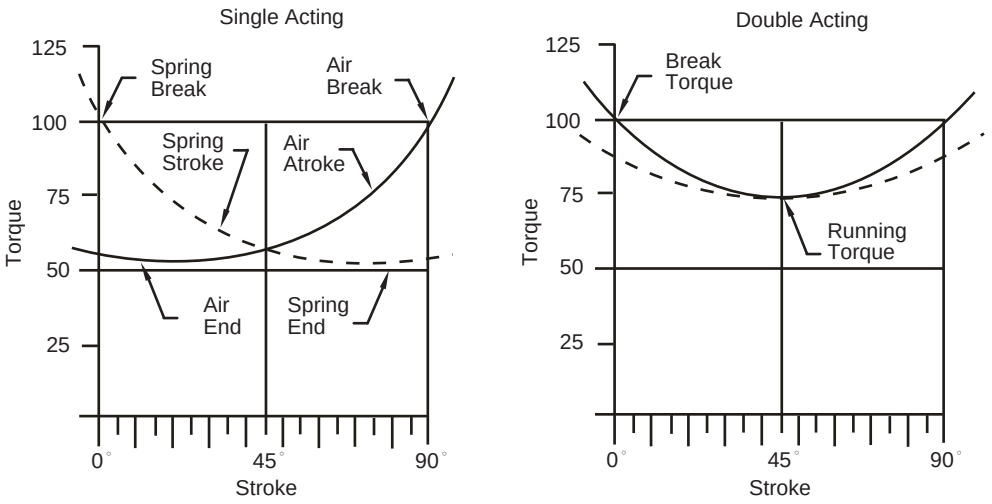


YS-Series Hydraulic Actuator

Parts And Material



No.	Name	Material	No.	Name	Material
1	Body	Ductile Iron	22	O-Ring	NBR
2	Vent Valve	Carbon Steel	23	Screw	Alloy Steel
3	Sliding Bearing	TFE Metal+TFE	24	Guide Ring	PTFE
4	Adjust Stud	Alloy Steel	25	O-Ring	NBR
5	Nut	2H	26	Piston	Ductile Iron
6	Yoke	Carbon Steel	27	Center Bar	Alloy Steel
7	Spring Case	Carbon Steel	28	O-Ring	NBR
8	Sliding Bearing	TFE Metal+TFE	29	Stud	Alloy Steel
9	Spring	Alloy Steel	30	Nut	2H
10	Tension rod	Alloy Steel	31	Sliding Bearing	TFE Metal+TFE
11	Spring Seat	Carbon Steel	32	Bolt	Carbon Steel
12	Nut	2H	33	Body Cap	Ductile Iron
13	Sliding Bearing	TFE Metal+TFE	34	Bolt	Carbon Steel
14	Hydraulic Cylinder	Carbon Steel	35	Cover	Ductile Iron
15	Hydraulic Piston	Carbon Steel	36	Drive Shaft	Alloy Steel
16	Adapter	Ductile Iron	37	Roller	Alloy Steel
17	O-Ring	NBR	38	Sliding Bearing	TFE Metal+TFE
18	Nut	2H	39	Pin	Alloy Steel
19	Cylinder	Carbon Steel	40	Guide Block	Ductile Iron
20	End Cap	Ductile Iron	41	Nut	Carbon Steel
21	Nut	2H	42	Cover Plate	Carbon Steel



TORQUE TABLE - Double acting

Uint:N.m

MODEL	HYDRAULIC TORQUE					
	70BAR		100BAR		135BAR	
	START/END	RUN	START/END	RUN	START/END	RUN
YS10-40DA	315	189	450	270	607	364
YS12-40DA	393	236	562	337	758	455
YS12-50DA	756	454	1081	649		
YS14-60DA	1364	818	1949	1169	2631	1578
YS14-70DA	1994	1196	2849	1709		
YS16-70DA	2347	1408	3354	2012	4527	2716
YS16-80DA	3256	1953	4652	2791		
YS25-90DA	4838	2902	6912	4147	9331	5598
YS25-100DA	6219	3871	8885	5331		
YS25-110DA	7746	4648				
YS30-110DA	8951	5371	12788	7673	17263	10358
YS30-120DA	10995	6596	15708	9424	21205	12722
YS30-130DA	13216	7929	18881	11328		
YS35-130DA	15690	9414	22415	13449	30260	18156
YS35-150DA	22023	13213	31462			
YS35-170DA	29261	17556				
YS40-170DA	32956	19773	47081	28248	63559	38135
YS40-190DA	42843	25706	61205	36723		
YS40-220DA	59734	35840				
YS48-190DA	49233	29539	70333	42199	94949	56969
YS48-220DA	69104	41462	98720	59232	133272	79963
YS48-245DA	87884	52730	125549	75329		
YS48-270DA	108684	65210				
YS60-245DA	113246	67947	161780	97068	218403	131041
YS60-270DA	141326	84795	201895	121136	27508	
YS60-320DA	205664	1223398	293807	176284		

YS-Series Hydraulic Actuator

Output Torque

TORQUE TABLE - Single acting

Uint:N.m

MODEL	SPRING TORQUE			HYDRAULIC TORQUE								
				70BAR			100BAR			135BAR		
	START	RUN	END	START	RUN	END	START	RUN	END	START	RUN	END
YS10-40-S1	187	91	118	196	97	127	331	178	262	488	272	420
YS10-40-S2	293	148	201							406	216	308
YS10-50-S2	293	148	201	404	214	312	664	370	571			
YS10-50-S3	489	242	319				545	276	375	848	458	678
YS10-60-S3	489	242	319	641	333	471						
YS12-50-S1	526	267	364							1006	346	760
YS12-60-S1	526	267	364	747	374	501	1262	683	1016			
YS12-50-S2	818	407	541							919	468	641
YS12-60-S2	818	407	541				1175	621	897			
YS12-70-S2	818	407	541	1185	628	907						
YS14-60-S1	1079	543	674				1276	655	907	1958	1064	1591
YS14-70-S1	1079	543	674	1321	682	953						
YS14-60-S2	1477	752	948							1675	848	1154
YS14-70-S2	1477	752	948	1765	902	1243	1893	979	1371			
YS14-70-S3	2291	1162	1458							2356	1158	1506
YS14-80-S3	2291	1162	1458				2397	1183	1547			
YS14-100-S3	2291	1162	1458	2976	1530	2125						
YS16-70-S1	2595	1310	1629							2864	2105	1904
YS16-80-S1	2595	1310	1629				2988	1505	2028			
YS16-90-S1	2595	1310	1629	2622	1285	1662						
YS16-80-S2	3194	1637	2085							4156	2135	2961
YS16-90-S2	3194	1637	2085				3999	2041	2804			
YS16-100-S2	3194	1637	2085	3313	1629	2117						
YS16-80-S3	3858	1954	2446							3795	1844	2352
YS16-100-S3	3858	1954	2446				5284	2736	3839			
YS16-110-S3	3858	1954	2446	4224	2101	2781						
YS25-90-S1	4955	2466	2999							6440	3348	4721
YS25-100-S1	4955	2466	2999				5994	3081	4275			
YS25-110-S1	4955	2466	2999	4865	2447	2913						
YS25-100-S2	6326	3117	3726							8225	4281	6046
YS25-110-S2	6326	3117	3726				7296	3724	5117			
YS25-120-S2	6326	3117	3726	5648	2735	3469						
YS25-100-S3	7628	3750	4720							7122	3447	4367
YS25-120-S3	7628	3750	4720				8581	4322	5827			
YS25-140-S3	7628	3750	4720	8325	4168	5571						
YS30-110-S1	9375	4712	5824							11564	5832	7876
YS30-120-S1	9375	4712	5824				10008	4898	6320			
YS30-140-S1	9375	4712	5824	9916	4843	6228						
YS30-120-S2	11426	5741	7092							13944	7034	9502
YS30-130-S2	11426	5741	7092				11620	5639	7177			
YS30-150-S2	11426	5741	7092	10931	5226	6489						
YS30-130-S3	14080	6952	8344							16953	8690	12013
YS30-150-S3	14080	6952	8344				17453	8990	12513			
YS30-170-S3	14080	6952	8344	15343	7723	10403						
YS35-130-S1	18185	8970	10752							19429	9860	13440
YS35-150-S1	18185	8970	10752				20631	10581	14641			
YS35-170-S1	18185	8970	10752	18430	9261	12440						
YS35-150-S2	23864	11772	14109							29018	15091	21286
YS35-170-S2	23864	11772	14109				28345	14688	20614			
YS35-190-S2	23864	11772	14109	23947	12048	16215						
YS35-170-S3	28953	14335	17288							38398	19835	27721
YS35-190-S3	28953	14335	17288				35399	18036	24722			
YS35-220-S3	28953	14335	17288	33278	16764	22601						

TORQUE TABLE - Single acting

Uint:N.m

MODEL	SPRING TORQUE			HYDRAULIC TORQUE								
				70BAR			100BAR			135BAR		
	START	RUN	END	START	RUN	END	START	RUN	END	START	RUN	END
YS40-170-S1	35425	17702	21679							41624	20900	28043
YS40-190-S1	35425	17702	21679				39270	19488	25689			
YS40-220-S1	35425	17702	21679	37799	18605	24218						
YS40-190-S2	47742	23883	29300							55410	27741	37061
YS40-220-S2	47742	23883	29300				58110	29365	39768			
YS40-245-S2	47742	23883	29300	48480	23583	30131						
YS48-190-S1	57348	28690	35200							61026	29831	38411
YS48-220-S1	57348	28690	35200				64797	32094	42182			
YS48-245-S1	57348	28690	35200	53961	25592	31346						
YS48-220-S2	69602	34788	42618							88958	45964	64256
YS48-245-S2	69602	34788	42618				81236	41330	56533			
YS48-270-S2	69602	34788	42618	64371	31211	39668						
YS48-245-S3	82680	41743	51976							116351	60847	86473
YS48-270-S3	82680	41743	51976				102123	52310	72245			
YS48-290-S3	82680	41743	51976	73638	35219	43760						
YS60-220-S1	95891	47761	58177							114382	58802	81624
YS60-245-S1	95891	47761	58177				101957	51169	68609			
YS60-270-S1	95891	47761	58177	86201	41893	53442						
YS60-245-S2	112369	57081	71764							146287	74894	103360
YS60-270-S2	112369	57081	71764				129778	64988	89820			
YS60-320-S2	112369	57081	71764	133547	67250	90620						

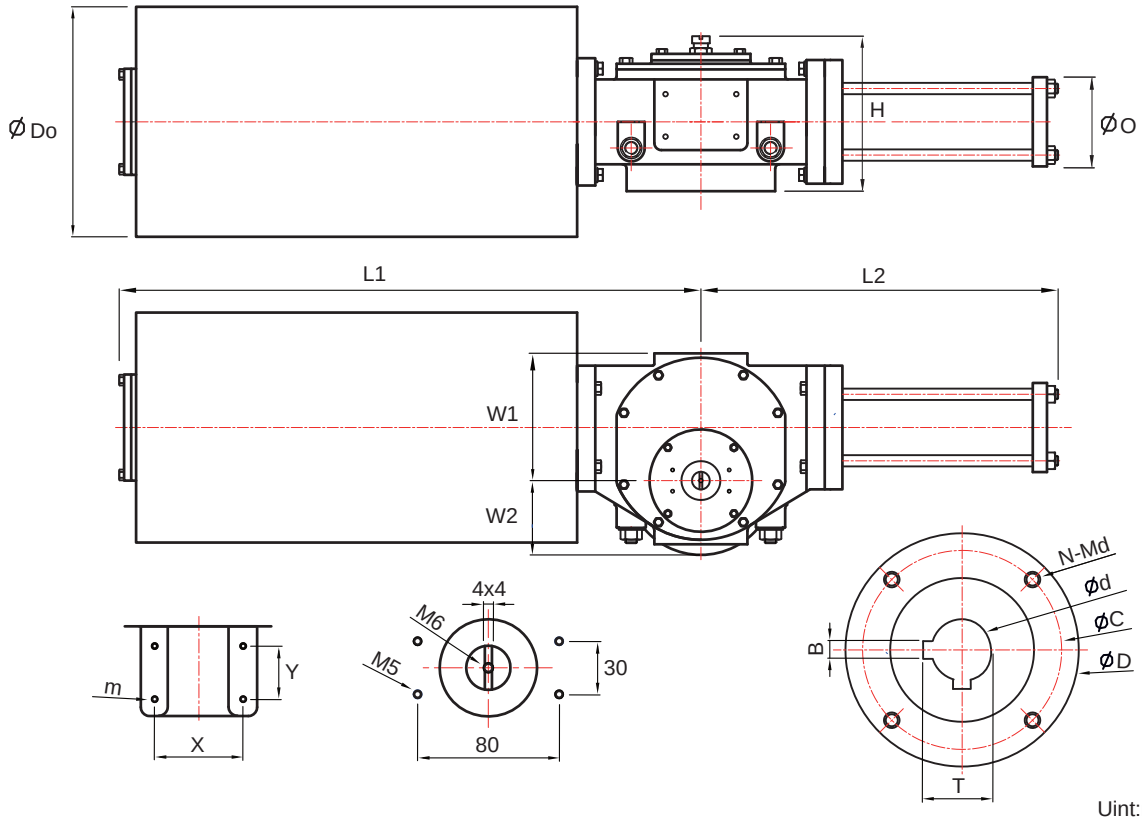
Hydraulic pressure
Up to 135 bar (1950 psi)

Torque output
Double Acting Up to 293,807 N.m (2,598,429lbf- in)
Single Acting Up to 71,764 N.m (634,680lbf- in)

Temperature ranges
· Standard -20º C -80 ºC (-4ºF-176ºF)
· Low Temperature -40 ºC - 80 ºC(-40ºF-176ºF)
· High Temperature -20 ºC - 120 ºC(-4ºF-392ºF)
Other range of temperatures under request

YS-Series Hydraulic Actuator

Spring Return Acting Dimension



Uint:mm

Model	D	C	d	f	F	N	Md	T	B	m	X	Y	L1	L2	H	W1	W2
YS10	□100	102	28	3	70	4	M10	31.3	8				465	345	184	123	82
YS12	□115	125	36	3	85	4	M12	39.3	10				515	398	190	143	87
YS14	□130	140	48	4	100	4	M16	51.8	14	M6	100	60	619	455	201	155	89
YS16	210	165	60	4	130	4	M20	64.4	18	M6	100	60	775	530	217	180	105
YS25	300	254	72	5	200	8	M16	76.9	20	M6	100	60	940	610	250	222	150
YS30	350	298	98	5	230	8	M20	104.4	28	M8	140	70	1165	730	302	262	175
YS35	415	356	160	6	260	8	M30	169.4	40	M8	140	70	1511	855	357	320	208
YS40	475	406	180	6	300	8	M36	190.4	45	M8	140	70	1760	990	392	377	238
YS48	560	483	200	8	370	12	M36	210.4	45	M8	140	70	2305	1150	465	450	280
YS60	686	603	280	8	470	20	M36	292.4	63	M8	140	70	3100	1420	465	545	343

Model	Do	O	Port
YS10-40-S1	168	85	1/4”
YS10-50-S2	168	92	1/4”
YS10-60-S3	219	100	1/4”
YS12-50-S1	219	92	1/4”
YS12-60-S1	219	100	1/4”
YS12-50-S2	273	92	1/4”
YS12-60-S2	273	100	1/4”
YS12-70-S2	273	110	1/4”
YS14-60-S1	273	100	1/4”
YS14-70-S1	273	110	1/4”
YS14-60-S2	273	100	1/4”
YS14-70-S2	273	110	1/4”
YS14-70-S3	325	110	1/4”
YS14-80-S3	325	130	1/4”
YS14-100-S3	325	145	3/8”

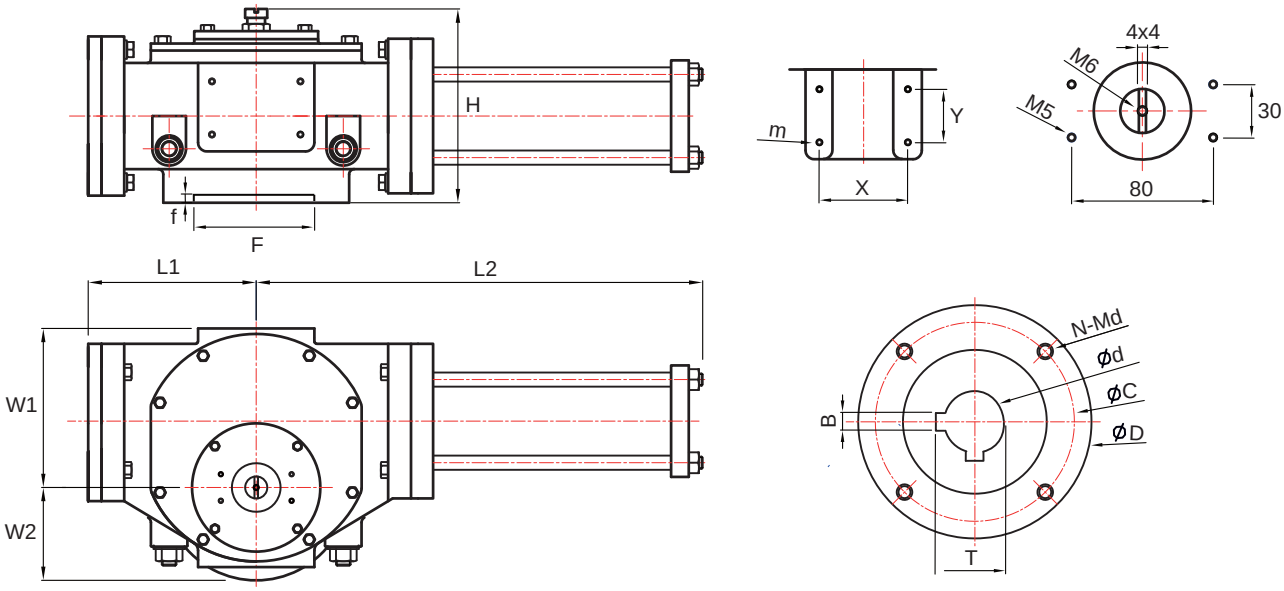
Model	Do	O	Port
YS16-70-S1	273	110	1/4”
YS16-80-S1	273	130	1/4”
YS16-90-S1	273	138	3/8”
YS16-80-S2	325	130	1/4”
YS16-90-S2	325	138	3/8”
YS16-100-S2	325	145	3/8”
YS16-80-S3	325	130	1/4”
YS16-100-S3	325	145	3/8”
YS16-110-S3	273	155	3/8”
YS25-90-S1	325	110	3/8”
YS25-100-S1	325	130	3/8”
YS25-110-S1	325	138	3/8”
YS25-100-S2	377	130	3/8”
YS25-110-S2	377	138	3/8”
YS25-120-S2	377	145	3/8”
YS25-100-S3	426	130	3/8”
YS25-120-S3	426	145	3/8”
YS25-140-S3	426	155	3/8”

Model	Do	O	Port
YS30-110-S1	426	155	3/8”
YS30-120-S1	426	170	3/8”
YS30-140-S1	426	185	3/8”
YS30-120-S2	508	170	3/8”
YS30-130-S2	508	180	3/8”
YS30-150-S2	508	195	3/8”
YS30-130-S3	508	180	3/8”
YS30-150-S3	508	195	3/8”
YS30-170-S3	508	270	1/2”
YS35-130-S1	508	180	3/8”
YS35-150-S1	508	195	3/8”
YS35-170-S1	508	270	1/2”
YS35-150-S2	630	195	1/2”
YS35-170-S2	630	270	1/2”
YS35-190-S2	630	290	1/2”
YS35-170-S3	630	270	1/2”
YS35-190-S3	630	290	1/2”
YS35-220-S3	630	320	1/2”

Model	Do	O	Port
YS40-170-S1	630	270	1/2”
YS40-190-S1	630	290	1/2”
YS40-220-S1	630	320	1/2”
YS40-190-S2	730	290	1/2”
YS40-220-S2	730	320	1/2”
YS40-245-S2	730	345	1/2”
YS48-190-S1	730	290	1/2”
YS48-220-S1	730	320	1/2”
YS48-245-S1	730	345	1/2”
YS48-220-S2	730	320	1/2”
YS48-245-S2	730	345	1/2”
YS48-270-S2	730	370	1/2”
YS48-245-S3	730	345	1/2”
YS48-270-S3	730	370	1/2”
YS48-290-S3	730	390	1/2”
YS60-220-S1	730	345	1/2”
YS60-245-S1	730	370	1/2”
YS60-270-S1	730	420	1/2”
YS60-245-S2	730	320	1/2”
YS60-270-S2	730	345	1/2”
YS60-320-S2	730	370	1/2”

YS-Series Hydraulic Actuator

Double Acting Dimension



Uint:mm

Mode	D	C	d	f	F	N	Md	T	B	m	X	Y	L1	L2	H	W1	W2	Port
YS10	□100	102	28	3	70	4	M10	31.3	8				124	345	184	123	82	1/4”
YS12	□115	125	36	3	85	4	M12	39.3	10				140	398	190	143	87	1/4”
YS14	□130	140	48	4	100	4	M16	51.8	14	M6	100	60	170	455	201	155	89	1/4”
YS16	210	165	60	5	130	4	M20	64.4	18	M6	100	60	194	530	217	180	105	1/4”
YS25	300	254	72	5	200	8	M16	76.9	20	M6	100	60	226	610	250	222	150	3/8”
YS30	350	298	98	6	230	8	M20	104.4	28	M8	140	70	275	730	302	262	175	3/8”
YS35	415	356	160	6	260	8	M30	169.4	40	M8	140	70	332	855	357	320	208	3/8”
YS40	475	406	180	8	300	8	M36	190.4	45	M8	140	70	402	990	392	377	238	1/2”
YS48	560	483	200	8	370	12	M36	210.4	45	M8	140	70	475	1150	465	450	280	1/2”
YS60	686	603	280		470	20	M36	292.4	63	M8	140	70	568	1420	465	545	343	1/2”

*YS35-170-DA Pressure Port 1/2”

Order Information

YS14 - 60 - S1 - FC

- Actuator Size:YS10~YS60
- Cylinder Size:40~320
- Actuator Type:DA-Double Acting
  S1/S2/S3-Spring Return
- Fail Position(Spring Return Type Only):
  FC-Fail Close / FO-Fail Open

BELEF PNEUMATIC ACTUATOR CO,.LTD.

Add: No.B6,8-1,xinshi road qianzhou industrial zone wuxi china

Tel:+86-510-8338 6336 / 8338 3668 Fax:+86-510-8339 1899

E-mail:info@belef.cn