



**30HXC 080-375**

**30GX 082-358**

Screw Compressor

Water-Cooled Liquid Chillers and

Air-Cooled Liquid Chillers

30HXC Nominal cooling capacity 290-1325 kW

30GX Nominal cooling capacity 285-1205 kW

50 Hz



**GLOBAL CHILLER**



**Installation, operation and maintenance instructions**



Quality Management System Approval

## 4 - PHYSICAL DATA 30HXC

30HXC		080	090	100	110	120	130	140	155	175	190	200	230	260	285	310	345	375	
<b>Net cooling capacity</b>	kW	292	321	352	389	426	464	514	550	607	663	716	822	918	996	1119	1222	1326	
<b>Operating weight</b>	kg	2447	2462	2504	2650	2846	2861	2956	2971	3283	3438	4090	4705	4815	4985	5760	5870	6105	
<b>Refrigerant</b>		HFC-134a																	
<b>Circuit A/B</b>	kg	39/36	39/36	37/32	38/38	57/55	59/50	56/50	59/52	58/61	60/70	110/58	118/63	120/75	120/75	108/110	110/110	110/120	
<b>Oil</b>		Polyolester oil CARRIER SPEC. PP 47-32																	
<b>Circuit A/B</b>	l	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	30/15	30/15	30/15	30/15	30/30	30/30	30/30	
<b>Compressors</b>		Hermetic twin-screw Power <sup>3</sup>																	
<b>Circ.A, nom. size per compressor**</b>		39	46	46	56	56	66	80	80	80	80+	66/56	80/56	80/80	80+/80+80/66	80/80	80+/80+		
<b>Circ.B, nom. size per compressor**</b>		39	39	46	46	56	56	56	66	80	80+	66	80	80	80+	80/66	80/80	80+/80+	
<b>Control type</b>		PRO-DIALOG Plus control																	
<b>Number of capacity steps</b>		6	6	6	6	6	6	6	6	6	6	8	8	8	8	10	10	10	
<b>Minimum capacity</b>	%	19	19	21	19	21	19	17	19	21	21	14	14	14	14	10	10	10	
<b>Evaporator</b>		Shell and tube type, with internally finned copper tubes																	
<b>Net water volume</b>	l	65	65	73	87	81	81	91	91	109	109	140	165	181	181	203	229	229	
<b>Water connections</b>		Factory-supplied flat flange, to be welded on site																	
<b>Inlet and outlet</b>	in.	4	4	4	5	5	5	5	5	5	5	6	6	6	6	8	8	8	
<b>Drain and vent (NPT)</b>	in.	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	
<b>Max. water-side operating pressure</b>	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
<b>Condensers</b>		Shell and tube type, with internally finned copper tubes																	
<b>Net water volume</b>	l	58	58	58	58	92	92	110	110	132	132	162	208	208	208	251	251	251	
<b>Water connections</b>		Factory-supplied flat flange, to be welded on site																	
<b>Inlet and outlet</b>	in.	5	5	5	5	5	5	5	5	6	6	6	6	6	6	8	8	8	
<b>Drain and vent (NPT)</b>	in.	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	
<b>Max. water-side operating pressure</b>	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	

\* Standardised Eurovent conditions: evaporator entering/leaving water temperatures = 12°C/7°C, condenser water entering/leaving water temperatures = 30°C/35°C  
 Net cooling capacity: Gross cooling capacity minus the water pump heat against the internal evaporator pressure drop.

\*\* The compressor size corresponds to the nominal capacity in tons (1 ton = 3.517 kW).

## 5 - ELECTRICAL DATA 30HXC

30HXC		080	090	100	110	120	130	140	155	175	190	200	230	260	285	310	345	375	
<b>Power circuit</b>		V-ph-Hz 400-3-50																	
<b>Nominal power supply*</b>		V 360-440																	
<b>Voltage range</b>																			
<b>Control circuit supply</b>		The control circuit is supplied via the factory-installed transformer																	
<b>Nominal power input*</b>	kW	59	67	74	83	88	99	112	123	135	146	156	179	201	219	245	274	298	
<b>Nominal current drawn *</b>	A	98	111	124	139	148	166	186	204	226	242	259	291	335	367	408	456	498	
<b>Max. power input**</b>	kW	76	83	91	101	111	121	135	145	158	181	187	214	237	272	290	316	362	
<b>Circuit A</b>	kW	-	-	-	-	-	-	-	-	-	-	121	135	158	181	145	158	181	
<b>Circuit B</b>	kW	-	-	-	-	-	-	-	-	-	-	66	79	79	91	145	158	181	
<b>Cosine phi, unit at full load</b>		0.87	0.87	0.87	0.87	0.87	0.86	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	
<b>Max. current drawn (Un - 10%***)</b>	A	138	152	166	184	202	221	245	264	288	330	341	389	432	495	528	576	660	
<b>Circuit A</b>	A	-	-	-	-	-	-	-	-	-	-	221	245	288	330	264	288	330	
<b>Circuit B</b>	A	-	-	-	-	-	-	-	-	-	-	120	144	144	165	264	288	330	
<b>Maximum current drawn (Un)***</b>	A	125	138	151	167	184	201	223	240	262	300	310	354	393	450	480	524	600	
<b>Circuit A</b>	A	-	-	-	-	-	-	-	-	-	-	201	223	262	300	240	262	300	
<b>Circuit B</b>	A	-	-	-	-	-	-	-	-	-	-	109	131	131	150	240	262	300	
<b>Max. starting current, std. unit (Un)****</b>	A	172	197	209	235	252	283	318	335	357	420	806	938	977	1156	1064	1108	1306	
<b>Circuit A***</b>	A	-	-	-	-	-	-	-	-	-	-	697	807	846	1006	824	846	1006	
<b>Circuit B***</b>	A	-	-	-	-	-	-	-	-	-	-	605	715	715	856	824	846	1006	
<b>Max. starting current/max. current draw ratio, unit</b>		1.37	1.42	1.39	1.41	1.37	1.41	1.43	1.40	1.36	1.40	2.60	2.65	2.49	2.57	2.22	2.12	2.18	
<b>Max. starting current/max. current draw ratio, circuit A</b>		-	-	-	-	-	-	-	-	-	-	3.47	3.62	3.23	3.35	3.43	3.23	3.35	
<b>Max. starting current/max. current draw ratio, circuit B</b>		-	-	-	-	-	-	-	-	-	-	5.55	5.46	5.46	5.71	3.43	3.23	3.35	
<b>Max. starting current - reduced current start (Un)****</b>	A	std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	601	643	682	760	769	813	910	
<b>Circuit A</b>	A	std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	492	512	551	610	529	551	610	
<b>Circuit B</b>	A	std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	330	370	370	385	529	551	610	
<b>Max. starting current - red. current start/ max. current draw ratio, unit</b>		std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	1.94	1.82	1.74	1.69	1.60	1.55	1.52	
<b>Circuit A</b>		std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	2.45	2.30	2.10	2.03	2.20	2.10	2.03	
<b>Circuit B</b>		std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	3.03	2.83	2.83	2.57	2.20	2.10	2.03	
<b>Three-phase short circuit holding current</b>	kA	25	25	25	25	25	25	25	25	25	25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
<b>Circuit A</b>	kA	-	-	-	-	-	-	-	-	-	-	25	25	25	25	25	25	25	
<b>Circuit B</b>	kA	-	-	-	-	-	-	-	-	-	-	15	15	15	15	25	25	25	
<b>Customer standby capacity, unit or circ. A, for evaporator/water pump connections†</b>	kW	8	8	8	11	11	11	15	15	15	15	15	18	18	30	30	30	30	

\* Standard Eurovent conditions: Evaporator entering/leaving water temperature 12°C and 7°C. Condenser entering/leaving water temperature 30°C/35°C.

\*\* Power input, compressor, at unit operating limits (evaporator water entering/leaving temperature = 15°C/10°C, condenser entering/leaving water temperature = 40°C/45°C) and a nominal voltage of 400 V (data given on the unit name plate).

\*\*\* Maximum unit operating current at maximum unit power input.

\*\*\*\* Maximum instantaneous starting current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced starting current of the largest compressor)

† Current and power inputs not included in the values above.

N/A Not available

## Compressors

Reference	Size	I nom.	MHA	LRA	LRA (Y)	LRA (S) 1 cp.	LRA (S) 2 cp.
06NW2146S7N	39	48	69	344	109	125	-
06NW2174S7N	46	58	83	423	134	154	-
06NW2209S7N	56	71	101	506	160	260	350
06NW2250S7N	66	87	120	605	191	330	400
06NW2300S5N	80	104	144	715	226	370	420
06NW2300S5E	80+	111	165	856	270	385	460

### Legend:

- 06NW - Compressor for water-cooled units
- N - Non-economized compressor
- E - Economized compressor
- INOM - Average current draw of the compressor at Eurovent conditions
- MHA - Must hold amperes (maximum operating current) at 360 V
- LRA - Locked rotor current with across-the-line start
- LRA (Y) - Locked rotor current at reduced current (star/delta start-up mode)
- LRA (S) 1 cp. - Start-up with reduced current with electronic starter (start-up duration 3 seconds max.) for one compressor per circuit
- LRA (S) 2 cp. - Start-up with reduced current with electronic starter (start-up duration 3 seconds max.) for two compressors per circuit

## 6 - ELECTRICAL DATA FOR UNITS WITH HIGH CONDENSING TEMPERATURES 30HXC 150 and 150A Options

30HXC		080	090	100	110	120	130	140	155	175	190	200	230	260	285	310	345	375	
<b>Power circuit</b>																			
Nominal power supply (Un)	V-ph-Hz	400-3-50																	
Voltage range	V	360-440																	
<b>Control circuit supply</b>																			
The control circuit is supplied via the factory-installed transformer																			
<b>Max. power input**</b>		kW	104	117	131	145	159	174	194	211	230	263	271	310	345	395	422	460	526
Circuit A	kW	-	-	-	-	-	-	-	-	-	-	-	175	195	230	263	211	230	263
Circuit B	kW	-	-	-	-	-	-	-	-	-	-	-	96	115	115	132	211	230	263
<b>Max. current drawn (Un - 10%)***</b>		A	190	215	240	265	290	320	355	385	420	480	495	564	630	720	770	840	960
Circuit A	A	-	-	-	-	-	-	-	-	-	-	-	320	355	420	480	385	420	480
Circuit B	A	-	-	-	-	-	-	-	-	-	-	-	175	210	210	240	385	420	480
<b>Maximum current drawn (Un)***</b>		A	173	195	218	241	264	291	323	350	382	436	450	514	573	655	700	764	873
Circuit A	A	-	-	-	-	-	-	-	-	-	-	-	291	323	382	436	350	382	436
Circuit B	A	-	-	-	-	-	-	-	-	-	-	-	159	191	191	218	350	382	436
<b>Max. starting current, std. unit (Un)****</b>		A	277	312	335	379	402	435	519	546	578	618	1251	1549	1608	1701	1735	1799	1920
Circuit A****	A	-	-	-	-	-	-	-	-	-	-	-	1092	1358	1417	1483	1385	1417	1483
Circuit B****	A	-	-	-	-	-	-	-	-	-	-	-	960	1226	1226	1265	1385	1417	1483
<b>Max. starting current/max. current draw ratio, unit</b>			1.61	1.60	1.54	1.57	1.52	1.49	1.61	1.56	1.51	1.42	2.78	3.02	2.81	2.60	2.48	2.36	2.20
Max. starting current/max. current draw ratio, circuit A			-	-	-	-	-	-	-	-	-	-	3.75	4.21	3.71	3.40	3.96	3.71	3.40
Max. starting current/max. current draw ratio, circuit B			-	-	-	-	-	-	-	-	-	-	6.03	6.42	6.42	5.80	3.96	3.71	3.40
<b>Max. starting current - reduced current start (Un)****</b>		A	std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Three-phase short circuit holding current</b>		kA	25	25	25	25	25	25	25	25	25	25	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Circuit A	kA	-	-	-	-	-	-	-	-	-	-	-	25	25	25	25	25	25	25
Circuit B	kA	-	-	-	-	-	-	-	-	-	-	-	15	15	15	15	25	25	25
<b>Customer standby capacity, unit or circ. A, for evaporator water pump connections†</b>		kW	8	8	8	11	11	11	15	15	15	15	15	18	18	30	30	30	30

\*\* Power input, compressor, at unit operating limits (evaporator water entering/leaving temperature = 15°C/10°C, condenser entering/leaving water temperature = 40°C/45°C) and a nominal voltage of 400 V (data given on the unit name plate).

\*\*\* Maximum unit operating current at maximum unit power input.

\*\*\*\* Maximum instantaneous starting current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced starting current of the largest compressor)

† Current and power inputs not included in the values above

N/A Not available

The 30HXC 080-375 units for high condensing temperatures are directly derived from the standard models. Their application range is the same as that of the standard units, but permits operation at condenser leaving water temperatures up to 63°C. The PRO-DIALOG control offers all the advantages of the standard units, plus control of the condenser leaving water temperature.

### The main modifications are:

- Use of 30GX compressors
- Modification of electrical components to operate with compressors for high condensing temperatures.
- Modification of heat exchangers to meet pressure code requirements (if necessary).

### Option 150

These units are designed for traditional applications for water-cooled units, but for higher condenser leaving water temperatures than 45°C.

Like the standard units they are equipped with condenser entering and leaving water sensors, installed on the piping.

It is possible to control the machine at the condenser water outlet, requiring a factory configuration change and the use of a heating/cooling inlet reversing device.

### Option 150A

These units are designed for water-to-water heat pumps.

They are factory configured as heat pumps (heating/cooling control as a function of the remote reversing device). The condenser incorporates thermal insulation that is identical to that of the evaporator.

### Technical information

All information is identical to that of the standard 30HXC units, except for the following paragraphs.

### Selection

There are no nominal conditions for this unit type. The selection is made using the current electronic catalogue.

### Dimensions

These are identical to those of the standard 30HXC units. The only difference is in the diameter of the incoming field wiring connection, described in the chapter "Recommended selection". Refer to the dimensional drawings for these units, before proceeding with the wiring.

### Compressor

See 30GX compressor table.

### Options and accessories

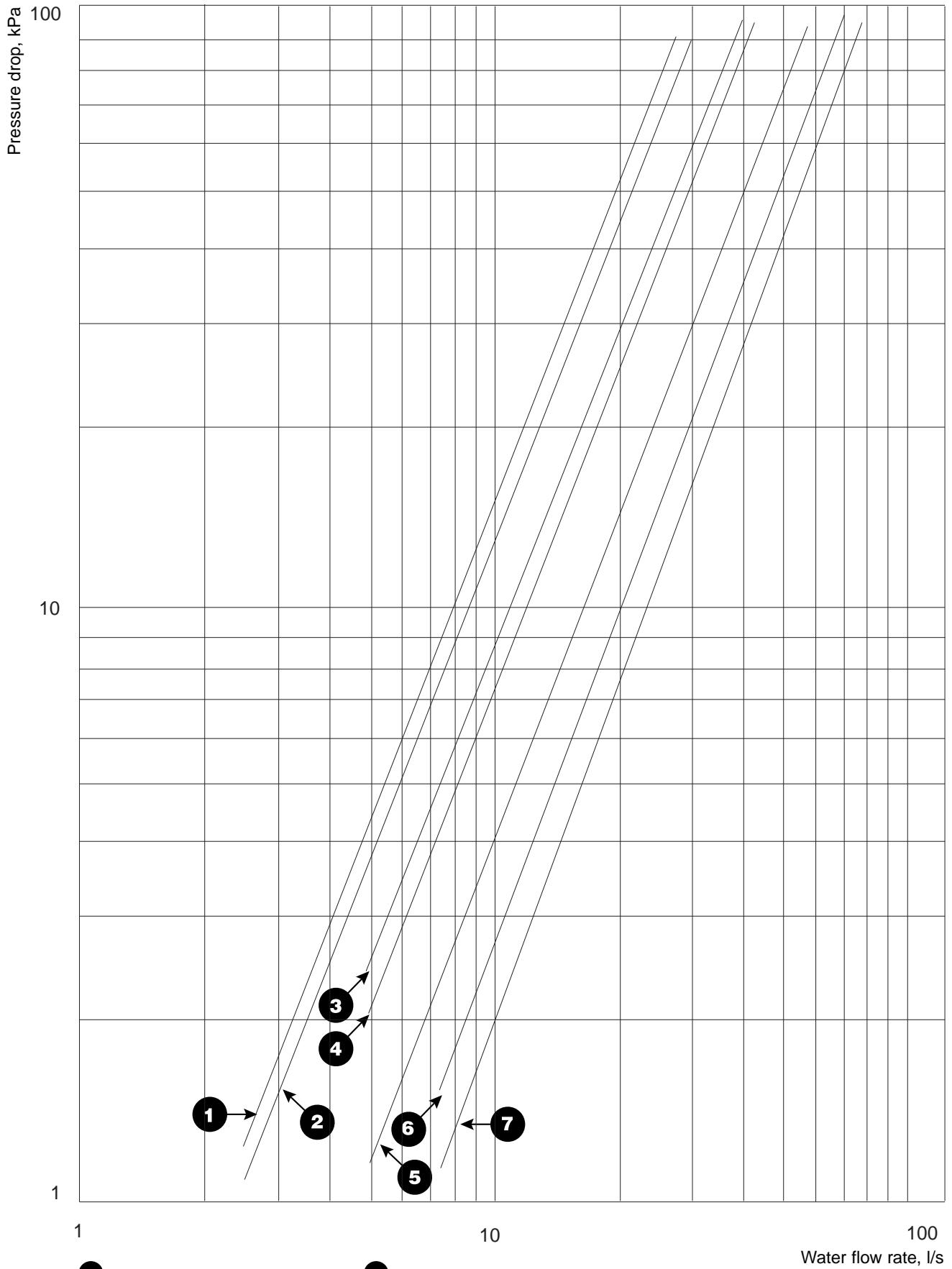
All options available for the standard 30HXC units are compatible, except:

<b>Option 5, brine unit</b>	Special unit
<b>Option 25, soft start, 30HXC 200-375 units</b>	Not available

### Attention:

*If units have two different operating modes - one with high condensing temperature and the other with low condensing temperature - and the transition is made with the unit in operation, the temperature must not vary by more than 3 K per minute. In cases where this is not possible, it is recommended to go through a unit start/stop switch (remote start/stop available for standard units).*

## 9.9 - Condenser pressure drop curve



- |                         |                     |
|-------------------------|---------------------|
| 1 30HXC 080-090-100-110 | 5 30HXC 200         |
| 2 30HXC 120-130         | 6 30HXC 230-260-285 |
| 3 30HXC 140-155         | 7 30HXC 310-345-375 |
| 4 30HXC 175-190         |                     |

### 13 - RECOMMENDED WIRE SECTIONS

Wire sizing is the responsibility of the installer, and depends on the characteristics and regulations applicable to each installation site. The following is only to be used as a guideline, and does not make Carrier in any way liable. After wire sizing has been completed, using the certified dimensional drawing, the installer must ensure easy connection and define any modifications necessary on site.

The connections provided as standard for the field-supplied power entry cables to the general disconnect/isolator switch are designed for the number and type of wires, listed in the table below.

The calculations are based on the maximum machine current (see electrical data tables).

For the design the following standardised installation methods are used, in accordance with IEC 364, table 52C:

- For 30HX units installed inside the building: No.13: perforated horizontal cable conduit, and No. 41: closed conduit.
- For 30GX units installed outside the building: No.17: suspended aerial lines, and No. 61: buried conduit with a derating coefficient of 20.

The calculation is based on PVC or XLPE insulated cables with copper or aluminium core. The maximum temperature is 40°C for 30HX units and 46°C for 30GX units.

The given wire length limits the voltage drop to < 5%.

Unit	Min. (mm <sup>2</sup> ) by phase	Wire type	L (m)	Max. (mm <sup>2</sup> ) by phase	Wire type	L (m)
30HX 080	1 x 35	XLPE Cu	140	1 x 120	PVC AI	260
30HX 090	1 x 50	XLPE Cu	160	1 x 120	PVC AI	260
30HX 100	1 x 50	XLPE Cu	160	1 x 95	XLPE AI	195
30HX 110	1 x 70	XLPE Cu	170	1 x 120	XLPE AI	205
30HX 120/130	1 x 70	XLPE Cu	170	1 x 150	XLPE AI	210
30HX 140	1 x 95	XLPE Cu	180	1 x 185	XLPE AI	220
30HX 155	1 x 95	XLPE Cu	180	1 x 240	XLPE AI	225
30HX 175	1 x 120	XLPE Cu	185	1 x 240	XLPE AI	225
30HX 190	1 x150	XLPE Cu	190	2 x 95	XLPE AI	195
30HX 200 ckt A	1 x 70	XLPE Cu	170	2 x120	PVC AI	325
30HX 230 ckt A	1 x 95	XLPE Cu	180	2 x 120	PVC AI	325
30HX 260 ckt A	1 x 120	XLPE Cu	185	1 x 240	XLPE AI	225
30HX 285 ckt A	1 x 150	XLPE Cu	190	2 x 150	XLPE AI	265
30HX 200 ckt B	1 x 35	XLPE Cu	140	1 x 95	PVC AI	250
30HX 230 ckt B	1 x 35	XLPE Cu	140	1 x 120	PVC AI	260
30HX 260 ckt B	1 x 35	XLPE Cu	140	1 x 120	PVC AI	260
30HX 285 ckt B	1 x 50	XLPE Cu	160	2 x 70	PVC AI	285
30HX 310 ckt A & B	1 x 95	XLPE Cu	180	1 x 240	XLPE AI	225
30HX 345 ckt A & B	1 x 120	XLPE Cu	185	1 x 240	XLPE AI	225
30HX 375 ckt A & B	1 x 150	XLPE Cu	190	2 x 150	XLPE AI	265
30GX 082	1 x 95	XLPE Cu	190	2 x 185	PVC AI	420
30GX 092	1 x 120	XLPE Cu	195	2 x 185	PVC AI	420
30GX 102	1 x 120	XLPE Cu	195	2 x 240	PVC AI	450
30GX 112	1 x 150	XLPE Cu	200	2 x 150	XLPE AI	300
30GX 122	1 x 185	XLPE Cu	205	2 x 185	XLPE AI	315
30GX 132	1 x 185	XLPE Cu	205	2 x 240	XLPE AI	330
30GX 152	1 x 240	XLPE Cu	205	3x 185	XLPE CU	430
30GX 162	2 x 95	XLPE Cu	190	3x 240	XLPE CU	440
30GX 182	2 x 120	XLPE Cu	200	3x 240	XLPE CU	440
30GX 207 ckt A	1 x 185	XLPE Cu	205	3x 185	XLPE AI	445
30GX 227 ckt A	1 x 240	XLPE Cu	205	3x 240	XLPE AI	470
30GX 247/298/328 ckt A	2 x 120	XLPE Cu	225	3x 185	XLPE CU	490
30HX 267/358 ckt A	2 x 150	XLPE Cu	230	3x 240	XLPE CU	505
30GX 207/227/247 ckt B	1 x 95	XLPE Cu	190	2 x 240	PVC AI	560
30HX 267 ckt B	1 x 120	XLPE Cu	200	2 x 185	XLPE AL	395
30GX 298 ckt B	1 x 185	XLPE Cu	205	3x 240	XLPE AL	470
30GX 328 ckt B	2 x 120	XLPE Cu	225	3x 185	XLPE CU	490
30GX 358 ckt B	2 x 150	XLPE Cu	230	3x 240	XLPE CU	505