ENERGY SECTOR











POWER FACTOR CORRECTION EQUIPMENT

- POWER FACTOR CORRECTION CAPACITOR BANKS DECREASE ELECTRICAL ENERGY COSTS AND INCREASE SYSTEM VOLTAGE
- USING POWER CAPACITORS IS ONE OF THE MOST PRACTICAL SOLUTION TO INCREASE SYSTEM POWER QUALITY
- POWER CAPACITORS ARE A MAINTENANCE FREE AND INEXPENSIVE SOURCE OF REACTIVE ENERGY NEEDED IN EVERY INDUCTIVE ELECTRICAL SYSTEM



INDEX

K	NK PFC CAPACITORS FOR LOW VOLTAGE	
	GENERAL	
	TERMS AND DEFINITIONS	_
	INSTRUCTIONS FOR INSTALLATION, MAINTENANCE AND SAFE HANDLING	•
	KNK5015 - CYLINDRICAL ALUMINIUM HOUSING (SINGLE-PHASE)	4
	KNK5065 - CYLINDRICAL ALUMINIUM HOUSING (THREE-PHASE)	,
	KNK1053, KNK9053 - CYLINDRICAL ALUMINIUM HOUSING	Ü
	KNK3053, KNK4053 - CYLINDRICAL ALUMINIUM HOUSING	,
_		
_	KNK9103, KNK9143, KNK9101, KNK9141 - PRISMATIC	
_	KNK9103, KNK9143 THREE-PHASE CAPACITORS - PRISMATIC	
-	KNK9101, KNK9141 SINGE-PHASE CAPACITORS - PRISMATIC	24
K	LV HIGH VOLTAGE POWER CAPACITORS	
	GENERAL	
	KLV1XX1, KLV3XX1 SINGLE-PHASE CAPACITORS	
	KLV1XX3, KLV3XX3 THREE-PHASE CAPACITORS	
	KLV1XX4, KLV3XX4 SINGLE-PHASE CAPACITORS WITH TWO OUTPUTS (TWIN)	31
K	LS INDUCTION HEATING CAPACITORS	
	GENERAL	0.4
	KLSX0XX, KLSX1XX - AIR COOLED	
	KLSX2XX, KLSX3XX, KLSX4XX - WATER COOLED	
	RESASAA, RESASAA, RESASAA WITER GOOLES	30
С	APACITOR DUTY CONTACTORS	
	Kc12, KC16, KC20, KC25, KC33, KC40, KC60	40
		40
P	OWER FACTOR CONTROL RELAY	
	PFCMAX 6, PFCMAX 12	42
	PFC-CX	43
H	IARMONIC FILTER REACTORS	
	3UI	15
		40



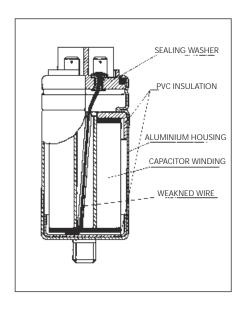
APPLICATIONS

THE KNK CAPACITORS ARE USED FOR POWER FACTOR CORRECTION OF INDUCTIVE CONSUMERS (TRANSFORMERS, ELECTRIC MOTORS, RECTIFIERS IN INDUSTRIAL NETWORKS FOR VOLTAGES OF UP TO 1000 V.

DESIGN

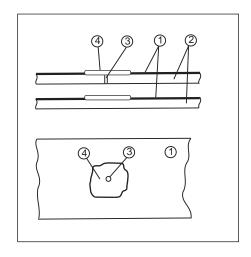
ISKRA KNK CAPACITORS ARE CONSTRUCTED BY THE MKP SISTEM OF LOW-LOSS, METALIZED POLYPROPYLENE FILMS WITH A SPECIAL METALIZATION, WHOSE PURPOSE IS TO FAVOUR THE SELF-HEALING PROCESS AND REDUCE DIELECTRIC LOSSES.

ON THE END OF THE ELEMENT IS ZINC METAL SPRAYED TO MAKE CONTINUOUS GOOD ELECTRICAL CONTACT WITH ELECTRODE METALIZATION ON THE ELECTRIC. THREE SINGLE-PHASE ELEMENT ARE DELTA CONNECTED. AFTERWARDS ARE HERMETICALLY SEALED IN AL CASES. CAPACITORS ARE FILLED WITH WEGETABLE OIL BASED, NON TOXIC, PCB FREE, BIODEGRADABLE, ENVIRONMENTALLY FRIENDLY OR/AND DRY TYPE.



SELF-HEALING CAPACITY

DAMAGE MAY OCCUR ON THE DIELECTRIC DUE TO FATIGUE WHICH RESULTS IN LOCAL BREAKDOWNS ON CERTAIN POINTS. THE RESULTANT ELECTRIC CURRENT DEVAPORISES THE THIN METALLIZED LAYER AND ISOLATES THE DAMAGED SPOT FROM THE REST OF THE CAPACITOR. CAPACITANCE LOSS IS ALMOST NEGLIGIBLE (SOME PF) DURING THIS PROCESS. THIS SELF-HEALING PROPERTY GUARANTEES OPERATING RELIABILITY AND LONG LIFE EXPECTANCY OF THE CAPACITOR.

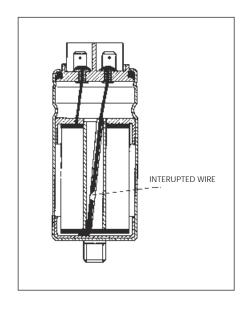


DISCHARGE RESISTOR

CAPACITORS SHOULD BE DISCHARGED TO < =10 % OF THE RATED VOLTAGE PRIOR TO BEING RE-ENERGIZED. KNK CAPACITORS ARE EQUIPPED WITH A RESISTOR THAT DISCHARGES THE CAPACITOR TO 75 V UNDER 3 MIN.

OVER-PRESSURE DISCONNECTOR

EVERY CAPACITOR IS PROTECTED AGAINST BREAKING BY THE OVERPRESSURE DISCONNECTOR, WHICH ENSURES SAFE DISCONNECTION OF THE CAPACITOR FROM THE NETWORK IN THE EVENT OF OVERLOADING AND AT THE END OF ITS OPERATIONAL LIFE.



TERMS AND DEFINITIONS

RATED CAPACITANCE OF A CAPACITOR C_n
CAPACITANCE VALUE FOR WHICH THE CAPACITOR HAS BEEN DESIGNED.

RATED OUTPUT OF A CAPACITOR Q_a

REACTIVE POWER DERIVERED FROM THE RATED VALUES OF CAPACITANCE, FREQUENCY AND VOLTAGE.

RATED VOLTAGE OF A CAPACITOR U

MEAN OF THE MAX. PERMISSIBLE VALUE OF SINUSOIDAL AC VOLTAGE IN CONTINUOUS OPERATION.

RATED FREQUENCY OF A CAPACITOR f.

FREQUENCY FOR WHICH THE CAPACITOR HAS BEEN DESIGNED.

RATED CURRENT OF A CAPACITOR I.

RMS VALUE OF THE CURRENT AT RATED VOLTAGE AND FREQUENCY, EXCLUDING HARMONIC DISTORTION, CAPACITANCE TOLERANCE AND SWITCHING TRANSIENTS.

MAXIMUM PRMISSIBLE A.C. VOLTAGE OF A CAPACITOR U_{max}

MAXIMUM RMS VOLTAGE, WHICH THE CAPACITOR CAN BE EXPOSED TO PERMANENTLY.

MAXIMUM PERMISSIBLE A.C. CURRENT OF A CAPACITOR I_{max}

MAXIMUM RMS VALUE OF PERMISSIBLE CURRENT IN CONTINUOIS OPERATING. THE EXACT VALUE FOR EACH CAPACITOR CAN BE FOUND IN THE DATA CHARTS. HIGHER RMS VALUE THAN STATED IN THE DATACHARTS REQUIRE ADJUSTMENTS IN CONSTRUCTION AND ARE AVAILABLE ON REQUEST.

AMBIENT AIR TEMPERATURE

TEMPERATURE OF THE AIR AT THE PROPOSED LOCATION OF THE CAPACITOR.

THE LOWEST AMBIENT TEMPERATURE AT WHICH A CAPACITOR MAY OPERATE, FOR ALL KNK CAPACITORS, IS -40°C. THE UPPER LIMIT TEMPERATURE IS INDICATED BY THE LETTER:

TEMPERATURE CLASESS (ACCORDING TO IEC 60831-1)

TEN	MPERATURE CLASS	AMBIENT TEMPERATURE °C								
		MAXIMUM	MAXIMUM MEAN FOR 24 H	MAXIMUM MEAN FOR 1 YEAR						
	A	40°C	30°C	20°C						
	В	45°C	35°C	25°C						
	C	50°C	40°C	30°C						
	D	55°C	45°C	35°C						

INSTRUCTION FOR INSTALLATION, MAINTENANCE AND SAFE HANDLING OF CAPACITORS TYPE KNK

CAPACITORS CAN OPERATE SAFELY DURING ITS LIFE TIME ONLY IF ALL ELECTRICAL AND THERMAL CONDITIONS ARE IN COMPLIANCE WITH THE LABEL, DATA SHEET OR CATALOGUE.

RECEIVING

WHEN YOU RECEIVE CAPACITOR, MAKE SURE THAT NO MECHANICAL DAMAGE OCCURRED DURING TRANSPORT. SMALL DAMAGES, SUCH AS SCRATCHES WILL HAVE NO AFFECT ON QUALITY AND PERFORMANCE OF CAPACITOR. IF YOU RECEIVE CAPACITORS WITH LARGE DENTS OR BROKEN PARTS, PLEASE INFORM THE NEAREST SALES OFFICE FOR INSTRUCTIONS REGARDING THE DISPOSITION BEFORE INSTALLATION.

CHECK THE CAPACITOR NAMEPLATE TO MAKE SURE THAT THE SPECIFICATIONS ARE IN ACCORDANCE WITH THE CONTRACT.

INSTALLATION

IN GENERAL CAPACITORS MUST BE INSTALLED INDOORS. TYPE KNK105X, KNK305X, KNK405X CAN BE MOUNTED IN VERTICAL OR HORIZONTAL POSITION. TYPE KNK50XX KNK905X MUST BE MOUNTED VERTICALLY WITH TERMINALS UPRIGHT. WHILE INSTALLING MAKE SURE THAT THE MINIMUM SPACE BETWEEN CAPACITORS IS 20 mm AND THERE IS MINIMUM 25 mm ABOVE UPPER SIDE OF CAPACITOR TO ENABLE THE EXTENSION OF ALUMINUM CASE (IN CASE OF ABNORMAL OPERATION) AND CONSEQUENTIAL NORMAL OPERATION OF THE OVERPRESSURE DISCONNECTOR. AT THE BOTTOM OF EACH CAPACITOR CASE IS A MALE SCREW M12, WHICH IS INTENDED FOR MOUNTING AND PROTECTION EARTH. MAXIMUM ALLOWED TORQUE AT TIGHTENING A SCREW IS 10 Nm.

INRUSH CURRENT

SWITCHING CAPACITORS, ESPECIALLY WHEN THEY ARE IN PARALLEL WITH OTHERS CAN CAUSE HIGH INRUSH CURRENTS OF UP TO 200 TIMES OF NOMINAL CURRENT. THESE SHOCKS CAUSE ADDITIONAL STRESS TO CAPACITOR AND HAVE BAD INFLUENCE ON USEFUL LIFE. IT IS NECESSARY TO LIMIT INRUSH CURRENTS.

ELECTRICAL CONNECTION

CONNECTIONS TO THE CAPACITOR TERMINALS MUST BE MADE WITH INSULATED FLEXIBLE COPPER CONDUCTORS. CONDUCTORS MUST HAVE A PROPER CROSS SECTION FOR EXPECTED CAPACITOR CURRENTS INCLUDING OVERLOADS. CONDUCTORS HAVE TO BE EQUIPPED WITH END SLEEVES OR CABLE LUGS IN CASE OF SCREW TERMINALS. WHEN COUPLING THE CAPACITORS IN PARALLEL DO NOT EXCEED THE MAXIMAL CURRENT PER CONTACT.

DO NOT SOLDER LEADS TO THE TERMINALS. CHECK CONNECTIONS PERIODICALLY TO AVOID WEAK CONNECTIONS AND OVERHEATING OF THE CONNECTING POINTS. WITH OUR 16 AND 25 mm² TERMINALS USE ONLY PH1 SCREWDRIVERS.

AMBIENT TEMPERATURE

THE CAPACITORS ARE DESIGNED TO OPERATE CONTINUOUSLY IN A TEMPERATURE RANGE -25 °C TO 55 °C.CAPACITORS CAN ALSO OPERATE CONTINUOUSLY AT LOWER TEMPERATURE, DOWN TO -40 °C. IF THE TEMPERATURE DROPS TO LESS THAN -40 °C THE CAPACITORS SHOULD NOT BE ENERGIZED, BECAUSE THERE IS POSSIBILITY OF DAMAGE. MAINTAIN PROPER AMBIENT TEMPERATURES AND TAKE CARE OF SUFFICIENT HEAT DISSIPATION.

DISCHARGE OF CAPACITORS

BECAUSE OF THE RESIDUAL VOLTAGE ALWAYS DISCHARGE AND SHORT CIRCUIT THE CAPACITOR BEFORE TOUCHING THE TERMINALS. OUR CAPACITORS ARE DISCHARGED TO 75 V UNDER 3 MIN AND THEY MUST BE DISCHARGED TO 10 % OF THE RATED VOLTAGE BEFORE RE-ENERGIZING. DISCHARGE RESISTOR MAY BECOME VERY HOT DURING OPERATION.

IN CASE THE REQUIRED TIME BETWEEN SWITCHING OFF AND REPEATED SWITCHING ON HAVE TO BE SHORTER THAN 3 MINUTES (MOSTLY APPLICATION IN AUTOMATIC CAPACITOR BANKS), CAPACITORS MUST BE ADDITIONALLY DISCHARGED BY OTHER MEASURES, EXAMPLE FAST DISCHARGE REACTORS OR FAST DISCHARGE RESISTORS.

HARMONICS

HIGHER HARMONICS MAY BE PRESENT IN SOME APPLICATIONS AND CAN AFFECT THE USEFUL LIFE OF A CAPACITOR. IN SUCH CASES CAPACITORS OR CAPACITOR DEVICES MUST BE CONNECTED WITH SUITABLE REACTORS.

PROTECTION AGAINST SHOCK

BEFORE MAINTENANCE OR ANY CONTACT OF THE CAPACITORS MAKE SURE THAT CAPACITORS OR CAPACITOR DEVICE ARE PHYSICALLY DISCONNECTED FROM THE POWER SOURCE. CAPACITORS HAVE AN INTERNAL OR EXTERNAL DISCHARGE RESISTORS TO REDUCE VOLTAGE TO 75 V OR LESS IN THREE MINUTES, AFTER THE POWER IS SWITCHED OFF.

WAIT FIVE MINUTES, THEN THE CAPACITORS MUST BE SHORTED AND GROUNDED BY USING A SHORT STICK WITH INSULATED HANDLE. MAKE SURE THAT ALL SAFETY PRECAUTIONS ARE MADE BEFORE HANDLING THE CAPACITOR.

FIRE HAZARD

CAPACITORS ARE NOT FLAMMABLE, BUT THERE IS A POSSIBILITY OF IGNITION IN A CASE OF EXPLOSION, IF THE ELECTRICAL CURRENT IS PRESENT.

IT MUST BE CONSIDERED, THAT THE CAPACITORS AND CAPACITOR DEVICES ARE LOCATED IN SUCH POSITION THAT POSSIBLE DAMAGE OF CAPACITOR WILL NOT DAMAGE THE SURROUNDING AREA.

EXPLOSION HAZARD

ALL CAPACITORS HAVE INTERNAL OVERPRESSURE DISCONNECTORS ON ALL THREE TERMINALS. IN EXTREME SITUATIONS IT IS POSSIBLE TO GET AN EXPLOSIVE CASE RUPTURE, EVEN WITH PROPER FUSING.

THESE FACTS SHOULD BE CONSIDERED WHEN LOCATING THE CAPACITORS AND CAPACITOR DEVICES.

HANDLING OF FAILED CAPACITORS

FAILED CAPACITORS SHOULD BE SHORT CIRCUITED BEFORE HANDLING.

CAPACITORS WHICH ARE VISUALLY DAMAGED MUST BE CAREFULLY REMOVED FROM THE PLACE OF INSTALLATION. CAPACITORS DO NOT CONTAIN ECOLOGICALLY HARMFUL SUBSTANCES AND CAN BE DEPOSITED TO AN INDUSTRIAL DUMP.

WARRANTY

IN CASE OF A CLAIM IN AN IN-WARRANTY PERIOD, THE USER SHOULD PROVIDE ALL INFORMATION IN ACCORDANCE WITH THE TERMS OF THE WARRANTY. TO THE SELLER.

THIS INFORMATION IS:

MANUFACTURING DATE, DESCRIPTION OF THE FAILURE, TIME OF THE OPERATION, DATE AND TIME OF THE FAILURE, WHETHER THE CAPACITOR WAS OPERATING CONTINUOUSLY OR THERE WERE MULTIPLE SWITCHING, CONDITIONS AT THE TIME OF THE FAILURE.

DO NOT DISPOSE OF AN IN-WARRANTY CAPACITOR BEFORE GETTING AN APPROVAL FROM A PERSON AUTHORIZED BY THE MANUFACTURER.

PFC CAPACITORS FOR LOW VOLTAGE KNK5015, KNK5065

TECHNICAL DATA				
ТҮРЕ	SYMBOL	UNIT	KNK5015 KN	IK5065
STANDARDS			IEC/EN 60831-1/2, UL 810 APPROVAL (E163	3120)
CONNECTION			SINGLE PHASE DELTA (T	HREE-PHASE)
RATED REACTIVE POWER		kVar	UP TO 7.5	
RATED VOLTAGE	U _n	V	400 ~ 525	
RATED FREQUENCY	- f _n	Hz	50 OR 60	
CAPACITANCE TOLERANCE			-5/10 % (OTHER ON REQUEST)	
DIELECTRIC LOSES		W/kVar	≤ 0.2	
TOTAL LOSES		W/kVar	≤ 0.45	
TEMPERATURE CATEGORY			-25/D	
MAX. HUMIDITY			95 %	
COOLING			FORCED VENTILATION OR NATURAL AIR CO	OLED
MAX. OVERVOLTAGE			1.1 x U _n (8 h/DAY)	
			1.15 x U _n (30 min/DAY)	
			1.2 x U _n (5 min - 200 TIMES PER LIFE TIM	E)
			1.3 x U _n (1 min - 200 TIMES PER LIFE TIM	E)
MAX. OVERCURRENT			1.3 x I _n (INCLUDING COMBINED EFFECTS OF OVERVOLTAGES, HARMONICS AN	D CAPACITANCE TOLERANCE
INRUSH CURRENT			150 x l _n	
EXPECTED LIFE TIME			> 100000 h (TEMP. CATEGORY D)	
			> 120000 h (TEMP. CATEGORY C)	
DISCHARGE RESISTOR			TO 75 V ≤ 3 min	
ALTITUDE			UP TO 4000 m	
INSULATION LEVEL		kV	3.6/-	
ROUTINE TESTS				
TERMINAL TO TERMINAL	<u> </u>		2.15 x U _n , 2 s	
TERMINAL TO CASE			3600 V , 10 s	
SEALING TEST			75 °C, 6 h	
MECHANICAL PARAMETERS				
TERMINAL PER PHASE / MAX. CURRENT			2.5 mm ² / 15 A	
MOUNTING AND GROUNDING / MAX. TORQUE			THREADED M12 BOLT /10 Nm	
MOUNTINING POSITION			VERTICAL WITH TERMINAL POINTING UPWARDS OR	HORIZONTAL
PROTECTION			IP00	
CLEARANCE DISTANCE			> 10 mm	
CREEPAGE DISTANCE			> 10 mm	
SAFETY DEVICE			OVERPRESSURE DISCONNECTOR	
MATERIAL PARAMETERS				
DIELECTRIC			SELF HEALING METALLIZED POLYPROPYLEN	E FILM
FILLING			NON PCB BIODEGRADABLE VEGETABLE (OIL
CASE			ALUMINIUM	

Notes:

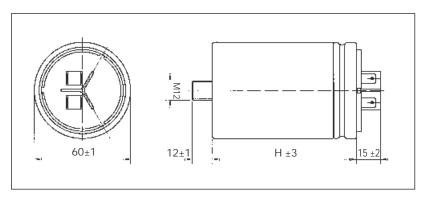
ON REQUEST, CAPACITORS WITH OTHER POWER AND VOLTAGE RATINGS, SHAPES, AND CONNECTIONS ARE AVAILABLE.

- ALL RIGHTS RESERVED FOR ANY POSSIBLE CHANGES.
- IN-RUSH CURRENT MUST BE LIMITED TO MAXIMAL PERMITTED VALUE.

PFC CAPACITORS FOR LOW VOLTAGE (SINGLE-PHASE) KNK5015 - CYLINDRICAL ALUMINIUM HOUSING



230 ... 525 V, 1.67 ... 6.25 kVar



f _n = 50 Hz	f _n = 50 Hz											
U _n (V)	Q"(kVar)	C _n (µF)	I _n (A)	H (mm)	Weight (kg)	Packing unit (pcs)						
400	1.67	33.2	4.2	75	0.22	36						
400	2.1	41.6	5.2	87	0.27	36						
400	2.5	49.7	6.2	87	0.27	36						
400	3.33	66.3	8.3	110	0.32	36						
400	4.17	82.9	10.4	125	0.40	36						
400	5	99.5	12.5	150	0.45	36						
440	1.67	27	3.8	75	0.22	36						
440	2.5	41.1	5.7	110	0.32	36						
440	3.33	54.8	7.6	110	0.32	36						
440	4.17	68.5	9.5	150	0.45	36						
440	5	82.2	11.4	150	0.45	36						
480	1.67	23.1	3.5	75	0.22	36						
480	2.1	29	4.4	75	0.22	36						
480	2.5	34.5	5.2	87	0.27	36						
480	3.33	46	6.9	100	0.30	36						
480	4.17	57.6	8.7	125	0.40	36						
480	5	69.1	10.4	150	0.45	36						
525	1.67	19.3	3.1	75	0.22	36						
525	2.5	28.0	4.8	100	0.30	36						
525	3.33	38.5	6.3	125	0.40	36						
525	4.17	48.2	7.3	150	0.45	36						

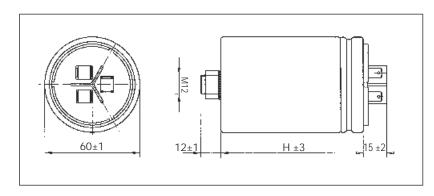
$f_n = 60 \text{ Hz}$	$f_n = 60 \text{ Hz}$											
U _n (V)	Q, (kVar)	C _n (µF)	I _n (A)	H (mm)	Weight (kg)	Packing unit (pcs)						
400	1.67	27.2	4.2	75	0.22	36						
400	3.33	55.2	8.3	100	0.30	36						
400	4.17	69.1	10.4	110	0.32	36						
400	5	82.9	12.5	125	0.40	36						
440	1.67	22.8	3.8	75	0.22	36						
440	3.33	45.4	7.5	110	0.32	36						
440	4.17	56.9	9.4	125	0.40	36						
440	5	68.4	11.3	150	0.45	36						
480	1.67	19.2	3.5	75	0.22	36						
480	3.33	38.3	6.9	87	0.27	36						
480	4.17	48	8.7	100	0.30	36						
480	5	57.6	10.4	125	0.40	36						
525	1.67	16.1	3.2	75	0.22	36						
525	3.33	32	6.3	100	0.30	36						
525	4.17	40.1	7.9	110	0.32	36						
525	5	48.1	9.5	125	0.40	36						
525	6.25	60.2	11.9	150	0.45	36						

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE)

KNK5065 - CYLINDRICAL ALUMINIUM HOUSING, DELTA CONNECTION



400 ... 525 V, 2.5 ... 7.5 kVar



f _n = 50 Hz	f _n = 50 Hz											
U _n (V)	O٫ (kVar)	C _n (µF)	I _n (A)	H (mm)	Weight (kg)	Packing unit (pcs)						
400	2.5	3 x 16.6	3.6	145	0.45	36						
400	3	3 x 19.9	4.3	145	0.45	36						
400	4	3 x 26.5	5.8	185	0.55	36						
400	5	3 x 33.2	7.2	185	0.55	36						
400	7.5	3 x 49.7	10.8	185	0.55	36						
440	2.5	3 x 13.7	3.3	145	0.45	36						
440	3	3 x 16.5	3.9	145	0.45	36						
440	4	3 x 21.9	5.3	185	0.55	36						
440	5	3 x 27.4	6.6	185	0.55	36						
480	2.5	3 x 11.5	3.0	145	0.45	36						
480	3	3 x 13.8	3.6	145	0.45	36						
480	4	3 x 18.4	4.8	145	0.45	36						
480	5	3 x 23	6.0	185	0.55	36						
480	6.25	3 x 28.8	7.5	185	0.55	36						
525	2.5	3 x 9.6	2.7	145	0.45	36						
525	3	3 x 11.5	3.3	145	0.45	36						
525	4	3 x 15.4	4.4	185	0.55	36						
525	5	3 x 19.3	5.5	185	0.55	36						
525	7.5	3 x 28.9	8.2	185	0.55	36						

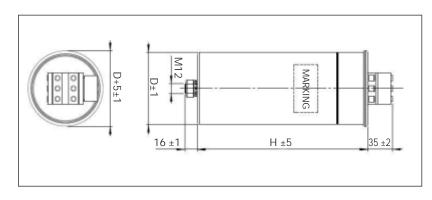
PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK1053, KNK9053 - CYLINDRICAL ALUMINIUM HOUSING

TECHNICAL DATA								
ТҮРЕ	SYMBOL	UNIT	KNK1053	KNK9053				
STANDARDS			IEC/EN 6	60831-1/2				
CONNECTION			DELTA (TH	IREE-PHASE)				
RATED REACTIVE POWER	Q _n	kVar	UP	TO 30				
RATED VOLTAGE	U _n	V						
RATED FREQUENCY	f _n	Hz	50 (OR 60				
CAPACITANCE TOLERANCE			-5/10 % (ОТН	ER ON REQUEST)				
DIELECTRIC LOSES		W/kVar	<u> </u>	0.2				
TOTAL LOSES		W/kVar	<	0.45				
TEMPERATURE CATEGORY			-2	25/D				
MAX. HUMIDITY			9	5 %				
COOLING			FORCED VENTILATION (OR NATURAL AIR COOLED				
MAX. OVERVOLTAGE				(8 H/DAY)				
			1.15 X U _N ((30 MIN/DAY)				
				TIMES PER LIFE TIME)				
			1.3 X U _n (1 min - 200	TIMES PER LIFE TIME)				
MAX. OVERCURRENT				OLTAGES, HARMONICS AND CAPACITANCE TOLERANCE				
INRUSH CURRENT			20	O X I _n				
EXPECTED LIFE TIME			> 130	0000 h				
DISCHARGE RESISTOR			TO 75	V ≤ 3 min				
ALTITUDE			UP TO	2000 m				
INSULATION LEVEL		kV	3	.6/-				
ROUTINE TESTS								
TERMINAL TO TERMINAL			2.15 X	(U _n , 2 s				
TERMINAL TO CASE			3600	V , 10 s				
SEALING TEST			N/A	75 °C, 6 h				
MECHANICAL PARAMETERS								
TERMINAL PER PHASE / MAX. TORQUE / MAX. CURRENT			2 x 25 mm ²	/ 3 Nm / 60 A				
MOUNTING AND GROUNDING / MAX. TORQUE			THREADED M	12 BOLT /10 Nm				
MOUNTINING POSITION			VERTICAL WITH TERMINAL POINTING UPWARDS OR HORIZONTAL	VERTICAL WITH TERMINAL POINTING UPWARDS				
PROTECTION			IF	P20				
CLEARANCE DISTANCE			> 10	6 mm				
CREEPAGE DISTANCE			> 16 mm					
SAFETY DEVICE			OVERPRESSURE DISCO	DNNECTOR (ALL PHASES)				
MATERIAL PARAMETERS								
DIELECTRIC			SELF HEALING METALLIZ	ZED POLYPROPYLENE FILM				
FILLING			DRY	NON PCB BIODEGRADABLE VEGETABLE OIL				
CASE			ALUN	MINIUM				

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK1053 - CYLINDRCAL ALUMINIUM HOUSING



400 ... 690 V, 10 ... 40 kVar



f _n = 50 H	Hz - DELTA	CONNI	ECTION							
C _n (μF)	Q _n (kVar)	I _n (A)	Q, (kVar)	I _n (A)	Q, (kVar)	I _n (A)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
U _n = 400 V	U _n = 400 V		U _n = 380 V							
3 x 66.3	10	14.4	9	13.7			205	90	1.2	16
3 x 83.3	12.5	18	11.3	17.2			205	90	1.2	16
3 x 100	15	21.7	13.6	20.7			240	90	1.4	16
3 x 133	20	28.9	18.1	27.5			205	116	1.6	9
3 x 165.8	25	36.1	22.6	34.3			240	116	1.9	9
3 x 198.9	30	43.3	27.1	41.2			240	116	1.9	9
U _n = 440 V	U _n = 440 V		U _n = 420 V		U _n = 400 V					
3 x 54.9	10	13.1	9.1	12.5	8.3	12	205	90	1.2	16
3 x 68.6	12.5	16.4	11.5	15.8	10.4	15	205	90	1.2	16
3 x 82.3	15	19.7	13.7	18.8	12.4	17.9	240	90	1.4	16
3 x 110	20	26.2	18.3	25.2	16.6	24	205	116	1.6	9
3 x 137.1	25	32.8	22.8	31.3	20.7	29.9	240	116	1.9	9
3 x 164.4	30	39.4	27.3	37.5	24.8	35.8	280	116	2.3	9
U _n = 480 V	U _n = 480 V		U _n = 440 V		U _n = 440 V					
3 x 46.1	10	12	8.4	11	7	10.1	160	90	0.9	16
3 x 57.6	12.5	15	10.5	13.8	8.6	12.4	205	90	1.2	16
3 x 69.1	15	18	12.7	16.7	10.5	15.2	205	90	1.2	16
3 x 92.1	20	24	16.9	22.2	13.9	20.1	205	116	1.6	9
3 x 115.1	25	30.1	21	27.6	17.4	25.1	205	116	1.6	9
3 x 138.2	30	36.1	25.2	33.1	20.8	30	240	116	1.9	9
U _n = 525 V	U _n = 525 V		U _n = 460 V		U _n = 440 V					
3 x 38.5	10	11	7.7	9.7	7	9.2	205	90	1.2	16
3 x 48.2	12.5	13.8	9.6	12	8.8	11.5	240	90	1.4	16
3 x 57.8	15	16.5	11.5	14.4	10.5	13.8	240	90	1.4	16
3 x 77	20	22	15.3	19.2	14	18.4	205	116	1.6	9
3 x 96.3	25	27.5	19.2	24.1	17.6	23.1	240	116	1.9	9
3 x 115.5	30	33	23	28.9	21.1	27.7	240	116	1.9	9
3 x 154	40	44	30.6	38.4	28	36.8	305	136	2.3	1
U _n = 690 V										
3 x 11.1	5	4.2					160	90	1.1	16
3 x 16.7	7.5	6.3					160	90	1.1	16
3 x 22.3	10	8.4					205	90	1.6	16
3 x 28	12.5	10.5					240	90	1.6	16
3 x 44.6	20	17					205	116	1.9	9
3 x 56	25	21					240	116	1.9	9
3 x 74	33	27.7					280	116	2.5	9

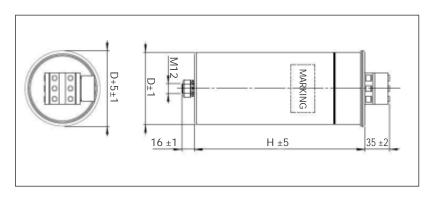
PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK1053 - CYLINDRICAL ALUMINIUM HOUSING

f _n = 60 H	Hz									
C _n (µF)	Q, (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
U _n = 400 V	U _n = 400 V		U _n = 380 V							
3 x 55.3	10	14.4	9	13.7			160	90	0.9	16
3 x 69.7	12.5	18	11.3	17.2			205	90	1.2	16
3 x 82.9	15	21.7	13.6	20.7			205	90	1.2	16
3 x 110.5	20	28.9	18.1	27.5			280	90	1.4	16
3 x 138.2	25	36.1	22.6	34.3			205	116	1.6	9
3 x 165.8	30	43.3	27.1	41.2			240	116	1.9	9
$U_{n} = 440 \text{ V}$	$U_n = 440 \text{ V}$		U _n = 420 V		$U_n = 400 \text{ V}$					
3 x 45.7	10	13.1	9.1	12.5	8.3	12	160	90	0.9	16
3 x 57.1	12.5	16.4	11.5	15.8	10.4	15	205	90	1.2	16
3 x 68.5	15	19.7	13.7	18.8	12.4	17.9	205	90	1.2	16
3 x 91.3	20	26.2	18.3	25.2	16.6	24	240	90	1.4	16
3 x 114.2	25	32.8	22.8	31.3	20.7	29.9	205	116	1.6	
3 x 137	30	39.4	27.3	37.5	24.8	35.8	240	116	1.6	9
U _n = 480 V	U _n = 480 V		U _n = 440 V		U _n = 440 V					
3 x 38.4	10	12	8.5	11.1	7	10	160	90	0.9	16
3 x 48	12.5	15	10.7	14	8.8	12.7	205	90	1.2	16
3 x 57.6	15	18	12.8	16.7	10.3	14.9	205	90	1.2	16
3 x 76.7	20	24	17	22.3	14	20.2	240	90	1.4	16
3 x 96	25	30	21	27.6	17.3	25	205	116	1.6	9
3 x 115.1	30	36	25	33	21	30	205	116	1.6	9
U _n = 525 V	U _n = 525 V		U _n = 460 V		U _n = 440 V					
3 x 21.1	10	11	7.7	9.7	7	9.2	160	90	0.9	16
3 x 40.1	12.5	13.8	9.6	12	8.8	11.5	205	90	1.2	16
3 x 48.1	15	16.5	11.5	14.4	10.5	13.8	205	90	1.2	16
3 x 64.2	20	22	15.3	19.2	14	18.4	240	90	1.4	9
3 x 80.2	25	27.5	19.2	24.1	17.6	23.1	205	116	1.6	9
3 x 96.2	30	33	23	28.9	21.1	27.7	240	116	1.9	9
3 x 128.3	40	44	30.6	38.4	28	36.8	305	136	3.1	1

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK9053 - CYLINDRCAL ALUMINIUM HOUSING



400 ... 690 V, 10 ... 30 kVar



f _n = 50 H	Hz - DELTA	CONNE	ECTION							
C _n (µF)	O, (kVar)	I _n (A)	O _n (kVar)	I _□ (A)	Q, (kVar)	I _n (A)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
U _n = 400 V	U _p = 400 V		U _n = 380 V							
3 x 66.3	10	14.4	9	13.7			205	90	1.35	16
3 x 83.3	12.5	18	11.3	17.2	·		205	90	1.35	16
3 x 100	15	21.7	13.6	20.7			240	90	1.6	16
3 x 133	20	28.9	18.1	27.5			205	116	1.9	9
3 x 165.8	25	36.1	22.6	34.3			240	116	2.2	9
3 x 198.9	30	43.3	27.1	41.2			240	116	2.2	9
U _n = 440 V	U _n = 440 V		U _n = 420 V		$U_n = 400 \text{ V}$					
3 x 54.9	10	13.1	9.1	12.5	8.3	12	205	90	1.35	16
3 x 68.6	12.5	16.4	11.5	15.8	10.4	15	205	90	1.35	16
3 x 82.3	15	19.7	13.7	18.8	12.4	17.9	240	90	1.6	16
3 x 110	20	26.2	18.3	25.2	16.6	24	205	116	1.9	
3 x 137.1	25	32.8	22.8	31.3	20.7	29.9	240	116	2.2	
3 x 164.4	30	39.4	27.3	37.5	24.8	35.8	280	116	2.6	
$U_n = 480 \text{ V}$	$U_n = 480 \text{ V}$		U _n = 440 V		$U_n = 440 \text{ V}$					
3 x 46.1	10	12	8.4	11	7	10.1	205	90	1.35	16
3 x 57.6	12.5	15	10.5	13.8	8.6	12.4	205	90	1.35	16
3 x 69.1	15	18	12.7	16.7	10.5	15.2	240	90	1.6	16
3 x 92.1	20	24	16.9	22.2	13.9	20.1	205	116	1.9	9
3 x 115.1	25	30.1	21	27.6	17.4	25.1	240	116	2.2	9
3 x 138.2	30	36.1	25.2	33.1	20.8	30	240	116	2.2	9
$U_n = 525 \text{ V}$	U _n = 525 V		$U_n = 460 \text{ V}$		$U_n = 440 \text{ V}$					
3 x 38.5	10	11	7.7	9.7	7	9.2	205	90	1.35	16
3 x 48.2	12.5	13.8	9.6	12	8.8	11.5	205	90	1.6	16
3 x 57.8	15	16.5	11.5	14.4	10.5	13.8	240	90	1.6	16
3 x 77	20	22	15.3	19.2	14	18.4	205	116	1.9	
3 x 96.3	25	27.5	19.2	24.1	17.6	23.1	240	116	2.2	
3 x 115.5	30	33	23	28.9	21.1	27.7	240	116	2.2	
U _n = 690 V										
3 x 11	5	4.2	. <u></u>				160	90	1.1	16
3 x 16	7.5	6.3					160	90	1.1	16
3 x 22	10	8.4	·				240	90	1.6	16
3 x 28	12.5	10.5					240	90	1.6	16
3 x 46	20	17	·				240	116	1.9	9
3 x 56	25	21					240	116	1.9	9
3 x 74	33	27.7					280	116	2.5	9

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK9053 - CYLINDRICAL ALUMINIUM HOUSING

f _n = 60 H	łz									
C _n (µF)	Q, (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	Oٍ (kVar)	I _n (A)	H (mm)	D (mm)	Weight (kg)	Packing unit (pcs)
U _n = 400 V	U _n = 400 V		U _n = 380 V							
3 x 55.3	10	14.4	9	13.7			160	90	1.05	16
3 x 69.7	12.5	18	11.3	17.2			205	90	1.35	16
3 x 82.9	15	21.7	13.6	20.7			205	90	1.35	16
3 x 110.5	20	28.9	18.1	27.5			280	90	1.6	16
3 x 138.2	25	36.1	22.6	34.3			205	116	1.9	9
3 x 165.8	30	43.3	27.1	41.2			240	116	2.2	9
U _n = 440 V	U _n = 440 V		$U_n = 420 \text{ V}$		$U_n = 400 \text{ V}$					
3 x 45.7	10	13.1	9.1	12.5	8.3	12	160	90	1.05	16
3 x 57.1	12.5	16.4	11.5	15.8	10.4	15	205	90	1.35	16
3 x 68.5	15	19.7	13.7	18.8	12.4	17.9	205	90	1.35	16
3 x 91.3	20	26.2	18.3	25.2	16.6	24	240	90	1.6	16
3 x 114.2	25	32.8	22.8	31.3	20.7	29.9	205	116	1.9	9
3 x 137	30	39.4	27.3	37.5	24.8	35.8	240	116	2.2	9
U _n = 480 V	U _n = 480 V		U _n = 440 V		U _n = 440 V					
3 x 38.4	10	12	8.5	11.1	7	10	160	90	0.9	16
3 x 48	12.5	15	10.7	14	8.8	12.7	205	90	1.2	16
3 x 57.6	15	18	12.8	16.7	10.3	14.9	205	90	1.2	16
3 x 76.7	20	24	17	22.3	14	20.2	240	90	1.4	16
3 x 96	25	30	21	27.6	17.3	25	205	116	1.6	9
3 x 115.1	30	36	25	33	21	30	205	116	1.6	9
U _n = 525 V	U _n = 525 V		U _n = 460 V		U _n = 440 V					
3 x 14.3	4.5	5	3.4	4.3	4.1		160	90	1.2	16
3 x 16.8	5.2	5.7	4	5	4.9		160	90	1.2	16
3 x 23.6	7.4	8.1	5.6	7	6.8		160	90	1.2	16
3 x 32.1	10	11	7.7	9.7	7	9.2	160	90	1.2	16
3 x 40.1	12.5	13.8	9.6	12	8.8	11.5	205	90	1.35	16
3 x 48.1	15	16.5	11.5	14.4	10.5	13.8	205	90	1.35	16
3 x 64.2	20	22	15.3	19.2	14	18.4	205	116	1.9	9
3 x 80.2	25	27.5	19.2	24.1	17.6	23.1	240	116	2.2	9
3 x 96.2	30	33	23	28.9	21.1	27.7	240	116	2.2	9
U _n = 690 V										
3 x 18.6	10	8.4					160	90	1.6	16
3 x 23.2	12.5	10.5			- <u> </u>		205	90	1.6	16
3 x 37.1	20	16.7					205	90	2.2	9
3 x 46.4	25	21					240	90	2.6	9
3 x 55.7	33	25.1					205	116	2.6	9

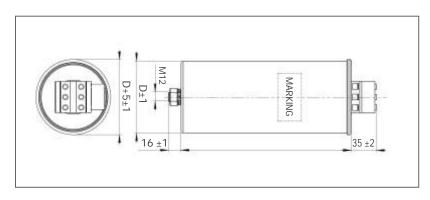
PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK3053, KNK4053 - CYLINDRCAL ALUMINIUM HOUSING

TYPE	SYMBOL	UNIT	KNK3053	KNK4053				
STANDARDS			IEC/EN 60831-	1/2				
CONNECTION			DELTA (THREE-PI	HASE)				
RATED REACTIVE POWER	Q _n	kVar	UP TO 50	•				
RATED VOLTAGE	U _n	V	220 ~ 800					
RATED FREQUENCY	f _n	Hz	50 OR 60					
CAPACITANCE TOLERANCE			-5/10 % (other on r	EQUEST)				
DIELECTRIC LOSES		W/kVar	≤ 0.2					
TOTAL LOSES		W/kVar	≤ 0.45					
TEMPERATURE CATEGORY			-40/D					
MAX. HUMIDITY			95 %					
COOLING			FORCED VENTILATION OR NAT					
MAX. OVERVOLTAGE			1.1 X U _n (8 h/D _n					
			1.15 X U _n (30 min					
			1.2 X U _n (5 min - 200 TIMES PER LIFE TIME)					
			1.3 X U _n (1 min - 200 TIMES	· · · · · · · · · · · · · · · · · · ·				
MAX. OVERCURRENT			1.5 x I _n (NORMAL DUTY) OR 2 x					
			(INCLUDING COMBINED EFFECTS OF OVERVOLTAGES, HA	RMONICS AND CAPACITANCE TOLERANCE				
INRUSH CURRENT			200 x I _n	LOUTIA				
EXPECTED LIFE TIME			> 120000 h (NORMA					
DICOLLADOS DECICTOD			> 150000 h (HEAVY					
DISCHARGE RESISTOR ALTITUDE			TO 75 V ≤ 3 m					
INSULATION LEVEL		kV	UP TO 4000 r	II .				
ROUTINE TESTS		K V	4/-					
TERMINAL TO TERMINAL			2.15 x U _n , 2 :	S				
TERMINAL TO CASE			4000 V , 10 s					
SEALING TEST			N/A	75 °C. 6 h				
MECHANICAL PARAMETERS				10 2/011				
TERMINAL PER PHASE / TERMINAL HEIGHT (TH) / MAX. TORQUE / MAX. CURR	RENT		2 x 25 mm² / 35 mm / 3 Nm / 6	00 A for D > 90 mm				
, , , , , , , , , , , , , , , , , , ,			2 x 16 mm ² / 30 mm / 2 Nm / 3					
MOUNTING AND GROUNDING / MAX. TORQUE			THREADED M12 BOL					
MOUNTINING POSITION			VERTICAL WITH TERMINAL POINTING UPWARDS OR HORIZONTAL VE	RTICAL WITH TERMINAL POINTING UPWARDS				
PROTECTION			IP20					
CLEARANCE DISTANCE			> 16 mm					
CREEPAGE DISTANCE			> 16 mm					
SAFETY DEVICE			OVERPRESSURE DISCONNECT	TOR (ALL PHASES)				
MATERIAL PARAMETERS								
DIELECTRIC			SELF HEALING METALLIZED PO					
FILLING			DRY (FILLED WITH NON PCB POLYURETHANE RESIN) NON	PCB BIODEGRADABLE VEGETABLE C				
CASE			ALUMINIUM					
REFERENCE STANDARD								
c N us								

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK3053, KNK4053 - CYLINDRICAL ALUMINIUM HOUSING



220 ... 800 V, 5 ... 50 kVar



$f_n = 50 I$	Hz - NO	RMAL	DUTY									
C _n (µF)	O, (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	O _n (kVar)	I _n (A)	D (mm)	H (mm)	Weigh	nt (kg)	Packing unit (pcs)	Approval
	U _n = 4	00 V	U _n = 3	80 V					KNK3053	KNK4053		C22.2 No. 190 PROTECTED, 10 000 AI-C
3 x 33.2	5	7.2	4.5	6.8			75	165	0.9	0.8	16	•
3 x 49.7	7.5	10.8	6.7	10.2			75	210	1.1	1.0	16	•
3 x 66.3	10	14.4	9	13.7			75	210	1.1	1.0	16	•
3 x 82.9	12.5	18	11.3	17.2			75	245	1.4	1.2	16	•
3 x 99.5	15	21.7	13.5	20.5			90	210	1.5	1.3	16	•
3 x 132.5	20	28.9	18	27.3			90	245	1.8	1.5	16	•
3 x 165.8	25	36.1	22.5	34.2			90	285	2.1	1.8	16	•
3 x 198.9	30	43.1	27	41			116	245	3.0	2.6	9	•
3 x 265.3	40	57.7	36.1	54.8			116	285	3.6	3.2	9	•
3 x 331.6	50	72.2	45.1	68.6		2001/	136	245	4	3.6	2	•
	$U_n = 4$		$U_n = 4$		$U_n = 3$				KNK3053	KNK4053		
3 x 27.4	5	6.6	4.1	5.9	3.7	5.6	75	165	0.9	0.8	16	•
3 x 41.1	7.5	9.8	6.2	8.9	5.6	8.5	75	210	1.1	1.0	16	•
3 x 54.8	10	13.1	8.3	12	7.4	11.2	75	245	1.4	1.2	16	•
3 x 68.5 3 x 82.2	12.5	16.4	10.4	15 17.9	9.3	14.1	90	210	1.5	1.3	16	•
	15	19.7	12.4		11.2	17	90	245	1.8	1.5	16	•
3 x 109.6 3 x 137	20 25	26.2	16.6 20.7	24 29.9	15	22.8	90 116	285 210	2.1	1.8 2.2	16 9	•
3 x 137	30	32.8 39.4	24.8	35.8	18.6 22.4	28.3 34	116	245	3.0	2.6	9	•
3 x 164.4 3 x 219.2	40	52.5	33.1	47.6	29.8	45.3	116	285	3.6	3.2	9	•
3 x 219.2	50	65.6	41.3	59.6	37.3	56.7	136	245	3.0	3.6	2	•
3 X 2 / 4	$U_n = 4$		$U_{n} = 4$		U _n = 4		130	240	KNK3053	KNK4053	2	
3 x 23	5	6	4.2	5.5	3.5	5.1	75	165	0.9	0.8	16	•
3 x 34.5	7.5	9	6.3	8.3	5.2	7.5	75	210	1.1	1.0	16	•
3 x 46.1	10		8.4	11	7	10.1	75	210	1.1	1.0	16	•
3 x 57.6	12.5	15	10.5	13.8	8.6	12.4	75	245	1.4	1.2	16	•
3 x 69.1	15	18	12.7	16.7	10.5	15.2	90	210	1.5	1.3	16	•
3 x 92.1	20	24.1	16.9	22.2	13.9	20.1	90	245	1.8	1.5	16	•
3 x 115.1	25	30.1	21	27.6	17.4	25.1	90	285	2.1	1.8	16	•
3 x 138.2	30	36.1	25.2	33.1	20.8	30	116	210	2.5	2.2	9	•
3 x 184.2	40	48.1	33.5	44	27.7	40.1	116	285	3.6	3.2	9	•
3 x 230.3	50	60.1	42	55.1	34.7	50.1	136	245	4	3.6	2	•
	U _n = 5	25 V	U _n = 4	80 V	U _n = 4	140 V			KNK3053	KNK4053		
3 x 19.3	5	5.5	4.4	5.1	3.5	4.6	75	165	0.9	0.8	16	•
3 x 28.9	7.5	8.2	6.2	7.5	5.3	7	75	210	1.1	1.0	16	•
3 x 38.5	10	11	8.4	10	7	9.2	75	245	1.4	1.2	16	•
3 x 48.1	12.5	13.7	10.5	12.6	8.8	11.5	75	245	1.4	1.2	16	•
3 x 57.7	15	16.5	12.5	15	10.5	13.8	90	210	1.5	1.3	16	•
3 x 77	20	22	16.7	20.1	14	18.4	90	285	2.1	1.8	16	•
3 x 96.2	25	27.5	20.9	25.1	17.6	23.1	116	210	2.5	2.2	9	•
3 x 115.5	30	33	25	30.1	21.1	27.7	116	245	3.0	2.6	9	•
3 x 154	40	44	33.4	40.2	28.1	36.9	116	285	3.6	3.2	9	•
3 x 192.5	50	55	41.8	50.3	35.1	46.1	136	245	4	3.6	2	•

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK3053, KNK4053 - CYLINDRCAL ALUMINIUM HOUSING

1 f = 50 f	Hz - NO	RMAL I	DUTY									
C _n (µF)	O, (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	Q, (kVar)	I _n (A)	D (mm)	H (mm)		ht (kg)	Packing unit (pcs)	Approval
		690 V								KNK4053		C22.2 No. 190 PROTECTED, 10 000 AI-C
3 x 11.1	5	4.2					75	165	0.9	0.8	16	
3 x 16.7	7.5	6.3 8.4					75 75	210	1.1	1.0	16 16	
3 x 22.3 3 x 27.9	12.5	10.5			- ——		75	245	1.1	1.0	16	-
3 x 27.9	15	12.6			-		90	210	1.5	1.3	16	
3 x 44.6	20	16.7					90	245	1.8	1.5	16	-
3 x 55.7	25	20.9					116	210	2.5	2.2	16	
3 x 66.9	30	25.1					116	245	3.0	2.6	9	
3 x 89.1	40	33.5					116	285	3.6	3.2	9	
	$U_n = 8$	300 V							KNK3053	KNK4053		
3 x 27.4	5	6.6					75	165	0.9	0.8	16	
3 x 41.1	7.5	9.8					75	210	1.1	1.0	16	
3 x 54.8	10	13.1					75	245	1.4	1.2	16	
3 x 68.5	12.5	16.4					75	245	1.4	1.2	16	
3 x 82.2	15	19.7					90	210	1.5	1.3	16	
3 x 109.6	20	26.2					90	285	2.1	1.8	16	
3 x 137 3 x 164.4	25 30	32.8 39.4					116 116	210 245	2.5 3.0	2.2	9	
3 x 164.4 3 x 219.2	40	52.5					116	285	3.6	3.2	9	
$f_n = 50 \text{ H}$			ITV				110	203	3.0	5.2	,	
C _n (μF)	Q _a (kVar)		Q _n (kVar)	I _n (A)	Q, (kVar)	I _n (A)	D (mm)	H (mm)	Weig	ht (kg)	Packing unit	Approval
On (pri)					Q _n (ittal)	'n V 'y	<i>D</i> (!!!!!)	()			(pcs)	C73 US C22.2 No. 190
		400 V	$U_n = 3$				7.5	1/5		KNK4053		PROTECTED, 10 000 AI-C
3 x 33.2	5	7.2	4.5	6.8			75	165	0.9	0.8	16	•
3 x 49.7 3 x 66.3	7.5	10.8	6.7	10.2			75 90	210 210	1.1	1.0	<u>16</u>	•
3 x 82.9	10 12.5	14.4	9 11.3	<u>13.7</u> 17.2			90	245	1.8	1.5	16	•
3 x 99.5	15	21.7	13.5	20.5			90	245	1.8	1.5	16	-
3 x 132.5	20	28.9	18	27.3			116	210	2.5	2.2	16	•
3 x 165.8	25	36.1	22.5	34.2			116	245	3.0	2.6	9	•
3 x 198.9	30	43.1	27	41			116	285	3.6	3.2	9	•
3 x 265.3	40	57.7	36.1	54.8			136	285	4.6	4.1	9	•
3 x 331.6	50	72.2	45.1	68.6			136	310	5	4.5	1	
	U _n = 4	440 V	$U_n = 4$	100 V	U _n = 3	380 V			KNK3053	KNK4053		
3 x 27.4	5	6.6	4.1	5.9	3.7	5.6	75	210	1.1	1.0	16	
3 x 41.1	7.5	9.8	6.2	0.0		0.5		210			· -	•
3 x 54.8	10			8.9	5.6	8.5	75	245	1.4	1.2	16	•
3 x 68.5		13.1	8.3	12	5.6 7.4	11.2	75 90		1.5	1.3		
3 x 82.2	12.5	16.4	8.3 10.4	12 15	7.4 9.3	11.2 14.1	90 90	245 210 245	1.5 1.8	1.3 1.5	16 16 16	0
	15	16.4 19.7	8.3 10.4 12.4	12 15 17.9	7.4 9.3 11.2	11.2 14.1 17	90 90 90	245 210 245 285	1.5 1.8 2.1	1.3 1.5 1.8	16 16 16 16	•
3 x 109.6	15 20	16.4 19.7 26.2	8.3 10.4 12.4 16.6	12 15 17.9 24	7.4 9.3 11.2 15	11.2 14.1 17 22.8	90 90 90 116	245 210 245 285 245	1.5 1.8 2.1 3.0	1.3 1.5 1.8 2.6	16 16 16 16 9	•
3 x 109.6 3 x 137	15 20 25	16.4 19.7 26.2 32.8	8.3 10.4 12.4 16.6 20.7	12 15 17.9 24 29.9	7.4 9.3 11.2 15 18.6	11.2 14.1 17 22.8 28.3	90 90 90 116 116	245 210 245 285 245 245	1.5 1.8 2.1 3.0 3.0	1.3 1.5 1.8 2.6 2.6	16 16 16 16 9	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4	15 20 25 30	16.4 19.7 26.2 32.8 39.4	8.3 10.4 12.4 16.6 20.7 24.8	12 15 17.9 24 29.9 35.8	7.4 9.3 11.2 15 18.6 22.4	11.2 14.1 17 22.8 28.3 34	90 90 90 116 116 116	245 210 245 285 245 245 245 285	1.5 1.8 2.1 3.0 3.0 3.6	1.3 1.5 1.8 2.6 2.6 3.2	16 16 16 16 9 9	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2	15 20 25	16.4 19.7 26.2 32.8 39.4 52.5	8.3 10.4 12.4 16.6 20.7	12 15 17.9 24 29.9 35.8 47.6	7.4 9.3 11.2 15 18.6	11.2 14.1 17 22.8 28.3 34 45.3	90 90 90 116 116 116	245 210 245 285 245 245 245 285 285	1.5 1.8 2.1 3.0 3.0	1.3 1.5 1.8 2.6 2.6 3.2 4.1	16 16 16 16 9	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4	15 20 25 30 40 50	16.4 19.7 26.2 32.8 39.4	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3	12 15 17.9 24 29.9 35.8	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3	11.2 14.1 17 22.8 28.3 34	90 90 90 116 116 116	245 210 245 285 245 245 245 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6	1.3 1.5 1.8 2.6 2.6 3.2	16 16 16 16 9 9 9	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2	15 20 25 30 40 50	16.4 19.7 26.2 32.8 39.4 52.5 65.6	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3	12 15 17.9 24 29.9 35.8 47.6	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3	11.2 14.1 17 22.8 28.3 34 45.3 56.7	90 90 90 116 116 116	245 210 245 285 245 245 245 285 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5	16 16 16 16 9 9 9	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274	15 20 25 30 40 50 U _n = 4	16.4 19.7 26.2 32.8 39.4 52.5 65.6	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4	12 15 17.9 24 29.9 35.8 47.6 59.6	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4	11.2 14.1 17 22.8 28.3 34 45.3 56.7	90 90 90 116 116 116 136	245 210 245 285 245 245 285 285 310	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053	16 16 16 16 9 9 9 1	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1	15 20 25 30 40 50 U _n = 4	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4	12 15 17.9 24 29.9 35.8 47.6 59.6	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5	90 90 90 116 116 116 136 136	245 210 245 285 245 245 285 285 310	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8	16 16 16 16 9 9 9 1 1	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6	15 20 25 30 40 50 U _n = 4 5 7.5 10	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4	90 90 90 116 116 116 136 136 75 75 75	245 210 245 285 245 245 285 285 310 165 210 245 210	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0	16 16 16 16 9 9 9 1 1 1 16 16	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1	15 20 25 30 40 50 U _n = 4 5 7.5 10	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 2 4.2 6.3 8.4 10.5 12.7	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 13.8 16.7	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 8.6 10.5	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2	90 90 90 116 116 116 136 136 75 75 75 90	245 210 245 285 245 245 285 285 310 165 210 245 210 245	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2	16 16 16 16 9 9 9 1 1 1 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 2 4.2 6.3 8.4 10.5 12.7 16.9	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 13.8 16.7 22.2	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 8.6 10.5 13.9	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1	90 90 90 116 116 116 136 136 75 75 75 90	245 210 245 285 245 245 285 310 165 210 245 210 245 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5	16 16 16 16 9 9 9 1 1 1 16 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1 3 x 115.1	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 13.8 16.7 22.2 27.6	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 8.6 10.5 13.9	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1	90 90 90 116 116 116 136 136 75 75 75 90 90	245 210 245 285 245 245 285 310 165 210 245 210 245 285 285 245	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5	16 16 16 16 9 9 9 1 1 1 16 16 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1 3 x 115.1 3 x 138.2	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 30	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30	90 90 90 116 116 116 136 136 75 75 75 90 90 90 116	245 210 245 285 245 245 285 285 310 165 210 245 210 245 285 285 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6	16 16 16 16 9 9 9 1 1 1 16 16 16 16 16 16 9	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 115.1 3 x 138.2 3 x 184.2	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 30 40	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n =4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1	90 90 90 116 116 116 136 136 75 75 75 90 90 116 116	245 210 245 285 245 245 285 285 310 165 210 245 210 245 285 245 285 245	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 3.2 3.6	16 16 16 16 9 9 9 1 1 1 16 16 16 16 16 16 9 9	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1 3 x 115.1 3 x 138.2	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 30 40 50	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 48.1 60.1	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42	12 15 17.9 24 29.9 35.8 47.6 59.6 440 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 2 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1	90 90 90 116 116 116 136 136 75 75 75 90 90 90 116	245 210 245 285 245 245 285 285 310 165 210 245 210 245 285 285 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0 4.6	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 3.2 3.6 4.1	16 16 16 16 9 9 9 1 1 1 16 16 16 16 16 16 9	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 30 40 U _n = 4 5 10 10 10 10 10 10 10 10 10 10	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n =4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U _n =4	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1	90 90 90 116 116 116 136 136 75 75 75 90 90 116 116 136 136	245 210 245 285 245 245 285 285 310 165 210 245 210 245 210 245 285 245 285 245 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0 4.6 KNK3053	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 3.2 3.6 4.1 KNK4053	16 16 16 9 9 9 1 1 1 16 16 16 16 16 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	• • • • • • • • • • • • • • • • • • •
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 30 40 5 15 5 10 15 15 20 25 30 40 50 50 50 50 50 50 50 50 50 5	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4	12 15 17.9 24 29.9 35.8 47.6 59.6 440 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U _n = 4 3.5	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1	90 90 90 116 116 116 136 136 75 75 75 90 90 116 116 136 136	245 210 245 285 245 245 285 285 310 165 210 245 210 245 210 245 285 245 285 245 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0 4.6 KNK3053 0.9	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 3.2 3.6 4.1 KNK4053 0.8	16 16 16 9 9 9 1 1 1 16 16 16 16 16 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 30 40 U _n = 4 5 10 10 10 10 10 10 10 10 10 10	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n =4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U _n =4	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1	90 90 90 116 116 116 136 136 75 75 75 90 90 116 116 136 136	245 210 245 285 245 245 285 285 310 165 210 245 210 245 210 245 285 245 285 245 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0 4.6 KNK3053	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 3.2 3.6 4.1 KNK4053 0.8 1.1	16 16 16 9 9 9 1 1 1 16 16 16 16 16 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 30 40 U _n = 5 7.5 10 15 20 25 30 40 50 7.5 15 20 25 30 40 40 40 40 40 40 40 40 40 4	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 5.5 8.2	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4 4.4 6.2	12 15 17.9 24 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1 180 V	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U _n = 4 3.5 5.3	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1 1440 V 4.6 7	90 90 90 116 116 116 136 136 75 75 90 90 116 116 136 136 75 75	245 210 245 285 245 245 285 285 310 165 210 245 210 245 285 245 285 245 285 245 285 210 210 210 210 210 210 210 210 210 210	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0 4.6 KNK3053 0.9 1.2	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 3.2 3.6 4.1 KNK4053 0.8	16 16 16 9 9 9 1 1 1 16 16 16 16 16 16 16 16 16 16 16	
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 30 40 50 10 15 15 15 20 25 15 10 10 10 10 10 10 10 10 10 10	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 5.5 8.2	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4 4.4 6.2 8.4	12 15 17.9 24 29.9 35.8 47.6 59.6 440 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1 180 V 5.1 7.5	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U _n = 4 3.5 5.3	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1 440 V 4.6 7	90 90 90 91 116 116 116 136 136 75 75 90 90 116 116 136 136 75 90 90 90 90 90 90 90 90 90 90	245 210 245 285 245 245 285 285 310 165 210 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 210 210	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0 4.6 KNK3053 0.9 1.2 1.5	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 3.2 3.6 4.1 KNK4053 0.8 1.1 1.3	16 16 16 16 9 9 9 11 11 16 16 16 16 16 16 16 16 16 16 16	
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 20 25 30 40 50 U _n = 5 7.5 15 20 10 10 10 10 10 10 10 10 10 10 10 10 10	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 5.5 8.2 11	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4 4.4 6.2 8.4	12 15 17.9 24 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1 80 V 5.5 180 V	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U _n = 4 3.5 5.3 7 8.8	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1 440 V 4.6 7 9.2 11.5	90 90 90 116 116 116 136 136 75 75 90 90 116 116 136 136 75 90 90 90 90 90 90 90 90 90 90	245 210 245 285 245 285 285 310 165 210 245 285 245 285 210 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0 4.6 KNK3053 0.9 1.2 1.5 1.8	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 5 3.2 3.6 4.1 KNK4053 0.8 1.1 1.3	16 16 16 16 9 9 9 11 11 16 16 16 16 16 16 16 16 16 16 16	
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 92.1 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3 3 x 28.9 3 x 38.5 3 x 48.1 3 x 57.7	15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 20 25 30 40 50 U _n = 5 7.5 15 20 10 10 10 10 10 10 10 10 10 10 10 10 10	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 5.5 8.2 11 13.7	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4 4.4 6.2 8.4 10.5 12.7	12 15 17.9 24 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1 80 V 5.5 10 12.6	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U ₀ = 4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U _n = 4 3.5 5.3 7 8.8 10.5	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1 440 V 4.6 7 9.2 11.5 13.8	90 90 90 116 116 116 136 136 75 75 90 90 90 116 116 136 136	245 210 245 285 245 285 285 310 165 210 245 285 245 285 210 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285	1.5 1.8 2.1 3.0 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.6 4.0 4.6 KNK3053 0.9 1.2 1.5 1.8 2.1	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 5 3.2 3.6 4.1 KNK4053 0.8 1.1 1.3 1.5 1.8	16 16 16 16 9 9 9 11 11 16 16 16 16 16 16 16 16 16 16 16	
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 69.1 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3 3 x 19.3 3 x 28.9 3 x 38.5 3 x 48.1 3 x 57.7 3 x 77 3 x 96.2 3 x 115.5	15 20 25 30 40 50 5 7.5 10 12.5 20 25 30 40 50 12.5 15 20 25 30 40 50 12.5 15 20 25 30 40 40 50 50 40 40 40 40 40 40 40 40 40 4	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 5.5 8.2 11 13.7 16.5 22 27.5 33	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4 4.4 10.5 12.5 16.7 20.9 25	12 15 17.9 24 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1 80 V 5.5 10 10 11 10 10 10 10 10 10 10 10 10 10	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U ₀ = 4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U ₀ = 4 3.5 5.3 7 8.8 10.5 14 17.6 21.1	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1 44.0 V 4.6 7 9.2 11.5 13.8 18.4 23.1 27.7	90 90 90 91 116 116 116 136 136 75 75 90 90 116 116 136 136 116 116 116 116	245 210 245 285 245 245 285 285 310 165 210 245 285 285 245 245 210 245 285 245 285 245 285 245 285 245 285 245 285 245 285 210 210 245 2210 245 225 225 225 225 225 225 225 225 225	1.5 1.8 2.1 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 4.6 KNK3053 0.9 1.2 1.5 1.8 2.1 3.0 3.6 4.0 4.6 KNK3053 0.9 3.6	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 4.1 KNK4053 0.8 1.1 1.3 1.5 1.8 2.6 3.2 3.6 4.1	16 16 16 16 9 9 9 11 11 16 16 16 16 16 16 16 16 16 16 16	
3 x 109.6 3 x 137 3 x 164.4 3 x 219.2 3 x 274 3 x 23 3 x 34.5 3 x 46.1 3 x 57.6 3 x 115.1 3 x 138.2 3 x 184.2 3 x 230.3 3 x 19.3 3 x 28.9 3 x 38.5 3 x 48.1 3 x 57.7 3 x 96.2	15 20 25 30 40 50 5 7.5 10 12.5 15 20 25 30 40 50 U _n = 4 5 7.5 10 12.5 15 20 25 7.5 10 12.5 10 20 25 25 20 25 20 25 20 25 20 25 25 26 26 26 27 26 27 26 27 26 27 26 27 26 27 27 27 27 27 27 27 27 27 27 27 27 27	16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 5.5 8.2 11 13.7 16.5 22 27.5	8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 10.5 12.7 16.9 21 25.2 33.5 42 U _n = 4 4.4 10.5 12.5 16.7 20.9	12 15 17.9 24 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 13.8 16.7 22.2 27.6 33.1 44 55.1 480 V 5.5 10 11 12.6 15 20.1 25.1	7.4 9.3 11.2 15 18.6 22.4 29.8 37.3 U ₀ = 4 3.5 5.2 7 8.6 10.5 13.9 17.4 20.8 27.7 34.7 U ₀ = 4 3.5 5.3 7 8.8 10.5 14 17.6	11.2 14.1 17 22.8 28.3 34 45.3 56.7 400 V 5.1 7.5 10.1 12.4 15.2 20.1 25.1 30 40.1 50.1 440 V 4.6 7 9.2 11.5 13.8 18.4 23.1	90 90 90 116 116 116 136 136 75 75 90 90 116 116 136 136	245 210 245 285 245 245 285 285 310 165 210 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 245 285 210 210 245 210 245 245 210 210 245 245 245 245 245 245 245 245 245 245	1.5 1.8 2.1 3.0 3.6 4.6 5 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 3.0 4.6 KNK3053 0.9 1.2 1.5 1.8 2.1 3.0	1.3 1.5 1.8 2.6 2.6 3.2 4.1 4.5 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.6 4.1 KNK4053 0.8 1.1 1.3 1.5 1.8 2.6 4.1	16 16 16 16 16 9 9 9 11 11 16 16 16 16 16 16 16 16 16 16 16	

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK3053, KNK4053 - CYLINDRICAL ALUMINIUM HOUSING

$f_{n} = 50 I$	Hz - HE	AVY DL	JTY									
C _n (µF)	Q _n (kVar)	I _n (A)	Q, (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	D (mm)	H (mm)		ht (kg)	Packing unit (pcs)	Approval
0 111		690 V					75	1/5		KNK4053	11	CZZ,Z NO, 190 PROTECTED, 10 000 AHC
3 x 11.1	5	4.2					75	165	0.9	8.0	16	
3 x 16.7	7.5	6.3					90	165	1.2	1.1	16	
3 x 22.3	10	8.4					90	210	1.5	1.3	16	
3 x 27.9	12.5	10.5	. ——				90	245	1.8	1.5	16	
3 x 33.4	15	12.6					90	285	2.1	1.8	<u>16</u>	-
3 x 44.6 3 x 55.7	20	16.7					116	210 245	2.5 3.0	2.2	9	
3 x 66.9	30	25.1					116	285	3.6	3.2	9	
3 x 89.1	40	33.5					136	285	4.6	4.1	1	-
3 X 07.1		800 V					130	203	KNK3053	KNK4053		
3 x 8.3	5	3.6					75	210	1.1	1.0	16	
3 x 12.4	7.5	5.4					75	245	1.4	1.2	16	
3 x 16.6	10	7.2					90	210	1.5	1.3	16	
3 x 20.7	12.5	9					90	245	1.8	1.5	16	
3 x 24.9	15	10.8					90	285	2.1	1.8	16	
3 x 33.2	20	14.4					116	210	2.5	2.2	9	
3 x 41.5	25	18					116	245	3.0	2.6	9	
3 x 49.7	30	21.7					116	285	3.6	3.2	9	
3 x 66.3	40	28.9					136	285	4.6	4.1	1	
$f_n = 60 I$	Hz - NO	RMAL	DUTY									
C _n (µF)	Q _n (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	D (mm)	H (mm)		ht (kg)	Packing unit (pcs)	Approval
	U _n =	400 V	$U_n = 3$	880 V					KNK3053	KNK4053		PROTECTED, 10 000 AHC
3 x 27.6	5	7.2	4.5	6.8			75	165	0.9	0.8	16	•
3 x 41.5	7.5	10.8	6.7	10.2			75	165	0.9	0.8	16	•
3 x 55.3	10	14.4	9	13.7			75	210	1.1	1.0	16	•
3 x 69.1	12.5	18	11.3	17.2			75	245	1.4	1.2	16	•
3 x 82.9	15	21.7	13.5	20.5			75	245	1.4	1.2	16	•
3 x 110.5	20	28.9	18	27.3			90	245	1.8	1.5	16	
3 x 138.2	25	36.1	22.6	34.3			90	285	2.1	1.8	16	•
3 x 165.8	30	43.1	27	41			116	210	2.5	2.2	9	•
3 x 221.1 3 x 276.3	40 50	57.7 72.2	<u>36.1</u> 45.1	54.8			116	245	3.0	3.2	4	•
3 X 270.3		440 V	$U_n = 4$		11 - 3	380 V	110	200	KNK3053	KNK4053	4	_
3 x 22.8		770 V	O _n				75		KINKOUSS	KINK4UJJ		
	5	6.6	<i>A</i> 1	5 9	3.7			165	0.9	0.8	16	•
	5 7.5	6.6 9.8	4.1	5.9 8.9	3.7 5.6	5.6 8.5	75 75	165 210	0.9	0.8	16 16	•
3 x 34.3 3 x 45.7	7.5	9.8	6.2	8.9	5.6	8.5	75	210	1.1	1.0	16	
3 x 45.7	7.5 10	9.8 13.1	6.2 8.3	8.9 12	5.6 7.5	8.5 11.4	75 75	210 210	1.1 1.1	1.0	16 16	•
	7.5	9.8	6.2	8.9	5.6	8.5	75	210	1.1	1.0	16	•
3 x 45.7 3 x 57.1	7.5 10 12.5	9.8 13.1 16.4	6.2 8.3 10.4	8.9 12 14.9	5.6 7.5 9.3	8.5 11.4 14.1	75 75 75	210 210 245	1.1 1.1 1.4	1.0 1.0 1.2	16 16 16	•
3 x 45.7 3 x 57.1 3 x 68.5	7.5 10 12.5 15	9.8 13.1 16.4 19.7	6.2 8.3 10.4 12.4	8.9 12 14.9 17.9	5.6 7.5 9.3 11.2	8.5 11.4 14.1 17	75 75 75 90	210 210 245 210	1.1 1.1 1.4 1.5	1.0 1.0 1.2 1.3	16 16 16 16	•
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3	7.5 10 12.5 15 20	9.8 13.1 16.4 19.7 26.2	6.2 8.3 10.4 12.4 16.6	8.9 12 14.9 17.9 23.8	5.6 7.5 9.3 11.2 14.9	8.5 11.4 14.1 17 22.6	75 75 75 90 90	210 210 245 210 245	1.1 1.1 1.4 1.5 1.8	1.0 1.0 1.2 1.3 1.5	16 16 16 16 16	•
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2	7.5 10 12.5 15 20 25	9.8 13.1 16.4 19.7 26.2 32.8	6.2 8.3 10.4 12.4 16.6 20.7	8.9 12 14.9 17.9 23.8 29.9	5.6 7.5 9.3 11.2 14.9 18.7	8.5 11.4 14.1 17 22.6 28.4	75 75 75 90 90 90	210 210 245 210 245 245 285	1.1 1.1 1.4 1.5 1.8 2.1	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2	16 16 16 16 16	0 0 0
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137	7.5 10 12.5 15 20 25 30 40	9.8 13.1 16.4 19.7 26.2 32.8 39.4	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3	8.9 12 14.9 17.9 23.8 29.9 35.8	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 2	8.5 11.4 14.1 17 22.6 28.4 34	75 75 75 90 90 90	210 210 245 210 245 245 285 210	1.1 1.1 1.4 1.5 1.8 2.1 2.5	1.0 1.0 1.2 1.3 1.5 1.8 2.2	16 16 16 16 16 16 16	0 0 0 0 0 0
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4	7.5 10 12.5 15 20 25 30 40 50 U _n =	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7	75 75 75 90 90 90 116 116 116	210 210 245 210 245 245 285 210 285	1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2	16 16 16 16 16 16 16 9	• • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8	7.5 10 12.5 15 20 25 30 40 50 U _n = 5	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 40 V 5.5 8.3	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5	75 75 75 90 90 90 116 116 116 75	210 210 245 210 245 285 210 285 285 285 165	1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8	16 16 16 16 16 16 9 9 4	• • • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 440 V 5.5 8.3	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5	75 75 75 90 90 90 116 116 116 75 75	210 210 245 210 245 285 210 285 285 285 165 165 210	1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8	16 16 16 16 16 16 9 9 4 16 16	• • • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1	75 75 75 90 90 90 116 116 116 75 75 75	210 210 245 210 245 285 210 285 285 2165 165 210 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 1.0	16 16 16 16 16 16 9 9 4 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 2 3.5 5.2 7 9 10.4	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13	75 75 75 90 90 90 116 116 116 75 75 75	210 210 245 210 245 285 210 285 285 285 165 165 210 245 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0	16 16 16 16 16 16 9 9 4 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8 22	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 2 3.5 5.2 7 9 10.4 13.9	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15	75 75 75 90 90 90 116 116 116 75 75 75 75	210 210 245 210 245 285 210 285 285 210 285 210 245 245 210 245 210	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.2	16 16 16 16 16 16 9 9 4 16 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8 22 27.6	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 13.9 17.4	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1	75 75 75 90 90 90 116 116 116 75 75 75 75 75	210 210 245 210 245 285 210 285 285 165 165 210 245 245 210 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 KNK4053 0.8 1.0 1.2 1.2 1.3 1.5	16 16 16 16 16 16 9 9 4 16 16 16 16 16	• • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 13.9 17.4 20.8	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30	75 75 75 90 90 90 116 116 116 116 75 75 75 75 75 90	210 210 245 210 245 285 210 285 285 165 165 210 245 245 210 245 25 26 27 28 28 28 28 28 28 28 28 28 28	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.2 1.3 1.5	16 16 16 16 16 16 9 9 4 16 16 16 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30 40 40	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 13.9 17.4 20.8 27.8	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1	75 75 90 90 90 116 116 116 116 75 75 75 75 90 90 90	210 210 245 210 245 285 210 285 285 165 165 210 245 245 210 245 245 210	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.2 1.3 1.5 1.8	16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30 40 50 50 50	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = ² 3.5 5.2 7 9 10.4 13.9 17.4 20.8 27.8 34.7	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1	75 75 75 90 90 90 116 116 116 116 75 75 75 75 75 90	210 210 245 210 245 285 210 285 285 165 165 210 245 245 210 245 25 26 27 28 28 28 28 28 28 28 28 28 28	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.2 1.3 1.5 1.8 2.6 2.6	16 16 16 16 16 16 9 9 4 16 16 16 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30 40 50 U _n = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 4	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1	75 75 75 90 90 90 116 116 116 116 75 75 75 75 90 90 90 116	210 210 245 210 245 285 210 285 285 165 165 210 245 245 210 245 245 210 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.2 1.3 1.5 1.8 2.6 KNK4053	16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16 16 16 16 16 16	
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 16	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30 40 50 U _n = 55 50 50 50 50 50	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1 180 V	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1	75 75 75 90 90 90 116 116 116 116 75 75 75 75 90 90 116	210 210 245 210 245 285 210 285 285 165 165 210 245 245 210 245 245 210 245 245 210	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 1.0 1.2 1.2 1.3 1.5 1.8 2.6 KNK4053 0.8	16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16	
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 16 3 x 24.1	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.4 6.3	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 140 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1 180 V	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2 3.5 5.3	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1 440 V 4.6 7	75 75 75 90 90 90 116 116 116 75 75 75 75 75 75 75 75 75 75 75 75 75	210 210 245 210 245 285 210 285 285 165 165 210 245 245 210 245 245 245 245 245 245 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 1.0 1.2 1.2 1.3 1.5 1.8 2.6 2.6 KNK4053 0.8 0.8	16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16 16 16 16 16 16	
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 10 10	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 2 4.4 6.3 8.4	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1 88 V 5.1 7.6 10.1	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 4 3.5 5.3 7	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1 440 V 4.6 7	75 75 75 90 90 90 116 116 116 75 75 75 75 75 75 75 75 75 75 75 75 75	210 210 245 210 245 285 210 285 285 165 165 210 245 245 245 245 245 245 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.3 1.5 1.8 2.6 2.6 KNK4053 0.8 0.8 1.0	16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16 16 16 16 16 16	
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 20 25 30 40 12.5 15 10 12.5 10 12.5 10 12.5	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.4 6.3 8.4 10.5	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1 80 V 5.1 7.6 10.1 12.6	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7 8.8	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 20.1 25.1 30 40.1 50.1 440 V 4.6 7 9.2 11.5	75 75 75 90 90 90 116 116 116 116 75 75 75 75 75 75 75 75 75 75 75 75 75	210 210 245 210 245 285 210 285 285 165 165 210 245 245 245 245 245 245 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 1.8 1.9 1.9 1.9 1.9 1.1 1.4 1.5 1.8 1.8 1.9 1.9 1.9 1.1 1.4 1.5 1.8 1.8 1.9 1.9 1.9 1.1 1.4 1.5 1.8 1.8 1.9 1.9 1.9 1.1 1.4 1.5 1.8 1.8 1.9 1.9 1.9 1.1 1.4 1.4 1.5 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.3 1.5 1.8 2.6 KNK4053 0.8 0.8 1.0 1.1.2	16 16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16 16 16 16 16 16	
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1 3 x 40.1 3 x 48.1	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 10 10	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7 16.5	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 2 4.4 6.3 8.4	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1 88 V 5.1 7.6 10.1	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 4 3.5 5.3 7	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1 440 V 4.6 7	75 75 75 90 90 90 116 116 116 75 75 75 75 75 75 75 75 75 75 75 75 75	210 210 245 210 245 285 210 285 285 165 165 210 245 245 245 245 245 245 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.3 1.5 1.8 2.6 KNK4053 0.8 0.8 1.0 1.1 2 1.2 1.3 1.5 1.8 2.6 1.0 1.2 1.2 1.3 1.5 1.8 2.6 2.6 KNK4053 0.8 1.0 1.2 1.2	16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16 16 16 16 16 16	
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 30 40 50 12.5 15 20 25 30 40 50 15 50 15 50 15 50 15 50 16 50 17 50 50 50 50 50 50 50 50 50 50 50 50 50	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _a = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.4 6.3 8.4 10.5	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1 80 V 5.1 7.6 10.1 12.6 15	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 4 3.5 5.2 7 9 10.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7 8.8 10.5	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1 440 V 4.6 7 9.2 11.5 13.8	75 75 75 90 90 90 116 116 116 116 75 75 75 75 75 75 75 75 75 75 75 75 75	210 210 245 210 245 285 210 285 285 165 165 210 245 245 245 245 245 245 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9 1.1 1.4 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9 1.1 1.4 1.4	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.3 1.5 1.8 2.6 KNK4053 0.8 0.8 1.0 1.1.2	16 16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16 16 16 16 16 16	
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1 3 x 40.1 3 x 48.1 3 x 64.2	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 30 40 50 12.5 15 20 25 30 40 50 15 20 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 20 25 30 40 50 20 20 20 20 20 20 20 20 20 20 20 20 20	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7 16.5 22	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.4 6.3 8.4 10.5 10.5 10.6	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1 80 V 5.1 7.6 10.1 12.6 15 20.1	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U _n = 2 3.5 5.2 7 9 10.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7 8.8 10.5 14.1	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1 440 V 4.6 7 9.2 11.5 13.8 18.5	75 75 75 90 90 90 116 116 116 116 75 75 75 75 75 75 75 75 75 75 75 75 75	210 210 245 210 245 285 210 285 285 165 165 210 245 245 245 245 245 245 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 1.1 1.4 1.8	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.3 1.5 1.8 2.6 KNK4053 0.8 0.8 1.0 1.1.2 1.2 1.3 1.5 1.8 2.6 1.0 1.2 1.3 1.5 1.8 2.6 2.6 KNK4053 0.8 1.0 1.2 1.2 1.3	16 16 16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16 16 16 16 16 16	
3 x 45.7 3 x 57.1 3 x 68.5 3 x 91.3 3 x 114.2 3 x 137 3 x 182.7 3 x 228.4 3 x 19.2 3 x 28.8 3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1 3 x 40.1 3 x 48.1 3 x 64.2 3 x 80.2	7.5 10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 30 40 50 12.5 15 20 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25 30 40 50 25	9.8 13.1 16.4 19.7 26.2 32.8 39.4 52.5 65.6 480 V 6 9 12 15 18 24.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7 16.5 22 27.5	6.2 8.3 10.4 12.4 16.6 20.7 24.8 33.1 41.3 U _n = 4 4.2 6.3 8.4 11 12.8 21 25.2 33.6 42 U _n = 4 6.3 8.4 10.5 12.5 16.7 21	8.9 12 14.9 17.9 23.8 29.9 35.8 47.6 59.6 40 V 5.5 8.3 11 14.4 16.8 22 27.6 33.1 44.1 55.1 80 V 5.1 7.6 10.1 12.6 15 20.1 25.3	5.6 7.5 9.3 11.2 14.9 18.7 22.4 29.8 37.3 U ₀ = 4 3.5 5.2 7 9 10.4 13.9 17.4 20.8 27.8 34.7 U ₀ = 2 3.5 5.3 7 8.8 10.5 14.1 17.5	8.5 11.4 14.1 17 22.6 28.4 34 45.3 56.7 400 V 5.1 7.5 10.1 13 15 20.1 25.1 30 40.1 50.1 440 V 4.6 7 9.2 11.5 13.8 18.5 23	75 75 75 90 90 90 116 116 116 116 75 75 75 75 75 75 75 75 75 75 75 75 75	210 210 245 210 245 285 210 285 285 165 165 210 245 245 245 245 245 245 245 245 245 245	1.1 1.1 1.4 1.5 1.8 2.1 2.5 3.6 3.6 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9 1.1 1.4 1.5 1.8 2.1 3.0 3.0 KNK3053 0.9 0.9 1.1 1.4 1.8 2.1	1.0 1.0 1.2 1.3 1.5 1.8 2.2 3.2 3.2 KNK4053 0.8 0.8 1.0 1.2 1.2 1.3 1.5 KNK4053 0.8 2.6 KNK4053 0.8 0.8 1.0 1.2 1.2 1.3 1.5 1.8	16 16 16 16 16 16 16 16 16 9 9 4 16 16 16 16 16 16 16 16 16 16 16 16 16	

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK3053, KNK4053 - CYLINDRCAL ALUMINIUM HOUSING

C_QPT	$t_n = 60 \text{I}$	Hz - NO	RMAL	DUTY									
3.473 5	C _n (μF)			Q _n (kVar)	I _n (A)	O _n (kVar)	I _n (A)	D (mm)	H (mm)			~	c FL us
33 139 75 63 75 105 09 08 16 16 18 18 19 19 19 19 19 19	3 y Q 3							75	165			16	PROTECTED, IDUIDARC
3 x 116			-										
33.4219													
33.271 20 16.7 90 245 18 15 16	3 x 23.2	12.5	10.5					75	245	1.4	1.2	16	
3.46.4 25 20.9 90 245 1.8 1.5 1.6 3.47.3 0. 25.1 90 225 21 1.8 1.6 3.47.3 0. 33.5 116 245 3.0 2.6 9 3.47.4 0. 33.5 176 177 126 188	3 x 27.9	15	12.6					75	245	1.4	1.2	16	
33 x x x x x x x x x x x x x x x x x x	3 x 37.1	20	16.7					90	245	1.8	1.5	16	
3 x x 9									-				
3x.67 5 3.6													
3 x x 0	3 x /4.3							116	245			9	
3 x 10	3 v 6 0							75	165			16	
3 3 1 1 2 5 0 0 7 2 3 7 5 210 1 1 1 1 0 10 10 3 3 7 7 5 2 10 1 1 1 1 0 10 10 3 3 7 7 5 2 10 1 1 1 1 10 10 10 3 7 7 5 3 7 5 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													
3 x x x x x x x x x x x x x x x x x x x													
3x27/b 20 144 3x36 25 18 0 0 285 21 18 16 3x416 30 217 3x53 40 289 1 116 210 25 22 9 3x53 40 289 1 116 245 30 2.6 9 1 1 1 1 1 1 1 1 1													
3x416, 30 217			10.8					90		1.5			
3.46.6 30 217 3.66.7 16.6 24.6 30 2.6 9 F _n = 60 Hz - HEAVY DUTY C _s (µF) Q _s (W _M) L _s (A) Q _s (W _M) Q _s (W _M) L _s (A) Q _s (W _M) Q _s (3 x 27.6	20	14.4					90	245	1.8	1.5	16	
f _n = 60 Hz - HEAVY DUTY C _Q (µF) Q _Q (RVar) L(Λ) Q _Q (RVar) Q _Q (RVar)	3 x 34.5	25	18					90	285				
F = 60 Hz - HEAVY DUTY C_(yF)													
Color	3 x 55.3	40	28.9					116	245	3.0	2.6	9	
C, (No. 1) C, (No. 2) C,	f _n = 60 l	Hz - HE	AVY DL	JTY									
3 x 27.6 5 7.2 4.5 6.8 75 165 0.9 0.8 16 3 x 415 75 10.8 6.7 10.2 7.5 10.8 6.7 10.2 7.5 20.0 1.1 10.0 16 3 x 45.3 10 14.4 9 13.7 7.75 245 14.4 1.2 16 3 x 69.1 12.5 18 11.3 17.2 90 210 1.5 13.3 16 3 x 69.1 12.5 18 11.3 17.2 90 210 1.5 13.3 16 3 x 10.5 20 28.9 18 27.3 90 22.5 18.8 1.5 16 3 x 110.5 20 28.9 18 27.3 90 22.5 18.8 1.5 16 3 x 110.5 20 38.9 18 27.3 90 22.5 1.8 1.5 16 3 x 10.5 30 43.1 2.7 41 11.6 245 3.0 2.6 9 3 x 12.5 36.1 22.6 34.3 11.6 22.5 2.2 16 3 x 10.5 8 30 43.1 2.7 41 11.6 245 3.0 2.6 9 3 x 27.6 3 50 72.2 45.1 6.8 6 136 22.5 4.6 4.1 2 3 x 22.8 5 6.6 4.1 5.9 3.7 5.6 13.6 22.5 4.6 4.1 2 3 x 22.8 5 6.6 4.1 5.9 3.7 5.6 3.5 13.6 22.5 1.8 1.5 1.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	C _n (µF)			O _n (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	D (mm)	H (mm)	Weigl	ht (kg)		
3x415 75 108 67 102 75 210 11 10 16 16 3x53 10 144 9 137 75 245 14 12 16 16 3x691 125 18 11.3 172 90 210 15 1.3 16 16 3x691 125 18 11.3 172 90 245 18 15 16 16 3x691 125 18 11.3 172 90 245 18 15 16 16 18 15 16 18 15 16 18 15 16 18 15 16 18 15 16 18 15 16 18 15 16 18 15 16 18 15 16 18 15 16 18 15 16 18 18 15 16 18 18 15 16 18 18 15 16 18 18 15 16 18 18 15 16 18 18 18 18 18 18 18			400 V	U _n = 3	380 V								C22.2 No. 190 PROTECTED, 10 000 AI-C
3 x 55 3 10 14.4 9 13.7 75 245 14 12 16 ● 3 x 69 11 12.5 18 11.3 17.2 90 210 15 13 16 ● 3 x 10.5 20 28 9 18 27.3 90 225 18 15 1.5 16 ● 3 x 11.5 20 28 9 18 27.3 90 225 18 15 1.5 16 ● 3 x 11.5 20 28 9 18 27.3 90 225 18 15 1.5 16 ● 3 x 11.5 20 36.1 22.6 34.3 1116 210 25 2.2 16 ● 3 x 12.5 14 40 57.7 36.1 54.8 116 245 30 2.6 9 ● 3 x 227.1 40 57.7 36.1 54.8 116 245 30 2.6 9 ● 3 x 227.5 3 50 7.2 2 45.1 68.6 13.6 285 4.6 4.1 2 ● 3 x 27.3 10 13.1 8.3 12 7 41 116 245 30 2.6 9 ● 3 x 227.5 3 50 7.2 2 45.1 68.6 13.6 285 4.6 4.1 2 ● 3 x 228.5 5 6.6 4.1 5.9 3.7 56.6 75 165 0.9 0.8 16 ● 3 x 43.3 7.5 9.8 6.2 8.9 5.6 8.5 75 210 11.1 1.0 16 ● 3 x 43.7 1 12.5 16.4 1.0 3 14.9 9.3 14.1 90 210 15 13.3 16 ● 3 x 43.7 1 12.5 16.4 10.3 14.9 9.3 14.1 90 210 15 13.3 16 ● 3 x 43.7 3 20 26.2 28 20.7 2.9 9 18.7 2.6 9 10.2 245 18 15 16 ● 3 x 13.8 25 25 2.1 18.8 15 16 ● 3 x 13.8 25 25 26 27 1 2.5 16.4 10.3 14.9 9.3 14.1 90 210 15 13.3 16 ● 3 x 13.2 25 32.8 20.7 2.9 9 18.7 2.8 4 116 245 30 2.6 9 ● 3 x 13.5 25 25 25 25 25 25 25 25 25 25 25 25 25													•
3 x 69.1 12.5 18			-						-				
3 x 22													
3x105 20 28.9 18 27.3 90 285 2.1 1.8 16 •													
3 x 1382 25 36.1 22.6 34.3 116 210 2.5 2.2 16 ● 3 x 155.8 30 43.1 27 41 116 245 3.0 2.6 9 ● 3 x 271.1 40 57.7 36.1 54.8 136 245 4.0 3.6 9 ● 3 x 272.1 45.1 68.6 136 245 4.0 3.6 9 ● 3 x 272.1 45.1 68.6 136 245 4.0 3.6 9 ● 3 x 275.7 36.6 4.1 5.9 3.7 5.6 75 165 0.9 0.8 16 ● 3 x 343.7 7.5 9.8 6.2 8.9 5.6 85 75 210 1.1 1.0 16 ● 3 x 557.1 12.5 16.4 10.3 14.9 9.3 14.1 90 210 1.5 1.3 16 ● 3 x 91.3 20 26.2 16.5 23.8 14.9 22.6 90													
3 x 165.8 30			-						-				
3 x 221.1 40 57.7 36.1 54.8 136 245 4.0 3.6 9 3 x 227.6 3 50 72.2 45.1 68.6 U_=400 V													
3 x 22.8 5		40		36.1	54.8			136	245	4.0		9	•
3 x 22.8	3 x 276.3			45.1	68.6			136	285	4.6	4.1	2	•
3 x 34.3			440 V										
3 x 45.7 10 13.1 8.3 12 7.5 11.4 75 245 1.4 1.2 16 3 x 57.1 12.5 16.4 10.3 14.9 9.3 14.1 90 210 1.5 1.3 16 3 x 68.5 15 19.7 12.4 17.9 11.2 17 90 245 1.8 1.5 16 3 x 91.3 20 26.2 16.5 23.8 14.9 22.6 90 285 2.1 1.8 16 3 x 114.2 25 32.8 20.7 29.9 18.7 28.4 116 245 3.0 2.6 9 3 x 182.7 30 39.4 24.8 35.8 22.4 34 116 245 3.0 2.6 9 3 x 182.7 40 52.5 33.1 47.6 29.8 45.3 13.6 245 4.0 3.6 1 3 x 228.4 50 65.6 41.3 59.6 37.3 56.7 136 285 4.6 4.1 2 ■■						_							
3 x 57.1													
3 x 68.5 15 19.7 12.4 17.9 11.2 17 90 245 1.8 1.5 16 ● 3 x 91.3 20 26.2 16.5 23.8 14.9 22.6 90 285 2.1 1.8 16 ● 3 x 114.2 25.3 32.8 20.7 29.9 18.7 28.4 116 245 3.0 2.6 9 ● 3 x 114.2 25.5 33.1 47.6 29.8 45.3 136 245 4.0 3.6 1 ● 3 x 228.4 50 65.6 41.3 59.6 37.3 56.7 136 245 4.0 3.6 1 ● 3 x 18.2 50 65.6 41.3 59.6 37.3 56.7 136 245 4.0 3.6 1 ● 3 x 19.2 5 6 4.2 5.5 3.5 5.1 75 165 0.9 0.8 16 ● 3 x 28.8 7.5 9 6.3 8.3 5.2 7.5 7.5<								0.0	040				•
3 x 91.3 20 26.2 16.5 23.8 14.9 22.6 90 285 2.1 1.8 16 ● 3 x 114.2 25 32.8 20.7 29.9 18.7 28.4 116 245 3.0 2.6 9 ● 3 x 182.7 40 52.5 33.1 47.6 29.8 45.3 136 245 4.0 3.6 1 ● 3 x 228.4 50 65.6 41.3 59.6 37.3 56.7 136 285 4.6 4.1 2 3 x 182.7 5 6 4.2 5.5 3.5 5.1 75 136 285 4.6 4.1 2 3 x 182.8 7.5 9 6.3 8.3 5.2 7.5 75 210 1.1 1.0 16 ● 3 x 28.8 7.5 9 6.3 8.3 5.2 7.5 75 210 1.1 1.0 16 ● 3 x 28.8 7.5 9 6.3 8.3 5.2 7.5 75						_							•
3 x 114.2 25 32.8 20.7 29.9 18.7 28.4 116 245 3.0 2.6 9 ● 3 x 182.7 40 52.5 33.1 47.6 29.8 45.3 136 245 3.0 2.6 9 ● 3 x 228.4 50 65.6 41.3 59.6 29.8 45.3 136 225 4.6 4.1 2 ● 3 x 19.2 5 6 4.2 5.5 3.5 5.1 75 165 0.9 0.8 16 ● 3 x 19.2 5 6 4.2 5.5 3.5 5.1 75 165 0.9 0.8 16 ● 3 x 28.8 7.5 9 6.3 8.3 5.2 7.5 75 20 1.1 1.0 16 ● 3 x 35.0 12.5 15 11 14.4 9 13 90 210 1.5 1.3 16 ● 3 x 76.8 20 24.1 16.8 12.2 13.9 20.1 90						_							
3 x 137 30 39.4 24.8 35.8 22.4 34 116 245 3.0 2.6 9 ● 3 x 182.7 40 52.5 33.1 47.6 29.8 45.3 136 245 4.0 3.6 1 ● 3 x 28.4 50 65.6 41.3 59.6 37.3 56.7 136 245 4.0 3.6 1 ● 3 x 19.2 5 6 4.2 5.5 3.5 5.1 75 165 0.9 0.8 16 ● 3 x 28.8 7.5 9 6.3 8.3 5.2 7.5 75 210 1.1 1.0 16 ● 3 x 38.4 10 12 8.4 11 7 10.1 75 245 1.4 1.2 16 ● 3 x 57.6 15 18 12.8 16.8 10.4 15 90 210 1.5 1.3 16 ● 3 x 95.9 25 30.1 21 27.6 17.4 25.1 116 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						_							
3 x 228.4		30		24.8	35.8	22.4	34	116	245	3.0	2.6	9	•
3 x 19.2 5 6 4.2 5.5 3.5 5.1 75 165 0.9 0.8 16 ● 3 x 28.8 7.5 9 6.3 8.3 5.2 7.5 75 210 1.1 1.0 16 ● 3 x 38.4 10 12 8.4 11 7 10.1 75 245 1.4 1.2 16 ● 3 x 57.6 125 15 11 14.4 9 13 90 210 1.5 1.3 16 ● 3 x 76.8 20 24.1 16.8 22 13.9 20.1 90 245 1.8 1.5 16 ● 3 x 95.9 25 30.1 21 27.6 17.4 25.1 116 210 2.5 2.2 9 ● 3 x 15.3 40 48.1 33.6 44.1 27.8 40.1 116 245 3.0 2.6 9 ● <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						_							
3 x 19.2 5 6 4.2 5.5 3.5 5.1 75 165 0.9 0.8 16 ● 3 x 28.8 7.5 9 6.3 8.3 5.2 7.5 75 210 1.1 1.0 16 ● 3 x 38.4 10 12 8.4 11 7 10.1 75 245 1.4 1.2 16 ● 3 x 57.6 15 18 12.8 16.8 10.4 15 90 210 1.5 1.3 16 ● 3 x 76.8 20 24.1 16.8 22 13.9 20.1 90 245 1.8 1.5 16 ● 3 x 76.8 20 24.1 16.8 22 13.9 20.1 90 245 1.8 1.5 16 ● 3 x 76.8 20 24.1 16.8 22 13.9 20.1 90 245 1.8 1.5 16 ● 3 x 16.7 25 30.1 21 27.6 17.4 25.1 116	3 x 228.4							136	285			2	•
3 x 38.4 10 12 8.4 11 7 10.1 75 245 1.4 1.2 16 ● 3 x 50 12.5 15 11 14.4 9 13 90 210 1.5 1.3 16 ● 3 x 57.6 15 18 12.8 16.8 10.4 15 90 210 1.5 1.3 16 ● 3 x 76.8 20 24.1 16.8 22 13.9 20.1 90 245 1.8 1.5 16 ● 3 x 95.9 25 30.1 21 27.6 17.4 25.1 116 210 2.5 2.2 9 ● 3 x 153.5 40 48.1 33.6 44.1 27.8 40.1 116 245 3.0 2.6 9 ● 3 x 191.9 50 60.1 42 55.1 3.47 50.1 136 245 4.0 3.6 2 ● 3 x 16 5 6.5 4.2 5.1 3.5 4.6 75	3 x 19.2	- H						75	165				•
3 x 50 12.5 15 11 14.4 9 13 90 210 1.5 1.3 16 ● 3 x 76.8 20 24.1 16.8 22 13.9 20.1 90 245 1.8 1.5 16 ● 3 x 95.9 25 30.1 21 27.6 17.4 25.1 116 210 2.5 2.2 9 ● 3 x 115.1 30 36.1 25.2 33.1 20.8 30 116 245 3.0 2.6 9 ● 3 x 153.5 40 48.1 33.6 44.1 27.8 40.1 116 285 3.6 3.2 9 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 19.9 50 60.1 42 55.1 3.7 50.1 136 245 4.0 3.6 2 ● 3 x 24.1 7.5 8.2 6.3 7.6 5.3 7 <t< td=""><td>3 x 28 8</td><td>7.5</td><td></td><td></td><td></td><td></td><td></td><td></td><td>100</td><td></td><td></td><td></td><td></td></t<>	3 x 28 8	7.5							100				
3 x 57.6 15 18 12.8 16.8 10.4 15 90 210 1.5 1.3 16 ● 3 x 76.8 20 24.1 16.8 22 13.9 20.1 90 245 1.8 1.5 16 ● 3 x 95.9 25 30.1 21 27.6 17.4 25.1 116 210 2.5 2.2 9 ● 3 x 115.1 30 36.1 25.2 33.1 20.8 30 116 245 3.0 2.6 9 ● 3 x 153.5 40 48.1 33.6 44.1 27.8 40.1 116 285 3.6 3.2 9 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 16 5 6.5 4.2 5.1 3.5 4.6									210	1.1	1.0		
3 x 76.8 20 24.1 16.8 22 13.9 20.1 90 245 1.8 1.5 16 ● 3 x 95.9 25 30.1 21 27.6 17.4 25.1 116 210 2.5 2.2 9 ● 3 x 115.1 30 36.1 25.2 33.1 20.8 30 116 245 3.0 2.6 9 ● 3 x 153.5 40 48.1 33.6 44.1 27.8 40.1 116 285 3.6 3.2 9 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 16 5 6.5 4.2 5.1 3.5 4.6 75 165 0.9 0.8 16 ● 3 x 24.1 7.5 8.2 6.3 7.6 5.3 7 75 210 1.1 1.0 16 ● 3 x 40.1 12.5 13.7 10.5 12.6 8.8 11.5	3 x 38.4	10	12	8.4	11	7	10.1	75	210 245	1.1 1.4	1.0	16	•
3 x 95.9 25 30.1 21 27.6 17.4 25.1 116 210 2.5 2.2 9 ● 3 x 115.1 30 36.1 25.2 33.1 20.8 30 116 245 3.0 2.6 9 ● 3 x 153.5 40 48.1 33.6 44.1 27.8 40.1 116 285 3.6 3.2 9 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 24.1 7.5 8.2 6.3 7.6 5.3 7 <td>3 x 38.4 3 x 50</td> <td>10 12.5</td> <td>12 15</td> <td>8.4</td> <td>11 14.4</td> <td>7 9</td> <td>10.1 13</td> <td>75 90</td> <td>210 245 210</td> <td>1.1 1.4 1.5</td> <td>1.0 1.2 1.3</td> <td>16 16</td> <td>•</td>	3 x 38.4 3 x 50	10 12.5	12 15	8.4	11 14.4	7 9	10.1 13	75 90	210 245 210	1.1 1.4 1.5	1.0 1.2 1.3	16 16	•
3 x 115.1 30 36.1 25.2 33.1 20.8 30 116 245 3.0 2.6 9 ● 3 x 153.5 40 48.1 33.6 44.1 27.8 40.1 116 285 3.6 3.2 9 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 24.1 7.5 8.2 6.3 7.6 5.3 7 75 210 1.1 1.0 16 ● 3 x 40.1 12.5 13.7 10.5 12.6 8.8 11.5 90 210 1.5 1.3 16 ● 3 x 48.1 15 16.5 12.5 15 10.5 13.8<	3 x 38.4 3 x 50 3 x 57.6	10 12.5 15	12 15 18	8.4 11 12.8	11 14.4 16.8	7 9 10.4	10.1 13 15	75 90 90	210 245 210 210	1.1 1.4 1.5 1.5	1.0 1.2 1.3 1.3	16 16 16	•
3 x 153.5 40 48.1 33.6 44.1 27.8 40.1 116 285 3.6 3.2 9 ● 3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 16 5 6.5 4.2 5.1 3.5 4.6 75 165 0.9 0.8 16 ● 3 x 24.1 7.5 8.2 6.3 7.6 5.3 7 75 210 1.1 1.0 16 ● 3 x 32.1 10 11 8.4 10.1 7 9.2 75 245 1.4 1.2 16 ● 3 x 40.1 12.5 13.7 10.5 12.6 8.8 11.5 90 210 1.5 1.3 16 ● 3 x 48.1 15 16.5 12.5 15 10.5 13.8 90 245 1.8 1.5 16 ● 3 x 80.2 25 27.5 21 25.3 17.5 23 1	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8	10 12.5 15 20	12 15 18 24.1	8.4 11 12.8 16.8	11 14.4 16.8 22	7 9 10.4 13.9	10.1 13 15 20.1	75 90 90 90	210 245 210 210 245	1.1 1.4 1.5 1.5	1.0 1.2 1.3 1.3	16 16 16 16	•
3 x 191.9 50 60.1 42 55.1 34.7 50.1 136 245 4.0 3.6 2 ● 3 x 16 5 6.5 4.2 5.1 3.5 4.6 75 165 0.9 0.8 16 ● 3 x 24.1 7.5 8.2 6.3 7.6 5.3 7 75 210 1.1 1.0 16 ● 3 x 32.1 10 11 8.4 10.1 7 9.2 75 245 1.4 1.2 16 ● 3 x 40.1 12.5 13.7 10.5 12.6 8.8 11.5 90 210 1.5 1.3 16 ● 3 x 48.1 15 16.5 12.5 15 10.5 13.8 90 245 1.8 1.5 16 ● 3 x 80.2 20 22 16.7 20.1 14.1 18.5 90 285 2.1 1.8 16 ● 3 x 96.2 30 33 25.1 30.2 21 27.6 116<	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9	10 12.5 15 20 25	12 15 18 24.1 30.1	8.4 11 12.8 16.8 21	11 14.4 16.8 22 27.6	7 9 10.4 13.9 17.4	10.1 13 15 20.1 25.1	75 90 90 90 90 116	210 245 210 210 245 210	1.1 1.4 1.5 1.5 1.8 2.5	1.0 1.2 1.3 1.3 1.5 2.2	16 16 16 16 9	•
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1	10 12.5 15 20 25 30	12 15 18 24.1 30.1 36.1	8.4 11 12.8 16.8 21 25.2	11 14.4 16.8 22 27.6 33.1	7 9 10.4 13.9 17.4 20.8	10.1 13 15 20.1 25.1 30	75 90 90 90 116 116	210 245 210 210 245 210 245 245	1.1 1.4 1.5 1.5 1.8 2.5 3.0	1.0 1.2 1.3 1.3 1.5 2.2 2.6	16 16 16 16 9	•
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5	10 12.5 15 20 25 30 40	12 15 18 24.1 30.1 36.1 48.1	8.4 11 12.8 16.8 21 25.2 33.6	11 14.4 16.8 22 27.6 33.1 44.1	7 9 10.4 13.9 17.4 20.8 27.8	10.1 13 15 20.1 25.1 30 40.1	75 90 90 90 116 116	210 245 210 210 245 210 245 245 285	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6	1.0 1.2 1.3 1.3 1.5 2.2 2.6 3.2	16 16 16 16 9 9	•
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5	10 12.5 15 20 25 30 40	12 15 18 24.1 30.1 36.1 48.1 60.1	8.4 11 12.8 16.8 21 25.2 33.6 42	11 14.4 16.8 22 27.6 33.1 44.1 55.1	7 9 10.4 13.9 17.4 20.8 27.8 34.7	10.1 13 15 20.1 25.1 30 40.1 50.1	75 90 90 90 116 116	210 245 210 210 245 210 245 245 285	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0	1.0 1.2 1.3 1.3 1.5 2.2 2.6 3.2 3.6	16 16 16 16 9 9	•
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9	10 12.5 15 20 25 30 40 50 U _n =	12 15 18 24.1 30.1 36.1 48.1 60.1 525 V	8.4 11 12.8 16.8 21 25.2 33.6 42 U _n =4	11 14.4 16.8 22 27.6 33.1 44.1 55.1 480 V	7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 4	10.1 13 15 20.1 25.1 30 40.1 50.1	75 90 90 90 116 116 116 136	210 245 210 210 245 210 245 285 245 245	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0 KNK3053	1.0 1.2 1.3 1.3 1.5 2.2 2.6 3.2 3.6 KNK4053	16 16 16 16 9 9 9 2	•
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1	10 12.5 15 20 25 30 40 50 U _n = 5	12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2	8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.2 6.3	11 14.4 16.8 22 27.6 33.1 44.1 55.1 480 V 5.1 7.6	7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2 3.5 5.3	10.1 13 15 20.1 25.1 30 40.1 50.1 140 V 4.6 7	75 90 90 90 116 116 116 136	210 245 210 210 245 210 245 285 245 265 270	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0 KNK3053 0.9	1.0 1.2 1.3 1.3 1.5 2.2 2.6 3.2 3.6 KNK4053 0.8 1.0	16 16 16 16 9 9 9 2	• • • • • • • • • • • • • • • • • • •
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1	10 12.5 15 20 25 30 40 50 U _n = 5 7.5	12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2	8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.2 6.3 8.4	11 14.4 16.8 22 27.6 33.1 44.1 55.1 480 V 5.1 7.6	7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7	10.1 13 15 20.1 25.1 30 40.1 50.1 140 V 4.6 7 9.2	75 90 90 90 116 116 116 136 75 75	210 245 210 210 245 210 245 285 245 265 210 245	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0 KNK3053 0.9 1.1	1.0 1.2 1.3 1.5 2.2 2.6 3.2 3.6 KNK4053 0.8 1.0	16 16 16 16 9 9 9 2	• • • • • • • • • • • • • • • • • • •
3 x 80.2 25 27.5 21 25.3 17.5 23 116 210 2.5 2.2 9 ● 3 x 96.2 30 33 25.1 30.2 21 27.6 116 245 3.0 2.6 9 ● 3 x 128.3 40 44 33.5 40.3 28.1 36.9 116 285 3.6 3.7 9 ●	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1 3 x 40.1	10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10	12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11	8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.2 6.3 8.4 10.5	11 14.4 16.8 22 27.6 33.1 44.1 55.1 480 V 5.1 7.6 10.1 12.6	7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7 8.8	10.1 13 15 20.1 25.1 30 40.1 50.1 140 V 4.6 7 9.2 11.5	75 90 90 90 116 116 116 136 75 75 75	210 245 210 210 245 210 245 285 245 265 210 245 210	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0 KNK3053 0.9 1.1 1.4	1.0 1.2 1.3 1.5 2.2 2.6 3.2 3.6 KNK4053 0.8 1.0 1.2	16 16 16 16 9 9 9 2 2	• • • • • • • • • • • • • • • • • • •
3 x 96.2 30 33 25.1 30.2 21 27.6 116 245 3.0 2.6 9 ● 3 x 128.3 40 44 33.5 40.3 28.1 36.9 116 285 3.6 3.7 9 ●	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1 3 x 40.1 3 x 48.1	10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5	12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7 16.5	8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.2 6.3 8.4 10.5 12.5	11 14.4 16.8 22 27.6 33.1 44.1 55.1 480 V 5.1 7.6 10.1 12.6	7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7 8.8 10.5	10.1 13 15 20.1 25.1 30 40.1 50.1 140 V 4.6 7 9.2 11.5 13.8	75 90 90 90 116 116 116 136 75 75 75 90	210 245 210 210 245 210 245 285 245 165 210 245 210 245	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0 KNK3053 0.9 1.1 1.4 1.5	1.0 1.2 1.3 1.5 2.2 2.6 3.2 3.6 KNK4053 0.8 1.0 1.2 1.3	16 16 16 16 9 9 9 2 16 16 16	• • • • • • • • • • • • • • • • • • •
3 x 128.3 40 44 33.5 40.3 28.1 36.9 116 285 3.6 3.7 9 ●	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1 3 x 40.1 3 x 48.1 3 x 64.2	10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20	12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7 16.5	8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.2 6.3 8.4 10.5 12.5 16.7	11 14.4 16.8 22 27.6 33.1 44.1 55.1 480 V 5.1 7.6 10.1 12.6 15 20.1	7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7 8.8 10.5 14.1	10.1 13 15 20.1 25.1 30 40.1 50.1 140 V 4.6 7 9.2 11.5 13.8 18.5	75 90 90 90 116 116 116 136 75 75 75 90 90	210 245 210 210 245 210 245 285 245 210 245 210 245 210 245 210 245	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1	1.0 1.2 1.3 1.3 1.5 2.2 2.6 3.2 3.6 KNK4053 0.8 1.0 1.2 1.3 1.5	16 16 16 16 9 9 9 2 16 16 16 16	
	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1 3 x 40.1 3 x 48.1 3 x 64.2 3 x 80.2	10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25	12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7 16.5 22 27.5	8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.2 6.3 8.4 10.5 12.5 16.7 21	11 14.4 16.8 22 27.6 33.1 44.1 55.1 480 V 5.1 7.6 10.1 12.6 15 20.1 25.3	7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7 8.8 10.5 14.1 17.5	10.1 13 15 20.1 25.1 30 40.1 50.1 140 V 4.6 7 9.2 11.5 13.8 18.5 23	75 90 90 90 116 116 116 136 75 75 75 90 90	210 245 210 210 245 210 245 285 245 165 210 245 210 245 210	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 2.5	1.0 1.2 1.3 1.5 2.2 2.6 3.2 3.6 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8	16 16 16 16 9 9 9 2 16 16 16 16 16 16	
	3 x 38.4 3 x 50 3 x 57.6 3 x 76.8 3 x 95.9 3 x 115.1 3 x 153.5 3 x 191.9 3 x 16 3 x 24.1 3 x 32.1 3 x 40.1 3 x 48.1 3 x 64.2 3 x 80.2 3 x 96.2	10 12.5 15 20 25 30 40 50 U _n = 5 7.5 10 12.5 15 20 25 30	12 15 18 24.1 30.1 36.1 48.1 60.1 525 V 6.5 8.2 11 13.7 16.5 22 27.5 33	8.4 11 12.8 16.8 21 25.2 33.6 42 U _n = 4 4.2 6.3 8.4 10.5 12.5 16.7 21 25.1	11 14.4 16.8 22 27.6 33.1 44.1 55.1 480 V 5.1 7.6 10.1 12.6 15 20.1 25.3 30.2	7 9 10.4 13.9 17.4 20.8 27.8 34.7 U _n = 2 3.5 5.3 7 8.8 10.5 14.1 17.5 21	10.1 13 15 20.1 25.1 30 40.1 50.1 140 V 4.6 7 9.2 11.5 13.8 18.5 23 27.6	75 90 90 90 116 116 116 136 75 75 75 90 90 91 116	210 245 210 210 245 210 245 285 245 210 245 210 245 210 245 210 245 210 245	1.1 1.4 1.5 1.5 1.8 2.5 3.0 3.6 4.0 KNK3053 0.9 1.1 1.4 1.5 1.8 2.1 2.5 3.0	1.0 1.2 1.3 1.5 2.2 2.6 3.2 3.6 KNK4053 0.8 1.0 1.2 1.3 1.5 1.8 2.2	16 16 16 16 9 9 9 2 16 16 16 16 16 16 9 9	

PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK3053, KNK4053 - CYLINDRICAL ALUMINIUM HOUSING

$f_{n} = 60 I$	Hz - HEA	AVY DL	ΙΤΥ									
C _n (µF)	Q _n (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	Q _n (kVar)	I _n (A)	D (mm)	H (mm)		nt (kg)	Packing unit (pcs)	Approval
	$U_n = 6$									KNK4053		PROTECTED, 10 000 AI-C
3 x 9.3	5	4.2					75	165	0.9	0.8	16	
3 x 13.9	7.5	6.3					75	210	1.1	1.0	16	
3 x 18.6	10	8.4					75	245	1.4	1.2	16	
3 x 23.2	12.5	10.5					90	210	1.5	1.3	16	
3 x 27.9	15	12.6					90	245	1.8	1.5	16	
3 x 37.1	20	16.7					90	285	2.1	1.8	16	
3 x 46.4	25	20.9					116	245	3.0	2.6	9	
3 x 55.7	30	25.1					116	245	3.0	2.6	9	
3 x 74.3	40	33.5					116	285	4.0	3.6	1	
	U _n = 8	800 V							KNK3053	KNK4053		
3 x 6.9	5	3.6					75	165	0.9	0.8	16	
3 x 10.4	7.5	5.4					75	210	1.1	1.0	16	
3 x 13.8	10	7.2					75	245	1.4	1.2	16	
3 x 17.3	12.5						90	210	1.5	1.3	16	
3 x 20.7	15	10.8					90	245	1.8	1.5	16	
3 x 27.6	20	14.4					90	285	2.1	1.8	16	
3 x 34.5	25	18					116	245	3.0	2.6	9	
3 x 41.6	30	21.7					116	245	3.0	2.6	9	
3 x 55.3	40	28.9					136	245	4.0	3.6	1	

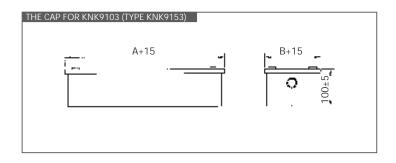
PFC CAPACITORS FOR LOW VOLTAGE (SINGLE- AND THREE-PHASE) KNK9103, KNK9143, KNK9101, KNK9141 - PRISMATIC

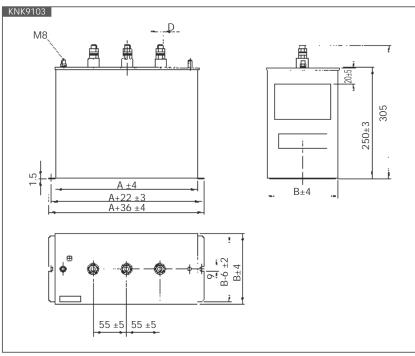
TYPE	SYMBOL	UNIT	KNK9103, KNK9143	KNK9101, KNK9141
STANDARDS			IEC/EN 6	0831-1/2
CONNECTION			DELTA (THREE-PHASE)	SINGLE PHASE
RATED REACTIVE POWER		kVar	UP	TO 60
RATED VOLTAGE	U _n	V	220	~ 525
RATED FREQUENCY	f _n	Hz		OR 60
CAPACITANCE TOLERANCE			-5/10 % (OTH	ER ON REQUEST)
DIELECTRIC LOSES		W/kVar		0.2
TOTAL LOSES		W/kVar		0.5
TEMPERATURE CATEGORY				5/D
MAX. HUMIDITY			9	95 %
COOLING			FORCED VENTILATION (OR NATURAL AIR COOLED
MAX. OVERVOLTAGE				(8 h/DAY)
			1.15 x U ₂ ((30 min/DAY)
) TIMES PER LIFE TIME)
			1.3 x U ₂ (1 min - 200	TIMES PER LIFE TIME)
MAX. OVERCURRENT			1.5 x I _n (INCLUDING COMBINED EFFECTS OF OVERV	<u>-</u>
INRUSH CURRENT				0 x L
EXPECTED LIFE TIME			> 100000 h (l	NORMAL DUTY)
				(HEAVY DUTY)
DISCHARGE RESISTOR				/ ≤ 3 min
ALTITUDE) 2000 m
INSULATION LEVEL		kV		1.6/-
ROUTINE TESTS				,
TERMINAL TO TERMINAL			2.15)	(U _n , 2 s
TERMINAL TO CASE				V , 10 s
SEALING TEST			-	°C, 6 h
MECHANICAL PARAMETERS				2,01.
TERMINAL PER PHASE / MAX. TORQUE / MAX. CURRENT			M8 / 5 I	Nm / 50 A
) Nm / 90 A
MOUNTING AND GROUNDING / MAX. TORQUE				M8 BOLT /5 Nm
MOUNTINING POSITION				NAL POINTING UPWARDS
PROTECTION			- <u></u>	103, KNK9143
				143. KNK9141
CLEARANCE DISTANCE				0 mm
CREEPAGE DISTANCE				0 mm
SAFETY DEVICE				E DISCONNECTOR
MATERIAL PARAMETERS			5 · 2 ·	
DIELECTRIC			SELF HEALING METALLIZ	ZED POLYPROPYLENE FILM
FILLING				ADABLE VEGETABLE OIL
CASE				HOUSING RAL7032

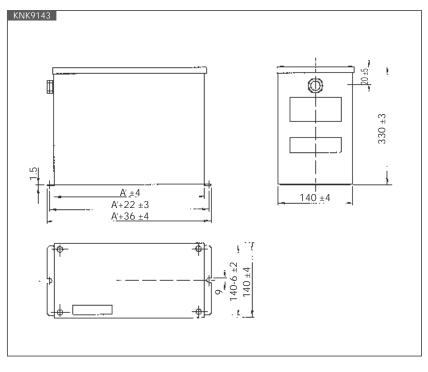
PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK9103, KNK9143 - PRISMATIC



230 ... 525 V, 5 ... 60 kVar







PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK9103, KNK9143 - PRISMATIC

f _n = 50 Hz									
U _n (V)	Q _n (kVar)	C _n (µF)	I _n (A)	A (mm)	A' (mm)	B (mm)	D	Weight (kg) KNK9103	Weight (kg) KNK9143
230	5	3 x 100.3	12.5	190	190	70	M8	3.65	6.40
230	10	3 x 200.7	25.1	380	190	70	M8	5.65	7.30
230	12.5	3 x 250.7	32.1	380	190	70	M8	5.95	7.80
230	15	3 x 301	37.6	380	380	140	M12	8.30	12.40
230	20	3 x 401.2	50.2	380	380	140	M12	9.65	13.20
230	25	3 x 501.5	62.7	380	380	140	M12	10.25	13.80
400	5	3 x 33.2	7.2	190	190	70	M8	2.95	6.00
400	7.5	3 x 49.7	10.8	190	190	70	M8	3.05	6.10
400	10	3 x 66.3	14.4	190	190	70	M8	3.25	6.25
400	12.5	3 x 82.9	18	190	190	70	M8	3.30	6.30
400	15	3 x 99.5	21.7	190	190	70	M8	3.65	6.45
400	20	3 x 132.6	28.9	380	190	70	M8	5.65	7.30
400	25	3 x 165.8	36.1	380	190	70	M8	5.95	7.80
400	30	3 x 198.9	43.3	380	190	70	M8	6.25	8.10
400	40	3 x 265.3	57.7	380	380	140	M12	8.30	12.20
400	50	3 x 331.6	72.2	380	380	140	M12	9.65	13.20
400	60	3 x 397.9	86.6	380	380	140	M12	10.25	13.80
440	5	3 x 27.4	6.5	190	190	70	M8	2.95	6.00
440	7.5	3 x 41.1	9.8	190	190	70	M8	3.05	6.10
440	10	3 x 54.8	13.1	190	190	70	M8	3.25	6.25
440	12.5	3 x 68.5	16.4	190	190	70	M8	3.30	6.30
440	15	3 x 82.2	19.7	190	190	70	M8	3.65	6.45
440	20	3 x 109.6	26.3	380	190	70	M8	5.65	7.30
440	25	3 x 137	32.8	380	190	70	M8	5.95	7.80
440	30	3 x 164.4	39.4	380	190	70	M8	6.25	8.10
440	40	3 x 219.2	52.6	380	380	140	M12	8.30	12.20
440	50	3 x 272	65.6	380	380	140	M12	9.65	13.20
440	60	3 x 328.8	78.8	380	380	140	M12	10.25	13.80
480	5	3 x 23	6	190	190	70	M8	2.95	6.10
480	7.5	3 x 34.5	9	190	190	70	M8	3.05	6.10
480	10	3 x 46	12	190	190	70	M8	3.25	6.30
480	12.5	3 x 57.6	15	190	190	70	M8	3.30	6.40
480	15	3 x 69.1	18	190	190	70	M8	3.65	7.30
480	20	3 x 92.1	24.1	380	190	70	M8	5.65	7.30
480	25	3 x 115.1	30.1	380	190	70	M8	5.95	7.80
480	30	3 x 138.2	36.1	380	190	70	M8	6.25	8.10
480	40	3 x 184.2	48.1	380	380	140	M12	8.30	12.20
480	50	3 x 230.3	60.1	380	380	140	M12	9.65	13.20
480	60	3 x 276.3	72.2	380	380	140	M12	10.25	13.80
525	7.5	3 x 28.9	8.2	190	190	70	8M	3.05	6.25
525	10	3 x 39	11	190	190	70	N8	3.25	6.30
525	12.5	3 x 48.1	13.8	190	190	70	8M8	3.30	6.45
525	15	3 x 57.7	16.5	190	190	70	8M	3.65	7.30
525	20	3 x 77	22	380	190	70	8M	5.65	7.80
525	25	3 x 92.2	27.5	380	190	70	M8	5.95	8.10
525	30	3 x 115.5	33	380	190	70	M8	6.25	12.20
525 525	<u>40</u> 50	3 x 154 3 x 192.5	<u>44</u> 55	380	380	140	M12 M12	9.65	13.20 13.80
323		3 X 17Z.3		300	300	140	IVIIZ	9.00	13.00

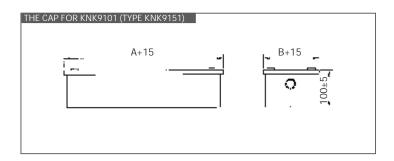
PFC CAPACITORS FOR LOW VOLTAGE (THREE-PHASE) KNK9103, KNK9143 - PRISMATIC

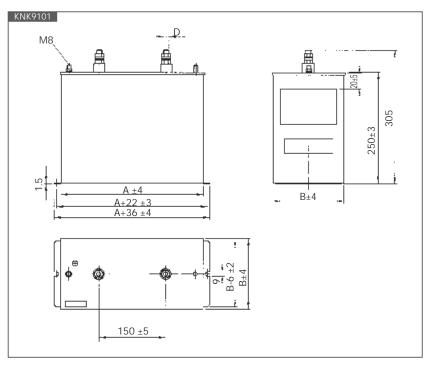
$f_n = 60 \text{ Hz}$	7								
U _n (V)	Q"(kVar)	C _n (µF)	I _n (A)	A (mm)	A' (mm)	B (mm)	D	Weight (kg) KNK9103	Weight (kg) KNK9143
220	5	3 x 91.3	13.13	190	190	70	M8	3.65	6.40
220	10	3 x 182.6	26.27	380	190	70	8M	5.95	7.30
220	15	3 x 273.9	39.41	380	190	70	M8	6.25	7.75
220	20	3 x 365.2	52.54	380	380	140	M12	8.30	12.10
220	25	3 x 456.5	65.68	380	380	140	M12	9.65	13.10
220	30	3 x 547.8	78.82	380	380	140	M12	10.25	13.70
420	5	3 x 25	6.88	190	190	70	M8	2.95	6.10
420	10	3 x 50.1	13.7	190	190	70	M8	3.25	6.20
420	15	3 x 75.2	20.64	190	190	70	M8	3.65	6.40
420	20	3 x 100.2	27.5	380	190	70	M8	5.65	7.25
420	25	3 x 125.3	34.4	380	190	70	M8	5.95	7.70
420	30	3 x 150.4	41.28	380	190	70	M8	6.25	8.00
420	50	3 x 250.6	68.8	380	380	140	M12	9.65	13.10
420	60	3 x 300.8	82.57	380	380	140	M12	10.25	13.70
440	5	3 x 22.8	6.5	190	190	70	M8	2.95	6.10
440	10	3 x 45.7	13.1	190	190	70	M8	3.25	6.20
440	15	3 x 68.5	19.6	190	190	70	M8	3.65	6.40
440	20	3 x 91.3	26	380	190	70	M8	5.65	7.25
440	25	3 x 114.2	32.8	380	190	70	M8	5.95	7.70
440	30	3 x 137	39.4	380	190	70	M8	6.25	8.00
440	50	3 x 228.4	65.6	380	380	140	M12	9.65	13.10
440	60	3 x 274	78.7	380	380	140	M12	10.25	13.70
480	5	3 x 19.2	6	190	190	70	M8	2.95	6.10
480	10	3 x 38.4	12	190	190	70	M8	3.25	6.20
480	15	3 x 57.6	18	190	190	70	M8	3.65	6.40
480	20	3 x 76.8	24.1	380	190	70	M8	5.65	7.25
480	25	3 x 99	30.1	380	190	70	M8	5.95	7.70
480	30	3 x 115.1	36.1	380	190	70	M8	6.25	8.00
480	40	3 x 153.5	48.1	380	380	140	M12	8.30	13.20
480	50	3 x 192	60.1	380	380	140	M12	9.65	13.50
480	60	3 x 230.3	72.2	380	380	140	M12	10.25	13.80

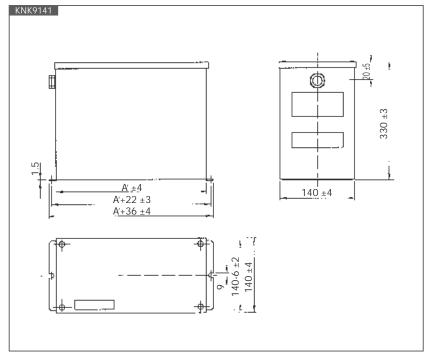
PFC CAPACITORS FOR LOW VOLTAGE (SINGLE-PHASE) KNK9101, KNK9141 - PRISMATIC



230 ... 525 V, 5 ... 60 kVar







PFC CAPACITORS FOR LOW VOLTAGE (SINGLE-PHASE) KNK9101, KNK9141 - PRISMATIC

U_(V)	f _n = 50 Hz	Z								
230 75 490 6 32.6 380 190 70 M8 5.30 7.25 230 12.5 725.1 54.3 380 190 70 M8 5.00 8.00 8.00 230 12.5 725.1 54.3 380 190 70 M8 5.00 8.00 230 20 1203.6 86.9 389 380 140 M12 9.25 12.10 230 230 20 1203.6 86.9 389 380 140 M12 9.00 13.10 32.5 32.0 3	U _n (V)	O _n (kVar)	C _n (µF)	I _n (A)	A (mm)	A' (mm)	B (mm)	D		
230	230	5	300.9	21.7	190	190	70	M8	3.60	6.40
230 12.5 72.5.1 54.3 380 190 70 M8 5.90 8.00 230 20 1203.6 86.9 380 380 140 M12 8.25 12.10 230 25 1594.4 108.6 380 380 140 M12 10.20 13.70 400 5 99.5 12.5 190 190 70 M8 2.90 5.90 400 12.5 140.1 18.7 190 190 70 M8 3.20 6.10 400 12.5 248.5 312 190 190 70 M8 3.20 6.10 400 12.5 248.5 312 190 190 70 M8 3.20 6.10 400 20 397.6 50 380 190 70 M8 3.20 6.10 400 20 397.6 50 380 190 70 M8 3.20 6.10 400 20 397.6 50 380 190 70 M8 3.20 6.10 400 20 397.6 50 380 190 70 M8 3.20 6.10 400 20 397.6 50 380 190 70 M8 3.20 6.20 400 20 397.6 50 380 190 70 M8 3.20 6.20 400 20 397.6 50 380 190 70 M8 3.20 6.25 800 400 30 596.4 75 380 190 70 M8 5.00 7.29 400 30 596.4 75 380 190 70 M8 5.00 7.20 400 50 994 125 380 380 140 M12 8.25 12.10 400 50 994 125 380 380 140 M12 8.25 12.10 400 50 994 125 380 380 140 M12 8.25 12.10 440 75 123.3 17.1 190 190 70 M8 3.20 6.10 440 15 246.6 34.1 190 190 70 M8 3.20 6.10 440 15 246.6 34.1 190 190 70 M8 3.20 6.10 440 15 246.6 34.1 190 190 70 M8 3.20 6.10 440 50 822.1 113.6 880 380 140 M12 9.00 13.10 440 50 822.1 113.6 880 380 140 M12 9.00 13.10 440 50 822.1 113.6 880 380 140 M12 9.00 13.10 440 50 822.1 113.6 880 380 140 M12 9.00 13.10 440 50 822.1 13.6 880 190 70 M8 3.20 6.10 440 50 822.1 13.6 880 190 70 M8 3.20 6.10 440 50 822.1 13.6 880 190 70 M8 3.20 6.20 6.00	230	7.5	450.6	32.6	380	190	70	M8	5.30	7.25
230 15 903 65.2 380 380 140 M12 825 12.10 230 25 1504.4 108.6 380 380 140 M12 0.60 13.10 230 25 1504.4 108.6 380 380 140 M12 10.20 13.70 400 5 99.5 10.5 140.1 187 190 190 70 M8 2.90 5.90 400 7.5 140.1 187 190 190 70 M8 3.20 6.00 400 10 196.8 25 190 190 70 M8 3.25 6.20 400 15 248.5 31.2 190 190 70 M8 3.25 6.20 400 15 292.2 37.5 190 190 70 M8 3.25 6.20 400 15 292.2 37.5 190 190 70 M8 5.60 7.25 400 25 397.6 50 380 190 70 M8 5.60 7.25 400 25 497 62.5 380 190 70 M8 6.25 8.00 400 40 795.2 100 380 380 140 M12 9.60 13.10 440 5 82.2 11.4 190 190 70 M8 2.90 5.30 440 15 282.2 11.4 190 190 70 M8 3.00 6.00 440 15 82.2 11.4 190 190 70 M8 3.00 6.00 440 15 82.2 11.4 190 190 70 M8 3.20 6.10 440 10 164.4 22.7 190 190 70 M8 3.00 6.00 440 10 164.4 22.7 190 190 70 M8 3.20 6.00 440 15 20.5 28.4 190 190 70 M8 3.20 6.00 440 15 20.5 28.4 190 190 70 M8 3.20 6.00 440 10 164.4 22.7 190 190 70 M8 3.20 6.00 440 10 164.4 22.7 190 190 70 M8 3.00 6.00 440 15 20.5 28.4 190 190 70 M8 3.20 6.00 440 10 164.4 22.7 190 190 70 M8 3.00 6.00 440 10 164.4 30 70 70 M8 3.00 6.00 440 15 20.5 28.4 190 190 70 M8 3.00 6.00 440 15 26.6 34.1 190 190 70 M8 3.20 6.10 440 10 164.4 30 493.2 68.2 380 190 70 M8 3.20 6.10 440 15 246.6 34.1 190 190 70 M8 3.20 6.00 440 15 25 411 5.68 380 190 70 M8 3.20 6.00 440 15 25 411 5.68 380 190 70 M8 3.20 6.00 440 15 38.8 13.8 380 190 70 M8 3.20 6.00 440 15 38.8 13.8 380 190 70 M8 3.20 6.00 440 15 38.8 13.8 380 190 70 M8 3.20 6.00 440 50 38.8 380 190 70 M8 3.20 6.00 50 38.8 380 190 70 M8 3.20 6.00 50 38.8 380 190 70 M8 3.20 6.00 50 600 600 50 600 600 600 600 600 600 50 600 600 600 600 600 600 600 50 600 600 600 600 600 600 600 600 600 6	230	10	602.1	43.4	380	190	70	M8	5.60	7.70
230 20 12036 86.9 380 380 140 M12 9.60 13.10 20 13.70 400 5 1504.4 108.6 380 380 140 M12 10.20 13.70 400 5 8 99.5 12.5 190 190 170 M8 3.00 6.00 400 12.5 248.5 31.2 190 190 70 M8 3.20 6.10 400 12.5 248.5 31.2 190 190 70 M8 3.20 6.10 400 12.5 248.5 31.2 190 190 70 M8 3.20 6.10 400 15 298.2 37.5 190 190 70 M8 5.60 6.40 400 20 397.6 50 380 190 70 M8 5.60 7.25 400 30 596.4 71 380 190 70 M8 5.60 7.25 400 30 596.4 71 380 190 70 M8 5.90 7.70 400 30 596.4 71 380 190 70 M8 5.90 7.70 400 30 596.4 71 380 190 70 M8 5.90 7.70 400 50 994 125 380 190 70 M8 2.5 12.10 400 50 994 125 380 380 140 M12 8.25 12.10 400 15 2.2 11.4 190 190 70 M8 2.9 0.5 30 400 15 2.2 11.4 190 190 70 M8 2.2 11.4 190 190 70 M8 2.5 12.10 12.1 12.1 12.1 12.1 12.1 12.1 12.	230	12.5	725.1	54.3	380	190	70	M8	5.90	8.00
230 25 1504.4 108.6 380 380 140 M12 10.20 13.70 400 5 99.5 12.5 190 190 70 M8 2.90 5.90 400 7.5 149.1 18.7 190 190 70 M8 3.00 6.00 400 10 198.8 25 190 190 70 M8 3.25 6.20 400 15 298.2 37.5 190 190 70 M8 3.25 6.20 400 15 298.2 37.5 190 190 70 M8 5.60 7.25 400 25	230	15	903		380	380	140		8.25	12.10
400 5 99 5 12 5 190 190 70 M8 2.90 5.90 5.90 4.00 10 198 25 190 190 70 M8 3.20 6.10 4.00 12 5 248 5 31 2 190 190 70 M8 3.20 6.10 4.00 12 5 248 5 31 2 190 190 70 M8 3.25 6.20 4.00 15 298 2 37.5 190 190 70 M8 3.60 6.40 4.00 20 397 6 50 380 190 70 M8 5.60 7.25 4.00 30 596 4 75 380 190 70 M8 5.60 7.25 4.00 30 596 4 75 380 190 70 M8 6.25 8.00 4.00 50 994 125 380 380 140 M12 9.60 13.10 4.00 5.50 994 125 380 380 140 M12 9.60 13.10 4.00 7.5 123 3 17.1 190 190 70 M8 3.00 6.00 4.00 7.5 123 3 17.1 190 190 70 M8 3.00 6.00 4.00 12.5 205 5 28.4 190 190 70 M8 3.20 6.10 4.00 15 246.6 34.1 190 190 70 M8 3.20 6.10 4.00 15 246.6 34.1 190 190 70 M8 3.20 6.10 4.00 2.5 411 5.6 380 190 70 M8 3.20 6.10 4.00 2.5 411 5.6 380 190 70 M8 3.20 6.10 4.00 2.5 411 5.6 380 190 70 M8 3.20 6.10 4.00 2.5 411 5.6 380 190 70 M8 3.20 6.10 4.00 2.5 411 5.6 380 190 70 M8 3.20 6.10 4.00 4.00 5.7 9.9 380 380 140 M12 8.25 12.10 4.00 5.7 9.9 380 380 140 M12 8.25 12.10 4.00 5.7 9.9 380 380 140 M12 8.25 12.10 4.00 5.7 9.9 380 380 140 M12 8.25 12.10 4.00 5.7 9.9 380 380 140 M12 8.25 12.10 4.00 5.7 9.9 380 380 140 M12 8.25 12.10 4.00 5.7 9.9 380 380 140 M12 8.25 12.10 4.00 5.25 8.00 4.00 4.00 5.25 8.00 4.00 4.00 5.25 8.00 4.00 4.00 5.25 8.00 4.00 4.00 5.25 8.00 4.00 4.00 5.25 5.00	230	20	1203.6	86.9	380	380	140	M12	9.60	13.10
400 7.5 1491 18.7 190 190 70 M8 3.00 6.00 400 12.5 248.5 31.2 190 190 70 M8 3.20 6.10 400 15 298.2 37.5 190 190 70 M8 3.60 6.40 400 25 497 6.25 380 190 70 M8 5.66 7.25 400 30 596.4 75 380 190 70 M8 5.90 7.70 400 40 795.2 100 380 380 140 M12 8.25 12.10 400 40 795.2 100 380 380 140 M12 8.26 12.10 400 5 82.2 11.4 190 190 70 M8 2.90 5.30 440 5 82.2 11.4 190 190 70 M8 3.00	230	25	1504.4	108.6	380	380	140	M12	10.20	13.70
400 7.5 149.1 18.7 190 190 70 M8 300 6.00 400 12.5 248.5 31.2 190 190 70 M8 3.20 6.10 400 15 298.2 37.5 190 190 70 M8 3.60 6.40 400 20 397.6 50 380 190 70 M8 5.60 7.25 400 25 497 62.3 380 190 70 M8 5.90 7.70 400 30 596.4 75 380 190 70 M8 6.25 800 400 40 795.2 100 380 380 140 M12 8.65 1210 400 5 82.2 11.4 190 190 70 M8 2.90 5.30 440 5 82.2 11.4 190 190 70 M8 3.20	400	5	99.5	12.5	190	190	70	M8	2.90	5.90
400 12.5 248.5 31.2 190 190 70 MB 3.25 6.20 400 25 397.6 50 380 190 70 MB 5.60 7.25 400 25 497 62.5 380 190 70 MB 5.90 7.70 400 30 596.4 75 380 190 70 MB 5.90 7.70 400 40 795.2 100 380 380 140 M12 8.25 12.10 400 50 994 125 380 380 140 M12 8.25 12.10 440 5 82.2 11.4 190 190 70 MB 2.90 5.30 440 10 16.44 22.7 190 190 70 MB 3.20 6.10 440 15 205.5 28.4 190 190 70 MB 3.20 6.10 440 15 205.5 28.4 190 190 70 MB 3.20 6.10 440 10 50 440 12.5 265.5 28.4 190 190 70 MB 3.20 6.10 440 15 82.2 11.4 190 190 70 MB 3.00 6.00 440 10.5 164.4 22.7 190 190 70 MB 3.00 6.00 440 10.5 6.60 34.1 190 190 70 MB 3.00 6.00 440 10.5 6.60 34.1 190 190 70 MB 3.20 6.10 440 10.5 6.60 38.1 190 70 MB 3.20 6.10 440 10.5 6.60 38.1 190 190 70 MB 3.20 6.10 440 20 328.8 45.5 380 190 70 MB 5.00 6.00 440 25 411 56.8 380 190 70 MB 5.00 6.00 440 657.7 90.9 380 380 140 M12 8.25 12.10 440 50 822.1 113.6 380 190 70 MB 6.25 8.00 440 60 986.5 136.4 380 380 140 M12 9.60 13.10 440 50 822.1 113.6 380 380 140 M12 9.60 13.10 440 60 986.5 136.4 380 380 140 M12 9.60 13.10 480 15 691 10.4 190 190 70 MB 3.20 6.10 480 15 691 10.4 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 20 276.3 41.6 380 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 20 231 381 380 190 190 70 MB 5.50 6.00 525 5 5 5 57.7 9.5 190 190 70 MB 5.50 6.00 525 5 5 5 57.7 9.5 190	400	7.5	149.1	18.7	190	190	70		3.00	6.00
400 12.5 248.5 31.2 190 190 70 MB 3.25 6.20 400 25 397.6 50 380 190 70 MB 5.60 7.25 400 25 497 62.5 380 190 70 MB 5.90 7.70 400 30 596.4 75 380 190 70 MB 5.90 7.70 400 40 795.2 100 380 380 140 M12 8.25 12.10 400 50 994 125 380 380 140 M12 8.25 12.10 440 5 82.2 11.4 190 190 70 MB 2.90 5.30 440 10 16.44 22.7 190 190 70 MB 3.20 6.10 440 15 205.5 28.4 190 190 70 MB 3.20 6.10 440 15 205.5 28.4 190 190 70 MB 3.20 6.10 440 10 50 440 12.5 265.5 28.4 190 190 70 MB 3.20 6.10 440 15 82.2 11.4 190 190 70 MB 3.00 6.00 440 10.5 164.4 22.7 190 190 70 MB 3.00 6.00 440 10.5 6.60 34.1 190 190 70 MB 3.00 6.00 440 10.5 6.60 34.1 190 190 70 MB 3.20 6.10 440 10.5 6.60 38.1 190 70 MB 3.20 6.10 440 10.5 6.60 38.1 190 190 70 MB 3.20 6.10 440 20 328.8 45.5 380 190 70 MB 5.00 6.00 440 25 411 56.8 380 190 70 MB 5.00 6.00 440 657.7 90.9 380 380 140 M12 8.25 12.10 440 50 822.1 113.6 380 190 70 MB 6.25 8.00 440 60 986.5 136.4 380 380 140 M12 9.60 13.10 440 50 822.1 113.6 380 380 140 M12 9.60 13.10 440 60 986.5 136.4 380 380 140 M12 9.60 13.10 480 15 691 10.4 190 190 70 MB 3.20 6.10 480 15 691 10.4 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 20 276.3 41.6 380 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 480 12.5 12.7 26 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 12.5 144.4 23 190 190 70 MB 3.25 6.20 525 20 231 381 380 190 190 70 MB 5.50 6.00 525 5 5 5 57.7 9.5 190 190 70 MB 5.50 6.00 525 5 5 5 57.7 9.5 190	400	10	198.8		190	190		M8	3.20	6.10
400 15 298.2 37.5 190 190 70 M8 3.60 6.40 400 25 497 62.5 380 190 70 M8 5.90 7.70 400 30 596.4 75 380 190 70 M8 6.25 8.00 400 40 795.2 100 380 380 140 M12 9.60 131.10 400 150 994 125 380 380 140 M12 9.60 131.10 440 75 123 17.11 190 190 70 M8 3.20 6.10 440 12.5 205.5 28.4 190 190 70 M8 3.20 6.10 440 12.5 205.5 28.4 190 190 70 M8 3.20 6.10 440 12.5 205.5 28.4 190 190 70 M8 3.20 6.10 440 10 164.4 22.7 190 190 70 M8 3.20 6.10 440 15.5 26.5 380 190 70 M8 3.20 6.10 440 15.5 205.5 28.4 190 190 70 M8 3.20 6.10 440 15.5 205.5 28.4 190 190 70 M8 3.20 6.10 440 15.5 205.5 28.4 190 190 70 M8 3.20 6.10 440 15.5 205.5 28.4 190 190 70 M8 3.20 6.10 440 15.5 205.5 28.4 190 190 70 M8 3.20 6.10 440 25 411 56.8 380 190 70 M8 3.00 6.00 440 25 411 56.8 380 190 70 M8 5.00 7.70 440 30 493.2 68.2 380 190 70 M8 5.00 7.70 440 657.7 9.99 380 380 140 M12 8.25 12.10 440 50 82.21 113.6 380 380 140 M12 8.25 12.10 440 50 82.21 113.6 380 380 140 M12 8.25 12.10 440 50 82.21 113.6 380 380 140 M12 8.25 12.10 480 5 66.1 10.4 190 190 70 M8 3.00 6.00 13.10 480 5 66.1 10.4 190 190 70 M8 3.00 6.00 13.10 480 5 66.1 10.4 190 190 70 M8 3.00 6.00 13.10 480 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5	400	12.5			190	190				
400 20 397.6 50 380 190 70 M8 5.60 7.25 400 25 497 62.5 380 190 70 M8 5.90 7.70 400 40 795.2 100 380 380 140 M12 9.60 13.10 440 5 82.2 11.4 190 190 70 M8 2.90 5.30 440 5 82.2 11.4 190 190 70 M8 2.90 5.30 440 7.5 123.3 17.1 190 190 70 M8 3.00 6.00 440 10 164.4 22.7 190 190 70 M8 3.00 6.00 440 15 246.6 34.1 190 190 70 M8 3.60 6.40 440 25 411 56.8 380 190 70 M8 5.00										
400 25 497 625 380 190 70 M8 590 770 400 30 5964 75 380 190 70 M8 625 8.00 400 40 7952 100 380 380 140 M12 825 1210 400 50 994 125 380 380 140 M12 960 1310 440 7.5 123.3 17.1 190 190 70 M8 2.90 5.30 440 10 164.4 22.7 190 190 70 M8 3.00 6.00 440 12.5 2055 28.4 190 190 70 M8 3.25 6.20 440 15 246.6 34.1 190 190 70 M8 3.60 6.40 440 20 328.8 45.5 380 190 70 M8 5.90 7.70 440 30 493.2 68.2 380 190 70 M8 5.90 7.70 440 30 493.2 68.2 380 190 70 M8 5.90 17.70 440 50 822.1 13.6 380 380 140 M12 8.25 12.10 440 50 822.1 13.6 380 380 140 M12 9.60 440 10 16 16 16 16 16 16 16 16 16 16 16 16 16	400	20	397.6		380					
400 30 \$56.4 75 380 190 70 M8 6.25 8.00 400 50 \$994 125 380 380 140 M12 8.25 12.10 440 5 82.2 11.4 190 190 70 M8 3.00 6.00 440 10 164.4 22.7 190 190 70 M8 3.00 6.00 440 10 164.4 22.7 190 190 70 M8 3.20 6.10 440 15 246.6 34.1 190 190 70 M8 3.25 6.20 440 25 25.5 28.4 190 190 70 M8 3.60 6.40 440 20 32.88 45.5 380 190 70 M8 5.90 7.70 440 30 493.2 68.2 380 190 70 M8 6.25										
400 40 795.2 100 380 380 140 M12 8.25 12.10 440 50 994 125 380 380 140 M12 9.60 13.10 440 5 82.2 11.4 190 190 70 M8 2.90 5.30 440 10 164.4 22.7 190 190 70 M8 3.00 6.00 440 12.5 205.5 28.4 190 190 70 M8 3.25 6.20 440 15 246.6 34.1 190 190 70 M8 3.60 6.40 440 25 411 56.8 380 190 70 M8 5.00 6.00 440 30 492.2 68.2 380 190 70 M8 6.25 8.00 440 40 667.7 90.9 380 380 140 M12 8.25<										
400 50 994 125 380 380 140 M12 9,60 13.10 440 5 82.2 11.4 190 190 70 M8 2.90 5.30 440 10 164.4 22.7 190 190 70 M8 3.20 6.10 440 15 205.5 28.4 190 190 70 M8 3.25 6.20 440 15 246.6 34.1 190 190 70 M8 3.60 6.40 440 20 328.8 45.5 380 190 70 M8 5.00 6.00 440 30 493.2 68.2 380 190 70 M8 5.00 6.00 440 40 657.7 90.9 380 380 140 M12 8.25 12.10 440 50 822.1 113.6 380 380 140 M12 8.25 12.10 480 5 69.1 10.4 190 190 70 M8 3.00 6.00 480 7.5 103.6 15.6 190 190 70 M8 3.20 6.10 480 10 138.1 20.8 190 190 70 M8 3.20 6.10 480 12.5 172.7 26 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.25 6.20 480 30 414.5 62.5 380 190 70 M8 3.20 6.10 480 30 414.5 62.5 380 190 70 M8 3.20 6.10 480 30 414.5 62.5 380 190 70 M8 3.20 6.10 480 30 414.5 62.5 380 190 70 M8 3.20 6.10 480 40 552.6 83.3 380 190 70 M8 5.00 6.00 480 40 552.6 83.3 380 190 70 M8 5.00 6.00 480 40 552.6 83.3 380 190 70 M8 5.00 6.00 480 50 690.8 104.1 380 190 70 M8 5.00 6.00 480 50 690.8 104.1 380 190 70 M8 5.00 6.00 480 50 690.8 104.1 380 190 70 M8 5.00 6.00 525 10 115.5 19 190 190 70 M8 3.20 6.10 525 50 57.7 9.5 190 190 70 M8 3.20 6.10 525 20 231 381 380 190 70 M8 3.20 6.10 525 50 57.7 9.5 190 190 70 M8 3.20 6.10 525 50 57.7 9.5 190 190 70 M8 5.00 6.00 525 50 57.7 9.5 190 190 70 M8 5.00 6.00 525 50 57.7 9.5 190 190 70 M8 5.00 6.00 525 50 57.7 9.5 190 190 70 M8 5.00 6.00 525										
440 5 82.2 11.4 190 190 70 M8 2.90 5.30 440 7.5 123.3 17.1 190 190 70 M8 3.00 6.00 440 10 164.4 22.7 190 190 70 M8 3.20 6.10 440 12.5 205.5 28.4 190 190 70 M8 3.25 6.20 440 15.5 246.6 34.1 190 190 70 M8 3.60 6.40 440 20 328.8 45.5 380 190 70 M8 5.90 7.70 440 30 493.2 68.2 380 190 70 M8 6.25 8.00 440 40 657.7 90.9 380 380 140 M12 8.25 12.10 440 50 822.1 113.6 380 380 140 M12 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>										
440 7.5 123.3 17.1 190 190 70 M8 3.00 6.00 440 10 164.4 22.7 190 190 70 M8 3.20 6.10 440 12.5 205.5 28.4 190 190 70 M8 3.25 6.20 440 15 246.6 34.1 190 190 70 M8 3.60 6.40 440 25 411 56.8 380 190 70 M8 5.00 6.00 440 30 493.2 68.2 380 190 70 M8 5.90 7.70 440 40 40 657.7 90.9 380 380 140 M12 8.25 12.10 440 50 822.1 113.6 380 380 140 M12 9.0 13.10 480 5 69.1 10.4 190 190 70 M8										
440 10 164.4 22.7 190 190 70 M8 3.20 6.10 440 12.5 205.5 28.4 190 190 70 M8 3.25 6.20 440 15 246.6 34.1 190 190 70 M8 3.00 6.40 440 20 328.8 45.5 380 190 70 M8 5.00 6.00 440 25 411 56.8 380 190 70 M8 5.90 7.70 440 30 493.2 68.2 380 190 70 M8 5.90 7.70 440 50 822.1 113.6 380 380 140 M12 9.60 13.10 440 60 986.5 136.4 380 380 140 M12 9.60 13.10 480 5 69.1 10.4 190 190 70 M8 2										
440										
440										
440 20 328.8 45.5 380 190 70 M8 5.00 6.00 440 25 411 56.8 380 190 70 M8 5.90 7.70 440 30 493.2 68.2 380 190 70 M8 6.25 8.00 440 40 657.7 90.9 380 380 140 M12 8.25 12.10 440 50 822.1 113.6 380 380 140 M12 9.60 13.10 440 60 986.5 136.4 380 380 140 M12 10.20 13.70 480 5 69.1 10.4 190 190 70 M8 2.90 5.30 480 7.5 103.6 15.6 190 190 70 M8 3.20 6.10 480 12.5 172.7 26 190 190 70 M8 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td></t<>								-		
440 25 411 56.8 380 190 70 M8 5.90 7.70 440 30 493.2 68.2 380 190 70 M8 6.25 8.00 440 40 657.7 90.9 380 380 140 M12 3.25 12.10 440 50 822.1 113.6 380 380 140 M12 9.60 13.10 440 60 986.5 136.4 380 380 140 M12 10.20 13.70 480 5 69.1 10.4 190 190 70 M8 2.90 5.30 480 7.5 103.6 15.6 190 190 70 M8 3.20 6.10 480 12.5 172.7 26 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>										
440 30 493.2 68.2 380 190 70 M8 6.25 8.00 440 40 657.7 90.9 380 380 140 M12 8.25 12.10 440 50 822.1 113.6 380 380 140 M12 9.60 13.10 440 60 986.5 136.4 380 380 140 M12 10.20 13.70 480 5 69.1 10.4 190 190 70 M8 2.90 5.30 480 10 138.1 20.8 190 190 70 M8 3.20 6.10 480 10 138.1 20.8 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.20 6.10 480 20 226.3 41.6 380 190 70 M8 <										
440 40 657.7 90.9 380 380 140 M12 8.25 12.10 440 50 822.1 113.6 380 380 140 M12 9.60 13.10 480 5 69.1 10.4 190 190 70 M8 2.90 5.30 480 7.5 103.6 15.6 190 190 70 M8 3.00 6.00 480 10 138.1 20.8 190 190 70 M8 3.20 6.10 480 15 207.2 31.2 190 190 70 M8 3.20 6.10 480 15 207.2 31.2 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.60 6.40 480 25 354.4 52.1 380 190 70 M8 5										
440 50 822.1 113.6 380 380 140 M12 9.60 13.10 440 60 986.5 136.4 380 380 140 M12 10.20 13.70 480 5 69.1 10.4 190 190 70 M8 2.90 5.30 480 7.5 103.6 15.6 190 190 70 M8 3.00 6.00 480 10 138.1 20.8 190 190 70 M8 3.20 6.10 480 15 207.2 31.2 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.60 6.40 480 20 276.3 41.6 380 190 70 M8 5.00 6.00 480 25 354.4 52.1 380 190 70 M8 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
440 60 986.5 136.4 380 380 140 M12 10.20 13.70 480 5 69.1 10.4 190 190 70 M8 2.90 5.30 480 7.5 103.6 15.6 190 190 70 M8 3.00 6.00 480 10 138.1 20.8 190 190 70 M8 3.20 6.10 480 12.5 172.7 26 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.60 6.40 480 25 354.4 52.1 380 190 70 M8 5.90 7.70 480 25 354.4 52.1 380 190 70 M8 6.25 8.00 480 40 552.6 83.3 380 190 70 M8 6.2										
480 5 69.1 10.4 190 190 70 M8 2.90 5.30 480 7.5 103.6 15.6 190 190 70 M8 3.00 6.00 480 10 138.1 20.8 190 190 70 M8 3.20 6.10 480 12.5 172.7 26 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.60 6.40 480 20 276.3 41.6 380 190 70 M8 5.00 6.00 480 25 354.4 52.1 380 190 70 M8 5.90 7.70 480 30 414.5 62.5 380 190 70 M8 6.25 8.00 480 50 690.8 104.1 380 190 140 M12 8.25<										
480 7.5 103.6 15.6 190 190 70 M8 3.00 6.00 480 10 138.1 20.8 190 190 70 M8 3.20 6.10 480 12.5 172.7 26 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.25 6.20 480 20 276.3 41.6 380 190 70 M8 5.00 6.00 480 25 354.4 52.1 380 190 70 M8 5.90 7.70 480 30 414.5 62.5 380 190 70 M8 6.25 8.00 480 50 690.8 104.1 380 190 140 M12 8.25 12.10 480 50 690.8 104.1 380 190 140 M12 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
480 10 138.1 20.8 190 190 70 M8 3.20 6.10 480 12.5 172.7 26 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.60 6.40 480 20 276.3 41.6 380 190 70 M8 5.00 6.00 480 25 354.4 52.1 380 190 70 M8 5.00 6.00 480 30 414.5 62.5 380 190 70 M8 5.25 8.00 480 40 552.6 83.3 380 190 140 M12 8.25 12.10 480 60 830 125 380 380 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 10.20										
480 12.5 172.7 26 190 190 70 M8 3.25 6.20 480 15 207.2 31.2 190 190 70 M8 3.60 6.40 480 20 276.3 41.6 380 190 70 M8 5.00 6.00 480 25 354.4 52.1 380 190 70 M8 5.90 7.70 480 30 414.5 62.5 380 190 70 M8 5.90 7.70 480 40 552.6 83.3 380 190 140 M12 8.25 12.10 480 50 690.8 104.1 380 190 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 9										
480 15 207.2 31.2 190 190 70 M8 3.60 6.40 480 20 276.3 41.6 380 190 70 M8 5.00 6.00 480 25 354.4 52.1 380 190 70 M8 5.90 7.70 480 30 414.5 62.5 380 190 70 M8 6.25 8.00 480 40 552.6 83.3 380 190 140 M12 8.25 12.10 480 50 690.8 104.1 380 190 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 9.60 13.70 525 5 57.7 9.5 190 190 70 M8 3.0										
480 20 276.3 41.6 380 190 70 M8 5.00 6.00 480 25 354.4 52.1 380 190 70 M8 5.90 7.70 480 30 414.5 62.5 380 190 70 M8 6.25 8.00 480 40 552.6 83.3 380 190 140 M12 8.25 12.10 480 50 690.8 104.1 380 190 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 10.20 13.70 525 5 57.7 9.5 190 190 70 M8 2.90 5.30 525 7.5 86.6 14.3 190 190 70 M8 3.20 6.10 525 10 115.5 19 190 190 70 M8 3.25										
480 25 354.4 52.1 380 190 70 M8 5.90 7.70 480 30 414.5 62.5 380 190 70 M8 6.25 8.00 480 40 552.6 83.3 380 190 140 M12 8.25 12.10 480 50 690.8 104.1 380 190 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 10.20 13.70 525 5 57.7 9.5 190 190 70 M8 2.90 5.30 525 7.5 86.6 14.3 190 190 70 M8 3.20 6.10 525 10 115.5 19 190 70 M8 3.20 6.10 525 12.5 144.4 23 190 190 70 M8 3.25 6.2										
480 30 414.5 62.5 380 190 70 M8 6.25 8.00 480 40 552.6 83.3 380 190 140 M12 8.25 12.10 480 50 690.8 104.1 380 190 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 10.20 13.70 525 5 57.7 9.5 190 190 70 M8 2.90 5.30 525 7.5 86.6 14.3 190 190 70 M8 3.00 6.00 525 10 115.5 19 190 190 70 M8 3.20 6.10 525 12.5 144.4 23 190 190 70 M8 3.25 6.20 525 15 173.2 28.6 190 190 70 M8 3.60										
480 40 552.6 83.3 380 190 140 M12 8.25 12.10 480 50 690.8 104.1 380 190 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 10.20 13.70 525 5 57.7 9.5 190 190 70 M8 2.90 5.30 525 7.5 86.6 14.3 190 190 70 M8 3.00 6.00 525 10 115.5 19 190 190 70 M8 3.20 6.10 525 12.5 144.4 23 190 190 70 M8 3.25 6.20 525 15 173.2 28.6 190 190 70 M8 3.60 6.40 525 20 231 38.1 380 190 70 M8 5.90 </td <td></td>										
480 50 690.8 104.1 380 190 140 M12 9.60 13.10 480 60 830 125 380 380 140 M12 10.20 13.70 525 5 57.7 9.5 190 190 70 M8 2.90 5.30 525 7.5 86.6 14.3 190 190 70 M8 3.00 6.00 525 10 115.5 19 190 190 70 M8 3.20 6.10 525 12.5 144.4 23 190 190 70 M8 3.25 6.20 525 15 173.2 28.6 190 190 70 M8 3.60 6.40 525 20 231 38.1 380 190 70 M8 5.00 6.00 525 25 288.7 47.6 380 190 70 M8 5.90										
480 60 830 125 380 380 140 M12 10.20 13.70 525 5 57.7 9.5 190 190 70 M8 2.90 5.30 525 7.5 86.6 14.3 190 190 70 M8 3.00 6.00 525 10 115.5 19 190 190 70 M8 3.20 6.10 525 12.5 144.4 23 190 190 70 M8 3.25 6.20 525 15 173.2 28.6 190 190 70 M8 3.60 6.40 525 20 231 38.1 380 190 70 M8 5.00 6.00 525 25 288.7 47.6 380 190 70 M8 5.90 7.70 525 30 346.5 57.5 380 190 70 M8 6.25										
525 5 57.7 9.5 190 190 70 M8 2.90 5.30 525 7.5 86.6 14.3 190 190 70 M8 3.00 6.00 525 10 115.5 19 190 190 70 M8 3.20 6.10 525 12.5 144.4 23 190 190 70 M8 3.25 6.20 525 15 173.2 28.6 190 190 70 M8 3.60 6.40 525 20 231 38.1 380 190 70 M8 5.00 6.00 525 25 288.7 47.6 380 190 70 M8 5.90 7.70 525 30 346.5 57.5 380 190 70 M8 6.25 8.00 525 40 462 72.2 380 190 140 M12 8.25										
525 7.5 86.6 14.3 190 190 70 M8 3.00 6.00 525 10 115.5 19 190 190 70 M8 3.20 6.10 525 12.5 144.4 23 190 190 70 M8 3.25 6.20 525 15 173.2 28.6 190 190 70 M8 3.60 6.40 525 20 231 38.1 380 190 70 M8 5.00 6.00 525 25 288.7 47.6 380 190 70 M8 5.90 7.70 525 30 346.5 57.5 380 190 70 M8 6.25 8.00 525 40 462 72.2 380 190 140 M12 8.25 12.10 525 50 577.4 95.2 380 380 140 M12 9.60 <td></td>										
525 10 115.5 19 190 190 70 M8 3.20 6.10 525 12.5 144.4 23 190 190 70 M8 3.25 6.20 525 15 173.2 28.6 190 190 70 M8 3.60 6.40 525 20 231 38.1 380 190 70 M8 5.00 6.00 525 25 288.7 47.6 380 190 70 M8 5.90 7.70 525 30 346.5 57.5 380 190 70 M8 6.25 8.00 525 40 462 72.2 380 190 140 M12 8.25 12.10 525 50 577.4 95.2 380 380 140 M12 9.60 13.10										
525 12.5 144.4 23 190 190 70 M8 3.25 6.20 525 15 173.2 28.6 190 190 70 M8 3.60 6.40 525 20 231 38.1 380 190 70 M8 5.00 6.00 525 25 288.7 47.6 380 190 70 M8 5.90 7.70 525 30 346.5 57.5 380 190 70 M8 6.25 8.00 525 40 462 72.2 380 190 140 M12 8.25 12.10 525 50 577.4 95.2 380 380 140 M12 9.60 13.10										
525 15 173.2 28.6 190 190 70 M8 3.60 6.40 525 20 231 38.1 380 190 70 M8 5.00 6.00 525 25 288.7 47.6 380 190 70 M8 5.90 7.70 525 30 346.5 57.5 380 190 70 M8 6.25 8.00 525 40 462 72.2 380 190 140 M12 8.25 12.10 525 50 577.4 95.2 380 380 140 M12 9.60 13.10										
525 20 231 38.1 380 190 70 M8 5.00 6.00 525 25 288.7 47.6 380 190 70 M8 5.90 7.70 525 30 346.5 57.5 380 190 70 M8 6.25 8.00 525 40 462 72.2 380 190 140 M12 8.25 12.10 525 50 577.4 95.2 380 380 140 M12 9.60 13.10										
525 25 288.7 47.6 380 190 70 M8 5.90 7.70 525 30 346.5 57.5 380 190 70 M8 6.25 8.00 525 40 462 72.2 380 190 140 M12 8.25 12.10 525 50 577.4 95.2 380 380 140 M12 9.60 13.10										
525 30 346.5 57.5 380 190 70 M8 6.25 8.00 525 40 462 72.2 380 190 140 M12 8.25 12.10 525 50 577.4 95.2 380 380 140 M12 9.60 13.10										
525 40 462 72.2 380 190 140 M12 8.25 12.10 525 50 577.4 95.2 380 380 140 M12 9.60 13.10										
525 50 577.4 95.2 380 380 140 M12 9.60 13.10										
	525	50	692.9	114.3	380	380	140	M12	10.20	13.70

KLV







THREE-PHASE CAPACITORS



SINGLE-PHASE WITH TWO OUTPUTS - TWIN CAPACITORS

GENERAL

ADVANCED TECHNOLOGY OF KLV CAPACITORS IS BASED ON CONSTRUCTION OF ALL-FILM CAPACITOR SECTIONS, FOLDING FOIL EDGE DESIGN, IMPROVED ELECTRICAL AND MECHANICAL CONNECTIONS BETWEEN SECTIONS AND IMPREGNATION WITH ENVIRONMENTALLY COMPATIBLE INSULATING OIL. KLV CAPACITORS HAVE VERY LOW DIELECTRIC LOSSES AND ARE DESIGNED FOR LONG SERVICE LIFE.

- KLV 3xxx INTERNALLY FUSED CAPACITORS. EACH CAPACITOR ELEMENT HAS A SEPARATE INTERNAL FUSE.
- KLV1xxx CAPACITORS WITHOUT INTERNAL FUSES
- KLVxxx4 SINGLE PHASE CAPACITORS WITH TWO OUTPUTS (TWIN). CAPACITORS ARE SUPPLIED IN SETS OF THREE TO
 PROVIDE AN ECONOMICAL UNBALANCE DETECTION SCHEME. THIS IS PARTICULARLY ADVAN-TAGEOUS IN LOW
 OUTPUT CAPACITOR BANKS.

TECHNICAL DATA	
RATED POWER (MAX.):	600 kVAR, 50 Hz ; 720 KVAR, 60 Hz
RATED VOLTAGE:	1.0 - 20 KV
RATED FREQUENCY:	50 OR 60 Hz
LOSSES TOTAL:	MAX. 0.2 W/kVAR (0.080.15 AVERAGE)
DIELECTRIC:	ALL-FILM (HAZY POLYPROPYLENE)
IMPREGNATING FLUID:	ENVIRONMENTALLY COMPATIBLE IMPREGNATING OIL BASED ON M/DBT (NON - PCB)
DISCHARGE RESISTOR:	BUILT IN DISCHARGE RESISTOR REDUCES THE VOLTAGE ON A DE-ENERGISED CAPACITOR FROM THE
	CREST OF RATED VOLTAGE TO 75 V IN 10 MINUTES OR LESS (DISCHARGE TO 50 V IN 5 MINUTES ON DEMAND).
PERMISSIBLE OVERLOADS:	MAXIMUM PERMISSIBLE CURRENT 1,3 x I _N CONTINUOUSLY
	MAXIMUM PERMISSIBLE VOLTAGE1,1 x U_N Continuously, 12 H Per Day
QUALITY:	ISKRA IS CERTIFIED ACCORDING TO ISO 9001(QUALITY) AND ISO 14001 (ENVIRONMENT)
STANDARDS:	IEC 60871-1, ANSI / IEEE 18, NEMA CP 1

ROUTINE TESTS

SEALING TEST:	MINIMUM OF 16 HOURS AT 75°C
VOLTAGE TEST BETWEEN TERMINALS:	2.15 x RATED VOLTAGE AC, 10 s OR 4.3 x RATED VOLTAGE DC, 10 s
AC VOLTAGE TEST BETWEEN	
TERMINALS AND CONTAINER:	ACCORDING TO IEC 60871-1, TABLE 3, 10 s
DISCHARGE RESISTOR TEST	

MEASUREMENT OF LOSSES (TAN d)

SERVICE CONDITIONS

TEMPERATURE CATEGORIES UP TO -40 /D

UPPER TEMPERATURE CATEGORY LIMIT	С	D
MAXIMUM	50	55
HIGHEST MEAN OVER 24 H	40	45
HIGHEST MEAN OVER 1 YEAR	30	35
LOW TEMPERATURE LIMIT DURING OPERATION	-25 °C C	OR -40 °C

INSTALLATION:	OUTDOOR OR INDOOR
INSTALLATION ALTITUDE (ABOVE SEA LEVEL):	1000 M STANDARD, UP TO 4000 M ON DEMAND
CASE MATERIAL:	STAINLESS STEEL PLATE 1.5 MM THICK
FINISH / COLOUR:	TWO-COMPONENT DURABLE PAINTING RAL 7032 (LIGHT GREY) ON TREATED SURFACES.
FIXING:	DEPENDING ON THE HEIGHT OF CAPACITOR, CON-TAINER IS EQUIPED WITH ONE OR TWO MOUNTING BRACKETS ON THE NAROWER SIDES. BRACKETS HAVE MOUNTING SLOTS 11 X 20 mm

TERMINAL & CONNECTIONS

BUSHINGS:	BROWN OR GRAY PORCELAIN BUSHINGS, WELDED TO THE CONTAINER.
THREAD OF TERMINAL STUD:	M14
CURRENT:	110 A MAX.
CONNECTIONS:	TERMINAL CLAMPS WITH PROVISION TO ACCOMMO-DATE ANY COMBINATION OF 2 CONDUCTORS FROM 4 mm ² SOLID TO 50 mm ² STRANDED WIRE ARE AVAILABLE ON DEMAND*. THE CAPACITOR UNIT GROUNDING IS PROVIDED BY UNPAINTED SURFACE OF MOUNTING BRACKETS.
PRESSURE SWITCH:	WITH TERMINAL CAP SUPPLIED ON DEMAND
NAME PLATE:	DURABLE PLASTIC LABEL WITH PERMANENT PRINTING

NOTE

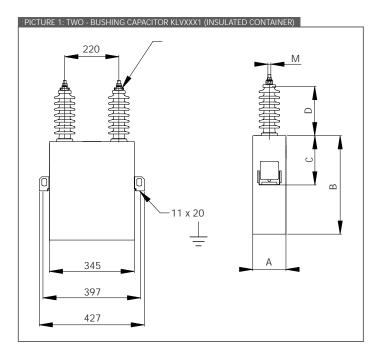
^{*} TERMINAL CLAMPS 70 mm² ALSO AVAILABLE ON DEMAND

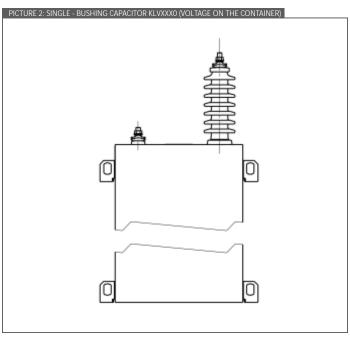
HIGH VOLTAGE POWER CAPACITORS KLV 1xx1 AND 3xx1, SINGLE-PHASE CAPACITORS

TYPICAL D	TYPICAL DIMENSIONS															
Q _n at 50 Hz		U _n KLV 1xxx (WITHOUT INTERNALY FUSED) (KV)				U _n KLV 3xxx				DIMENSIONS (mm)					WEIGHT	WEIGHT*
(kVar)	(WITHOUT IN			(INTERNALY FUSED) (kV)		A	В	B*	С	BIL 75-95 kV	BIL 125 kV	(kg)	(kg)			
100	2.00	-	16.5 (20)	2.00	-	2.4	145	310	340	120 ^{2R}	240	315	26	28		
150	2.00	-	16.5 (20)	2.00	-	4.8	145	400	430	200 ^{2R}	240	315	32	34		
200	2.00	-	16.5 (20)	2.00	-	4.8	145	500	550	200 ^{2R}	240	315	39	42		
250	2.27	-	16.5 (20)	2.27	-	7.2	145	600	670	200 ^{2R}	240	315	47	50		
300	2.72	-	16.5 (20)	2.72	-	7.2	145	720	770	200 ^{2R}	240	315	53	56		
350	3.18	-	16.5 (20)	3.18	-	9.6	145	840	870	200 ^{2R}	240	315	60	65		
400	3.64	-	16.5 (20)	3.64	-	9.6	145	940	1000	200 ^{2R}	240	315	66	70		
450	4.10	-	16.5 (20)	4.10	-	12	175	860	940	100 ^{4R}	240	315	75	78		
500	4.56	-	16.5 (20)	4.56	-	14.4	175	920	1000	100 ^{4R}	240	315	82	89		
550	5.00	-	16.5 (20)	5.00	-	14.4	190	920	970	100 ^{4R}	240	315	93	98		
600	5.46	-	16.5 (20)	5.46	-	14.4	190	1000	1025	100 ^{4R}	240	315	93	98		

NOTES:

- * DIMENSIONS WITH AN ASTERISK (*) REFER TO INTERNALLY FUSED CAPACITORS
- 1) VOLTAGE IN PARENTHESIS () REFER TO ONE-BUSHING CAPACITORS ONLY
- 2) FOR OUTPUT AND VOLTAGE OUTSIDE THIS RANGE, PLEASE CONTACT FACTORY
- 3) CASE SIZES ARE TYPICAL AND ACTUAL SIZES WILL BE CONFIRMED AT THE TIME OF ORDER
- 4) CAPACITOR CONTAINER COULD HAVE 2 OR 4 BRACKETS (1 OR 2 BRACKETS ON NARROWER SIDE)
 DIMENSION C 2R MEANS 1 BRACKET FROM EACH SIDE (CAPACITOR TYPE KLVXX1X); 4R MEANS 2 BRACKETS ON EACH SIDE, ONE ON THE TOP AND ONE ON THE BOTTOM, EXCEPT WHERE THE HEIGHT IS 310 MM OR BELOW, WHERE BRACKETS ARE ON THE BOTTOM ONLY (TYPE KLVXX2X).
- 5) DIM A MAY EXPAND UP TO 115% DUE TO THERMAL FLEXURE
- 6) POWER AT 60 HZ = 1.2 X POWER AT 50 HZ





WHILE EVERY CARE HAS BEEN TAKEN TO ENSURE THAT THE INFORMATION CONTAINED IN THIS DOCUMENT IS CORRECT, NO RESPONSIBILITY CAN BE ACCEPTED FOR ANY INAC-CURACY. WE RESERVE THE RIGHT TO ALTER OR MODIFY THE INFORMATION CONTAINED HEREIN AT ANY TIME IN THE LIGHT OF TECHNICAL OR OTHER DEVELOPMENTS. TECHNICAL SPECIFICATIONS ARE VALID UNDER NORMAL OPERATING CONDITIONS ONLY. WE DO NOT ACCEPT ANY RESPONSIBILITY FOR ANY MISUSE OF THE PRODUCT AND CANNOT BE HELD LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES. TECHNICAL DATA AND DESIGN CAN BE SUBJECT TO CHANGE AND SHOULD BE CONFIRMED PRIOR TO ORDERING.

HIGH VOLTAGE POWER CAPACITORS KLV 1xx3 AND 3xx3, THREE-PHASE CAPACITORS

BIL 20/60 kV

TYPICAL D	DIMENSIONS	(PICTURE 3)							
Un	Q _n at 50 Hz		Dimensions (mm) Weight						
(kV)	(kVar)	А	В	B*	D	Е	(kg)	(kg)	
	50	145	200	200	190	240	16	20	
	100	145	290	325	190	240	23	26	
	150	145	415	430	190	240	30	33	
	200	145	520	550	190	240	37	42	
3.3 - 7.2	250	145	620	670	190	240	44	49	
	300	145	740	770	190	240	51	55	
	350	145	825	900	190	240	60	63	
	400	145	940	1000	190	240	66	71	
	450	175	870	960	190	240	73	78	

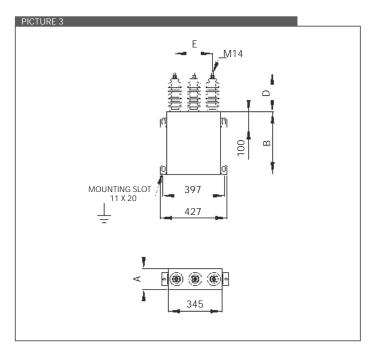
BIL 28/75 kV

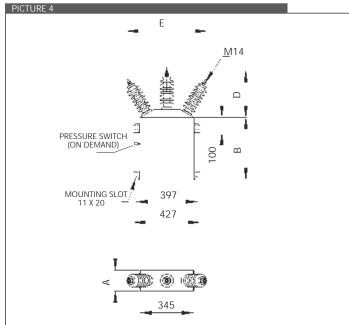
TYPICAL DIMENSIONS (PICTURE 4)									
U _n	Q _n at 50 Hz		Dimensions (mm) Weight We						
(kV)	(kVar)	А	В	B*	D	Е	(kg)	(kg)	
	50	145	200	200	300	510	22	23	
	100	145	290	310	300	510	28	29	
	150	145	400	430	300	510	35	37	
	200	145	500	550	300	510	42	44	
UP TO 12	250	145	600	670	300	510	49	51	
	300	145	720	770	300	510	55	60	
	350	145	825	870	300	510	63	66	
	400	145	940	1000	300	510	69	75	
	450	175	840	940	300	510	76	82	

NOTES:

- * DIMENSIONS WITH AN ASTERISK (*) REFER TO INTERNALLY FUSED CAPACITORS
- 1) FOR OUTPUT AND VOLTAGE OUTSIDE THIS RANGE, PLEASE CONTACT FACTORY
- 2) CASE SIZES ARE TYPICAL AND ACTUAL SIZES WILL BE CONFIRMED AT THE TIME OF ORDER
- 3) PRESSURE SWITCH ON DEMAND
- 4) EITHER 2 OR 4 FIXING BRACKETS ARE USED, DEPENDING ON THE HEIGHT OF THE UNIT. SPECIAL BRACKET POSITIONS CAN BE PROVIDED IF REQUIRED. PLEASE SPECIFY AT THE ENQUIRY STAGE.
- 5) DIM A MAY EXPAND UP TO 115 % DUE TO THERMAL FIEXURE
- 6) POWER AT 60 HZ = 1.2 x POWER AT 50 HZ

HIGH VOLTAGE POWER CAPACITORS KLV 1xx3 AND 3xx3, THREE-PHASE CAPACITORS





WHILE EVERY CARE HAS BEEN TAKEN TO ENSURE THAT THE INFORMATION CONTAINED IN THIS DOCUMENT IS CORRECT, NO RESPONSIBILITY CAN BE ACCEPTED FOR ANY INAC-CURACY. WE RESERVE THE RIGHT TO ALTER OR MODIFY THE INFORMATION CONTAINED HEREIN AT ANY TIME IN THE LIGHT OF TECHNICAL OR OTHER DEVELOPMENTS. TECHNICAL SPECIFICATIONS ARE VALID UNDER NORMAL OPERATING CONDITIONS ONLY. WE DO NOT ACCEPT ANY RESPONSIBILITY FOR ANY MISUSE OF THE PRODUCT AND CANNOT BE HELD LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES. TECHNICAL DATA AND DESIGN CAN BE SUBJECT TO CHANGE AND SHOULD BE CONFIRMED PRIOR TO ORDERING.

KLV 1xx4 AND 3xx4, SINGLE-PHASE CAPACITORS WITH TWO OUTPUTS (TWIN)

BIL 20/60 kV

TYPICAL D	TYPICAL DIMENSIONS (PICTURE 5)									
U _n	Q _n at 50 Hz		Dimensions (mm) Weight							
(kV)	(kVar)	А	В	B*	D	E	(kg)	(kg)		
	50 (2x25)	135	200	220	250	240	22	23		
	100 (2x50)	145	290	310	250	240	28	29		
	150 (2x75)	145	400	430	250	240	35	37		
2.0 - 4.16	200 (2x100)	145	500	550	250	240	42	44		
	250 (2x125)	145	620	640	250	240	49	51		
	300 (2x150)	145	720	770	250	240	51	55		
	400 (2x200)	145	940	1000	250	240	66	71		

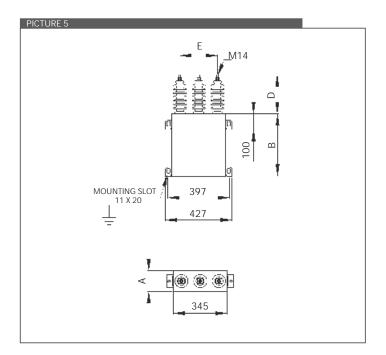
BIL 28/75 kV

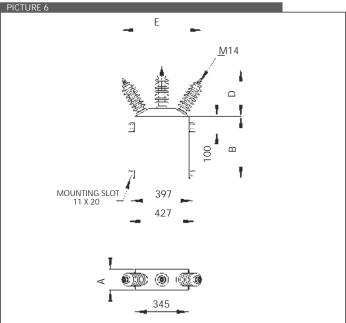
TYPICAL D	TYPICAL DIMENSIONS (PICTURE 6)									
Un	Q _n at 50 Hz		Dimensions (mm)							
(kV)	(kVar)	А	В	B*	D	Е	(kg)	(kg)		
	50 (2x25)	145	180	200	300	510	22	23		
	100 (2x50)	145	290	330	300	510	28	29		
	150 (2x75)	145	400	440	300	510	35	37		
UP TO 6.93	200 (2x100)	145	500	550	300	510	42	44		
	250 (2x125)	145	590	670	300	510	49	51		
	300 (2x150)	145	690	770	300	510	55	60		
	400 (2x200)	145	900	1000	300	510	69	75		

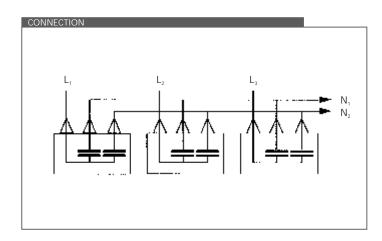
NOTES:

- * DIMENSIONS WITH AN ASTERISK (*) REFER TO INTERNALLY FUSED CAPACITORS
- 1) FOR OUTPUT AND VOLTAGE OUTSIDE THIS RANGE, PLEASE CONTACT FACTORY
- 2) CASE SIZES ARE TYPICAL AND ACTUAL SIZES WILL BE CON? RMED AT THE TIME OF ORDER
- 3) EITHER 2 OR 4 FIXING BRACKETS ARE USED, DEPENDING ON THE HEIGHT OF THE UNIT. SPECIAL BRACKET POSITIONS CAN BE PROVIDED IF REQUIRED. PLEASE SPECIFY AT THE ENQUIRY STAGE.4) DIM A MAY EXPAND UP TO 115 % DUE TO THERMAL FIEXURE
- 5) POWER AT 60 HZ = 1.2 x POWER AT 50 HZ

KLV 1xx4 AND 3xx4, SINGLE-PHASE CAPACITORS WITH TWO OUTPUTS (TWIN)



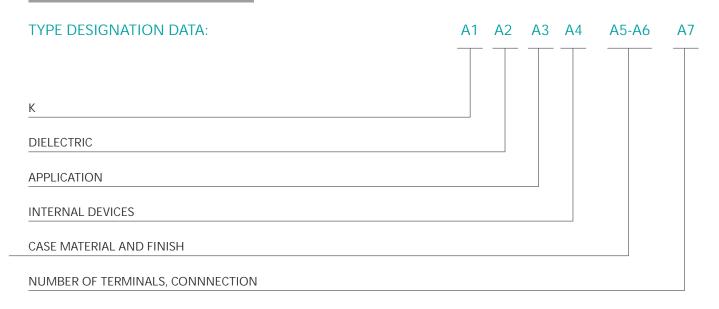




WHILE EVERY CARE HAS BEEN TAKEN TO ENSURE THAT THE INFORMATION CONTAINED IN THIS DOCUMENT IS CORRECT, NO RESPONSIBILITY CAN BE ACCEPTED FOR ANY INAC-CURACY. WE RESERVE THE RIGHT TO ALTER OR MODIFY THE INFORMATION CONTAINED HEREIN AT ANY TIME IN THE LIGHT OF TECHNICAL OR OTHER DEVELOPMENTS. TECHNICAL SPECIFICATIONS ARE VALID UNDER NORMAL OPERATING CONDITIONS ONLY. WE DO NOT ACCEPT ANY RESPONSIBILITY FOR ANY MISUSE OF THE PRODUCT AND CANNOT BE HELD LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES. TECHNICAL DATA AND DESIGN CAN BE SUBJECT TO CHANGE AND SHOULD BE CONFIRMED PRIOR TO ORDERING.

KLV

ORDERING DATA



A1	K	CAPACITOR				
A2	L	IELECTRIC POLYPROPYLENE (ALL-FILM)				
A3	V	IIGH VOLTAGE CAPACITOR FOR POWER FACTOR CORRECTION				
	1	DISCHARGE RESISTOR BUILT IN				
A4	2	WITHOUT DISCHARGE RESISTORS				
74	3	INTERNAL FUSES AND DISCHARGE RESISTORS BUILT IN				
	4	INTERNAL FUSES BUILT IN				
A5	0	ORDINARY STEEL CASE COATED WITH PRIMER AND TOP COAT (INTENDED FOR INDOOR INSTALLATION)				
710	2	STAINLESS STEEL CASE COATED WITH PRIMER AND TOP COAT (INTENDED FOR OUTDOOR AND AGGRESSIVE ATMOSPHERE INSTALLATION)				
A6	1	CASE SIDE MOUNTING (2 BRACKETS)				
710	2	CASE SIDE MOUNTING (2 BRACKETS ON THE TOP AND / OR 2 BRACKETS ON THE BOTTOM)				
	0	SINGLE PHASE, ONE BUSHING CAPACITOR				
A7	1	SINGLE-PHASE, TWO BUSHING CAPACITOR				
Α/	3	THREE PHASE CAPACITOR				
	4	SINGLE PHASE CAPACITOR WITH TWO OUTPUTS				

WHEN ORDERING, PLEASE STATE:

RATED OUTPUT	kVar
RATED VOLTAGE	V
RATED FREQUENCY	Hz
TOLERANCE OF CAPACITANCE	% / +%
NUMBER OF BUSHINGS	SINGLE BUSHING, TWO BUSHINGS
INSTALLATION	INDOOR/OUTDOOR
INSULATION LEVEL	/kV, IF HIGHER THAN REQUIRED BY U
INTERNAL FUSES	YES/NO
PRESSURE SWITCH	YES/NO
TERMINAL CLAMPS	YES/NO

WHILE EVERY CARE IS TAKEN TO ENSURE THAT THE INFORMATION CONTAINED IN THIS PUBLICATION IS CORRECT, NO LEGAL RESPONSIBILITY CAN BE ACCEPTED FOR ANYINACCURACY. THE COMPANY RESERVES THE RIGHT TO ALTER OR MODIFY THE INFORMATION CONTAINED HEREIN AT ANY TIME IN THE LIGHT OF TECHNICAL OR OTHER DEVELOPMENTS.

INDUCTION HEATING CAPACITORS

KLS



ADVANCED TECHNOLOGY OF LOW LOSS KLS CAPACITOR UNITS IS BASED ON CONSTRUCTION OF ALL-FILM CAPACITOR SECTIONS AND IMPREGNATION WITH ENVIRONMENTALLY COMPATIBLE INSULATING OIL (NON-PCB).

APPLICATIONS

KLS CAPACITORS ARE ESPECIALLY DESIGNED FOR INDUCTIVE HEAT GENERATING PLANTS OPERATING AT FREQUENCIES BETWEEN 50 AND 10000 HZ. MANUFACTURED BY REQUEST, THESE CAPACITORS ARE DESIGNED TO COMPLY WITH THE SPECIFIC REQUIREMENTS OF EACH CUSTOMER. MOST OF THESE CAPACITORS PROVIDE FOR STEP CHANGES IN KVAR BY VIRTUE OF TERMINATED SECTIONS WITHIN EACH UNIT. THIS ALLOWS FOR THE TUNING OF THE CIRCUIT FOR CHANGING INDUCTIVE LOADS.

CONSTRUCTION

KLS CAPACITORS UTILIZE A POLYPROPYLENE FILM AND ALUMINUM FOIL CONSTRUCTION WITH NON-PCB LIQUID IMPREGNANT. THE IMPREGNATING FLUID M/DBT AND TEXTURED POLYPROPYLENE FILM HAVE EXCEPTIONAL DIELECTRIC PROPERTIES OVER THE ENTIRE OPERATING TEMPERATURE RANGE OF INDUCTION HEATING CAPACITORS.

THE EXTENDED FOIL DESIGN OF CAPACITOR ELEMENTS MAKES NEARLY CONTINUOUS CONNECTION TO THE FOILS, SO CAPACITOR OVERCURRENT AND COOLING CAPABILITIES ARE INCREASED.

KLS CAPACITORS DESIGNED FOR OPERATING AT LOWER FREQUENCIES ARE AIR COOLED. MEDIUM FREQUENCY CAPACITORS UTILIZE INTERNAL TUBES FOR COOLING. BUSHINGS AND CONNECTION FOR COOLING WATER ARE PLACED ON CAPACITOR CASE COVER.

SAFETY REQUIREMENTS

THE STANDARD CAPACITOR DOES NOT HAVE INTERNAL DISCHARGE DEVICES - ALL CAPACITOR UNITS SHOULD BE CONNECTED DIRECTLY WITH A DISCHARGE DEVICE, THIS MAY BE OTHER ELECTRICAL EQUIPMENT CONNECTED DIRECTLY ACROSS THE CAPACITOR (I.E. FURNACE COIL). THE DISCHARGE PATH MUST NOT HAVE A DISCONNECTING SWITCH OR FUSES.

WHEN THE CAPACITORS IS SWITCHED OFF AND RE-ENERGIZED AT SHORT INTERVALS, ARRANGEMENTS SHOULD BE MADE SO THAT, AT THE TIME OF RE-APPLICATION OF THE VOLTAGE, THE CAPACITOR TERMINAL VOLTAGE SHALL NOT BE MORE THAN 10% OF THE RATED VOLTAGE OF THE CAPACITOR.

BEFORE WORKING ON A CAPACITOR ENSURE THAT THE CAPACITOR BANK IS PROPERLY ISOLATED, WAIT TO ENSURE THE CAPACITOR IS DISCHARGED AND SHORT CIRCUIT THE CAPACITOR TERMINALS BEFORE HANDLING.

QUALITY ASSURANCE

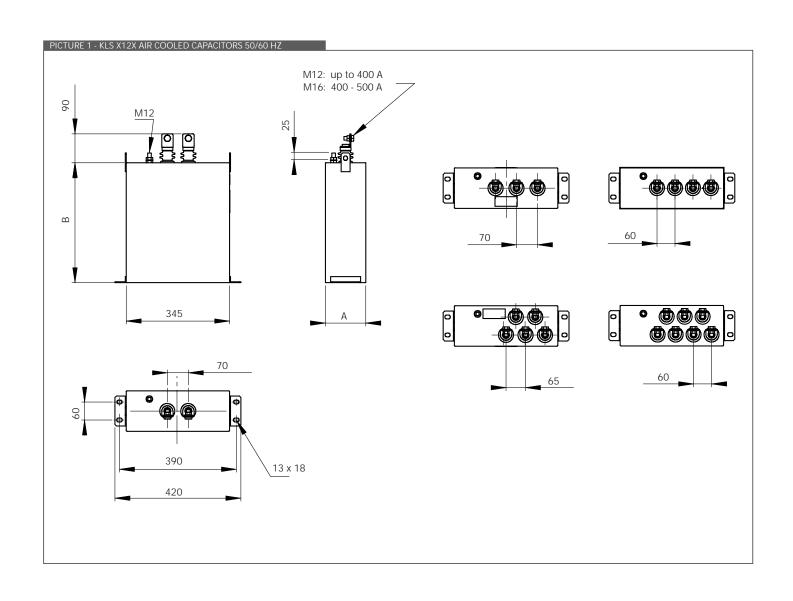
ALL CAPACITORS ARE SUBJECTED TO THE FOLLOWING ROUTINE TESTS:

- SEALING TEST ON CONTAINER
- SHORT CIRCUIT DISCHARGE TEST 1.7 × RATED VOLTAGE DC, ONE DISCHARGE, FOR INTERNALLY FUSED CAPACITORS
- CAPACITANCE MEASUREMENTS
- LOSS MEASUREMENTS AT 50 HZ
- VOLTAGE TEST BETWEEN TERMINALS AT 2.0 × RATED VOLTAGE AC, 10 SEC OR 4.0 × RATED VOLTAGE DC, 10 SEC.
- VOLTAGE TEST TERMINALS TO CONTAINER WHERE APPLICABLE
- CAPACITORS COMPLY WITH IEC 60110-1 AND VDE 0560 PART 9.

INDUCTION HEATING CAPACITORS KLS xOxx, KLS x1xx - AIR COOLED

50 / 60 Hz

TECHNICAL DATA			
VOLTAGE RANGE	Un	V	500 - 3000
OUTPUT RANGE	Q _n	kVar	UP TO 600
RATED FREQUENCY	f _n	Hz	50/60
TOLERANCE OF CAPACITY			-5 % +10 % (NARROWER TOLERANCES ON REQUEST)
LOSSES (TYPICAL)		W/kVar	0.15 - 0.3
TEMPERATURE CATEGORY (AMBIENT TEMPERATURE)		° C	-25 / +45 % (AIR-COOLED CAPACITORS)
IMPREGNATING FLUID			BIODEGRADABLE NON-PCB DIELECTRIC OIL BASED ON M/DBT
DISCHARGE RESISTORS			ON DEMAND
INTERNAL FUSES			BUILT IN, WITHOUT FUSES ON DEMAND
TEMPERATURE MONITORING			TEMPERATURE SENSORS CAN BE BUILT-IN UPON REQUEST
PRESSURE MONITORING			PRESSURE SWITCHES CAN BE BUILT-IN UPON REQUEST
CASE MATERIAL			MILD STEEL OR STAINLESS STEEL
CASE FINISH			ONE LAYER OF TOP COAT ON ONE LAYER OF PRIMER. STANDARD COLOUR RAL 7032.
DIMENSIONS			DIM A : 110 - 165 mm, DIM B : UP TO 1000 mm
			ACTUAL SIZES WILL BE CONFIRMED AT THE TIME OF ORDER



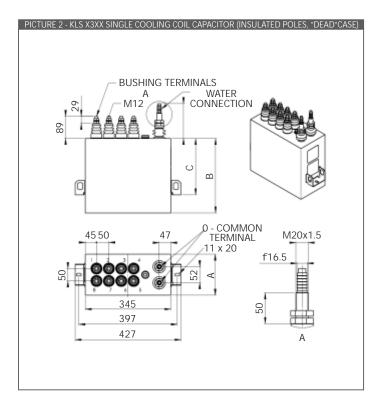
INDUCTION HEATING CAPACITORS KLS x2xx, x3xx, x4xx - WATER COOLED

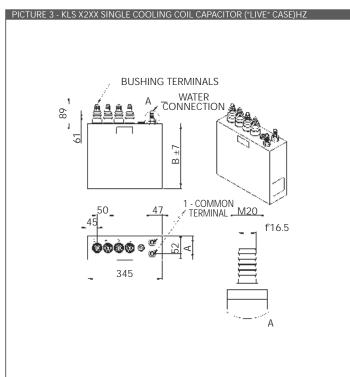


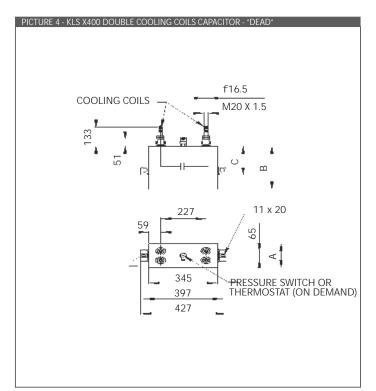
180 ... 10000 Hz

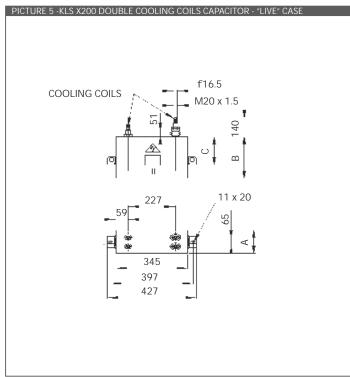
TECHNICAL DATA			
VOLTAGE RANGE	Un	V	100 - 3000
OUTPUT RANGE	Q _n	kVar	UP TO 3000
RATED FREQUENCY	f _n	Hz	150 10000
TOLERANCE OF CAPACITY			-10 % +10 % (NARROWER TOLERANCES ON REQUEST)
LOSSES (TYPICAL)		W/kVar	0.2 - 0.7
TEMPERATURE CATEGORY (AMBIENT TEMPERATURE)		° C	+1 / +45 % (WATER COOLED CAPACITORS)
OUTLET WATER TEMPERATURE		° C	45 MAX.
MAX. PRESSURE OF INCOMING COOLING WATER		bar	8
COOLING WATER FLOW		l/min	4.5 - 12.5
IMPREGNATING FLUID			BIODEGRADABLE NON-PCB DIELECTRIC OIL BASED ON M/DBT
DISCHARGE RESISTORS			NO
INTERNAL FUSES			NO
TEMPERATURE MONITORING			TEMPERATURE SENSORS CAN BE BUILT-IN UPON REQUEST
PRESSURE MONITORING			PRESSURE SWITCHES CAN BE BUILT-IN UPON REQUEST
CASE MATERIAL			BRASS OR ALUMINIUM CONTAINERS FOR MEDIUM FREQUENCY CAPACITORS
CASE FINISH			ONE LAYER OF TOP COAT ON ONE LAYER OF PRIMER. STANDARD COLOUR RAL 7032.
DIMENSIONS			DIM A : 110 - 165 mm, DIM B : UP TO 1000 mm
			ACTUAL SIZES WILL BE CONFIRMED AT THE TIME OF ORDER
NUMBER OF TAPS			UP TO 8

INDUCTION HEATING CAPACITORS KLS x2xx, x3xx, x4xx - WATER COOLED





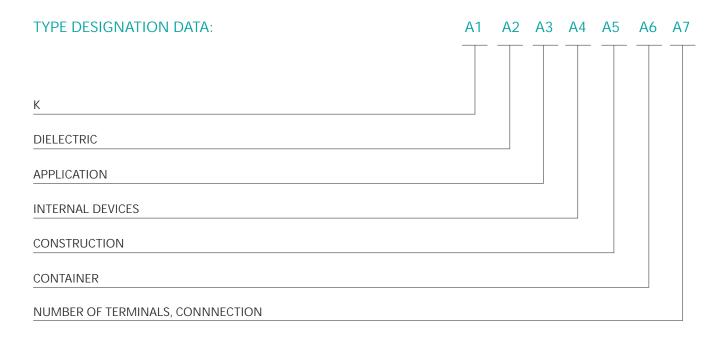




INDUCTION HEATING CAPACITORS

KLS

ORDERING DATA



A1	K	CAPACITOR
A2	L	DIELECTRIC POLYPROPYLENE (ALL-?LM)
A3	S	INDUCTION HEATING CAPACITOR
	1	DISCHARGE RESISTORS BUILT IN
	2	WITHOUT DISCHARGE RESISTORS
	3	INTERNAL FUSES ANDDISCHARGE RESISTORS BUILT IN
Α4	4	INTERNAL FUSES BUILT IN
714	5	DISCHARGE RESISTO1S AND THERMOSTAT OR PRESSURE SWITCH BUILT-IN
	6	THERMOSTAT OR PRES 217URE SWITCH BUILT-IN
	7	INTERNAL FUSES, DILCHARGE RESISTORS AND THERMOSTAT OR PRESSURE SWITCH BUILT-IN
	8	INTERNAL FUSES, ANLO32THERMOSTAT OR PRESSURE SWITCH BUILT-IN
	0	AIR COOLED, COMMON1TERMINAL ON THE CASE (»LIVE CASE«)
	1	AIR COOLED, ISOLATED TERMINALS
A5	2	WATER COOLED, COMM1N TERMINAL ON THE CASE (»LIVE CASE«)
	3	WATER COOLED, ISOLATED TERMINALS
	4	WATER COOLED, TWO C\ 360LING COILS, ISOLATED TERMINAL
A6	0	CASE SIDE MOUNTING
	2	CASE BOTTOM MOUNTING
A7	0	NUMBER OF TERMINALS

INDUCTION HEATING CAPACITORS

KLS

When ordering, please state:

RATED OUTPUT	kVar
RATED VOLTAGE	V
RATED FREQUENCY	Hz
TOLERANCE OF CAPACITANCE	% / +%
COOLING	air / water
TERMINAL CONNECTION	one terminal conne 026ed to the case ("live") / isolated ("dead")
NUMBER OF BUSHINGS	
INTERNAL FUSES	Yes/No
DISCHARGE RESISTORS	Yes/No
THERMOSTAT	Yes/No
PRESSURE SWITCH	Yes/No
SPECIAL CONDITIONS	
STANDARDS AND REGULATIONS	

WHILE EVERY CARE IS TAKEN TO ENSURE THAT THE INFORMATION CONTAINED IN THIS PUBLICATION IS CORRECT, NO LEGAL RESPONSIBILITY CAN BE ACCEPTED FOR ANYINACCURACY. THE COMPANY RESERVES THE RIGHT TO ALTER OR MODIFY THE INFORMATION CONTAINED HEREIN AT ANY TIME IN THE LIGHT OF TECHNICAL OR OTHER DEVELOPMENTS.

CAPACITOR DUTY CONTACTORS KC12, KC16, KC20, KC25, KC33, KC40, KC60



SWITCHING OF CAPACITORS IN SYSTEMS FOR COMPENSATION OF REACTIVE ENERGY (CLASSIC AUTOMATION DEVICES).

FEATURES

- CONFORMS TO UTILIZATION CATEGORY AC-6B
- STANDARD CONTROL VOLTAGES:
 24 V 50/60 HZ, 220 V 50/60 HZ, 230 V 50/60 HZ, 415 V 50/60 HZ
- SAVES COSTS OF EXPENSIVE REPLACEMENT
- LONG ELECTRICAL LIFE
- REDUCES WATT LOSSES DURING "ON" CONDITION, SAVES ENERGY
- HIGH SAFETY
- NO RISK OF DANGEROUS VOLTAGE
- SWITCHING OF CAPACITOR BANK IN PARALLEL WITHOUT DE-RATING
- LESS MAINTENANCE AND DOWNTIME
- APPROVALS: CSA

TECHNICAL DATA												
	RATING AT 50/60 Hz (kVar)			CURRI	ENT CARRYIN		POWER DISSIPATION	MECHANICAL LIFE		ELECTRICAL LIFE		
TYPE	≤ 55°C *	220 -	240 V	400 4	140 V	kVar / CURI	CURRENT RATING AS PER UL (kVar/A) PER POLE 50 OR 60 Hz 50 / 60 Hz				50 / 60 Hz	
		kVar	CURRENT AT 230 V (A)	kVar	CURRENT AT 400 V (A)	240 V	480 V	600 V	W	MILI	LION	OPERATIONS
KC12-11	12.5	6.7	17.6	12.5	18.1	6 / 15	12.5 / 15	15 / 15	0.36	17	15	200.000
KC16-11	16.7	8.5	22.3	16.7	24.1	8 / 20	16.7 / 20	20 / 20	0.8	20	15	200.000
KC20-11	20	10	26.2	20	28.9	10 / 24	20 / 24	25 / 24	1.25	16	12	100.000
KC25-11	25	15	39.4	25	36.1	12.5 / 30	25 / 30	33.3 / 30	2	16	12	100.000
KC33-12	33.3	20	52.5	33.3	48.1	16.5 / 40	33.3 / 40	40 / 40	4.2	16	6	100.000
KC40-12	40	25	65.6	40	57.7	20 / 48	40 / 48	50 / 48	4.2	16	6	100.000
KC60-12	60	40	104.9	60	86.6	30 / 72	60 / 72	80 / 77	5.1	10	4	100.000

NOTES:

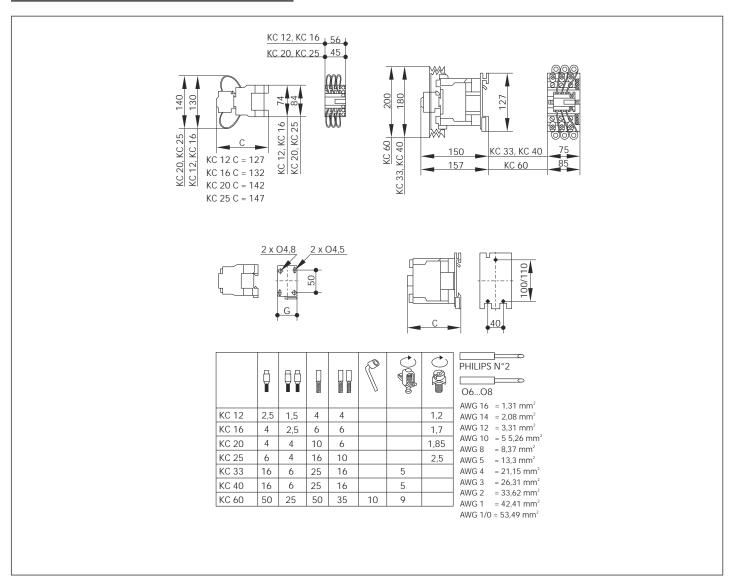
KC12 TO KC25; CLIP- ON MOUNTING ON 35 mm WIDE RAIL KC33 TO KC60; CLIP-ON MOUNTING ON 75 mmM WIDE RAIL

^{*} AVERAGE AMBIENT TEMPERATURE SHOULD NOT EXCEED 45 °C WITHIN THE 24-HOUR PERIOD IN ACC. WITH IEC 60 070 AND IEC 60 831

TECHNICAL DATA													
	RATING AT 50/60 Hz (kvar)	UPPEF	R BLOCK	Wire details							COIL CONSUMPTION		
TYPE	≤ 55°C	TIME LAG BETWEEN MAKE CONTACTS OF AUX. BLOCK AND CONTACTOR	HOLDING TIME OF MAIN CONTACTS OF AUX. BLOCK	CROSS- SECTIONAL AREA	LENGHT	MATERIAL	LUGS - AT CONTACTOR END	LUGS AT AUX. BLOCK END	TIGHTENING TORQUE	50 Hz	60 Hz	50 / 60 Hz	
		ms	ms	mm²	mm				Nmm²	VA	VA	VA	
KC12-11	12.5	2 - 10	5 - 12	0.292	174	,			1.2	7	7.5	8	
KC16-11	16.7	2 - 10	5 - 12	0.292	174	ESIS	FNG	9	1.7	7	7.5	8	
KC20-11	20	2 - 10	5 - 12	0.292	174	COATED RESIS TANCE WIRE)E L	PIN TYPE LUG	1.85	7.5	7.5	8.5	
KC25-11	25	2 - 10	5 - 12	0.292	174	ATE	TYPE		2.5	7.5	7.5	8.5	
KC33-12	33.3	2 - 10	5 - 12	0.196	245	CO	RING		5	20	22	26	
KC40-12	40	2 - 10	5 - 12	0.196	245	PTFE	<u> </u>		5	20	22	26	
KC60-12	60	2 - 10	5 - 12	0.196	245	ш.			5	20	22		

CAPACITOR DUTY CONTACTORS KC12, KC16, KC20, KC25, KC33, KC40, KC60

DIMENSIONS



ORDERING DATA

THE TYPE DESIGNATION AND CONTROL VOLTAGE ARE STATED WHEN ORDERING THE CONTACTORS.



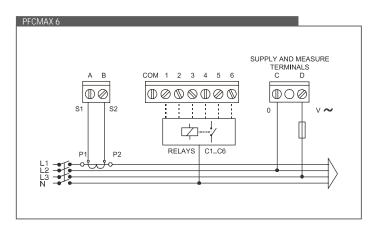
POWER FACTOR CONTROL RELAY PFCMAX 6, PFCMAX 12

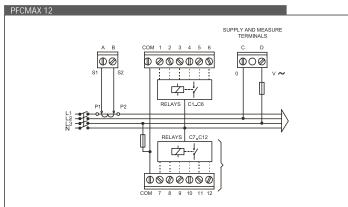


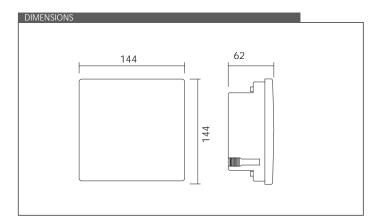
POWER FACTOR REGULATORS PFCMAX6 (6 STEPS) AND PFCMAX12 (12 STEPS) MEASURE COS? OF A SUPPLY SYSTEM AND CONTROL THE AUTOMATIC CONNECTION AND DISCONNECTION OF COMPENSATION CAPACITORS ACCORDING TO DESIRED COS?

FEATURES

- FCP (FAST COMPUTERIZED PROGRAM) SYSTEM MINIMIZING THE NUMBER OF CAPACITOR CONNECTIONS AND DISCONNECTIONS
- 6 AND 12 RELAY REGULATORS ACCORDING TO THE TYPE
- CONNECTED STEP DISPLAY, A DIGITAL DISPLAY FOR COS? AND DIFFERENTIATION OF A SIGN FOR REACTIVE POWER L (INDUCTIVE) AND C (CAPACITIVE)
- THREE-DIGIT LCD WITH SEVEN SEGMENTS
- SETTING OF PARAMETERS WITHOUT THE NEED FOR DISCONNECTING THE REGULATOR POWER SUPPLY
- OPTION TO CONFIGURE THE REGULATOR EVEN WHEN IT IS STILL IN THE PROCESS OF REGULATING THE CAPACITORS
- OPTION FOR USING 50 OR 60 HZ FREQUENCIES
- ALL MEASUREMENTS DISPLAYED ON ONE SINGLE DISPLAY
- EASY TO MOUNT WITH NO NEED FOR TOOLS
- PROGRAMMING FROM KEYPAD ON THE FRONT: (3 KEYS)
- SIZE 144 X 144 mm ACCORDING TO DIN 43 700
- MEASUREMENT AND POWER SUPPLY IN ONE SINGLE INPUT







POWER FACTOR CONTROL RELAY PFC-CX

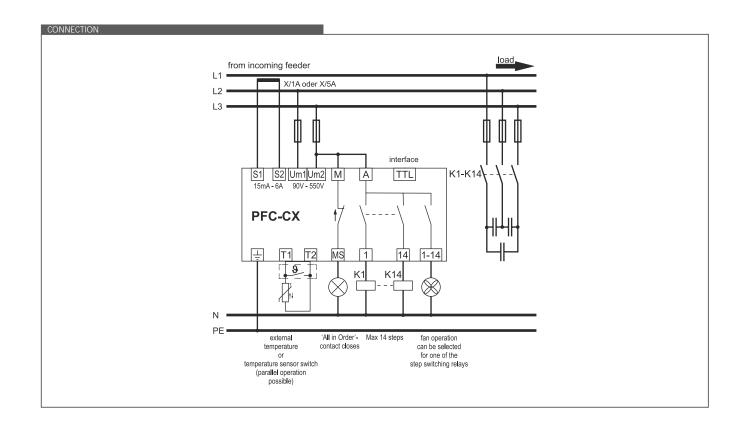


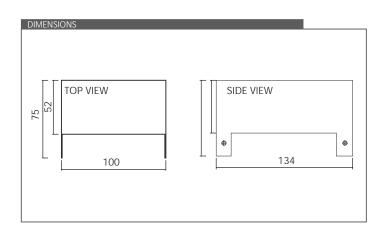
POWER FACTOR CONTROL RELAY PFC-CX MEASURE COS? OF A SUPPLY SYSTEM AND CONTROL THE AUTOMATIC CONNECTION AND DISCONNECTION OF COMPENSATION CAPACITORS ACCORDING TO DESIRED COS? MICROPROCESSOR CONTROLLED POWER FACTOR CONTROLLER WITH 1-PHASE MEASUREMENT SYSTEM.

FEATURES

- START MENU FOR EASY COMMISSIONING
- AUTOMATIC DETECTION AND CORRECTION OF THE PHASE OF CURRENT AND VOLTAGE CONNECTION
- FULLY-AUTOMATIC C/K-VALUE SETTING, SELF ADAPTING, CONNECTION OF DIFFERENT CAPACITOR STEP SIZES POSSIBLE
- AUTOMATIC DETECTION AND USAGE OF THE OPTIMUM CAPACITOR STEP
- SWITCHING PROGRAMS: BEST FIT, LIFO, MANUAL MODE, COMBIFILTER, PROGRESSIVE
- CAPABLE FOR 4-QUADRANT OPERATION
- 1-PHASE MEASUREMENT SYSTEM ALSO SUITABLE FOR NON-SINUSODIAL CURRENTS AND VOLTAGES
- SUPPLY VOLTAGE TAKEN FROM MEASURING VOLTAGE
- VOLTAGE MEASURING: 90 550 V, 45 65 HZ
- CURRENT MEASURING: 15 mA 5 A, SUITABLE FOR CT X/1 A UND X/5 A
- CONNECTION WITH PLUGABLE SCREW TERMINALS
- LCD WITH BACKLIT
- DISPLAY OF ALL IMPORTANT GRID AND SYSTEM PARAMETERS
- DISPLAY OF THD U AND VOLTAGE HARMONICS FROM 3RD TO 15TH ORDER
- INPUT FOR TEMPERATURE SENSOR OR THERMOSTATE (N/O) (THIS INPUT CAN BE USED TO SWITCH-OVER THE TARIF BY N/O CONTACT)
- ALARM RELAY WITH VOLTFREE N/O CONTACT (OPERATED AT NORMAL FUNCTION)
- TTL-INTERFACE ON REAR
- INSTRUMENT CASING FOR CUTOUT 144 X 144 mm, DEPTH 49 mm
- PROTECTION CLASS IP20 (CASING), IP50 (FRONT)

POWER FACTOR CONTROL RELAY PFC-CX





3UI



ELECTRICAL POWER SUPPLY TO INDUSTRIAL NETWORKS IS NOWADAYS POLLUTED TO THE SAME DEGREE AS THE AIR WE BREATHE IN THE MAJOR CONURBATIONS AND LARGE CITIES OF OUR PLANET. THIS IS DUE TO INCREASING APPLICATION OF NON-LINEAR LOADS, SUCH AS VARIABLE SPEED DRIVES, FREQUENCY CONVERTERS AND RECTIFIERS, BUT ALSO THE ASTRONOMICALLY HIGH NUMBER OF ELECTRICAL ENERGY CONSUMERS. THE OUTCOME IS UNUSUALLY HIGH LEVELS OF HARMONIC DISTORTION, NOT ONLY RESULTING IN UNNECESSARY LOSSES FROM TRANSMISSION LINES, BUT ALSO IN NON-CALCULABLE RESONANCES BETWEEN NETWORK INDUCTANCES AND POWER FACTOR CORRECTION CAPACITORS.

THIS WAS PREVIOUSLY NOT A MAJOR PROBLEM, BECAUSE THE DESIGN OF CAPACITORS FOR POWER FACTOR CORRECTION (MIXED DIELECTRIC AND LIQUID IMPREGNATION CONTAINING PCBS) MEANT THAT SUCH CAPACITORS WERE RELATIVELY INSENSITIVE TO LINE DISTORTION. FOLLOWING THE WORLDWIDE BANNING OF ELECTRICAL COMPONENTS CONTAINING PCBS, THIS KIND OF CAPACITOR HAD TO BE REPLACED. OVER THE LAST TWENTY YEARS, CAPACITORS MADE OF METALIZED POLYPROPYLENE FILM HAVE FOUND APPLICATION.

THIS NEW CAPACITOR DESIGN PROVIDES MANY ADVANTAGES, CHIEFLY VERY LOW LOSS DISSIPATION AND SMALL VOLUME COMBINED WITH LOW WEIGHT. HOWEVER, AD-VANTAGES OFTEN GO HAND-IN-HAND WITH DISADVANTAGES AND THIS ALSO APPLIES TO METALIZED FILM CAPACITORS: A DISTINCT SENSITIVITY TO HARMONIC DISTORTION, CURRENTLY A FAMILIAR AND INCREASING PROBLEM IN INDUSTRIAL NETWORKS.

SEVERAL PHENOMENA ASSOCIATED WITH THIS PROBLEM CAN PRODUCE SUBSTANTIAL PREMATURE AGING IN FILM CAPACITORS:

- HARMONIC DISTORTION IN EXTENDED NETWORKS INDUCES RESONANCE BETWEEN INDUCTANCES OF THE NETWORK AND POWER CAPACITORS, RESULTING IN EXCESSIVE CAPACITOR HEATING.
- HARMONIC CURRENTS OVER AND ABOVE THE FUNDAMENTAL LOAD RESULT IN VOLTAGE DROPS ACROSS THE CAPACITOR ELEMENTS WHICH MAY EXCEED THE VOLTAGE THE CAPACITOR WAS DESIGNED FOR. THIS CAUSES PARTIAL DISCHARGE AND RESULTS IN EXTREME SELF-HEALING EVENTS WITHIN THE CAPACITOR ELEMENTS, LIABLE TO SHORTEN CAPACITOR LIFE CONSIDER-ABLY.
- EXCESSIVE HARMONIC CURRENTS CAN OVERLOAD THE INTERNAL CONNECTIONS BETWEEN THE CABLES AND CAPACITOR FILM, CAUSING THE ARC-SPRAYED ZINC LAYER TO BE STRIPPED OFF FROM THE SURFACE OF THE CAPACITOR COIL.

3UI

DESIGN CRITERIA

SINCE IT IS IMPOSSIBLE TO PREDICT CONDITIONS PREVAILING IN THE NETWORK WHERE THE REACTOR WILL DO ITS JOB, ALL REACTORS HAVE TO BE DESIGNED FOR A DEFINED WORST-CASE SCENARIO, MEETING ALL TOLERANCES LAID DOWN BY THE INTERNATIONAL STANDARD IEC 60076. IN THE ABSENCE OF AN APPROPRIATE STANDARD RELATING TO NETWORK QUALITY, THIS WORST-CASE SCENARIO HAD TO BE AGREED BETWEEN LEADING POWER FACTOR CAPACITOR SUPPLIERS. THESE ARE THE DESIGN CRITERIA OF PROVEN RELIABILITY OVER A PERIOD OF MANY YEARS:

• TOLERANCE FOR INDUCTANCE FUNDAMENTAL CURRENT I, -2 % ... + 3 % OF L_N

• ASSUMED HARMONIC VOLTAGE DISTORTION 1.06 x I_{CN} OR 1.10 x I_{CN} (FOR 6% OR 10 % OVERVOLTAGE RESPECTIVELY)

• THERMAL CURRENT I_{th} UH3= 0,5 %; UH5 = UH7 = 5,0 %; BASED ON U_N

• LIMIT OF CORE LINEARITY I_{Lin} 1.05 x I_{rms} (Relative to worst-case tolerances and capacitor aging)

1.20 x 11...7 (RELATIVE TO SWITCHING PROCEDURES AT FULL HARMONIC LOAD)

• ASSUMED AMBIENT TEMPERATURE 40°C

THESE DESIGN PARAMETERS REMAIN UNCHANGED FOR MEDIUM-VOLTAGE REACTORS.

AGAINST A BACKGROUND OF DETERIORATING NETWORK QUALITY, STANDARDS HAVE NOW BEEN LAUNCHED, MAKING CORRESPONDING ADJUSTMENTS TO THE 3UI REACTORS DESIGN FOR LOW VOLTAGE REACTORS NECESSARY AS FOLLOWS:

DESIGN
 THREE-PHASE, IRON-CORE, POLYGAP® CORE CONSTRUCTION

• ENCLOSURE IP00 FOR INDOOR USE

• COOLING AIR COOLED, AN

• LAY-OUT ACC. TO IEC 76 AND 289

• TOLERANCES OF THE INDUCTANCES -2 %...+3% OF L_N

• FUNDAMENTAL CURRENT 1,06 I_{CN}

HARMONIC LOAD
 STANDARD VALUES

(VH3=0.5 %, VH5= 5.0 %, VH7= 5.0 % BASED ON U_n)

• LIMIT OF LINEARITY $L(I_{Lin})^3 0.95 L_N$

• INSULATION LEVEL LI/AC --/3.0 kV ACC. TO IEC 76-3

• IMPREGNATION COMPLETED UNIT IMPREGNATED UNDER VACUUM AND OVER-

PRESSURE IN IMPREGNATION, RESIN ACC. TO TEMPERATURE CLASS H

WINDINGS
 COPPER WIRE OR ALUMINIUM BAND WITH COPPER BAR TEMINALS

TEMPERATURE SENSOR
 TEMPERATURE SWITCH NORMALY CLOSED (TNC180) POSITIONED IN

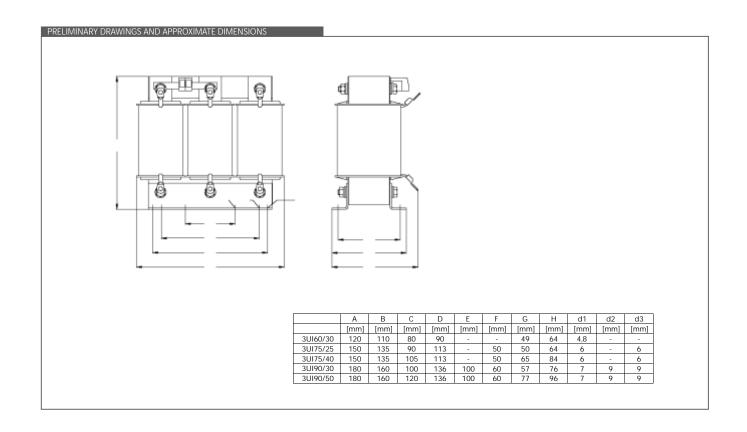
MIDDLE COIL

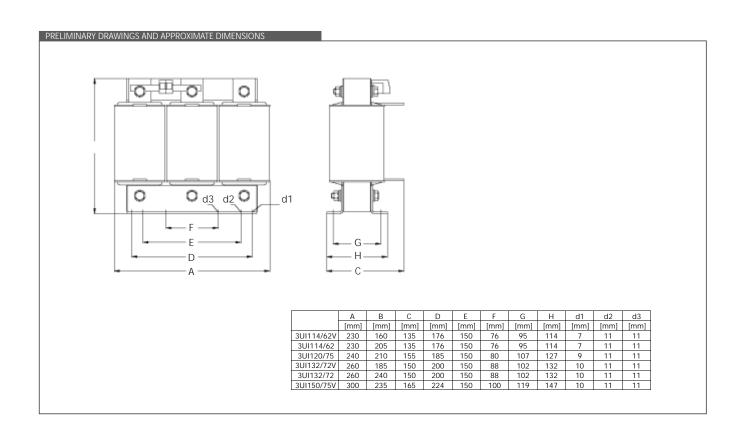
• EARTHING ONE FIXATION HOLE IS SIMULTANEOUS EARTHING

3UI

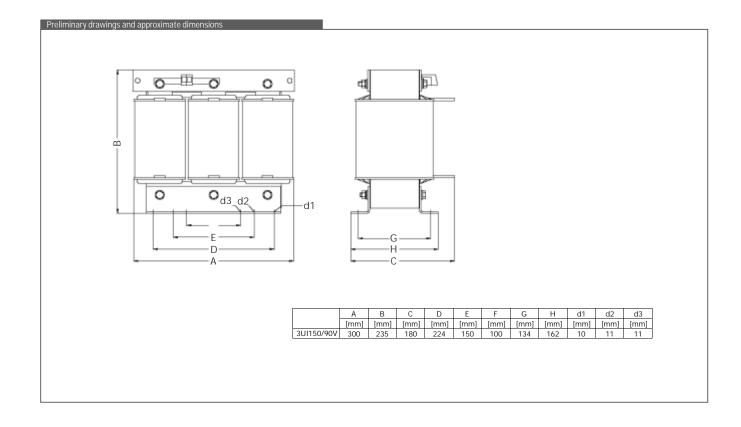
TECHI	NICAL	DATA								
HARMO	VIC FILTE	ER REACTORS 400 V								
Item	ph	TYPE OF CORE	U _n (V)	f _n (Hz)	p (%)	Nc (kVar)	L _N (mH)	I _{rms} (A)	I _{Lin} (A)	Nv (I _{rms}) (A)
1	3	3UI60/30	400	50	5.67 (210 Hz)	1.5	3 x 20.409	2.6	4	30
2	3	3UI75/25	400	50	5.67 (210 Hz)	2.5	3 x 12.245	4.4	7	30
3	3	3UI75/40	400	50	5.67 (210 Hz)	5	3 x 6.123	8.8	15	50
4	3	3UI90/50	400	50	5.67 (210 Hz)	7.5	3 x 4.082	13.2	23	70
5	3	3UI114/62V	400	50	5.67 (210 Hz)	10	3 x 3.061	17.5	31	90
6	3	3UI114/62V	400	50	5.67 (210 Hz)	12.5	3 x 2.449	21.9	39	110
7	3	3UI114/62V	400	50	5.67 (210 Hz)	15	3 x 2.041	26.3	47	130
8	3	3UI114/62	400	50	5.67 (210 Hz)	20	3 x 1.531	35.1	63	150
9	3	3UI114/62	400	50	5.67 (210 Hz)	25	3 x 1.225	43.9	79	180
10	3	3UI132/72V	400	50	5.67 (210 Hz)	30	3 x 1.020	52.6	95	190
11	3	3UI132/72	400	50	5.67 (210 Hz)	40	3 x 0.765	70.2	127	260
12	3	3UI132/72	400	50	5.67 (210 Hz)	50	3 x 0.612	87.7	159	280
13	3	3UI60/30	400	50	7 (189 Hz)	1.5	3 x 25.556	2.4	4	20
14	3	3UI75/25	400	50	7 (189 Hz)	2.5	3 x 15.334	4	6	30
15	3	3UI75/40	400	50	7 (189 Hz)	5	3 x 7.667	8	13	50
16	3	3UI90/30	400	50	7 (189 Hz)	7.5	3 x 5.111	12.1	20	70
17	3	3UI90/50	400	50	7 (189 Hz)	10	3 x 3.833	16.1	26	70
18	3	3UI114/62V	400	50	7 (189 Hz)	12.5	3 x 3.067	20.1	33	80
19	3	3UI114/62V	400	50	7 (189 Hz)	15	3 x 2.556	24.1	40	90
20	3	3UI114/62	400	50	7 (189 Hz)	20	3 x 1.917	32.1	53	140
21	3	3UI114/62	400	50	7 (189 Hz)	25	3 x 1.533	40.2	66	170
22	3	3UI114/62	400	50	7 (189 Hz)	30	3 x 1.278	48.2	80	190
23	3	3UI120/75	400	50	7 (189 Hz)	40	3 x 0.958	64.3	106	220
24	3	3UI132/72	400	50	7 (189 Hz)	50	3 x 0.767	80.3	133	240
25	3	3UI75/25	400	50	14 (134 Hz)	1.5	3 x 55.272	2.3	3	30
26	3	3UI75/40	400	50	14 (134 Hz)	2.5	3 x 33.163	3.8	5	40
27	3	3UI90/30	400	50	14 (134 Hz)	5	3 x 16.582	7.7	10	80
28	3	3UI90/50	400	50	14 (134 Hz)	7.5	3 x 11.054	11.5	16	80
29	3	3UI132/72V	400	50	14 (134 Hz)	10	3 x 8.291	15.4	21	80
30	3	3UI132/72V	400	50	14 (134 Hz)	12.5	3 x 6.633	19.2	27	90
31	3	3UI132/72V	400	50	14 (134 Hz)	15	3 x 5.527	23.1	32	110
32	3	3UI132/72V	400	50	14 (134 Hz)	20	3 x 4.145	30.8	43	150
33	3	3UI132/72	400	50	14 (134 Hz)	25	3 x 3.316	38.5	53	190
34	3	3UI150/75V	400	50	14 (134 Hz)	30	3 x 2.764	46.2	64	210
35	3	3UI150/90V	400	50	14 (134 Hz)	40	3 x 2.073	61.5	86	270
36	3	3UI150/90V	400	50	14 (134 Hz)	50	3 x 1.658	76.9	107	290

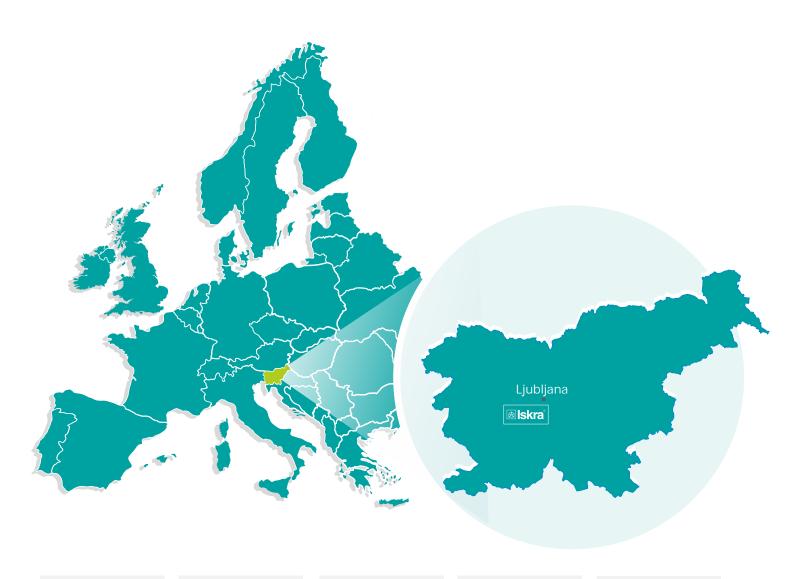
3UI





3UI





Headquarter

Stegne 21 SI-1000 , Ljubljana Phone: + 386 1 513 10 00

Iskra IP, d.o.o.

Vajdova ulica 71 SI-8333, Semi Phone: +386 7 384 94 54

Iskra Sistemi - M dooel

UI, Dame Gruev br. 16/5 kat 1000 , Skopje Phone: +389 75 444 498

BU Kondenzatorji

Vajdova ulica 71 SI-8333 , Semi Phone: +386 7 38 49 200

Iskra Lotri, d.o.o.

Oto e 5a SI-4244, Podnart Phone: +386 4 535 91 68

Iskra Commerce, d.o.o.

Hadži Nikole Živkovi a br. 2 11000 , Beograd Phone: +381 11 328 10 41

BU MIS

Ljubljanska c. 24a SI-4000, Kranj Phone: +386 4 237 21 12

Iskra ODM, d.o.o.

Oto e 5a 4244 , Podnart Phone: +386 4 237 21 96

Iskra Hong Kong Ltd. 33 Canton Road, T.S.T. 1705 , China HK City Phone: +852 273 00 917 +852 273 01 020

PE Baterije in potenciometri

Šentvid pri Sti ni 108 SI-1296, Šentvid pri Sti ni Phone: +386 1 780 08 00

Iskra STIK, d.o.o.

Ljubljanska cesta 24a SI-4000, Kranj Phone: +386 4 237 22 33

Iskra INDIA Pvt Ltd.

3 shree Ganesh Glory Appartment Nakshtra Colony Near Akashwani Kendra, Nashik Phone: +91 253 2346161 +91 909 6900893 PE Galvanotehnika

Glinek 5 SI-1291, Škofljica Phone: +386 1 366 80 50

Iskra Tela L, d.o.o.

Omladinska 66 78250 , Laktaši Phone: +387 51 535 890

