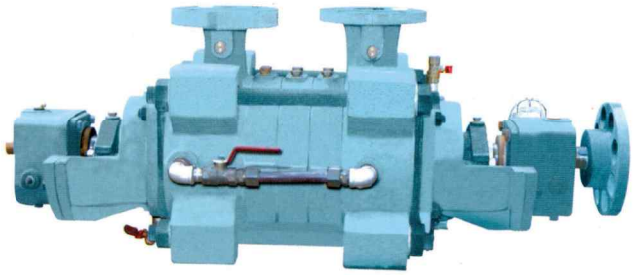
MX

Horizontal, Multi-Stage, Turbine Pumps

횡축, 다단 터빈 펌프



적용 분야 / Application ranges

청정, 저온 또는 고온 액체의 펌핑용으로서
01. 용수 플랜트
02. 난방(가열) 및 보일러 플랜트
03. 다양한 산업분야의 가압 플랜트
04. 응축수 회수용 등에 사용된다.

For pumping clean, cold or hot liquids
01. In water plants
02. In heating and boiler plants
03. In booster plants of various industrial branches
04. For condensate recovery

운전 데이터 / Operating data

01. 유량 : 150㎥/hr 까지
02. 양정 : 750m 까지
03. 운전 압력 : 80bar 까지
04. 운전 온도 : -20℃에서 +180 까지

01. Capacity : up to 150m^3/hr
02. head : up to 750m
03. Operating pressure : up to 80bar
04. Operating Temperature : up to -20℃ up to +180℃

기초자료 / Principle Particulars

Pump Type	Flange Position		Flange Rating		Flange Face	Thrust Balancing Mechanism
	Suction	Discharge	Suction	Discharge		
MX40	Side/Top	Top	KS 10K	KS 63K	R.F	Balance Disc / Balance Drum
MX50	Side/Top	Top	KS 10K	KS 63K	R.F	Balance Disc / Balance Drum
MX65	Side/Top	Top	KS 10K	KS 63K	R.F	Balance Disc / Balance Drum
MX80	Side/Top	Top	KS 10K	KS 63K	R.F	Balance Disc / Balance Drum

형식 표시 방법 / Type nomenclature

MX 40-7S

- MX : 씨리즈(Series)
- 40 : 크기/토출공칭 구경(Size/Nominal Dia. of Discharge Nozzle)
- 7S : 단수(Number of stage)

설계 / Design

수평, 원주방향 분할 stage-casing 펌프 :
반경류 다단 펌프 :
수력학적 바란싱 장치에 의한 축추력 상쇄 (Disc or Drum)

Horizontal, radially split stage-casing pump :
radial impellers single-flow, multi-stage:
axial thrust compensated by hydraulic balancing device
(Disc or Drum)

케이싱 부 / Casing Parts

케이싱 부는 O-Ring과 외부의 타이볼트에 의해 밀폐된다.
The casing parts are sealed against each other by O-Ring and secured by external tie bolts.

흡토출 위치 / Branch Position

일반적으로 토출은 상향이다. 흡입은 상향, 좌향 또는 우향 모두 가능하다.
Normally the discharge branch is positioned upwards for all size and the suction branch can be positioned upwards, left or right.

축추력 상쇄 / Compensation of Axial Thrust

편흡입 임펠러에 의해 발생한 축추력은 수력학적 바란싱 장치에 의해 상쇄된다.
바란싱 디스크는 축추력을 완전히 상쇄시킨다. 바란싱 드럼이 사용되었다면 잔류 축추력은 antifriction bearing에 의해 흡수된다.
The axial thrust produced by the single suction impellers is compensated by a hydraulic balancing device.
A design with balancing disc ensure a complete compensation. If a balancing drum is used the residual thrust is absorbed by antifriction bearings.

베어링과 윤활 / Bearing and Lubrication

베어링 윤활방식은 오일 윤활이다.
In the case of series MX the shaft runs in oil lubricated antifriction bearings.

축 밀봉 / Shaft Sealing

일반적으로 패킹이 사용된다. 바란싱 장치내에서 압력이 감소되기 때문에 흡입 압력에 대해서 밀봉하면 된다. 액체의 온도가 110℃ 이상 되면 그랜드를 냉각하여야 하고, 130℃이상이면 스터핑 박스를 추가적으로 냉각하여야 한다. 메카니칼 씰은 바란스 드럼 타입일 때 사용가능하다. 메카니칼 씰은 항상 바란스 씰을 사용하여야 한다.
Normally packed stuffing boxes are used as shaft sealings. Due to the pressure reduction in the balancing device the discharge end shaft seal only seals against the suction pressure. For liquid temperatures above 110℃ the stuffing box gland is cooled. above 130℃ the stuffing box area is cooled in addition.
Mechanical seal are only used for balance drum type. If mechanical seal are only used for balance drum type.
If mechanical seals are installed balanced seal have always to be used.

플랜지, 구동기, 회전방향 / Flanges, Drive, Direction of Rotation

일반적으로 플랜지 규격은 KS이고, ANSI에 따를 수 있다.
펌프는 흡입측에서 구동된다.
회전방향은 구동기측에서 보아 시계방향이다.

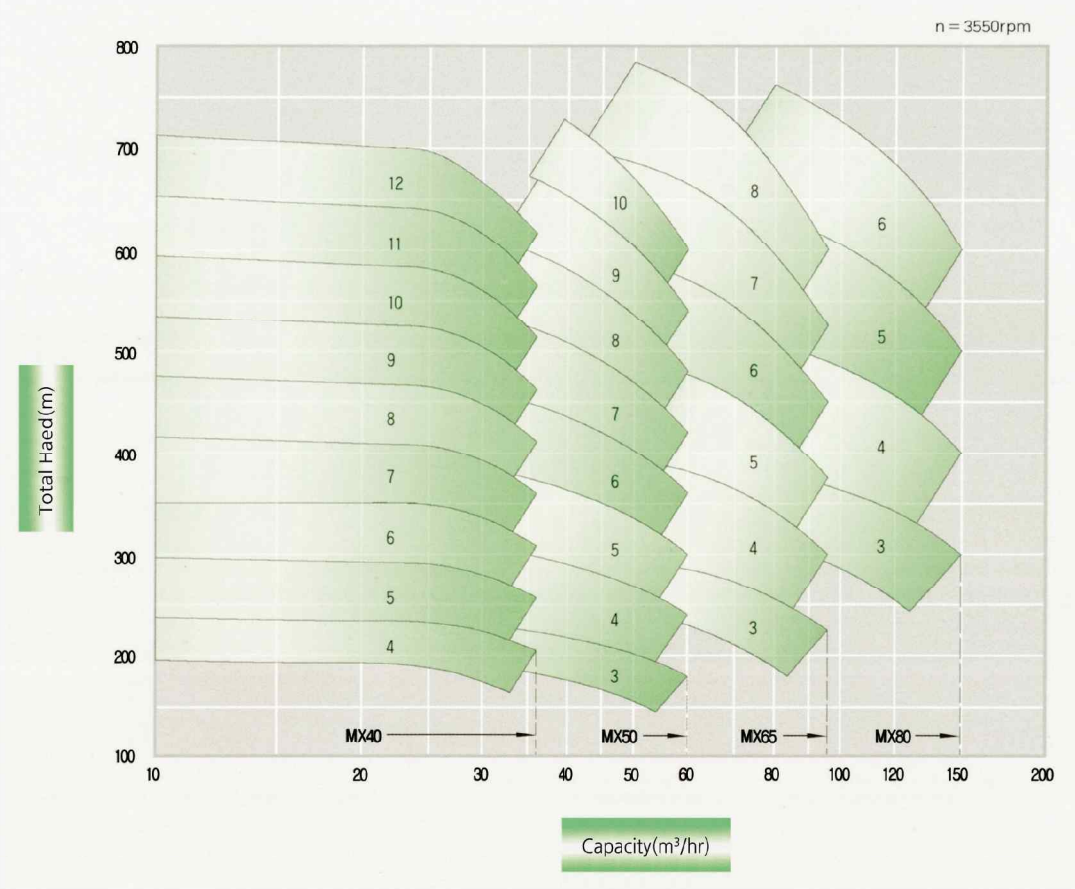
※상기 사양범위를 초과하는 대형 펌프도 제작합니다.

Normally the flanges are rated to KS but can also be supplied according to ANSI.
The pumps are driven on the suction end.
The direction of rotation is C.W looking form drive end.

*The out of the above range can be supplied according to customer's order placement

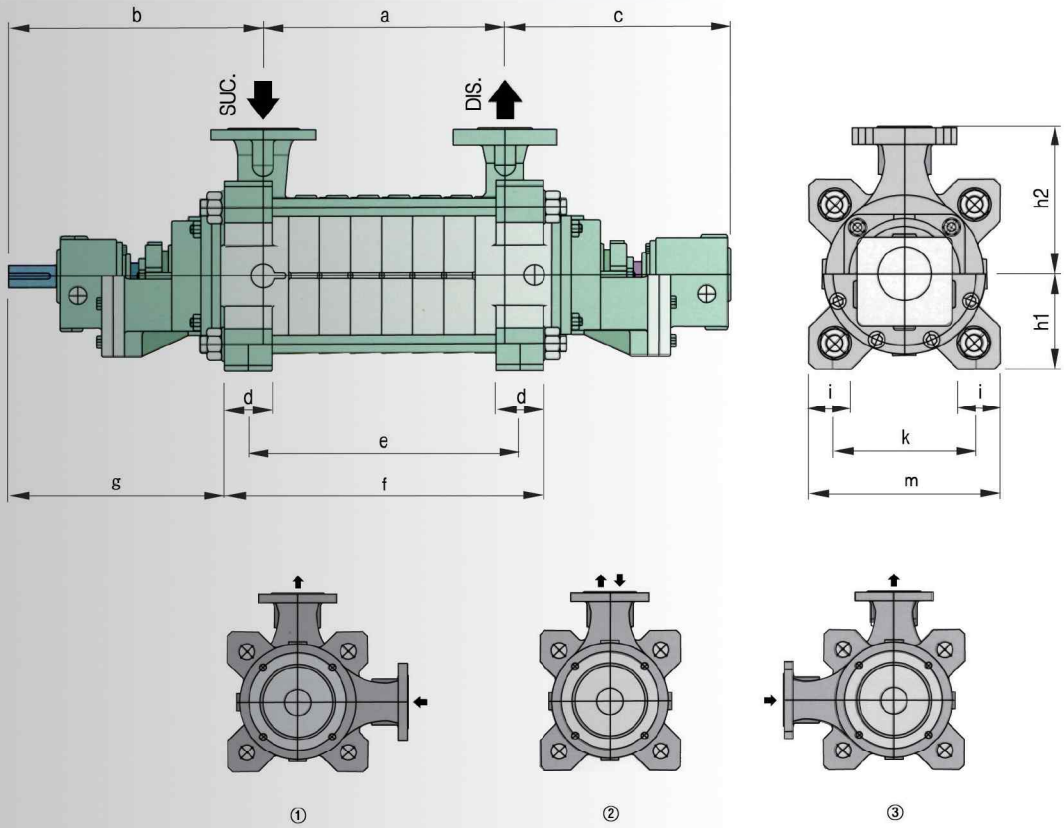
MX

선정표(60HZ) / Performance Range(60Hz)



* The out of the above range can be supplied according to customer's order placement.

외형치수도 / Outline dimensions



Flange position when viewed from coupling side

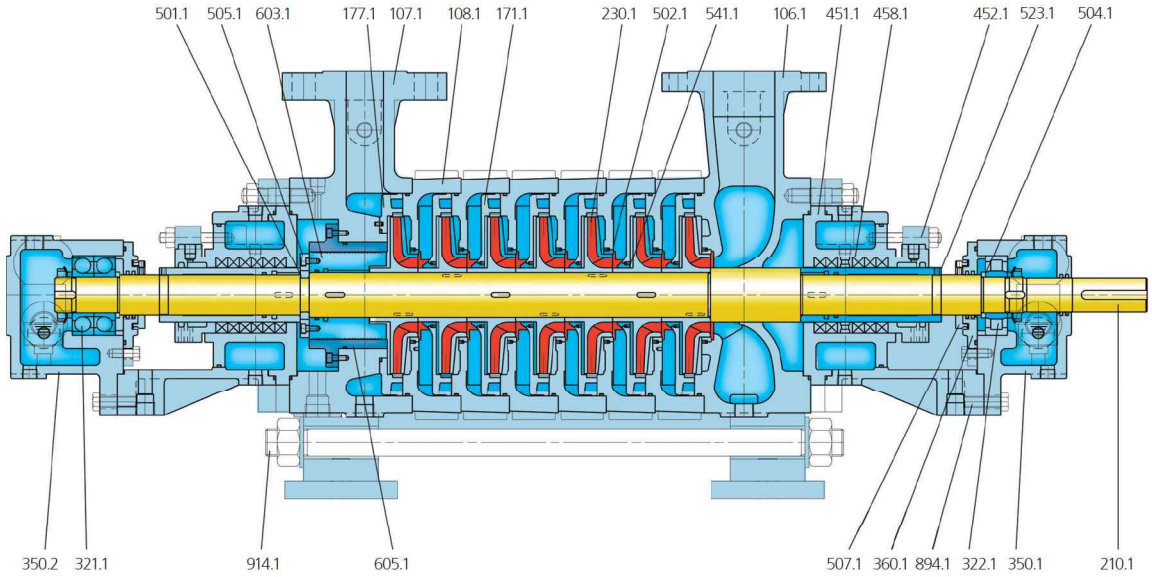
TYPE	BRANCHES		NUMBER OF STAGE	PUMP DIMENSION(MM)											
	Ds	Dd		a	b	c	d	e	f	g	h1	h2	i	k	m
MX 40	Ø 65	Ø 40	4	249	429	382	80	299	379	364	160	250	71	240	320
			5	301				351	431						
			6	353				403	483						
			7	405				455	535						
			8	457				507	587						
			9	509				559	639						
			10	561				611	691						
			11	613				663	743						
			12	665				715	795						
MX 50	Ø 80	Ø 50	3	278	540	490	100	338	438	460	185	300	85	270	370
			4	346				406	506						
			5	414				474	574						
			6	482				542	642						
			7	550				610	710						
			8	618				678	778						
			9	686				746	846						
			10	754				814	914						
MX 65	Ø 100	Ø 65	3	295	560	520	100	345	445	364	160	250	71	240	320
			4	370				420	520						
			5	445				495	595						
			6	520				570	670						
			7	595				645	745						
			8	670				720	820						
MX 80	Ø 125	Ø 80	3	335	580	550	100	385	485	500	215	400	100	330	470
			4	420				470	570						
			5	505				555	665						
			6	590				640	740						

• 치수는 참고용임

MX

조립 단면도 / Sectional drawing

● Balance Drum Type



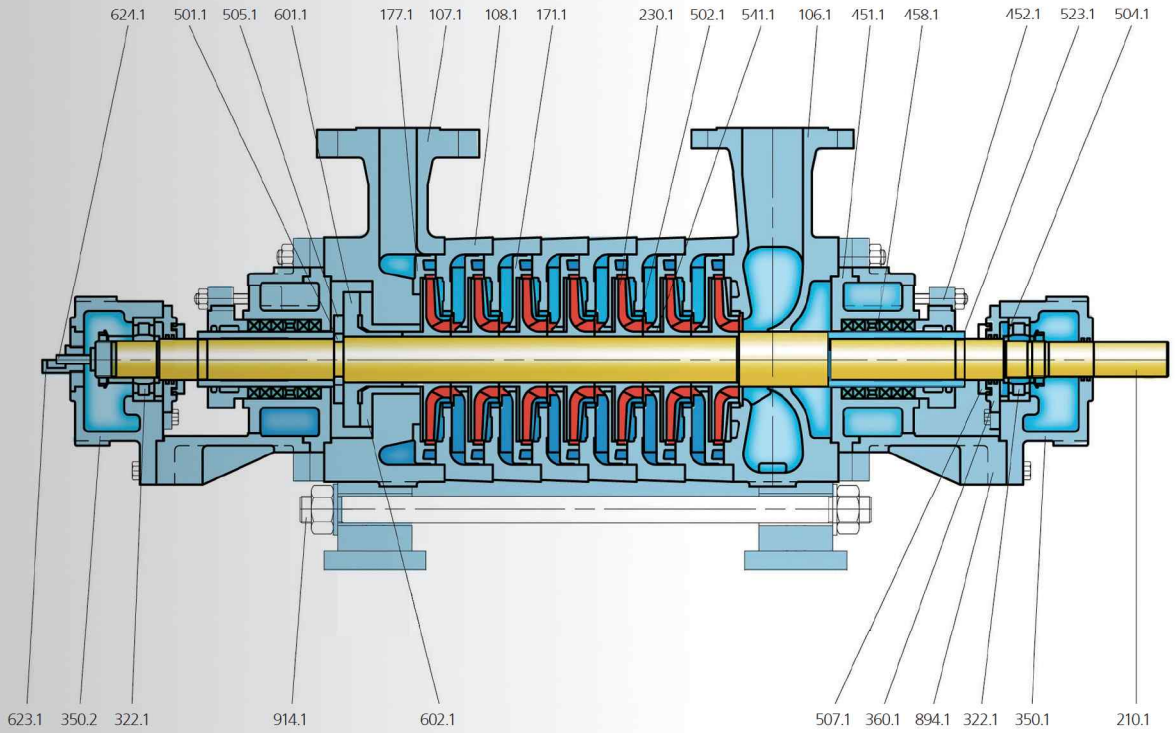
• S: Number of Stage

NO.	PART NAME	MATERIAL				Q'ty
		CLASS 1	CLASS 2	CLASS 3	CLASS 4	
106.1	SUCTION CASING	GCD 450	SCPH 2	SSC 1	SSC 14	1
107.1	DISCHARGE CASING	GCD 450	SCPH 2	SSC 1	SSC 14	1
108.1	STAGE CASING	GCD 450	SCPH 2	SSC 1	SSC 14	S-1
171.1	DIFFUSER	GCD 450	SSC 1	SSC 1	SSC 14	S-1
177.1	DIFFUSER (LAST STAGE)	GCD 450	SSC 1	SSC 1	SSC 14	1
210.1	SHAFT	SM 45C	STS 420J2	STS 420J2	STS 420J2	1
230.1	IMPELLER	SSC 13	SSC 1	SSC 1	SSC 14	S
321.1	BALL BEARING	STB 2	STB 2	STB 2	STB 2	1SET
322.1	ROLLER BEARING	STB 2	STB 2	STB 2	STB 2	1
350.1	BEARING HOUSING(SUC.)	GC200	GC 200	GC 200	GC 200	1
350.2	BEARING HOUSING(DIS.)	GC 200	GC 200	GC 200	GC 200	1
360.1	BEARING COVER	GC 200	GC 200	GC 200	GC 200	2
451.1	STUFFING BOX HOUSING	GCD 450	SCPH 2	SSC 1	SSC 14	2

NO.	PART NAME	MATERIAL				Q'ty
		CLASS 1	CLASS 2	CLASS 3	CLASS 4	
452.1	PACKING GLAND	GC 200	SSC 14	SSC 14	SSC 14	2
458.1	LANTERN RING	CAC 406	SSC 1	SSC1	SSC 14	2
501.1	SPLIT RING	STS 420J2	STS 420J2	STS 420J2	STS 420J2	1
502.1	CASING WEAR RING	SSC 13	SSC 1	SSC 1	SSC 14	S
504.1	SPACER RING	STS 420J2	STS 420J2	STS 420J2	STS 420J2	1
505.1	COLLAR RING	STS 420J2	STS 420J2	STS 420J2	STS 420J2	1
507.1	THROWER	CAC 406	CAC 406	CAC 406	CAC 406	2
523.1	SHAFT SLEEVE	STS 420J2	STS 420J2	STS 420J2	STS 420J2	2
541.1	INTERSTAGE BUSH	CAC 406	SSC1	SSC1	SSC14	S-1
603.1	BALANCE DRUM	STS 410+HT	STS 410+HT	STS 410+HT	STS 410+HT	1
605.1	BALANCE DRUM LINER	STS 410+HT	STS 410+HT	STS 410+HT	STS 410+HT	1
894.1	BRACKET	GC 200	GC 200	GC 200	GC 200	2
914.1	TIE BOLT	SCM 440	SCM 440	SCM 440	SCM 440	4

조립 단면도 / Sectional drawing

● Balance Disc Type



NO.	PART NAME	MATERIAL				Q'ty
		CLASS 1	CLASS 2	CLASS 3	CLASS 4	
106.1	SUCTION CASING	GCD 450	SCPH 2	SSC 1	SSC 14	1
107.1	DISCHARGE CASING	GCD 450	SCPH 2	SSC 1	SSC 14	1
108.1	STAGE CASING	GCD 450	SCPH 2	SSC 1	SSC 14	S-1
171.1	DIFFUSER	GCD 450	SSC 1	SSC 1	SSC 14	S-1
177.1	DIFFUSER (LAST STAGE)	GCD 450	SSC 1	SSC 1	SSC 14	1
210.1	SHAFT	SM 45C	STS 420J2	STS 420J2	STS 420J2	1
230.1	IMPELLER	GCD 450	SSC 1	SSC 1	SSC 14	S
322.1	ROLLER BEARING	STB 2	STB 2	STB 2	STB 2	2
350.1	BEARING HOUSING(SUC.)	GC200	GC 200	GC 200	GC 200	1
350.2	BEARING HOUSING(DIS.)	GC 200	GC 200	GC 200	GC 200	1
360.1	BEARING COVER	GC 200	GC 200	GC 200	GC 200	2
451.1	STUFFING BOX HOUSING	GCD 450	SCPH 2	SSC 1	SSC 14	2
452.1	PACKING GLAND	GC 200	SSC 14	SSC 14	SSC 14	2
458.1	LANTERN RING	CAC 406	SSC 1	SSC 1	SSC 14	2

NO.	PART NAME	MATERIAL				Q'ty
		CLASS 1	CLASS 2	CLASS 3	CLASS 4	
501.1	SPLIT RING	STS 420J2	STS 420J2	STS 420J2	STS 420J2	1
502.1	CASING WEAR RING	CAC 406	SSC 1	SSC 1	SSC 14	S
504.1	SPACER RING	STS 420J2	STS 420J2	STS 420J2	STS 420J2	1
505.1	COLLAR RING	STS 420J2	STS 420J2	STS 420J2	STS 420J2	1
507.1	THROWER	CAC 406	CAC 406	CAC 406	CAC 406	2
523.1	SHAFT SLEEVE	STS 420J2	STS 420J2	STS 420J2	STS 420J2	2
541.1	INTERSTAGE BUSH	CAC 406	SSC 1	SSC 1	SSC 14	S-1
601.1	BALANCE DISC	STS 410+HT	STS 410+HT	STS 410+HT	STS 410+HT	1
602.1	BALANCE SEAT	STS 410+HT	STS 410+HT	STS 410+HT	STS 410+HT	1
623.1	INDICATOR OF SHAFT POSITION	CAC 406	CAC 406	CAC 406	CAC 406	1
624.1	ACTUATING PIN FOR INDICATOR	STS 420J2	STS 420J2	STS 420J2	STS 420J2	1
894.1	BRACKET	GC 200	GC 200	GC 200	GC 200	2
914.1	TIE BOLT	SCM 440	SCM 440	SCM 440	SCM 440	4

• S: Number of Stage

MX